



ENVIRONMENT PLAN SUMMARY DOCUMENT

Helios-1/1H Exploration Wells

Site Preparation and Drilling

EP493 Exploration Program

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2.0	<i>Final Revision and Approval</i>	<i>Senior Environmental Engineer</i>	<i>Onshore Manager</i>
2.1	<i>DMIRS RFI- minor amendments to Attachment 5</i>	<i>Senior Environmental Engineer</i>	<i>Onshore Manager</i>

List of acronyms and definitions

ALARP	as low as reasonably practicable
1% AEP	1% Annual Exceedance Probability or "100 year flood"
ATR	Action Tracking Register
ATU	Aerobic Treatment Unit
BGL	Below Ground Level
BOP	Blow Out Preventer
CALM Act	Conservation and Land Management Act 1984 (Western Australia)
OM	Onshore Manager
COPC	Constituents of Potential Concern
Cwth	Commonwealth
DAA	Department of Aboriginal Affairs (Western Australia)
DPAW	Department of Parks and Wildlife (Western Australia)
DPR	Daily Project Report
DFES	Department of Fire and Emergency Services (Western Australia)
DMP	Department of Mines and Petroleum (Western Australia)
DotE	Department of the Environment (Commonwealth)
DoW	Department of Water (Western Australia)
EP	Environment Plan
EP Act	Environmental Protection Act 1986 (Western Australia)
OEPA	Office of the Environmental Protection Authority (WA)
ERP	Emergency Response Plan
ESA	Environmentally Sensitive Area
Finder	Finder Shale Pty Ltd
Fugro	Fugro AG Pty Ltd
HPA	Heritage Protection Agreement
HSE	Health, Safety and Environment
KRED	KRED Enterprises Pty Ltd
KTLA	Karajarri Traditional Lands Association
MSDS	Material Safety Data Sheets
MDGL	Measured Depth Ground Level
NES	National Environmental Significance
OSCP	Oil Spill Contingency Plan
PGER Act	Petroleum and Geothermal Energy Resources Act 1967 (Western Australia)
PGER (E) Regulations	Petroleum and Geothermal Energy Resources (Environment) Regulations 2012 (WA)
PSMP	Project Specific HSE Management Plan
TD	Target Depth
TVDGL	True Vertical Depth Ground Level
The Project	Proposed exploration activity that consists of site preparation, drilling, decommissioning and maintenance
The Project area	Includes the well site, campsite and access track and areas associated with the previous disturbance
VSA	Vegetation and substrate association
WA	Western Australia
WAC	Walalakoo Aboriginal Corporation
WC Act	Wildlife Conservation Act 1950 (Western Australia)
Well site	The physical location on which an oil or gas well is drilled including associated infrastructure such as drill pad, sumps, storage areas, office and associated facilities .
YAC	Yanunijarra Aboriginal Corporation

TABLE OF CONTENTS		Page
1	INTRODUCTION.....	4
1.1	Background	4
1.2	Operator.....	4
2	DESCRIPTION OF ACTIVITIES	5
2.1	Location.....	5
2.2	General details	6
2.2.1	Civil Works	7
2.2.2	Access road and track	8
2.2.3	Well site and Exploration Well	8
2.2.4	Drilling Muds and Cuttings.....	9
2.2.5	Water.....	10
2.2.6	Waste Management	12
2.2.7	Decommissioning and Maintenance	12
2.2.8	Details of Chemicals and Other Substances.....	13
3	EXISTING ENVIRONMENT	13
3.1	Physical Environment.....	13
3.2	Biological Environment	14
3.3	Socio-Economic Environment	15
4	LEGISLATIVE FRAMEWORK.....	16
5	ENVIRONMENTAL RISKS ASSESSMENT AND MANAGEMENT PRACTICES	16
6	IMPLEMENTATION STRATEGIES	23
7	ENVIRONMENTAL REPORTING	24
7.1.1	Reportable Incidents.....	24
7.1.2	Recordable Incidents.....	24
7.1.3	Emissions and Discharges	25
7.1.4	Annual Environmental Report.....	25
8	STAKEHOLDER CONSULTATION.....	25
9	REFERENCES	26
	Appendix 1 - Finder HSEQ Policy	28
	Appendix 2 - Finder Risk Assessment Matrix.....	29
	Appendix 3 - Chemicals and other Substances Disclosure Statement.....	30

1 INTRODUCTION

1.1 Background

Finder Shale Pty Ltd (Finder) is the holder of the exploration permit EP493 in the Canning Basin, Western Australia granted under the provision of the PGER Act 1967. Finder proposes to drill two exploration wells (the project).

This document summarises the operations, risk assessment, mitigation and management measures as detailed in the Finder's Environmental Plan Ref. No. EP493-ENV-PLN-1001-1 and Oil Spill Contingency Plan Ref. No. EP493-ENV-OSCP-1001-1.

Providing regulatory approvals are granted, Finder is planning to commence ground activities in March-April 2017.

1.2 Operator

Finder Shale Pty Ltd is the holder of permit EP493, the operator of this project and the owner of this Environment Plan (EP). Finder holds 100% interest in permit EP493.

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2 DESCRIPTION OF ACTIVITIES

2.1 Location

The proposed well location is approximately 150 km southeast of Broome (see *Figure 1: Regional Location*), with coordinates for the well location is provided in *Table 1*.

Figure 1: Regional Location

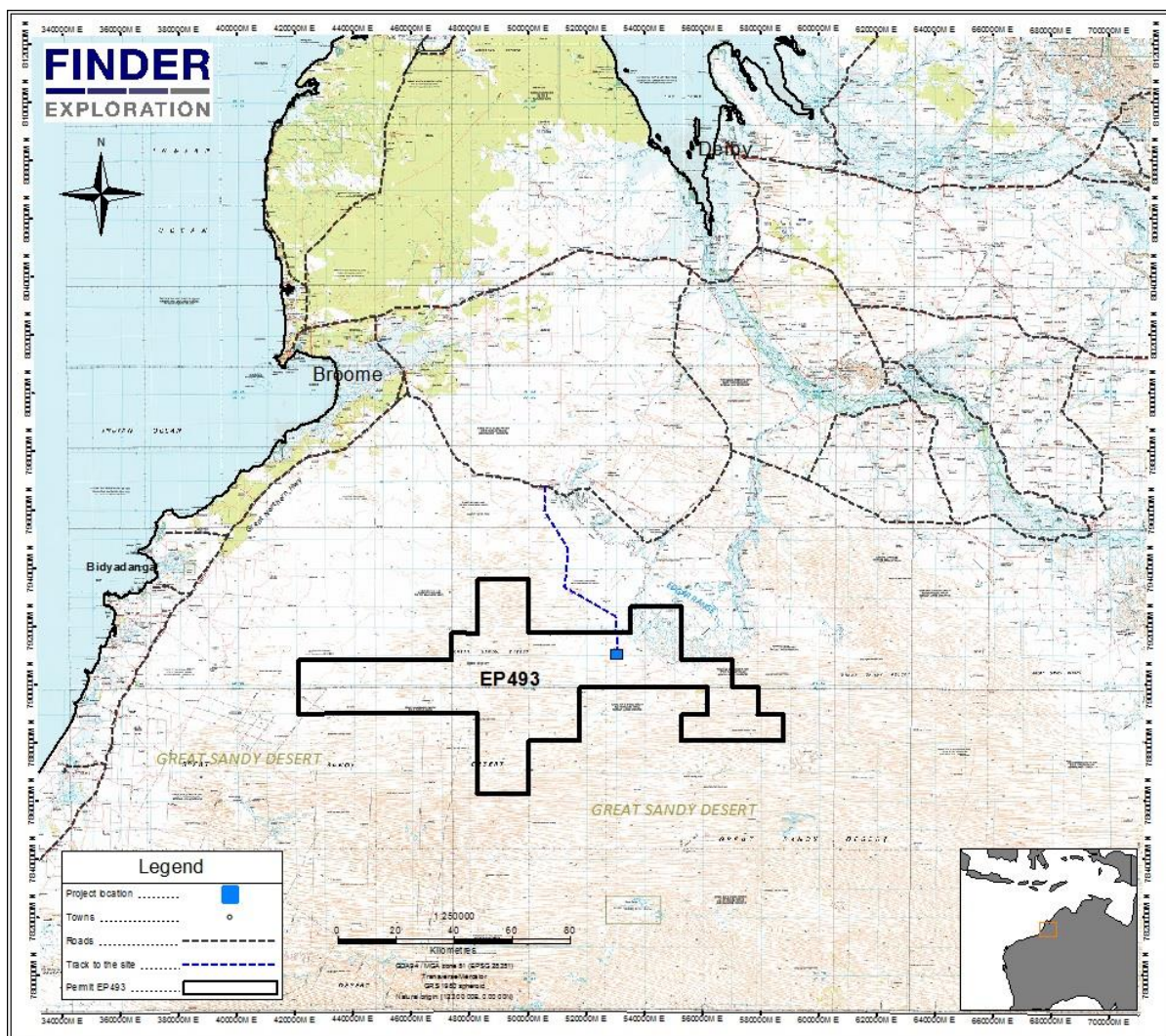
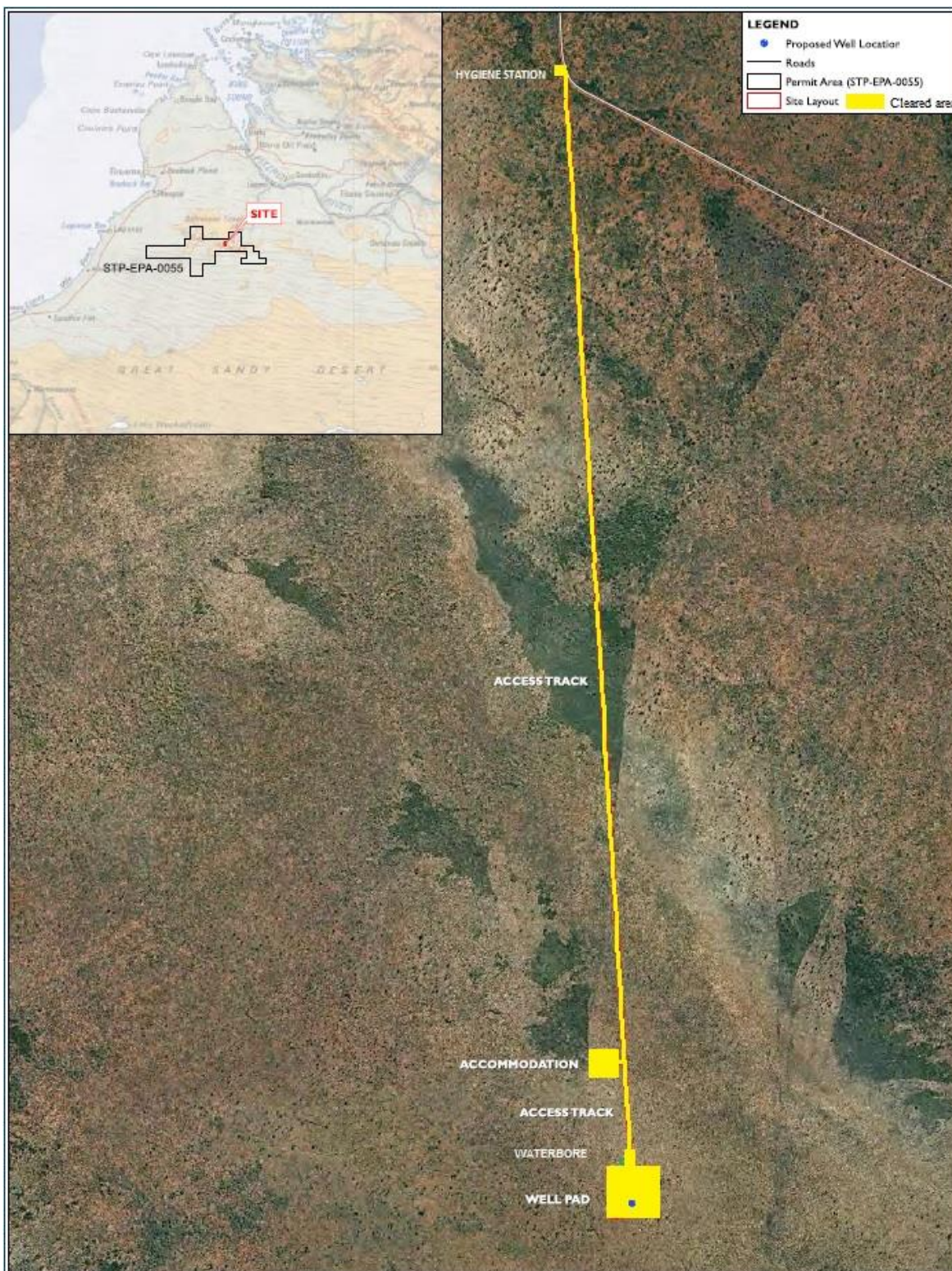


Table 1: Proposed Well Location Coordinates

Latitude WGS84	18° 54' 02.8789" S
Longitude WGS84	123° 17' 38.6062" N

The Project will be undertaken at the existing site. There is an existing access track to the site, camp site and the water bore in place to support drilling operations (see *Figure 2: Location Diagram*). The existing well site requires clearing of approximately 3.4ha of native vegetation to accommodate additional infrastructure. The proposed location contains no identified waterways or other sensitive locations. The project will be undertaken on Unallocated Crown Land.

Figure 2: Location Diagram



2.2 General details

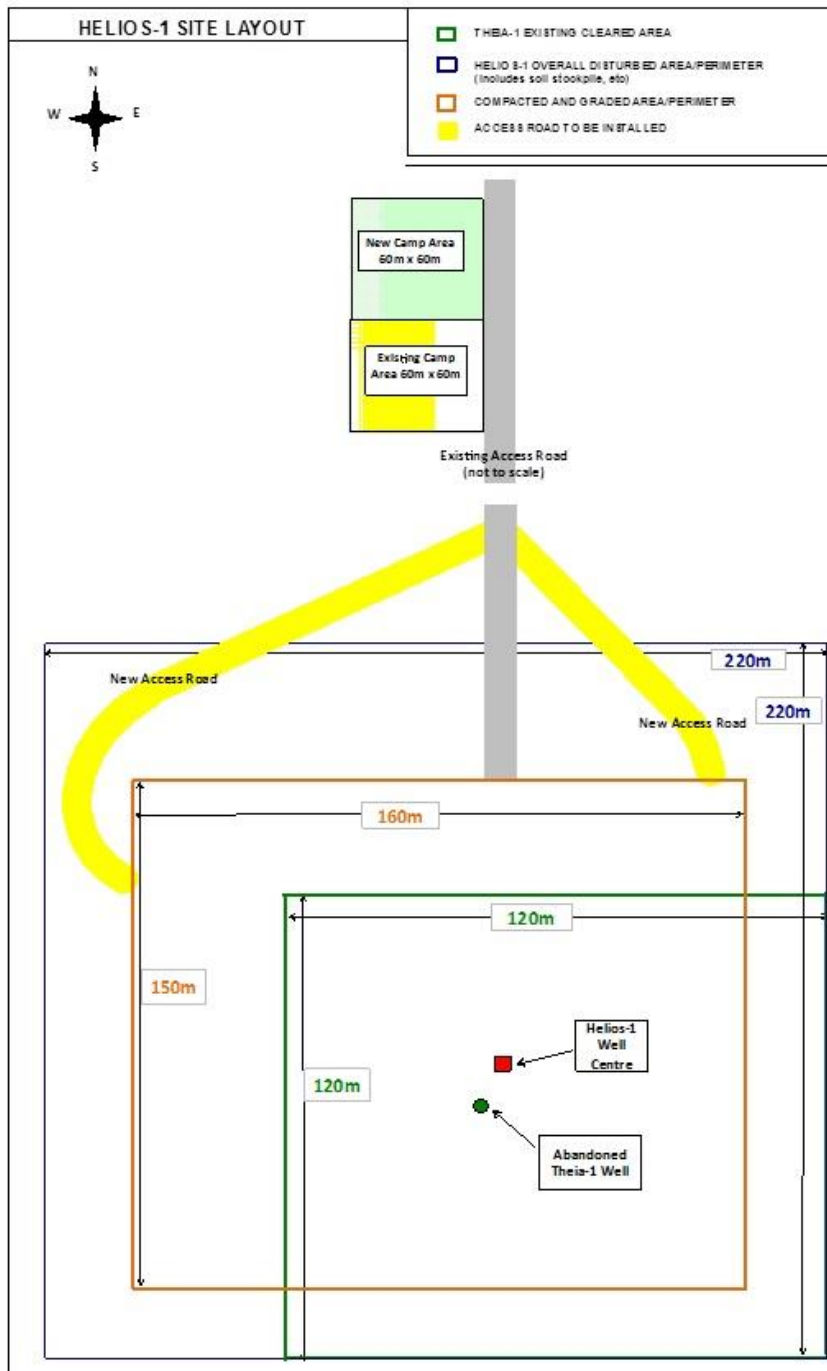
The project involves drilling two wells: the Helios-1 vertical well, a pilot well to a target depth of 1,650m to acquire data that will be used to drill the horizontal well section, which will then be plugged back and sidetracked as the Helios-1H horizontal well, which is expected to have a lateral extent in the order of 1,000m. The well will then be suspended, in readiness for possible well completion and testing.

Associated project activities are outlined in the following sections, but in summary consist of mobilisation/demobilisation, site preparation and civil works, operations and maintenance.

2.2.1 Civil Works

The wells are proposed to be drilled using the existing well site prepared for Theia-1. The existing well site requires an extension from 120m x 120m to 220m x 220m, refer to Figure 3 Helios 1 Site Extension. The additional area includes an allowance for a 10m fire break and areas to cater for soil stockpiling.

Figure 3: Helios-1 site extension



(Diagram not to scale)

The camp site will be extended from a 60m x 60m footprint to 60m x 120m to accommodate the larger workforce required for the Helios drilling program on-site.

In addition, two new access roads to the Helios-1 Site will be constructed from the existing access road to provide improved vehicular access / egress. These will be 5m wide running surface with a cleared shoulder of 2m each side. The length of each new access road section will be approximately 120m and 150m respectively.

Topsoil will be removed to a depth of 300mm and cleared vegetation will be stored in separate stockpiles within the site perimeter. The topsoil stockpile will be kept to maximum height of 2m to minimise stockpile erosion.

Excavated soil from the water holding pond and mud sumps will be stored in stockpiles within the site perimeter. The size of stockpiles will not exceed a maximum height of 2m.

If required, dust suppression will be considered during civil works using water sourced from the on-site bore or provided by the civil contractor.

Following completion of drilling, Finder will retain the well site and associated infrastructure for subsequent production testing in accordance with the permit work program commitment.

2.2.2 Access road and track

To access the drilling site, Finder will use the existing Dampier Downs Road and the existing access track. The access track extends for approximately 2.8km in a straight line along an historical seismic line. An established hygiene station is located at the intersection of the access track and the Dampier Downs Road.

2.2.3 Well site and Exploration Well

The total area of the well site including firebreaks will be approximately 4.8ha.

The turkey nest will be approximately 60m x 40 m x 3m deep. The turkey nest will be lined with HDPE plastic liner. During the drilling activities covered by this EP, the turkey nest will be used to contain water from the water bore and as a contingency measure to receive any overflow from the sumps during a significant 1% AEP rainfall event.

The mud sumps will each be approximately 30m x 30m x 3m deep. The mud sumps will be lined with HDPE plastic liner. The mud sumps have been designed with combined capacity of 3,500m³ that increases to 4,400m³ factoring in the 0.5m raised bund edge.

The chemical storage area will be designated to store dry and liquid chemicals. Dry chemicals for use during the drilling of the well will be stored on ground that is covered by a very flexible polyethylene (VFPE) liner.

There are two types of liners to be used during the project: a 1 mm a very flexible polyethylene VFPE for dry chemicals storage area and clean-down area will be lined with this liner and a 0.75 mm Enviroliner (EL6030^{HD}) to line turkey nest and mud sumps.

The flare pit will be constructed for emergency flaring only. The pit will have an overall size of 30m x 10m, with walls sloped from approximately 1m up to 3m height and will be located 45m from the well.

The site toilet block will consist of 1 x 7000L black water storage tank (maximum size). This is a pump-out system which collects and stores waste from toilets. The tank will be pumped out at a regular basis with the waste to be disposed at licensed waste facilities. The tank will be removed during demobilisation.

The outline drilling operations sequence as follows:

Helios-1 Operations

- Drill, set and cement 508mm (20") conductor at ~30m BGL utilising water bore drilling rig.
- Mobilise drilling rig.
- Rig up on location. Install riser/bell nipple to take drilling returns.
- Drill 445mm (17½") hole vertically to ~865mMDGL.
- Run and cement 340mm (13⅜") casing.
- Nipple up and test BOP's.
- Drill out shoe and conduct Leak off Test with 216mm (8½") BHA.
- Drill 216mm (8½") production hole vertically to 1650mMDGL.
- Conduct electric logging.
- Run and cement 140mm (5½") casing.
- Conduct diagnostic injection test.
- Permanently plug and abandon reservoir section.
- Cut and pull 140mm (5½") casing at ~1050m.
- Set an abandonment/kick off cement plug.

Helios-1H Operations

- Kick off well in 311mm (12¼") hole just below the 340mm (13⅜") casing shoe.
- Drill 311mm (12¼") intermediate hole, landing horizontal in the Goldwyer III Formation at 2010mMDGL (1550mTVDGL).
- Run and cement 244mm (9⅝") casing.
- BOP pressure test.
- Drill out shoe and rat hole with 216mm (8½") BHA
- Geosteer 216mm (8½") hole horizontally to 2610mMDGL (1550mTVDGL)
- Run and cement 140mm (5½") casing.
- Suspend well for subsequent activities.
- Rig down.
- Release rig.

A Well Management Plan will be submitted to the DMP for approval. The conceptual design of the wells is shown in *Figure 4: Helios-1/1H Well Design* for activities covered under this EP.

2.2.4 Drilling Muds and Cuttings

Water based drilling mud will be used to drill the well. The main ingredients of the drilling mud are KCL (potassium chloride), polymers and biocides. With the exception of KCL, all ingredients used in the drilling mud are present in low concentrations – they are non-toxic and are easily biodegradable. The drilling mud and cuttings that are returned to surface however, could contain inorganic elements associated with geological formations.

The drilling mud will be filtered and cleaned of drilled cuttings and sediment from the mud at surface. This is achieved by processing the returned fluid through a solids control system. Removed cuttings will be placed directly into the drilling mud sump.

Recycling of mud limits the volume of water required to be taken from local groundwater bores and the non-invasive mud design limits fluid loss to surface formations protecting groundwater from potential contamination.

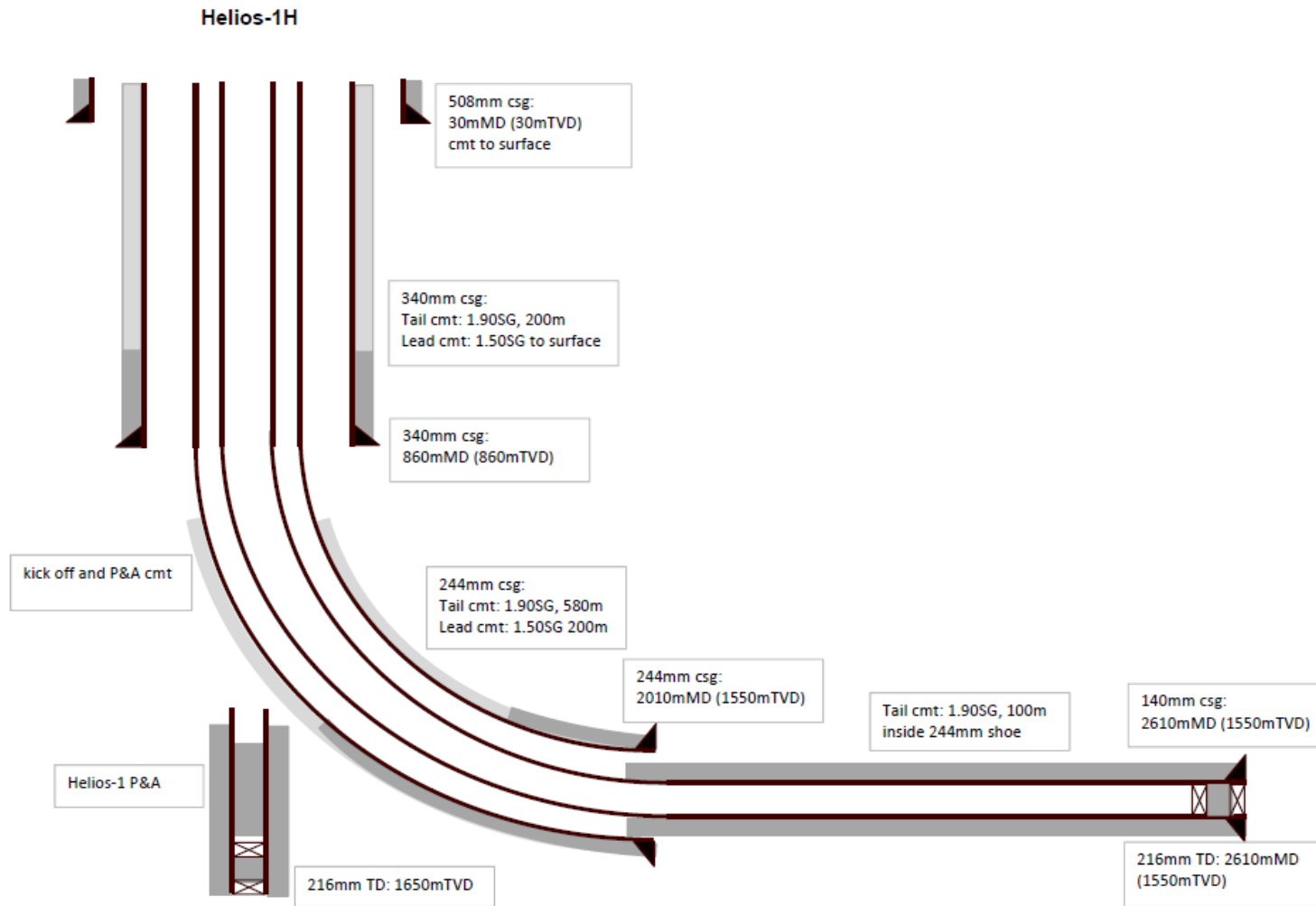
All substances used during drilling have been fully disclosed in accordance with Regulation 15(9) of the Petroleum and Geothermal Energy Resources (Environment) Regulations 2012 (WA) and Chemicals Disclosure Guideline as provided in Appendix 3. The Material Safety Data Sheets (MSDS) for the substances are also provided in Appendix 3.

2.2.5 Water

Water for maintenance of the road and access track, camp and well site, and subsequent drilling of the exploration well will be sourced from the existing water bore drilled on the permit in 2015 in accordance Section 26D of the Rights in Water and Irrigation Act 1914.

The water bore is adjacent to the well site and drilled to a depth of approximately 166m. The water from the bore is saline and is not potable. Finder will utilise this water bore for drilling operations. Approximately 3,4KL of water will be required for this project. Finder has a 5C licence to take water GWL179507(2) for the project activities. Potable water for domestic consumption will be sourced locally and stored on-site as required.

Figure 4: Helios-1/1H Well Design



2.2.6 Waste Management

The project will generate general and putrescible wastes (non-hazardous solid wastes, recyclable materials, food scraps, grey water, drilling mud and cuttings) and potentially hazardous wastes (black water / sewage, fuels and oils and flammable materials).

General wastes will be recycled where possible, with all general and recyclable wastes removed and disposed of at a licensed waste management facility. A waste removal contractor will be nominated prior to the civil works.

Greywater from the camp will be re-used for irrigation. Any product for cleaning or products that will be washed down drains will be environmentally friendly (non-toxic, biodegradable).

Black water / sewage from the toilets on the well site will be managed by utilising an on-site holding tank which will be periodically emptied by a licensed contractor and disposed of at a licensed waste management facility in Broome. The system will consist of 1 x 7000L tank on the well site. The tank will be emptied at least once per week, more frequently if required.

Black water from the camp will be managed by utilising a mobile wastewater treatment unit (WWTU), such as Aerobic Treatment Unit (ATU), e.g. Enviroflow Water Technology system. The ATU will be capable of handling toilet, washing machine and shower waste from up to 45 people.

The residual drilling fluid will be tested to determine disposal options. To determine the classification of the solid material and the landfill type that will accept this material, the cuttings and residual sludge will be tested for constituents of potential concern (COPC). If the results for contaminants are below the threshold criteria prescribed in the Landfill Waste Classification and Waste Definitions (2013), the material can be re-used or buried on-site otherwise the material will be disposed of to the appropriate class of landfill, or treated to a level that is suitable for disposal to lower class landfill or reuse.

2.2.7 Decommissioning and Maintenance

The well will be suspended in accordance with *the Well Management Plan* for subsequent production testing that will be subject to a separate environmental approval by the DMP.

Following the suspension of the well and assuming that subsequent operations are not performed in direct or near term continuation, the site will be partially decommissioned. The following maintenance program/ protocols will be implemented to establish a safe stable non-polluting environment:

- the well will be suspended for subsequent production testing;
- the wellhead will be fenced;
- all drilling equipment and camp structures will be removed;
- all general waste, waste containers and residual chemicals will be removed;
- all contaminated material from the hygiene station will be appropriately disposed of;
- water bore standpipes will be locked;
- sumps containing cuttings and residual drilling fluid will be retained until significant reduction of fluid (through evaporation) is achieved.
- The cuttings and residual drilling fluid will be tested to determine standard quality criteria for disposal.

- the entire site will be contained within a minimum 0.3 m high earth embankment (ie. a windrow) which will extend for the full length of the site boundary.

Decommissioning and maintenance will be in accordance with FINDER *Decommissioning and Maintenance Management Plan* described in the Environmental Plan.

2.2.8 Details of Chemicals and Other Substances

As prescribed under the PGER (Environment) Regulations 2012 and DMP Chemicals Disclosure Guidelines, 2013, the Chemicals and other Substances Disclosure Statement for drilling activities is provided as Appendix 3.

Any changes to the drilling fluids program, FINDER will notify the DMP, update the Chemical Disclosure Statement in accordance with Regulation 11(7) (8) of the PGER Regulations 2012.

3 EXISTING ENVIRONMENT

3.1 Physical Environment

The Project is located in the Pindandland subregion (DL2) of the Dampierland Bioregion, close to the subregion's southern boundary with the McLarty subregion (GSD1) of the Great Sandy Desert bioregion (Graham, 2001b).

The regional climate is arid-tropical with a distinct wet season (December to March) and dry season (April to November). The area is subject to cyclone activity, with the coastline between Exmouth and Broome recognised as an area of high cyclone activity.

The surface geology in the vicinity of the proposed well consists of sand plains with dunes and swales of regolith. No emergent landscape features occur in the immediate vicinity of the Helios-1 well. The nearest emergent feature is the Edgar Ranges, which lies approximately 7 km to the north-east of the proposed well site.

There are no permanent surface water features in the vicinity of the project. During the wet season (December – March), sustained heavy rainfall may result in ephemeral surface water features in the region.

The project area contains unconfined unsaturated Broome Sandstone and the confined Wallal Sandstone. These two aquifers are separated by the generally impermeable Jarlemai Siltstone.

The unsaturated Broome Sandstone overlies the Jarlemai Siltstone and has a maximum recorded thickness of 60 m in the West Canning Basin. The Jarlemai Siltstone comprises mainly black puggy clay and silty clay and acts as a confining layer which separates the Wallal and Broome Sandstone. The Jarlemai Siltstone has a maximum recorded thickness of 200 m. The Wallal Sandstone generally comprises cemented very coarse to fine grained sands. The Wallal aquifer is confined beneath the Jarlemai Siltstone.

The groundwater in the Canning Basin is used for irrigation, industrial, rural, domestic and commercial uses (DoW, 2010). The project does not occur in close proximity to existing groundwater users. The nearest public drinking water reserve is near the town of Broome (DoW, 2010), approximately 150 km north-west of the Project area.

3.2 Biological Environment

A desktop review and an ecological field survey were completed during May 2014. The first field survey was completed to establish baseline conditions of the existing environment and to identify potential protected flora and fauna species within the project area.

Finder proposes to undertake an additional ecological survey for the proposed clearing in late November 2016. If any sensitive vegetation is identified during the proposed ecological survey, Finder will review the proposed site layout to minimise impact from proposed disturbance.

As an example, one population of P3 flora (*K. katatona*) was recorded within the footprint of the previous project primarily in the area proposed to be cleared for the accommodation camp. In response to this, Finder reviewed the project layout and relocated the accommodation camp to the opposite side of the access track in order to avoid disturbance to this population. It was noted that *K. katatona* was observed in previously disturbed areas (historic seismic clearing) and appears to respond positively to ground disturbance.

In regard to fauna protection, Finder has Fauna Management Plan approved by DMP. The plan was developed in consultation the Department of Parks and Wildlife and implemented during the previous activities.

Key findings of the desktop study and the ecological field survey are summarised as follows:

Flora and vegetation

No threatened or priority ecological communities declared under the EPBC Act or WC Act have been recorded during the survey or are expected to occur within the project area.

There are no Ramsar listed wetlands in the vicinity of the project area.

No threatened flora species declared under the EPBC Act were identified during the desktop study or recorded during the ecological field survey.

A total of 58 plant taxa (15 families, 39 genera) were recorded within the existing clearing footprint during the field survey.

Eight conservation significant flora species (Priority 1, Priority 2 and Priority 3) were identified within 50km radius of the project location during the desktop study. However, no flora species listed under Schedule 1 or 2 of the WC Act were recorded during the field survey.

One Priority 3 flora species (*K. katatona*) was recorded in the vicinity of the well site

No recognised weed species were identified during the survey.

The Pindan vegetation of the project area is consistent with the broad-scale vegetation type described as: "*Eucalyptus tectifica* (Darwin box), *Corymbia flavescens* woodland with *Acacia tumida* (pindan wattle) open-scrub and *Chrysopogon* spp. (ribbon grass) and *Triodia bitextura* grasses" (Graham, 2001a).

Three main vegetation units were identified and recorded within the project area. They are Cg.Cf.As.Ts – *Acacia/Grevillea* Tall Scrub, Eb.Am.Sp – *Acacia monticola* Tall Scrub and Cg.Eb.Ah.Aa.Tp – *Acacia* Low Heath.

Fauna

In regard to fauna habitat, three vegetation and substrate associations (VSAs) were found within the survey area during the field investigation, which corresponded to the three vegetation communities identified during the flora and vegetation assessment.

The desktop review identified an assemblage of 257 vertebrate fauna species potentially occurring in the vicinity of the project, comprising six (6) frog species, sixty two (62) reptile species, one hundred and forty six bird species, thirty three (33) native mammal species and ten introduced (feral) mammal species. Twenty nine are considered to be fauna of conservation significance. Of these, many were identified as migratory birds that were considered to be unlikely regular visitors to the project area.

Based on desktop assessment results, the project area is considered potential habitat for the greater bilby (*Macrotis lagotis*), declared as vulnerable under the EPBC Act, and the northern marsupial mole (*Notoryctes caurinus*), declared as Endangered under the EPBC Act.

The targeted fauna survey undertaken in 2014 did not identify any marsupial mole habitat and moles. Four inactive burrows and five sites with signs of bilby digging were found.

Conservation Areas and other sensitivities

The project area contains no declared conservation areas or areas of specific environmental sensitivities. In particular, there are:

- No environmentally sensitive areas (ESA) of declared conservation land under the CALM Act such as declared conservation significant land, wetlands, national parks or reserves within the permit;
- No permanent waterways within or in proximity to the project area;
- No groundwater dependant systems;
- No areas of other ESAs of ecological significance such as TEC/PEC, threatened flora species and its habitat;
- No Public Drinking Water Source Areas, potable water supplies, Public Drinking Water Source Areas water bores or Aboriginal Community drinking water bores in the project area. The nearest public drinking water reserve is near the town of Broome, approximately 150km north-west of the Project area.
- No social values such as recreational areas or tourist attractions are associated with the Project area;
- Limited groundwater values and beneficial use, as the project is located in a remote area on unallocated Crown Land;
- No populated areas and no identified groundwater users in the vicinity of the project area;
- No known areas of cultural significance located in the project area.

3.3 Socio-Economic Environment

The Project is located on unallocated Crown Land. The nearest pastoral lease is the Dampier Downs station, which lies 50 km to the north-east of the well location. There is no State or Commonwealth declared conservation significant land in the vicinity of the project area.

The closest major population centre is the town of Broome, which is approximately 155 km north-west of the proposed location.

4 LEGISLATIVE FRAMEWORK

A summary of applicable legislation and the activities covered by this EP to which it applies is provided in Table 2.

Table 2: Summary of Applicable Legislation

Legislation / Regulation	Jurisdiction	Administering Authority	Approvals
<i>Aboriginal Heritage Act 1972</i>	WA	Department of Aboriginal Affairs (DAA)	Heritage Protection Agreement
<i>Petroleum and Geothermal Energy Resources Act 1967</i>	WA	DMP	Well Management Plan
<i>Petroleum and Geothermal Energy Resources Act 1967 and (Safety) Regulations</i>	WA	DMP	Safety Management Plan
<i>Petroleum and Geothermal Energy Resources Act 1967 and (Environment) Regulation 2012</i>	WA	DMP	Environmental Plan Oil Spill Contingency Plan
<i>Rights in Water and Irrigation Act 1914</i>	WA	Department of Water (DoW)	D26 licence to drill water bore and C5 licence to take groundwater
Environmental Protection Act 1999 Biodiversity Conservation Act 2016	WA	Department of Parks and Wildlife (DPaW)	Requirement for an on-ground ecological assessment.

5 ENVIRONMENTAL RISKS ASSESSMENT AND MANAGEMENT PRACTICES

An evaluation of environmental risks and impacts in relation to the Project was carried out in accordance with the methodology and principles described in the following standards and procedures:

- ISO:14000 – Environmental Management Standards
- Standards Australia/New Zealand Standards 31000:2009 – Risk management – Principles and guidelines
- HB 203:2012 – Managing environment-related risk
- Finder Hazard Identification and Risk Management Procedure HSE-PRO-4008.

All aspects of the proposed project that may affect the environment were identified, along with the associated hazards and potential impacts for both planned and unplanned operations.

Measures to reduce the likelihood or consequence were considered for each potential impact in the context of the drilling program and their effectiveness in reducing risk.

The management process applied to the identification and assessment of environmental risks is described in Appendix 2: *Finder Risk Assessment Matrix*.

Table 3 provides a summary of the risk assessment including description of impacts, mitigation measures and management practices proposed for individual impacts. The proposed mitigation measures will be implemented throughout the operations to reduce environmental risks to ALAR.

Finder's overarching environmental objective for the project is to avoid or minimise environmental risks to as low as reasonably practicable (ALARP) and as described in

Finder's HSEQ Policy (Appendix 1). Finder has developed specific performance objectives for the Project to meet Finder's HSEQ Policy commitments, protect identified environmental values and reduce impacts on the environment to ALARP.

The environmental performance objectives, environmental standards and measurement criteria relevant to each aspect of the project are summarised in Table 3 below. The measurement criteria were developed to allow direct measurement of performance indicators. Each measurement criteria is specific, recordable and auditable.

The following project specific management plans were developed and will be implemented for routine activities to avoid, minimise and control impacts to identified environmental values to ALARP:

- Native Flora and Vegetation Management Plan
- Soil Management Plan
- Weeds, Pathogens and Pests Management Plan
- Fauna Management Plan
- Cultural Heritage Management Plan
- Air pollution (dust, GHG and other emissions) control
- Waste Management Plan
- Decommissioning and Maintenance Plan

To avoid and reduce impacts from non-routine activities (e.g. loss of well control, spills, fire) and address emergency situations the following plans will be implemented:

- Oil Spill Contingency Plan (EP493-ENV-OSCP-1001-1)
- Emergency Response Plan will be developed as part of the Well Management Plan and Safety Management Plan for this project.

With the application of these management commitments, the risk assessment identified that the overall residual impact to identified environmental aspects is considered to be low.

Table 3: Summary of Environmental Impact Assessment, Environmental Performance Objectives, Standards and Measurement Criteria

Sources of Risk (Hazards)	Environmental Impact	Environmental Performance Objectives	Environmental Performance Standards	Performance indicators	Residual risk
Clearing of native vegetation	Loss of native vegetation, flora species, fauna habitat.	To maintain representation, diversity, viability and ecological function at the species, population and community level.	Baseline conditions (flora/vegetation) are known, an on-ground ecological survey will be carried out prior to clearing to identify protected flora and vegetation. The footprint of proposed disturbance is limited to 4.0ha. Based on results of the on-ground ecological survey, protected flora species will be avoided. Cleared areas will be clearly marked to prevent accidental clearing. Pre-clearing inspection by traditional owners to be carried out. No clearing of large trees (>600mm diameter at chest height) that may provide habitat for fauna. Vegetation in emergency helicopter landing area will be trimmed to less than 1m above ground to reduce disturbance. If unplanned encroachment occurs, all clearing works/ activities will be halted and an incident will be reported to relevant administering authorities. Finder will restore environmental damage. Disturbed areas will be maintained during drilling activities and monitored during care and maintenance phase to ensure no erosion and weeds. Evidence exists that some species (<i>K. katatona</i>) appear to respond positively to ground disturbance.	Clearing footprint to be limited to 4.0ha. Actual disturbance is less than planned. Sensitive areas are avoided.	Low
Soil disturbance	Soil erosion, compaction, and sedimentation. Dust generation. Disruption of surface hydrology.	Protect the environmental values of soil ecosystems. Avoid wind and water erosion and alteration to drainage. Avoid impact on surface hydrology. Minimise soil disturbance.	Soil disturbance will be localised, and restricted to the proposed footprint. No water courses will be intercepted, no impacts on surface water flow in the area is expected. Vehicle and machinery movements will be at low speed to prevent dust generation. Dust control measures will be implemented as required during excavation works. The earthmoving contractor will be inducted on locations and areas of disturbance (sumps/turkey nest and areas that require upgrade e.g. access track, firebreaks). During excavation of sumps and turkey nest, subsoil will be stockpiled within cleared areas. Size of stockpile will not exceed 6m wide at the base, max 2m high with a maximum 2:1 batter slope to minimise erosion, protect soil from windblown erosion and preserve biological and chemical integrity. Stockpiles will be set back no more than 2m from the edge of the site in a manner that facilitate backfilling to rebuild soil profile during restoration.	Clearing footprint does not exceed 4.0ha. No visual sign of erosion and sediment run off.	Low
Introduction of weeds or pathogens and feral fauna species.	Competition for resources with native flora, degradation of critical habitat or food resources for native flora and fauna species. Rehabilitation failure.	Protect biodiversity and ecological values of the existing environment. Prevent introduction and spread of weeds, plant diseases and feral fauna. Control their spread where they are already present.	No established weed populations or evidence of pathogens were identified during the field ecological survey 2014. Civil works and traffic will be restricted to proposed footprint only. To prevent the introduction of weeds, project activities will be carried out in the dry weather when weeds are not active. Contractors will be required to provide washdown certificates where equipment/ vehicles are brought to the project area from interstate or weed/pathogen infested areas. Vehicles and equipment will be inspected for soil and plant material prior to arriving at site and cleaned if required. A vehicle inspection bay (designated hygiene station) with brush down facilities will be available at the beginning of the access track. Off-road driving or creation of short-cuts will be prohibited. The hygiene station will be on covered ground (VFPE plastic liner); material that has fallen from the vehicle will be collected and contained within a sealed container to prevent wind dispersal. Contaminated material will be sealed in bags and removed by the waste contractor. A brush down register will be maintained on-site. Sheeting material for civil works will be sourced locally – this was identified as an alternative to bringing material on-site from elsewhere, which reduces the risk of translocation of weed species. All site staff will be trained in vehicle inspection requirements prior to arriving on-site. Public access to the access track, camp and well site to be restricted to minimise risk of weed translocation. Signage to be posted on access track to inform visitors of access restrictions.	No introduction of weeds or pathogens as a result of the project. No reported instances of new infestations of exotic flora/fauna species. No recorded incidence of a vehicle driving in areas not designated for clearing during the entire project.	Low
Disturbance to native fauna	Injury or death of native fauna. Loss of fauna habitat (Bilby)	Minimise disturbance to native fauna species and populations. Avoid injuries to native fauna.	Baseline conditions of potential fauna species and its habitat were established during the field ecological survey in May 2014. Fauna management will be in accordance with Finder Fauna Management Plan. The Plan was successfully implemented during clearing and drilling operations in 2015. Fauna encountered during civil works and drilling operations will be allowed to make their own way from the site to avoid injury and stress to the animal. All sightings of bilbies and bilby burrows, both active and inactive during the project activities will be recorded and reported to relevant administering authorities in accordance with Finder's Fauna Management Plan (Bilbies). Feeding of fauna, hunting or keeping animals will be prohibited. Waste will be managed to prevent attraction of feral and native fauna species. All sumps/pits will be fenced. Methods of escape, such as hessian matting, rope, cargo net or wood acting as a ramp, will be placed in sumps/pits. Field personnel will be inducted on the potential to encounter fauna in the area and of the associated reporting requirements. Vehicle speeds will be reduced along roads, access tracks, camp and drill site to <40km/h. Reducing vehicle speed provides both the driver and fauna time to take evasive action. Vehicle and machinery movements will be restricted to daylight hours only to reduce the likelihood of incidents involving fauna. Given the nocturnal habits of the Bilby, issues associated with vehicle movements are unlikely as night time vehicle traffic will be limited to emergencies only. Signage will be placed on the access road warning drivers that bilbies may occur in the area, especially at night. Injured animal will be reported to the DMP and the DPAW.	No wildlife injuries or mortalities. No driving during night time (unless approved or an emergency). 100% field personnel to be inducted on fauna.	Low
Disturbance to aboriginal	Damage to, or loss of, culturally	Avoid sites of cultural and heritage	Compliance with Heritage Protection Agreements (HPA) between Finder and the Native Title holders. Cultural heritage survey will be undertaken prior to any ground works in accordance with the HPA. If required, a monitoring team (representatives of the Native Title Party) will be present on-site during excavation works. In the event of cultural heritage artefacts/ objects being identified, works in the immediate vicinity of such	No incidence of disturbance of newly discovered heritage	Low

Table 3: Summary of Environmental Impact Assessment, Environmental Performance Objectives, Standards and Measurement Criteria

Sources of Risk (Hazards)	Environmental Impact	Environmental Performance Objectives	Environmental Performance Standards	Performance indicators	Residual risk
heritage sites.	significant sites Restricted access to culturally significant sites.	significance. No disturbance, damage to or loss of culturally significant sites and artefacts.	artefacts/objects will be suspended and a culturally appropriate method of managing the discovery will be discussed with the Native Title Party. If required, consent must be granted under Section 18 of the <i>Aboriginal Heritage Act 1972</i> (Western Australia) by the DAA.	sites for the duration of the project. No aboriginal heritage related complaints. 100% field personnel are inducted on heritage values.	
Drilling Muds and Cuttings	Contamination of soil, surface water and groundwater.	Prevent disposal or discharge of any hazardous material to the environment. Minimise environmental harm from spillage, leakage or other escape of harmful substances. No contamination of soil or groundwater from drilling muds and cuttings.	Finder proposes to use water-based KCL drilling mud, refer to <i>Finder's Chemicals and Other Substances Disclosure Statement</i> . Drilling cuttings and mud will be separated and stored in lined sumps to avoid impacts on soil structure around the drilling site. Appropriate casing and cementing material will be used to prevent contamination of groundwater. Frilling mud will be designed to prevent artesian water flows and limit mud seepage into the drilled borehole prior to casing being run. The well is designed with cemented casing strings set at depths in the well to isolate aquifers and prevent vertical cross-flow and mixing of different aquifers. Materials used to mix drilling mud will be stored and handled in accordance with Australian Standards, manufacturer's specifications and MSDS. Drilling mud solids control and recovery system will be implemented and a mud engineer will be on-site to maintain drilling mud properties and where possible drilling mud will be re-used to reduce drilling fluid volume. Mud sumps will be designed and constructed to contain all drilling cuttings and residual drilling fluid. Sumps will be lined with the HDPE liner, to prevent escape of contaminants into shallow aquifers. Fill extracted will be utilised to construct an earth bund (minimum 0.5m) around earth of the sumps. The sumps are designed to store drilling mud and drilling fluid from the drilling operation and to also store rainfall. All residual fluids will be sampled to determine management options.	No discharge or escape of contaminants to the land or water. No significant loss of drilling fluid during drilling and cross contamination of formations. 100% structural integrity of cuttings/drilling mud sumps. A mud engineer on-site.	Low
Light and noise emissions.	Alteration of behaviour of native fauna. Nuisance or disturbance to sensitive receptors	Minimise impacts of light / noise emissions to sensitive receptors.	Drilling operations will be conducted 24/7. Lighting will be required for night time operations to provide safe working conditions. Noise will be generated by the drill rig and associated equipment (e.g. generators, pumps, motors). The area of the project is remote unallocated Crown Land, sensitive receptors are limited to reptiles and mammal species, therefore the impacts associated with light and noise emissions is unlikely to have significant consequences. Lighting will be reduced to that required for the safe operation of the well and camp. Directional lighting will be faced inwards to camp and well site to reduce light spill into surrounding areas. Contractors will be required to ensure that all engines, machinery and equipment are operated and maintained within manufacturers' specifications. Vehicles, machinery and equipment will be operated in a manner that does not cause unnecessary noise (e.g. excessive revving or dropping of materials).	Applicable noise and light levels are met. No noise/ light related incidents and complaints.	Low
Water consumption	Depletion of local water resources, impact on local water supply.	No direct or indirect impact to aquifer from the extraction of groundwater as part of the project. Minimise impact on local water resources by re-using and recycling water where possible.	Approximately 3.4ML of water is required for the project activities. This includes approximately 350KL of potable water that will be sourced locally and stored on-site as required. Water for drilling activities and for maintenance of the road and access track will be sourced from the existing water bore under the Finder's water licence GWL179507 allocating 60ML of water for the project. The water from the bore is not potable. There are no groundwater dependent ecosystems and water users that could be impacted by proposed water extraction. The water to prepare drilling mud will be stored in the turkey nest that will be lined to prevent losses via seepage. To reduce water consumption, residual water and treated wastewater will be reused or recycled for dust suppression, irrigation or site restoration and maintenance.	Water usage does not exceed Finder's Groundwater Licence limits. Actual consumption of water is less than planned.	Low
Generation of general and putrescible wastes.	Visual pollution generated by litter, temporary contamination of soil, modification of native and feral fauna habitat. Introduction of weeds	Optimise waste avoidance, reduction, reuse, recycling, treatment and disposal to reduce the quantity of waste that is sent to landfills. Prevent disposal of waste to the environment. Minimise potential environmental	Given the relatively short-term life of the project, the generation of general waste will be limited to kitchen scraps, green waste, grey water, treated effluent, paper, packaging material and metal scraps. All domestic waste will be segregated and stored in labelled rubbish bins/skips and removed from the site by a licenced contractor. Wind, water and vermin proof waste bins will be used to ensure litter does not enter the surrounding environment. A certified waste removal contractor will be called once the waste skips reach 75% capacity. A spare waste skip will be retained on-site to cover any extra waste generated prior to collection. Waste will not be burned or allowed to be burned. All vehicles will carry rubbish bags. Residual drilling liquid and cuttings will be tested. If the waste is not classified as controlled, the waste will be managed on-site by the mix-bury-cover method, otherwise the material will be disposed of to the appropriate class of landfill. Field personnel will be educated on waste management procedures at induction. Camp and drill sites will be subject to daily and weekly inspections. Contractors will be required to maintain records of waste disposal. All emissions and discharges will be reported quarterly to the DMP in accordance with Reg. 33/ 34 of the PGER Act Regulations 2012.	No waste left on-site after demobilisation and decommissioning. All waste disposed of appropriately in accordance with regulatory requirements.	Low

Table 3: Summary of Environmental Impact Assessment, Environmental Performance Objectives, Standards and Measurement Criteria

Sources of Risk (Hazards)	Environmental Impact	Environmental Performance Objectives	Environmental Performance Standards	Performance indicators	Residual risk
		impacts associated with the generation of general and putrescible wastes.			
Generation of controlled and hazardous waste	Soil and groundwater contamination, human health effects, injury or death of fauna, loss of ecological values	Optimise hazardous waste avoidance, reduction, reuse, recycling, treatment and disposal. Prevent disposal of hazardous waste to the environment. Prevent spillage, leakage or other escape of hazardous substances.	Generation of controlled and hazardous waste will be limited to sewage, fuels, hydrocarbons, batteries, used oils/lubricants, residual or unused liquid/solid chemicals (surfactants, acids, alkalis), spill contained materials, cuttings and residual drilling mud (if not classified otherwise). All material used for drilling is listed in Finder's <i>Chemicals and Other Substances Disclosure Statement</i> . Hydrocarbons, fuels, lubricants, and chemicals will be stored in appropriately banded areas, (sufficient to retain the volume of the largest tank +10%) or self-banded containers and used in accordance with manufacturer's instructions and MSDS. Hydrocarbons and chemicals will be segregated in labelled bunds as per the MSDS and manufacturer's instructions. Portable bunds will be available on-site for use if any hydrocarbon or chemical needs to be transported or moved. A <i>Hazardous Materials Register</i> will be maintained by Contractors and <i>MSDS</i> for all registered materials will be available on-site. A mobile wastewater treatment unit will be used to treat black water/sewage from the camp. Wastewater will be treated to the effluent standard suitable for beneficial re-use (irrigation). Treated effluent and grey water will be discharged for irrigation to a designated area outside the camp using slotted end PVC pipe for purpose of reticulation. Signage will be erected to prevent access. Visual inspection will be undertaken to ensure there are no signs of ponding or erosion. Black water / sewage from the toilets on the well site will be managed by utilising an on-site holding tank which will be periodically emptied by a licensed contractor and disposed of at a licensed waste management facility in Broome. All hazardous wastes generated during the Project will be transported by a licensed contractor to licensed disposal facility. Sludge from sewage / black water treatment will be disposed of at a licensed facility in Broome. Waste containing hydrocarbons will be transported to a disposal facility licensed to accept the waste. Unclassified waste (cuttings and residual drilling liquid) will be tested to determine suitable disposal options. Unused solid/liquid chemicals will be packed and removed from the site by the drilling contractor. Contractors will maintain records of controlled and hazardous waste disposal. All emissions and discharges will be reported quarterly to the DMP in accordance with Regulation 33 and 34 of the PGER Act Regulations 2012. An approved <i>Oil Spill Contingency Plan (OSCP)</i> will be in place, with site staff trained in the implementation of the plan.	No site contamination from hazardous materials and wastes. All controlled or hazardous wastes are disposed of appropriately in accordance with regulatory requirements.	Low
GHG and other emissions	Air pollution and contribution to climate change	Minimise GHG and other emissions. Reduce impact on ambient air quality.	GHG emissions will result from the rig operations, vehicle and machinery movements and reservoir/ background gas (CH4) from the drilling mud brought to the surface during drilling. H2S and CO2 gases are not typically a problem in the region and are not anticipated in the well. An average of approximately 8kL of fuel including the camp will be consumed daily during the drilling activities (usage can vary depending of the operations being performed on the rig site). All equipment, engines and generators will be serviced to manufactures' specifications and maintained to reduce risk of leaks and emissions. Procedures will be in place to ensure efficient use of machinery. Refuelling will be performed under the Contractor's Refuelling Work Procedure. Fugitive emissions will be limited to a very small amount of entrained CH4 gas in the drilling mud. The gas will be separated by a degasser and vented to the atmosphere. The reservoir being targeted is a shale formation and it is very unlikely that any significant volume of gas will be produced to surface during the drilling operations. For emergency use a flare pit will be constructed and activated to flare gaseous hydrocarbons. The OSCP will be in place with field personnel trained in the implementation of the plan. All Contractors will maintain records of fuel consumption. All emissions will be reported quarterly to the DMP in accordance with Regulation 33 and 34 of the PGER Act Regulations 2012. In case of accidental release of emissions exceeding 500m3 per day, the DMP will be notified in accordance with Reg.28 of the PGER (E) Regulations 2012.	No leaks from equipment. Release of GHG and other emissions are less than planned.	Low
Vehicle movements and transport of materials	Dust generation, spills, deterioration of track/road surface. Collisions with fauna. Introduction of weeds.	Minimise potential environmental impacts from soil erosion and compaction. (see Soil Disturbance) No introduction of weeds or pathogens as a result of the project. (see Introduction of weeds, pathogens and feral fauna and Disturbance to Native Fauna above)	Project vehicles will be required to travel along the Dampier Downs Road, ring road and access track. This traffic will consist of light vehicles (e.g. utilities), buses (personnel transfer) and trucks (e.g. fuel, waste etc.). Vehicle usage to be reduced where possible e.g. crew transfers using minibus, unnecessary trips will be avoided. Vehicle movements will be restricted to existing tracks. Speed limits will be sign posted. Vehicle speeds along access tracks, camp and well site will be reduced to <40 km/hr. Reducing vehicle speed provides both the vehicle driver and fauna time to take evasive action. Public access to the access track, accommodation camp and well site to be restricted to minimise risk of weed translocation. During transportation of goods to site, all loads will be securely fastened for transportation and checked prior to departure. All containers will be closed and checked prior to transportation. Chemicals for drilling mud will be delivered to site on shrink wrapped pallets. Fuel will be purchased from an accredited supplier and transportation to site to be conducted by authorised distributor. Refuelling activities will be performed by a trained person. All hazardous wastes generated at the camp will be transported by a licensed contractor and disposed of at a licensed waste management facility in Broome. All materials will be stored, handled and transported in accordance with manufacturer's instructions and MSDS. All vehicles transporting fuel will have spill kits. Prestart inspections and load checks will be performed before travelling to / from site. Clearance (washdown) certificates will be required from contractors if equipment, machinery, vehicles and materials are brought to the project area from interstate. Driving outside of daylight hours will be limited to emergency only. Many fauna species in the area are nocturnal (including Bilby's), as such restricting routine vehicle movements to daylight hours significantly reduces the likelihood of incidents involving fauna. Field personnel will be inducted on speed limits and vehicle inspection requirements.	No recorded accidents, spills, collision during vehicle movements and transport of materials. No complaints from roads/tracks users or third party. No recorded incidence of a vehicle driving in areas not designated for driving. No records of impact with fauna.	Low

Table 3: Summary of Environmental Impact Assessment, Environmental Performance Objectives, Standards and Measurement Criteria

Sources of Risk (Hazards)	Environmental Impact	Environmental Performance Objectives	Environmental Performance Standards	Performance indicators	Residual risk
Loss of Well Control	Increased risk of fire, contamination of soil, surface water and groundwater. Injury or death of fauna. Loss of local ecosystems.	No environmental impacts from loss of well control.	The well is targeting shales (non-conventional reservoir) usually with low permeability to allow free gas flow. There is a low risk of encountering a liquid hydrocarbon reservoir under sufficient pressure to result in a blowout risk. <i>Finder's Well Management Plan</i> including detailed well design approved by the DMP will be in place prior to the well spud. Drilling procedures with overbalance mud will be in place to minimise gas release. A blow out preventer (BOP) will be installed on the well to contain well fluids in the event of a loss of well control. The BOP is safety specific equipment to provide the mechanism by which the well may be sealed at surface in case of unplanned flow from the well, or build up a pressure in the well. This serves to minimise the risk of release of any well fluids to the environment. The blowout prevention equipment will be not removed until the well has been adequately sealed. Each BOP test will be recorded in the drilling log. General BOP drills will be carried out as often as necessary until the drilling crews are familiar with all operations and further conducted weekly for each drilling crew to ensure that all equipment is operating and that the crew is properly trained to carry out emergency duties. Flare pit will be constructed to vent gaseous hydrocarbons to reduce well pressure. Gas detectors will be available on-site. The well site has 10m firebreak in place. The well will be cased to prevent contamination of upper aquifers. Formation integrity testing (pressure testing or leak-off test) will be conducted at the completion of each casing level to ensure that there is no connection between formations. DMP approved <i>Well Management Plan, Safety Management Plan, Emergency Response Plan and the OSCP</i> will be in place. Field personnel will be trained to implement the ERP and the OSCP. In case of an environmental incident caused by the project activities, Finder is responsible to complete necessary restoration activities.	No loss of well control or blowout during the project.	Low
Fire	Smoke hazard, injury or death of native fauna, GHG emissions, changes to ecological values.	Prevention of fire. No fires lit on-site, no vegetation burning. Compliance with all requirements and instructions from DFES.	Fire could result from working equipment, electrical systems, flare pit, flammable materials (e.g. bottled gas), cigarettes butts, 3rd party activities, natural event and vandalism. Consultation with the DFES will take place prior to the project activities. An approved <i>Emergency Response Plan</i> will be implemented. Fire drill and use of fire-fighting equipment training will be conducted prior to the commencement. Camp and well sites have appropriate firebreaks in place. Fire detection system (such as smoke detectors) will be installed in all offices, warehouses and camp. Lighting of fires on well site (except authorised flaring), camp site and access tracks or in immediate vicinity of above mentioned areas will be prohibited. Smoking will be prohibited except within designated areas. Cigarette bins will be placed in designated smoking areas for the disposal of cigarettes and cigarette butts. A mobile fire-fighting unit with 2 diesel powered foam pumps and fire-fighting equipment will be available for use at the camp and well site. Each vehicle will be equipped with a correct fire extinguisher. Fire extinguishers will be in place at designated locations around the camp and well site. All vehicles will use diesel fuel. Hot work operations will be in accordance with the DMP approved <i>Safety Management Plan</i> . Emergency services will be contacted on 000 in case of uncontrolled fire.	No fires as a result of the project. All instructions from State and Local DFES are complied with. 100% field personnel inducted and trained.	Low
Spills	Contamination of soil, water and air. Land degradation. Increase risk of fire.	No contamination of soil from spills. Prevent spills and minimise impact from spillage, leakage and other escape of hazardous substances.	The project will involve the storage and handling of fuels (diesel), oils (e.g. lubricating oil, hydraulic fluid), liquid chemicals, drilling mud and sewage. It is expected that approximately 30-60kL of fuel will be stored on-site in 2x30kL self-bunded fuel tanks. This risk assessment is based on a spill greater than 500L (reportable amount). All solid wastes will be stored in covered skips and other appropriate containers. Hazardous liquid materials and wastes will be stored in appropriate containers with appropriate bunding (i.e. sufficient to retain the volume of the largest container +10%) to capture any potential spills or leaks. Main fuel tanks will be double skinned and self bunded. All materials will be stored and handled in accordance with <i>Australian Standards 1940:2004 and 3780:2008</i> , manufacturer's instructions and as described in MSDS for each identified material. A <i>Hazardous Materials Register</i> is to be maintained by Contractors and MSDS for each registered material will be available on-site. Equipment will be well maintained to reduce risk of leaks and fugitive emissions. <i>Planned Preventative Maintenance (PPM)</i> will be undertaken for all equipment. Hydraulic hoses on all equipment will be inspected prior to mobilisation and replaced as required. All subcontractors are required to inspect their equipment for leaks as part of daily inspection program. Refuelling will be performed by a trained person under the contractor's <i>Refuelling Procedures</i> . Refuelling station will have a collapsible bund, manufactured from 1350gsm PVC and drip trays to be utilised during refuelling activities to catch any spilt fuel. Vehicle exclusion zone to be established around main fuel tanks to reduce dangers of vehicle collision. Suitable clean up equipment (including spill kits) will be located at hazardous materials storage areas. Emergency spill drill will be performed prior to the commencement date and if required throughout the project. All hazardous wastes generated during the project will be transported by a licensed contractor and disposed of at a licensed waste management facility at Broome. The DMP approved <i>OSCP</i> will be in place during the project, with site staff trained in the implementation of the plan. In case of spill, the spill will be managed in accordance with the OSCP. Finder will complete necessary restoration activities. An incident will be reported to the DMP in accordance with Reg.28 of the PGER (E) Regulations 2012.	No spills during the project activities. 100% field personnel trained and inducted to halt spills. Results of groundwater monitoring and baseline assessments	Low
Demobilisation and partial decommissioning	Disturbance to fauna. Soil erosion. Land degradation.	Ensure that the project area has safe and stable landform with topography and hydrology consistent with surrounding	The rig and associated drilling equipment will be removed from the well site. All unused solid/liquid chemicals will be packed and removed from the site. The well will be suspended and cellar fenced. Suspension works will be undertaken in accordance with the approved well design and Well Management Plan. All camp facilities and associated equipment will be removed from the camp site. If any signs of erosion, soil profile will be restored similar to surrounding conditions. Vehicle inspection area (hygiene station) will be decommissioned by removing all contaminated material, waste and ground plastic liner. All waste will be removed from the camp, drilling site and the hygiene station and disposed of	All disturbed areas are restored and prepared for care and maintenance. No equipment, unused	Low

Table 3: Summary of Environmental Impact Assessment, Environmental Performance Objectives, Standards and Measurement Criteria

Sources of Risk (Hazards)	Environmental Impact	Environmental Performance Objectives	Environmental Performance Standards	Performance indicators	Residual risk
		land. Ensure new ecological values and ecosystem functions are similar to adjacent natural ecosystems.	accordingly.	material or waste left on-site. No unauthorised third party access.	
Water holding pond and sumps. Stormwater management.	Soil, surface water contamination from overflow during significant rain events. Land degradation.	Prevent disposal or discharge of any waste to the environment. Maintain structural integrity of sumps to prevent environmental harm from spillage, leakage and other escape of harmful substances.	The following areas will be retained and maintained for the production testing: suspended well, turkey nest, mud sumps and flare pit. Suspended well will be fenced. Mud sumps containing cuttings and residual drilling fluid will be retained until significant reduction of fluid (through evaporation) is achieved. The cuttings and residual drilling fluid will be tested for COPC to determine standard quality criteria for on-site reuse or disposal. The dry cuttings will then be removed. To prevent sumps from overflowing during significant rain events, the sumps will be constructed with additional storage margin for a significant rainfall event. Contingency measures will be implemented such as any overflow from the sumps during significant rainfall event will be directed in to the turkey nest. The turkey nest and sumps will be fenced to prevent third party access and fauna entrapment. The site will be monitored after significant rain events and if required Finder's Maintenance Plan will be reviewed with additional mitigation/management measures to be developed and implemented. Erosion and sedimentation will be controlled within the drilling site. The entire site will be contained within a 0.3m high earth embankment (i.e. a windrow) which extends for the full length of the site boundary. As a result, any runoff and transportation of sediment which occurs within the site during rainfall or storm events will be contained wholly within the site. In addition, at the completion of drilling, a raised embankment will be constructed at the point where the access track enters the drilling site to prevent any stormwater flow along the track.	No discharge or escape of contaminants to the land or water.	Low
Fauna entrapment	Injury or death of native fauna	No disturbance to local fauna populations and its habitat.	The preparation for drilling activities will require the excavation and construction of a water holding pond, sumps, cellar and flare pit. These excavations may lead to fauna entrapment. The sumps, turkey nest and flare pit will be fenced with 1.75m high feral ringlock mesh fencing. Small animal mesh will be attached to the base of the fence to help prevent ingress of small animals. The cellar will have a cellar grating installed. Methods of escape, such as hessian matting, rope, cargo net or wood acting as a ramp, will be positioned in them to facilitate fauna escape. The sumps will be monitored every 6 months or following significant rain event (whatever is earlier) for evidence of fauna entrapments. Incidents will be reported to the DMP and the DPAW. If necessary, the site maintenance plan including methods of escape will be reviewed and additional mitigation measures will be developed.	No recorded incidence of fauna entrapment	Low
Failure to maintain	Land degradation. Soil erosion. Third party access. Failure to rehabilitate.	Restore and rehabilitate all environmental damage in a manner consistent with current standards and without unacceptable liability to the State.	Signage will be retained on the access track to inform visitors of access restrictions and weed control. Signage will be erected at the well site entrance to prevent unauthorised third party access and vandalism. Sumps, turkey nest, flare pit and the suspended well will be fenced. The site will be monitored every 6 months or after significant rain events and if required additional management measures will be implemented. The Maintenance Plan will be revised annually following well suspension.	No new weed infestation areas. No visual soil erosion. No third party access.	Low

6 IMPLEMENTATION STRATEGIES

The implementation strategies were developed for each environmental aspect to ensure environmental objectives are met and performance indicators are achieved over the course of the project. The implementation strategy describes specific management practices that will be applied to the operation including monitoring/ reporting, personnel training/ inductions and the definition of roles / responsibilities.

The practices and procedures described in the project specific environmental management plans will be used by Finder personnel and Finder's contractors and sub-contractors as practical implementation and management tool when conducting the project activities.

In order to ensure that the environmental objectives are achieved all personnel including Finder, contractors and sub-contractors must comply with this EP. In addition, the approved Safety Management Plan (SMP) and Well Management Plan (WMP) will be implemented to assist with management of safety and emergency responses.

The Finder Site Representative will be present at all times during the project activities and will ensure that Finder's environmental requirements are met in all aspects of the project operations. This will be verified via the audit, inspections, monitoring and review program.

Finder will ensure that all contractors have the following procedures in place prior to commencement of the project activities:

- Copy of this approved Environment Plan and associated reporting and compliance documents
- Site Specific Safety Management Plan including refuelling procedures
- Oil Spill Contingency Plan
- Emergency Response Plan
- Records of all field personnel trainings and inductions.

Un-planned and non-routine activities

The risk to the environment from un-planned and non-routine activities is limited to spills and fire. Contributing factors may include loss of well control, inappropriate storage and handling of HAZCHEM, hazardous materials and waste. The impact to the environment from a spill is dependent on the nature, amount and location of the spill. The risk assessment associated with spill is based on a spill greater than 500L (reportable incident). The OSCP has been developed covering three scenarios of spillage: small spillage (Level 1 Spill), medium (Level 2 Spill) and large spillage (Level 3 Spill).

Finder will audit contractors prior to the project activities to ensure contractors provide, via their Project Specific Management Plans (PSMP), spill management procedures, refuelling procedures, HAZCHEM handling procedures, Oil Spill Contingency Plan and the Emergency Response Plan. The procedures should include, but not limited to, use of bunding on-site, spill containment equipment, workers' responsibilities, and emergency procedures and response, clean-up and rehabilitation procedures, monitoring, reporting and communication.

Un-planned and non-routine activities will be also addressed in the Finder's Safety Management Plan (SMP) and Well Management Plan (WMP). The SMP and WMP regime aims to reduce risks and impacts of petroleum drilling activities to a level which is ALARP and acceptable. The Project SMP and WMP will be the overriding safety documents for the project and must be adhered to by all project personnel.

In case of spill /fire emergency, the Emergency Response Plan (ERP) will be implemented. The ERP will be developed as part of the Project SMP and WMP. The ERP details the emergency response arrangements and contains contact details for emergency services to support the field personnel in any emergency situation, including environmental emergencies such as release of hazardous substances and/or fire.

7 ENVIRONMENTAL REPORTING

7.1.1 Reportable Incidents

Regulation 28 of the PGER (E) Regulations requires Finder to report to the DMP any reportable incident that classified as a reportable incident in the Environment Plan for the project; or an incident has caused, or has the potential to cause, an adverse environmental impact; and an environmental impact that has been categorised as moderate or more serious than moderate under the environmental risk assessment process described in the EP.

For the project covered by this EP, reportable incidents are considered to be those which the inherent consequence category is determined to be moderate to critical using the risk assessment methodology described in Section 5.

The following triggers will be used to activate reportable incident reporting:

- spill of hydrocarbons or hazardous materials >80L in inland water
- spill of hydrocarbons on land of >500L.
- an unplanned gaseous release to the atmosphere >500m³
- an uncontrolled escape or ignition of petroleum or other flammable or combustible material that affect a ground surface area greater than 100m²
- fire
- loss of well control.

In addition to the notification provided to the DMP, Finder will submit a written report to the DMP via petroleum.environment@dmp.wa.gov.au. The DMP Environmental Incident Report Form template ENV-PEB-189, Rev3.0, 2012 will be used.

The written report will include a completed reportable environmental incident report, any relevant photos, maps and/or supporting documents with all known facts and circumstances regarding the reportable incident and any action taken to avoid or mitigate any adverse environmental impacts.

The written report will be prepared in accordance with s.3.8.3.1 of the *DMP Guideline for the Development of Petroleum and Geothermal Environmental Plans in WA, 2016*.

7.1.2 Recordable Incidents

Under Regulation 30 (4d) of the PGER (E) Regulations, any incident that occurs during the project and which breaches an environmental performance objective or standard in this EP, but is not reportable, is a recordable incident.

Finder will maintain a record of all recordable incidents that occur during the operations. This written record will be provided by Finder to the DMP following each calendar month in which the drilling program is undertaken, and will be provided no later than 15 days following the end of a calendar month. The recordable incident report will be submitted via petroleum.environment@dmp.wa.gov.au

7.1.3 Emissions and Discharges

In accordance with Regulation 34 of the PGER (E) Regulations, Finder will report to DMP on a three monthly basis the estimated emissions and discharges to the environment as a result of the project.

7.1.4 Annual Environmental Report

Finder will provide an environmental close-out report summarising environmental performance of the project activities to enable the DMP to determine whether the EP objectives have been achieved, performance indicators are met and the implementation strategy complied with.

In addition to the close-out report, an annual maintenance report covering the ongoing maintenance and monitoring activities will be submitted to the DMP within 12 months following the completion of the drilling activities (the completion date).

The content of the report will be in accordance with requirements of s.3.8.2 of the DMP Guideline for the Development of Petroleum and Geothermal Environmental Plans in WA, 2016.

The reports will be submitted to the DMP via petroleum.environment@dmp.wa.gov.au.

8 STAKEHOLDER CONSULTATION

The following stakeholders have been identified as relevant to the project activities and require consultations throughout planning, approval and operational stages:

- DMP, Environment
- Department of Water (DoW)
- Office of the Environmental Protection Authority (OEPA)
- Western Australian Department of Fire and Emergency Services (DFES)
- Department of Park and Wildlife
- Shire of Broome
- Karajarri Traditional Lands Association (KTLA) Aboriginal Corporation
- Ecologia Environmental Services
- Aztech,
- Schlumberger,
- Fugro
- Mineral exploration companies operating in the area.

Finder will continue to consult with relevant government authorities, community, interested third parties and organisations on all aspects of operations, as required.

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- HB 203:2012 – Managing environment-related risk

Appendix 1 - HSEQ Policy



Health, Safety, Environment and Quality Policy

OBJECTIVE

Finder Exploration (**Finder**) success is subject to strong health, safety, environment and quality (HSEQ) performance. We aim to be recognised as a responsible, professional and trustworthy operator through managing our activities in a safe, sustainable, legally compliant and socially acceptable manner with respect to our colleagues, directly affected stakeholders and the environment.

At Finder we are committed to the prevention of process and personal safety related incidents, and the prevention of occupational illnesses. We are committed to identifying and managing the risks and impacts of our activities to minimise adverse health, safety or environmental impacts, applying leading industry practice standards in our approach to quality.

APPLICATION

This policy applies to Finder and all its subsidiaries and all personnel working on Finder controlled services and operations.

The meaning of environment includes ecosystems and their constituent parts including: people and communities, natural and physical resources, the qualities and characteristics of locations, places and areas, the heritage value of places, and their social, economic and cultural features.

PRINCIPLES

Finder will:

- Implement a systematic approach to HSEQ risk management and adhere to the established HSEQ Management System and standards
- Comply with all applicable laws and regulations and apply leading industry standards where laws do not exist, or better alternatives are available
- Set, measure and review objectives and performance standards that will drive continuous improvement in HSEQ outcomes
- Embed HSEQ considerations in our business, project and operations planning and decision-making processes
- Integrate HSEQ requirements when designing, purchasing or contracting services and equipment
- Maintain a culture in which everyone is aware of their HSEQ rights and obligations and feels empowered to speak up and intervene on HSEQ issues
- Commit to continuous learning to improve our understanding of HSEQ and using knowledge and experience to support impact assessments and evidence-based decision-making
- Conduct regular and ongoing consultation with regulators, directly affected stakeholders, all employees and contractors, listening to their concerns and feedback
- Require contractors to comply with our HSEQ expectations and learn from them in a mutually beneficial manner
- Regularly report on HSEQ performance

A handwritten signature in black ink, appearing to read "Shane Westlake".

Shane Westlake
CEO – Finder Exploration Pty Ltd

A handwritten signature in blue ink, appearing to read "Jan Ostby".

Jan Ostby
Director – Finder Exploration Pty Ltd

Appendix 2 - Finder Risk Assessment Matrix

A quantitative risk analysis was undertaken in accordance with the Australian Standard AS/NZS 4360:2004 Risk Management and NB 203:2006 Environmental Risk Management – principles and processes and Finder’s Hazard Identification and Risk Management Procedure (HSE-PRO-4008).

The likelihood is the product of exposure and probability. The likelihood of each event occurring has been determined based on information such as industry past experience and examples of environmental risk assessment reports. The consequence of each event occurring has been determined based on information such as the potential scale of the event, the range of stakeholders who may be affected and the duration of the event. The risk associated with each environmental aspect was determined by multiplying the likelihood and consequences by. Explanatory notes on the selection of the consequences and likelihood for each environmental impact and risk matrix are present in the Table 1 below:

Table 1: Risk Matrix

Risk Assessment Matrix										
CONSEQUENCE				LIKELIHOOD						
				Description	Probability	Historical	RARE	UNLIKELY	POSSIBLE	LIKELY
People	Environment	Asset	Reputation			1	2	3	4	5
First Aid Treatment or no injury.	Limited damage to area of low significance. Temporary (Hours - day) impact to the immediate area	Less than \$10K. Minimal production disruption.	Local mention only, quickly forgotten, freedom to operate unaffected	MINOR	A	A1	A2	A3	A4	A5
Medical Treatment, Restricted or Alternate Work..	Minor environmental damage. Limited scale less than 1km. Short term impact (days-month)	Less than \$100K. Slight production disruption.	Short Term Local concern. Some impact on asset level non-production activities	MODERATE	B	B1	B2	B3	B4	B5
Lost Time Injury.	Moderate effects on environment. Limited scale 1-10 km. Short term impact (months - years)	\$100K - \$1M. Serious production disruption.	Attention from government, media or heightened concern from community. National negative publicity	SERIOUS	C	C1	C2	C3	C4	C5
Fatality, permanent disability or potential fatality	Major environmental damage. Large scale. Greater than 10km. Long term (years - decades) impact	\$1M - \$10M. Significant business reorganisation.	Persistent national concern. Major venture/asset operations severely restricted.	MAJOR	D	D1	D2	D3	D4	D5
Multiple fatality or potential for multiple fatalities.	Significant environmental or heritage damage. Large scale >10km. Long term (decades) impact	Greater than \$10M. Extreme business reorganisation.	International concern. Serious public or media outcry. Government or common law legal action. Long term brand impact	CRITICAL	E	E1	E2	E3	E4	E5

Table 2 Risk Acceptance Criteria

Risk level	Response
High	Unacceptable; stop operations and rectify immediately. Further significant risk reduction is required. Chief Executive Officer approval required to continue.
Medium	Undesirable: Formal assessment and documented mitigation controls required. Tolerable if all effort made to reduce risk to level that ALARP. Upper-management decision to accept or reject risk and for operation to continue.
Low	Acceptable risks with control in place, proceed with caution and continuous improvement, monitor and review by crew management.

Appendix 3 - Chemicals and other Substances Disclosure Statement

DMP CHEMICAL DISCLOSURE REPORTING

A. SYSTEM DETAILS:

OPERATOR:	Finder
PROJECT/WELL:	Helios-1
SYSTEM:	Drilling Fluid System
TOTAL VOLUME OF SYSTEM (L):	628m3*

* includes 30% Contingency.

B. PRODUCT LIST:

Product Name	Supplier	Purpose	Toxicity & Ecotoxicity Information	% Product in system	MSDS Attached
Water	N/A	Base Fluid	Bore water sourced onsite - Natural Product	69.83%	N
Barite / Newbar	Newpark	Weighting Agent	<p>Low toxicity. Under normal conditions of use, adverse health effects are not anticipated.</p> <p>Toxicity Data: Toxicity data available for ingredient: QUARTZ (SILICA CRYSTALLINE) (14808-60-7) LC50 (inhalation) 300 ug/m³/10 years (human) TCLo (inhalation) 16 000 000 particles/ft3/8 hours/17.9 years (human-fibrosis)</p> <p>Aquatic toxicity: Fish Toxicity LC50 (Rainbow trout) > 7500 ppm/96hrs. LC50 (Fresh Water Trout) > 21,000 ppm/96hrs. LC50 (Salt Water Stickle Back) > 56,000 ppm/96hrs.</p> <p>Biodegradation/bioaccumulation: Barium sulphate (major ingredient of barite (60-100%) is insoluble in water and not biodegradable. Not expected to bioaccumulate. This product is not anticipated to cause adverse effects to animal or plant life if released to the environment in small quantities.</p>	8.41%	Y
Bentonite / NewGel	Newpark	Viscosifier	<p>The main component/s of this product are not anticipated to cause any adverse effects to plants or animals.</p> <p>Toxicity Data: Toxicity data available for ingredient: QUARTZ (SILICA CRYSTALLINE) (14808-60-7) LC50 (inhalation) 300 ug/m³/10 years (human) TCLo (inhalation) 16 000 000 particles/ft3/8 hours/17.9 years (human-fibrosis) BENTONITE (1302-78-9) LD50 (intravenous) 35 mg/kg (rat) LD50 (oral): >2000mg/kg (rat) LDLo (intravenous) 10 mg/kg (dog) Inhalation LC 50: >5.27 mg/L, 4hr (rat)</p> <p>Ecotoxicity Data: Bentonite (1302-78-9) EC50 Daphnia > 100 mg/l, 48 hours EC50 Freshwater algae > 100 mg/l, 72 hours LC50 Freshwater fish 16000 mg/l, 96 hours LC 50 Marine water fish 2800 - 3200 mg/l, 24 hours EC50 Coon stripe shrimp (Pandalus danae) 24.8 mg/l, 96 hours EC 50 Dungeness or edible crab (Cancer magister) 81.6 mg/l, 96 hours LC50 Rainbow trout,donaldson trout (Oncorhynchus mykiss) 19000 mg/l, 96 hours</p> <p>Persistence and degradability: Not relevant for inorganic substances Mobility: Low water solubility, expected to sink and migrate into the sediment. Expected to partition to sediment and wastewater solids. Bioaccumulation: Will not bio-accumulate. Other adverse effects: No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.</p>	3.84%	Y
Potassium Chloride	Newpark	Shale swelling inhibition (smectite & illite clays)	<p>Acute Toxicity: LD50 (Ingestion): 2600 mg/kg (rats) LD50 (Intraperitoneal): 620 mg/kg (mouse) LD50 (Intravenous): 117 mg/kg (mouse) LDLo(Ingestion): 20 mg/kg (man) LDLo (Intraperitoneal): 900 mg/kg (guinea pig) LDLo (Intravenous): 77 mg/kg (guinea pig) LDLo (Subcutaneous): 2120 mg/kg (frog) TDLo(Ingestion): 60 mg/kg/days (woman)</p> <p>Ecotoxicity Data: In short-term acute toxicity tests with fish, daphnia and algae the following results were found (lowest test result values): Ictalurus punctulus 48h-LC50 = 720 mg/l; Daphnia magna: 48h-LC50 = 177 mg/l; Nitzschia linearis: 120 h-EC50 = 1337 mg/l. A chronic reproductive test with the invertebrate Daphnia magna gave a LOEC of 101 mg/l. All the studies compiled on the acute and chronic aquatic toxicity were > 100 mg/L. Thus it is concluded that KCl is not hazardous to freshwater organisms. Taking into considerations the background concentrations of KCl in seawater (380 mg/l K+ and 19,000 mg/l Cl-), it is concluded that there is no reason for further investigations of KCl on marine species. The low concern for the environment is supported by the absence of a bioaccumulation potential for the substance.</p> <p>Biodegradation/Bioaccumulation: Biodegradability does not pertain to inorganic substances. Does not bioaccumulate. Mobile in Soil: No impact if small amount is released to the soil. http://www.inchem.org/documents/sids/sids/KCHLORIDE.pdf</p>	6.16%	Y
Sodium Chloride Brine	Newpark	Base Fluid / Weighting Agent	<p>Acute Toxicity: LD50 (Ingestion): 3000 mg/kg (rat)</p> <p>Ecotoxicity: LC50 (water flea) is 2122 mg/L/48 hours; LC50 (fathead minnow) is 6.57 g/l/96 hours. This product is not anticipated to cause adverse effects to animal or plant life if released to the environment in small quantities. Not expected to bioaccumulate</p> <p>Biodegradation/Bioaccumulation: Biodegradability does not pertain to inorganic substances. Does not bioaccumulate.</p>	7.54%	Y
NewZan D (Xanthan Gum)	Newpark	Viscosifier	<p>Acute Toxicity: LD50 (oral) > 1000 mg/kg (mouse) LD50 (oral) > 45,000 mg/kg (rat) LD50 (oral) > 20,000 mg/kg (dog) LD50 (intraperitoneal): > 50 mg/kg (mouse) LD50 (intravenous): 100-250 mg/kg (mouse)</p> <p>This product is not anticipated to cause adverse effects to animal or plant life if released to the environment in small quantities. Not expected to bioaccumulate.</p>	0.47%	Y
NewPac LV	Newpark	Fluid Loss	<p>Acute Toxicity: Toxicity data available for ingredients: SODIUM CARBOXYMETHYL CELLULOSE (9004-32-4) LD50 (oral): 27000 mg/kg (rat) LD50 (dermal): > 2000 mg/kg (rabbit) LC50 (inhalation): >5800 mg/m3/4hrs (rat) SODIUM CHLORIDE (7647-14-5) LC50 (Inhalation): > 42 g/m3/1 hour (rat) LD50 (oral): 3 g/kg (rat)</p> <p>Ecotoxicity: SODIUM CHLORIDE (7647-14-5) LC50 (Fish 1): 5560 (5560-6080) mg/l (Exposure time: 96hrs - Species: Lepomis macrochirus). EC50 (Daphnia 1): 1000mg/l (Exposure time: 48hrs - Species: daphnia magna). LC50 (Fish 2): 12946mg/l (Exposure time: 96hrs - species Lepomis macrochirus). EC50 (Daphnia 2): 340.7 (340.7-469.2) mg/l (Exposure time: 48hrs - Species: Daphnia magna).</p> <p>This product is not anticipated to cause adverse effects to animal or plant life if released to the environment in small quantities. Not expected to bioaccumulate.</p>	0.65%	Y

NewPac R	Newpark	Fluid Loss	<p>Acute Toxicity: Toxicity data available for ingredients: SODIUM CARBOXYMETHYL CELLULOSE (9004-32-4) LD50 (oral): 27000 mg/kg (rat) LD50 (dermal): > 2000 mg/kg (rabbit) LC50 (inhalation): >5800 mg/m3/4hrs (rat) ATE US (oral): 27000mg/kg body weight SODIUM CHLORIDE (7647-14-5) LC50 (Inhalation): > 42 g/m3/1 hour (rat) LD50 (oral): 3 g/kg (rat) ATE US (oral): 3000mg/kg body weight</p> <p>Ecotoxicity: SODIUM CHLORIDE (7647-14-5) LC50 (Fish 1): 5560 (5560-6080) mg/l (Exposure time: 96hrs - Species: Lepomis macrochirus). EC50 (Daphnia 1): 1000mg/l (Exposure time: 48hrs - Species: daphnia magna). LC50 (Fish 2): 12946mg/l (Exposure time: 96hrs - species Lepomis macrochirus). EC50 (Daphnia 2): 340.7 (340.7-469.2) mg/l (Exposure time: 48hrs - Species: Daphnia magna).</p> <p>This product is not anticipated to cause adverse effects to animal or plant life if released to the environment in small quantities. Not expected to bioaccumulate.</p>	0.25%	Y
JK-161 LV	Newpark	Encapsulating Agent - provides shale inhibition	<p>This product is expected to be of low toxicity. Under normal conditions of use, adverse health effects are not anticipated.</p> <p>Acute toxicity: LD50 rat (oral): > 2,000 mg/kg (OECD Guideline 401)</p> <p>Ecotoxicity: (10000 ppm test concentration) (EPA-821-R-02-012) Mysidopsis bahia = 48hr LC50 = 16.2 mg/L Menidia beryllina = 48hr LC50 = 34.2 mg/L Scophthalmus Maximus = 96hr LC50 > 1000 mg/L Skeletonema costatum = 72hr EC50 = 393 mg/L [NOEC = 118 mg/L] Acartia tonsa = 48 hr EC50 = 393 mg/L [NOEC = 112 mg/L] Corophium Volutator = 10 Day LC50 = 9338 mg/Kg [NOEC = 1000 mg/Kg]</p> <p>Persistence and degradability Not readily biodegradable (by OECD criteria). Bioaccumulation: Assessment bioaccumulation potential: Based on its structural properties, the polymer is not biologically available. Accumulation in organisms is not to be expected.</p>	0.31%	Y
ldcide-20	Newpark	Biocide/Prevents bacterial contamination of the mud	<p>Toxicity: Toxicity data available for ingredient: TETRAKIS(HYDROXYMETHYL)PHOSPHONIUM SULPHATE (55566-30-8) LD50 (Ingestion) 248 mg/kg (rat) TDLo (Ingestion) 650 mg/kg/13 weeks - intermittent (rat)</p> <p>Ecotoxicity: 75% TETRAKIS(HYDROXYMETHYL)PHOSPHONIUM SULPHATE (55566-30-8): LC50 (Rainbow Trout) = 119 mg/L/96 hr LC50 (Bluegill Sunfish) = 93 mg/L/96 hr EC50 (Daphnia Magna) = 19 mg/L/48 hr LC50 (Brown Shrimp) = 340 mg/L/96 hr LC50 (Mysid Shrimp) = 9.5 mg/L/96 hr LC50 (Sheepshead Minnow) = 94 mg/L/96 hr LC50 (Jeuvenile Plaice) = 86 mg/L/96 hr Waste Water management EC50 (Activated Sludge) = 24 mg/L/3 hr</p> <p>Persistence and degradability: This product is readily biodegradable.</p>	0.05%	Y
Caustic Soda	Newpark	pH control-prevents bacteria & corrosion.	<p>Toxicity: Toxicity Data available for the ingredients: SODIUM HYDROXIDE (1310-73-2): LD50 (Intraperitoneal): 40 mg/kg (mouse) LDLo (Ingestion): 1.57 mg/kg (human)</p> <p>Ecotoxicity: EC50 Ceriodaphnia: 40 mg/l.</p> <p>Biodegradation/Bioaccumulation: Biodegradability does not pertain to inorganic substances. Does not bioaccumulate.</p> <p>WATER: If released to waterways, alkaline products may change the pH of the waterway. Fish will die if the pH reaches 10-11 (goldfish 10.9, bluegill 10.5). SOIL: May leach to groundwater with toxic effects on aquatic life as above. ATMOSPHERE: Not expected to reside in the atmosphere. Drops or particles released to atmosphere should be removed by gravity and/or be rained out.</p>	0.05%	Y
Sodium Sulphite	Newpark	Oxygen Scavenger	<p>Acute Toxicity: SODIUM SULPHITE (7757-83-7) LD50 (Ingestion): 820 mg/kg (mouse) LD50 (Intraperitoneal): 950 mg/kg (mouse) LD50 (Intravenous): 175 mg/kg (mouse) LDLo (Ingestion): 2825 mg/kg (rabbit) LDLo (Intravenous): 400 mg/kg (cat) LDLo (Subcutaneous): 600 mg/kg (rabbit)</p> <p>SODIUM SULPHATE (7757-82-6) LD50 (Ingestion): 5989 mg/kg (mouse) LD50 (Intravenous): 1220 mg/kg (rabbit) LDLo (Intravenous): 1220 mg/kg (mouse) TDLo (Ingestion): 14 g/kg (mouse - 8-12 days pregnant) TDLo (subcutaneous): 806 mg/kg/26 weeks intermittently (mouse)</p> <p>SODIUM CARBONATE (497-19-8) LC50 (inhalation): 800 mg/m³/2 hours (guinea pig) LD50 (Ingestion): 4090 mg/kg (rat) LD50 (dermal): >2000mg/kg (rabbit) LD50 (Intraperitoneal): 117 mg/kg (mouse) LD50 (subcutaneous): 2210 mg/kg (mouse)</p> <p>Biodegradation/Bioaccumulation: Biodegradability does not pertain to inorganic substances. Does not bioaccumulate.</p> <p>OCNS category and registration number E - 26232</p>	0.13%	Y

Soda Ash	Newpark	pH / Hardness control	<p>Toxicity: SODIUM CARBONATE LD50 (oral): 4090 mg/kg (rat) LD50 (dermal): >2000mg/kg (rabbit) LC50 (Inhalation): 800 mg/m3/2 hours (guinea pig) LD50 (Intraperitoneal): 117 mg/kg (mouse) LD50 (Subcutaneous): 2210 mg/kg (mouse)</p> <p>Ecotoxicity: Fishes, Lepomis macrochirus, LC50, 96 h, 300 mg/l Crustaceans, Ceriodaphnia dubia, EC50, 48 h, 200 - 227 mg/l</p> <p>Biodegradation/Bioaccumulation: Biodegradability does not pertain to inorganic substances. Does not bioaccumulate.</p> <p>WATER: If released to waterways, alkaline products may change the pH of the waterway. Fish will die if the pH reaches 10-11 (goldfish 10.9, bluegill 10.5). SOIL: May leach to groundwater with toxic effects on aquatic life as above. ATMOSPHERE: Not expected to reside in the atmosphere. Drops or particles released to atmosphere should be removed by gravity and/or be rained out.</p> <p>OCNS category and registration number E - 26180</p>	0.05%	Y
Sodium Bicarbonate	Newpark	pH Buffer, Contamination Treatment	<p>Acute Toxicity: LD50 (Ingestion): 3360 mg/kg (mouse) LC50 (inhalation): 4.74 mg/L (rat)</p> <p>Ecotoxicity: Fishes, Lepomis macrochirus, LC50, 96 h, 300 mg/l Crustaceans, Ceriodaphnia dubia, EC50, 48 h, 200 - 227 mg/l</p> <p>Ecotoxicity Data: LC50 (Oncorhynchus mykiss), 96 h, 7.700 mg/l LC50 (Lepomis macrochirus), 96 h, 7.100 mg/l EC50 (Crustaceans, Daphnia magna) 48 h, 4.100 mg/l LOEC (Crustaceans, Daphnia magna) 48 h, 3.100 mg/l</p> <p>Biodegradation/Bioaccumulation: Biodegradability does not pertain to inorganic substances. Does not bioaccumulate.</p> <p>This product is not anticipated to cause adverse effects to animal or plant life if released to the environment in small quantities. Not expected to bioaccumulate.</p> <p>OCNS category and registration number E - 26175</p>	0.04%	Y
Ancor 1	Newpark	Corrosion inhibitor	<p>Acute Toxicity: Toxicity data available for ingredient: Toxicity Data TRIETHANOLAMINE (102-71-6) LD50 (Ingestion): 2200 mg/kg (rabbit) LD50 (Intraperitoneal): 1450 mg/kg (mouse) LD50 (Skin): > 20 mL/kg (rabbit) TDLo (Ingestion): 16 g/kg/64 weeks (mouse - cancer)</p> <p>Ecotoxicity: LC50 (shrimp): > 100 ppm.</p> <p>In soil and water, triethanolamine will biodegrade fairly rapidly following acclimation (half-life in the order of days to weeks). In soil, residual triethanolamine may leach to groundwater. Not expected to bioaccumulate.</p>	0.91%	Y
Citric Acid	Newpark	pH Buffer	<p>Acute Toxicity: LD50 (Ingestion): 3000 mg/kg (rat) LD50 (Intraperitoneal): 290 mg/kg (rat) LD50 (Intravenous): 42 mg/kg (mouse) LDLo (Ingestion): 7000 mg/kg (rabbit)</p> <p>Ecotoxicity: LC50 (Leuciscus idus melanotus): 440 mg/L - 48 h LC50 Daphnia magna (Water flea): 1.535 mg/L - 24 h</p> <p>Biodegradation/Bioaccumulation: Readily Biodegradability. Does not bioaccumulate.</p> <p>If citric acid is released to water, it is expected to biodegrade rapidly. May be toxic to fish at moderately high levels (120 ppm is fatal to daphnia; 894 ppm with pH 4 is fatal to goldfish) due to acidic nature. Fairly high biological oxygen demand (BOD) which may cause oxygen depletion in large spills. Citric acid occurs naturally in many plants.</p>	0.05%	Y
Fraceal Fine / Medium	Newpark	Prevent lost circulation	<p>This product is expected to be of low toxicity. Under normal conditions of use, adverse health effects are not anticipated Oral LD50 (rat) is > 5000 mg/m3. Dermal LD50 (rabbit) is > 2000 mg/m3. LC50 (rat) is 510 mg/m³/2 hours.</p>	1.13%	Y
Magnesium Oxide	Newpark	pH Indicator / temperature stabiliser	<p>Acute Toxicity: Toxicity Data SILICA, AMORPHOUS (7631-86-9) LD50 (oral): 3160 mg/kg (rat). Health Hazard Summary Low toxicity - irritant. Use safe work practices to avoid eye or skin contact and inhalation. Over exposure may result in irritation. Magnesium Oxide TCLo (inhalation) 400 mg/kg (human). Eye Irritant. Contact may result in irritation, lacrimation, pain and redness. Inhalation Irritant. Over exposure may result in irritation of the nose and throat, with coughing. Skin Irritant. Contact may result in irritation, redness, rash and dermatitis. Ingestion Low toxicity. Ingestion may result in gastrointestinal irritation, nausea, vomiting, abdominal pain and diarrhoea.</p> <p>Biodegradation/bioaccumulation: Not expected to Biodegrade as it is inorganic substance.</p>	0.13%	Y
Defoam-A (I)	Newpark	Defoamer suitable for High Temperatures	<p>May be harmful - irritant. This product has the potential to cause adverse health effects with over exposure. Use safe work practices to avoid eye or skin contact and inhalation. Over exposure may result in central nervous system (CNS) effects.</p> <p>Acute Toxicity: Main ingredient Octan-2-OL (>98%); Oral, mouse: LD50 = 300 mg/kg; Oral, rabbit: LD50 = 9300 mg/kg; Oral, rat: LD50 = 200 mg/kg; Water accounts for the remaining <2% of the product.</p> <p>Biodegradation/Bioaccumulation: Aliphatic hydrocarbons behave differently in the environment depending on their size. WATER: Light aliphatics volatilise rapidly from water (half life - few hours). Bioconcentration should not be significant. SOIL: Light aliphatics biodegrade quickly in soil and water, heavy aliphatics biodegrade very slowly. ATMOSPHERE: Vapour-phase aliphatics will degrade by reaction with hydroxyl radicals. The manufacturer reports that this product is > 80% biodegradable.</p>	0.05%	Y

Calcium Chloride (94%) Powder	Newpark	Weighting Agent	<p>Based on available data, the classification criteria are not met. Toxicity Data available for the ingredients:</p> <p>Acute Toxicity: CALCIUM CHLORIDE ANHYDROUS (10043-52-4) LD50 (Ingestion): 1000 mg/kg (rat) LD50 (Intraperitoneal): 210 mg/kg (mouse) LD50 (Intravenous): 42 mg/kg (mouse) LD50 (Subcutaneous): 823 mg/kg (mouse) LDLo (Ingestion): 1384 mg/kg (rabbit) LDLo (Intravenous): 150 mg/kg (guinea pig) LDLo (Subcutaneous): 249 mg/kg (cat) TDLo (Intravenous): 20 mg/kg/1 hour (woman) SODIUM CHLORIDE (7647-14-5) LC50 (Inhalation): > 42000 mg/m³/1 hour (rat) LD50 (Ingestion): 3000 mg/kg (rat) LD50 (Intraperitoneal): 2602 mg/kg (mouse) LD50 (Intravenous): 645 mg/kg (mouse) LD50 (Skin): > 10000 mg/kg (rabbit) LD50 (Subcutaneous): 3000 mg/kg (mouse) LDLo (Ingestion): 8000 mg/kg (rabbit) LDLo (Intravenous): 300 mg/kg (guinea pig) LDLo (Subcutaneous): 2160 mg/kg (guinea pig) TDLo (Ingestion): 12357 mg/kg (human)</p> <p>Biodegradation/Bioaccumulation: Biodegradability does not pertain to inorganic substances. Does not bioaccumulate.</p>	1.12%	Y
TopSpot	Newpark	Free pipe agent - surfactant	<p>Toxicity Data: This product is expected to be of low toxicity. Under normal conditions of use, adverse health effects are not anticipated.</p>	2.73%	Y
Strata-Vanguard	Newpark	Bridging Agent	<p>Toxicity Data: Toxicity data available for ingredient: CRISTOBALITE (14464-46-1) TCLo (Inhalation) 16 mppcf/8hours/17.9 years (human-fibrosis) QUARTZ (SILICA CRYSTALLINE) (14808-60-7) LCLo (Inhalation) 300 ug/m³/10 years (human) TCLo (Inhalation) 16 000 000 particles/ft³/8 hours/17.9 years (human-fibrosis) CELLULOSE (9004-34-6) LC50 (Inhalation) > 5800 mg/m³/4 hours (rat) LD50 (Ingestion) > 5000 mg/kg (rat) LD50 (Intraperitoneal) > 31600 mg/kg (rat) LD50 (skin) > 2000 mg/kg (rabbit) POLYETHYLENE (9002-88-4) LDLo (Ingestion) 3000 mg/kg (rat) MAGNESIUM OXIDE (1309-48-4) TCLo (Inhalation) 400 mg/kg (human)</p> <p>This product is not anticipated to cause adverse effects to animal or plant life if released to the environment in small quantities. Not expected to bioaccumulate. This product has low mobility in soil.</p>	1.30%	Y
Frac Attack	Newpark	Prevent lost circulation	<p>Acute Toxicity: Calcium Oxide (1305-78-8) as an ingredient (<10%) LD50 3059 mg/kg (Mouse/Intraperitoneal) Calcium Hydroxide (1305-62-0) as an ingredient (<5%) LD50 (Ingestion) 7300 mg/kg (mouse) Cristobalite (14464-46-1) as an ingredient (<5%) TCLo (Inhalation) 16 mppcf/8hours/17.9 years (human-fibrosis) Quartz (Silica Crystalline) (14808-60-7) as an ingredient (<3%) LCLo (Inhalation) 300 ug/m³/10 years (human) TCLo (Inhalation) 16 000 000 particles/ft³/8 hours/17.9 years (human-fibrosis) 2-Propenenitrile-1,3- Butadiene Rubber as an ingredient (<50%) LC50 (96 h): >100 mg/L (Oncorhynchus mykiss) LC50 (48 h): >100 mg/L (Daphnia Magna) LC50 (48 h): >100 mg/L (Scenedesmus quadricauda) Natural Rubber as an ingredient is a natural product (<50%) It is not anticipated to cause adverse environmental effects. Polyisoprene as an ingredient (<50%) General-purpose rubber used to replace natural rubber Acute Oral LD50 : >2000mg/kg (Rat, LIR-30) Acute Dermal Irritation (Rabbit) : Negative (LIR-30) Acute Inhalation LC50 : Not Available SBR Elastomers as an ingredient (<50%) LD50 (Oral) >5000 mg/kg (rat) LD50 (skin) >20000 mg/kg (rat) LD50 (Inhalation) >20000 mg/kg (rat) Cellulose (9004-34-6) as an ingredient is a natural product (<30%) LC50 (Inhalation) > 5800 mg/m³/4 hours (rat) LD50 (Ingestion) > 5000 mg/kg (rat) LD50 (Intraperitoneal) > 31600 mg/kg (rat) LD50 (skin) > 2000 mg/kg (rabbit).</p> <p>Diatomaceous earth, Flux calcined as an ingredient (<15%) LCLo (Inhalation) 300 ug/m³/10 years (human) TCLo (Inhalation) 16 000 000 particles/ft³/8 hours/17.9 years (human-fibrosis). Fullers earth (Bentonite) as an ingredient (<10%) Fish Toxicity 96h LC50: 8-19 g/L (Salmo gairdneri). Magnesium Oxide (1309-48-4) as an ingredient (<2%) TCLo (Inhalation) 400 mg/kg (human).</p> <p>Biodegradation/bioaccumulation: This product is not expected to bioaccumulate.</p>	1.30%	Y

HIPERM	Newpark	Prevent swelling clays by blocking the site for water hydration.	<p>Acute Toxicity HEXAMETHYLENEAMINE (124-09-4) LD50 (oral): 750mg/kg (rat) LD50 (dermal): 1110 mg/kg (rabbit) FORMIC ACID (64-18-6) LD50 (oral): 700mg/kg (mouse) LC50 (inhalation): 6200 mg/m3/15mins</p> <p>Ecotoxicity Information: Not classified. Hexamethylenediamine (124-09-4) LC50 (Lepomis macrochirus): > 56 mg/l/96hrs EC (Daphnia magna): 23.4 mg/l/48hrs LC50 (Pimephlaes promelas): 1825 mg/l/96hrs. Formic Acid (64-18-6): EC50 (Daphnia magna): 120 mg/l/48hrs EC50 (Daphnia magna static): 138 - 165.6 mg/l/48hrs</p> <p>Persistence and Degradability Not established. Bioaccumulation Hexamethylenediamine (124-09-4): Log Pow 0.02 Formic Acid (64-18-6): BCF Fish 1: 0.22; Log Pow -0.54</p>	2.73%	Y
Starch B	Newpark	Fluid Loss	<p>Acute Toxicity: Toxic to microorganisms above 0.3 ppm (as formaldehyde). Biological oxygen demand (BOD): 37-47%, 5 days (High). May cause oxygen depletion in aquatic systems. WATER: Aquatic toxicity: 32 ppm/24 hr/catfish/fresh water; 100-300 ppm/48 hr/flounder/salt water.</p> <p>Acute Toxicity: This product is expected to be of low toxicity. The product contains Dazomet (ISO) [Tetrahydro-3,5-dimethyl-1,3,5-thiadiazine-2-thione], however due to the low levels present, adverse health effects are not anticipated. DAZOMET (ISO) [Tetrahydro-3,5-dimethyl-1,3,5-thiadiazine-2-thione] LD50 (oral): 180 mg/kg (mouse) LD50 (dermal): 2260mg/kg (rat)</p>	0.52%	Y
SAPP	Newpark	Acidifier / Buffering Agent	<p>Acute Toxicity: Low toxicity; Ingestion of large quantities may result in nausea, vomiting and gastrointestinal irritation. Ingestion of large quantities may also result in serious disturbances in calcium metabolism.</p> <p>LD50 (Ingestion): 2650 mg/kg (mouse) LD50 (Intraperitoneal): 1 g/kg (mouse) LD50 (Intravenous): 59 mg/kg (mouse) LD50 (Subcutaneous): 480 mg/kg (mouse)</p> <p>Biodegradation/Bioaccumulation: Biodegradability does not pertain to inorganic substances. Does not bioaccumulate.</p> <p>OCNS category (actual or equivalent chemical) and Registration number: E-2449</p>	0.13%	Y
Limestone LSC/80	Newpark	Bridging & Weighting Agent	<p>Calcium carbonate occurs naturally in a wide variety of substances including limestone, marble and egg shells. It is not anticipated to cause adverse environmental effects.</p> <p>Acute Toxicity: LD50 (Ingestion): 6450 mg/kg (rat)</p> <p>Biodegradation/Bioaccumulation: Biodegradability does not pertain to inorganic substances. Does not bioaccumulate.</p>	1.30%	
Omyacarb 40 (Trade Name of Calcium Carbonate)	Newpark	Bridging & Weighting Agent	<p>This product is expected to be of low toxicity. Based on available data, the classification criteria are not met.</p> <p>Acute Toxicity: LD50 (Ingestion) = 6450 mg/kg (rat).</p> <p>Calcium carbonate occurs naturally in a wide variety of substances including limestone, marble and egg shells. It is not anticipated to cause adverse environmental effects.</p> <p>Biodegradation/Bioaccumulation: Dissolved calcium carbonate dissociates into calcium and carbonate ions. Calcium ions will be assimilated by living organisms in the water and the carbonate will become part of the carbon cycle.</p> <p>This product does not bioaccumulate</p>	1.30%	
Circal 60/16	Newpark	Bridging agent & loss circulation material	As per Omyacarb 40	1.30%	Y
Circal 1000	Newpark	Bridging agent & loss circulation material	As per Omyacarb 40	1.30%	Y
Ciacal Y	Newpark	Bridging agent & loss circulation material	As per Omyacarb 40	1.30%	Y
Omyacarb 2	Newpark	Bridging agent & loss circulation material	As per Omyacarb 40	1.30%	Y
Omyacarb 8	Newpark	Bridging agent & loss circulation material	As per Omyacarb 40	1.30%	Y
Omyacarb 20	Newpark	Bridging agent & loss circulation material	As per Omyacarb 40	1.30%	Y
JK 261	Newpark	Encapsulating Agent - provides shale inhibition	As per JK 161 LV	0.13%	Y
QUICKSEAL F / M / C	Newpark	Loss circulation material	<p>This product is expected to be of low toxicity. Under normal conditions of use, adverse health effects are not anticipated</p> <p>Acute Toxicity: Acute Oral Toxicity: LD50 (oral) > 5000 mg/kg (rats). Acute Dermal Toxicity: LD50 (dermal) > 2000 mg/kg (rats). Acute Inhalation Toxicity: LC50 (Inhalation) = 5800 mg/m3/4hrs (rat).</p> <p>Low toxicity to aquatic organisms. This product is readily biodegradable. This product is not expected to bioaccumulate.</p>	1.30%	Y

FlexFirm KA	Newpark	Inhibits dispersion of drilled shale cutting	<p>Acute toxicity information available for the product: No known toxicological effects from this product. Information available for the ingredients: POTASSIUM SILICATE: LD50 (oral): 1600 mg/kg (rat) Sensitization: not classified as causing skin or respiratory sensitisation. Mutagenicity: Insufficient data available to classify as a mutagen. Carcinogenicity: Crystalline silica is classified as carcinogenic to humans (IARC Group 1). However, there is a body of evidence supporting the fact that increased cancer risk would be limited to people already suffering from silicosis. STOT – single exposure: Irritating to the respiratory system. Over exposure may result in irritation of the nose and throat, with coughing. High level exposure may result in breathing difficulties. STOT – repeated exposure to respirable silica may result in pulmonary fibrosis (silicosis). Silicosis is a fibronodular lung disease caused deposition in the lungs of fine respirable particles of crystalline silica. Principal symptoms of silicosis are coughing and breathlessness.</p> <p>Ecotoxicity The high pH when undiluted or unneutralized is acutely harmful to aquatic life. The following data is reported for chemically similar Sodium Silicates on a 100% solids basis: A 96 hour median tolerance for fish (<i>Gambusia affinis</i>) of 2320 ppm; a 96 hour median tolerance for water fleas (<i>Daphnia magna</i>) of 247 ppm; a 96 hour median tolerance for snail eggs (<i>Lymnaea</i>) of 632 ppm; and a 96 hour median tolerance for Amphipoda of 160 ppm. Persistence and degradability This material is not persistent in aquatic systems. Mobility in soil Expected to be mobile in soil. Diluted material rapidly depolymerizes to yield dissolved silica in a form that is indistinguishable from natural dissolved silica.</p> <p>Bioaccumulative potential Neither silica nor potassium will appreciably bio-concentrate up the food chain.</p>	0.52%	Y
Gagetrol	Newpark	HT Fluid Loss	<p>CARBOXYMETHYL STARCH. CAS: 9057-06-1 <u>Acute toxicity</u> LD50 (Oral): >27 gm/kg (mouse) LD50 (Oral): >27 gm/kg (rabbit) LD50 (Oral): 27000 mg/kg (rat) Skin, rabbit: LD50 = >2 gm/kg; This product is expected to be of low toxicity. Under normal conditions of use, adverse health effects are not anticipated. Skin. Not classified as a skin irritant. Contact may result in mild irritation. Eye. Not classified as an eye irritant. Contact may cause mild irritation and lacrimation. Sensitization. This product is not known to be a skin or respiratory sensitizer. Mutagenicity. No evidence of mutagenic effects. Carcinogenicity. No evidence of carcinogenic effects Reproductive. No evidence of reproductive effects STOT – single exposure. No known effects from this product. STOT – repeated exposure. No known effects from this product Aspiration. Not relevant. Toxicity. This product is not anticipated to cause adverse effects to animal or plant life if released to the environment in small quantities. Bioaccumulative potential. Not expected to bioaccumulate</p>	0.91%	Y
AvaGreenLube / EBL	Newpark	Lubricant	<p>Constituent 1: 100% LC50 (Fish) 48 h: > 10000 µg / L LC50 (Mollusc) 48 h: > 10000 µg / L LC50 (Amphibious) 48 h: > 7600 µg/L 70% 28 days (method OECD 301 B)</p> <p>Low potential for bio-accumulation in aquatic organisms or terrestrial even after repeated exposure. The product is inherently biodegradable. Under anaerobic conditions the product is inherently biodegradable.</p>	1.82%	
DeepDrill Inhibitor	Newpark	Lubricant / Shale Inhibitor	<p>Constituent 1: (>50%) This product is expected to be of low toxicity. Under normal conditions of use, adverse health effects are not anticipated LC50: 218,000 ppm ATEmix (dermal) 40,971.00 mg/kg</p> <p>Constituent 2: (<50%) This product is expected to be of low toxicity. Under normal conditions of use, adverse health effects are not anticipated</p> <p>Constituent 3: (Remainder) No Hazard</p>	1.86%	
New100N	Newpark	Lubricant	<p>Constituent 1: (30-60%) This product is expected to be of low toxicity. Under normal conditions of use, adverse health effects are not anticipated</p> <p>Constituent 2: (10-30%) Oral Toxicity (LD50) 4090 mg/kg (mouse) LD50 (intrapertitoneal) 4420 mg/kg (rat) LD50 (intravenous) 4250 mg/kg (mouse) LD50 (subcutaneous) 91 mg/kg (mouse) TDLo (oral) 1428 mg/kg (human) LC50 static (<i>Daphnia magna</i>): 500mg/l/24 hrs EC50 (fish): 51-57 96 h <i>Oncorhynchus mykiss</i> mL/L This product is expected to be of low toxicity. Under normal conditions of use, adverse health effects are not anticipated</p> <p>Constituent 3: (10-60%) No Hazard</p>	1.50%	

Evolube TR	Newpark	Lubricant	<p>Constituent 1: (7-13%) LD50 (oral): 5300 mg/kg (Rat) LD50 (Dermal): 3480 mg/kg (Rabbit) ECSO Algae/aquatic plants (Desmodesmus subspicatus): 500mg/l - 72 hrs LC50 static Leuciscus idus (Fish): 2200 - 4600mg/l - 96 hrs LC50 static Pimephales promelas: 2400mg/l - 96 hrs LC50 Pimephales promelas: 2400mg/l - 96 hrs ECSO Daphnia magna (Crustacea): 500mg/l 48 hrs</p> <p>Constituent 2: (3-7%) LD50 (oral): 470 mg/kg (Rat) LD50 (dermal): 99 mg/kg (Rabbit) LC50 (inhalation): 450 ppm (Rat) 4 h LC50 Fish Lepomis macrochirus: 2950mg/l - 96 hrs LC50 static (Lepomis macrochirus): 1490mg/l - 96 hrs ECSO Daphnia magna (Crustacea): 1000mg/l - 48 hrs ECSO Daphnia magna: 1698 - 1940mg/l - 24 hrs</p> <p>Constituent 3: (1-5%) LD50 (oral): 620 µL/kg (rat) LD50 (dermal): 7640 µL/kg (rabbit) ECSO Desmodesmus subspicatus (Algae/aquatic plants): 7.8mg/l - 72 hrs ECSO Pseudokirchneriella subcapitata: 2.1 - 2.3mg/l - 96 hrs LC50 flow-through Fish (Pimephales promelas): 4460 - 4980mg/l 96 hrs LC50 static Pimephales promelas: 1200 - 1580mg/l - 96 hrs LC50 static Lepomis macrochirus: 600 -1000mg/l - 96 hrs ECSO Daphnia magna (Crustacea) - 55mg/l - 48 hrs</p> <p>Constituent 4: (85%) Oral Toxicity (LD50) - 840 mg/m³</p> <p>This product is expected to be of low toxicity. Under normal conditions of use, adverse health effects are not anticipated.</p> <p>The following toxicity are based on the whole compound ATEmix (oral) 500.00 mg/kg ATEmix (dermal) 2,022.00 mg/kg mg/l ATEmix (inhalation-dust/mist) 1.50 mg/l ATEmix (inhalation-vapor) 450.00 mg/l</p>	1.26%	
			TOTAL		

* Shaded products are contingent.

C. CHEMICAL LIST:

Ingredients (ie: Chemicals within Drilling Fluids)	CAS Number	Mass
Water	7732-18-5	69.23%
Bentonite	1302-78-9	3.92%
Potassium Chloride	7447-40-7	6.62%
Sodium Chloride	7647-14-5	8.20%
Barium Sulphate	7727-43-7	7.80%
Sodium Carboxymethyl Cellulose	9004-32-4	0.82%
Xanthan Gum	11138-66-2	0.47%
Acrylamide, Sodium Acrylate Copolymer	25987-30-8	0.31%
Quartz (Silica Crystalline)	14808-60-7	0.54%
Sodium Hydroxide	1310-73-2	0.05%
Sodium Carbonate	497-19-8	0.06%
Sodium Sulphite	7757-83-7	0.13%
Sodium Sulphate	7757-82-6	0.003%
Sodium Bicarbonate	144-55-8	0.02%
Citric Acid, Anhydrous	77-92-9	0.05%
Tetrakis (Hydroxymethyl) Phosphonium Sulphate	55566-30-8	0.010%
Triethanolamine	102-71-6	0.633%
Magnesium Oxide	1309-48-4	0.123%
Cellulose	9004-34-6	0.750%
Calcium Oxide	1305-78-8	0.123%
Silica, Amorphous	7631-86-9	0.149%
TOTAL		100.00%
Octan-2-ol	123-96-6	0.05%
Cellulose	9004-34-6	2.60%
Calcium Chloride	10043-52-4	1.05%
Sodium Chloride	7647-14-5	0.06%
CRISTOBALITE	14464-46-1	0.05%
Quartz (Silica Crystalline)	14808-60-7	0.03%
2-Propenenitrile, polymer with 1,3-butadiene Rubber	9003-18-3	0.47%
Natural Rubber	9006-04-6	0.39%
Polyisoprene	9003-31-0	0.34%
Rubber - SBR elastomers (derived from recycled automotive tyres)	9003-55-8	0.36%
Diatomaceous Earth	68855-54-9	0.21%
Fuller's earth	8031-18-3	0.16%
Calcium Carbonate	1317-65-3	7.86%
Polyethylene	9002-88-4	0.03%
Magnesium Oxide	1309-48-4	0.04%
Calcium Oxide	1305-78-8	0.04%
Calcium Hydroxide	1305-62-0	0.03%
Hexamethylenediamine	124-09-4	1.64%
Formic Acid	64-18-6	0.82%
STARCH	9005-25-8	0.51%
DAZOMET (ISO)[TETRAHYDRO-3,5-DIMETHYL-1,3,5-THIADIAZINE-2-THIONE]	533-74-4	0.01%
Disodium Pyrophosphate	7758-16-9	0.13%
Acrylamide, Sodium Acrylate Copolymer	25987-30-8	0.13%
Carboxymethyl Starch	9057-06-1	0.91%
POTASSIUM SILICATE	1312-76-1	0.52%
Methyl esters of fatty acids	88990-52-3	2.03%
Glycerol	56-81-5	0.32%
Polyglycerol	25618-55-7	0.67%
Triethylene glycol, monobutyl ether	143-22-6	0.14%
2-Butoxyethanol	111-76-2	0.11%
Diethanolamine	111-42-2	0.08%
TOTAL Contingency Chemicals		21.76%

* Shaded products are contingent.

NOTE:- NC - not classified as Hazardous

340mm (13 3/4") Cement Job

A. SYSTEM DETAILS:

OPERATOR:	Finder
WELLS:	Helios-1
SYSTEM:	Class G Slurry
TOTAL VOLUME OF SYSTEM (m ³):	82

B. PRODUCT LIST:

Trade name	Supplier	Purpose	Product in system fluid (mass %)	Toxicity & Ecotoxicity Info	MSDS Attached
Fresh water	Bore water sourced onsite	Mix water	10.401%	Bore water sourced onsite - Natural Product	N/A
Cement- Class G	Halliburton	Cement	61.987%	<p>CONSTITUENT 1 (≤100%):</p> <p>After hardening with water or moisture, cement presents no ecotoxicity risks. (Source: IUCLID 2000)</p> <p>Static Acute Aquatic Toxicity- Freshwater and Marine Fish:- 96 hour LC50: >1,500 mg/L</p> <p>Static Acute Aquatic Toxicity -Freshwater and Marine Invertebrates:- 48 hour LC50: >1,000 mg/L</p> <p>Static Acute Aquatic Toxicity - Freshwater and Marine Algae:- 72 hour EC50: >1,000 mg/L</p> <p>Partition Coefficient, n-Octanol/Water: Not Applicable for inorganics</p> <p>Oxygen Demand, Chemical Oxygen Demand: Not Applicable for inorganics</p> <p>Biodegradability, Seawater – Indigenous microbes: Not Applicable for inorganics</p> <p>CONSTITUENT 2 (≤10%):</p> <p>Carcinogenicity: Classified as a human carcinogen (IARC Group 1)</p>	Yes
Econolite Liquid	Halliburton	Cement Additive Stabiliser	9.245%	<p>CONSTITUENT 1 (≤60%):</p> <p>Crustacean Toxicity 100h EC50: 247 mg/L (Daphnia magna);</p> <p>Acute Fish Toxicity 96h LC50: 301-478 mg/L (Lepomis macrochirus);</p> <p>LD50:2000-3000 mg/kg (Rat)</p> <p>Component is an inorganic substance with "No bioaccumulation potential"; "studies on biodegradation are not applicable."</p> <p>Source: IUCLID 2000 PLONOR</p> <p>Bioassay testing where LC50/ EC50: >100mg/L Readily biodegradable</p> <p>CONSTITUENT 2 (≤100%):</p> <p>Natural Product (Water)</p>	Yes
Gascon 469	Halliburton	Cement Additive Stabiliser	8.475%	<p>CONSTITUENT 1 (≤1%):</p> <p>The inorganic substance has a high water solubility, and is not expected to bioconcentrate in organisms; "Biodegradation is not applicable."</p> <p>Algae toxicity (i.e. mortality) has been shown at pH >8.5. Concentration-based toxicity values were not available.</p> <p>Acute Fish Toxicity 96h LC50: 45.4 mg/L (Oncorhynchus mykiss);</p> <p>Source: IUCLID 2000</p> <p>Included on the OSPAR List of Substances Used and Discharged Offshore which Are Considered to Pose Little or No Risk to the Environment</p> <p>CONSTITUENT 2 (≤60%):</p> <p>"SiO2" is a stable substance. In the environment it occurs in different modifications and it is one of the most abundant materials on the Earth's surface." Biodegradability is "not applicable" for silica since it is inorganic. Additionally, "bioaccumulation is not expected."</p> <p>Acute Algae Toxicity 72h EC50: 440 mg/L (Selenastrum capricornutum);</p> <p>Acute Crustacean Toxicity 48h EC50: 7600 mg/L (Ceriodaphnia dubia);</p> <p>Acute Fish Toxicity 96h LC50 5000 mg/L (Brachydanio rerio);</p> <p>Source: IUCLID 2000</p> <p>PLONOR</p> <p>CONSTITUENT 3 (≤100%):</p> <p>Natural Product (water)</p>	Yes
HR-6L	Halliburton	Cement Retarder	1.331%	<p><u>Acute Toxicity</u></p> <p>Retarder Algae Toxicity EC50 (72h): 301 mg/L (Skeletonema costatum)</p> <p>Fish Toxicity LC50 (48h): >100 mg/L (Scophthalmus maximus) (juvenile turbot)</p> <p>Crustacean Toxicity LC50 (48h): 1261 mg/L (Acartia tonsa)</p> <p><u>Chronic Toxicity:</u></p> <p>No data available to indicate product or components present at greater than 1% are chronic health hazards.</p> <p><u>Biodegradation/bioaccumulation:</u></p> <p>Slowly biodegradable</p>	Yes

B. PRODUCT LIST: cont'd

Trade name	Supplier	Purpose	Product in system fluid (mass %)	Toxicity & Ecotoxicity Info	MSDS Attached
CFR-3L	Halliburton	Friction Reducer	0.966%	<p>CFR-3L is CFR-3 in solution</p> <p><u>Acute Toxicity:</u> Retarder Algae Toxicity EC50 (72h): >100 mg/L (Skeletonema costatum) [Halliburton Funded Study] Fish Toxicity LC50 (48h): 7478 mg/L (Aphyosemion bivittatum) [SKW Trostberg] Crustacean Toxicity LC50 (48h): 1687 mg/L (Acartia tonsa) [Halliburton Funded Study]</p> <p><u>Chronic Toxicity:</u> No data available to indicate product or components present at greater than 1% are chronic health hazards.</p> <p><u>Biodegradation/bioaccumulation:</u> Slowly biodegradable Bioaccumulation Log Pow: < 0 [Halliburton Funded Study]; Marine Water Biodegradation 28d: 0% [Halliburton Funded Study]; CHARM Category - GOLD</p>	Yes
Halad-413L	Halliburton	Fluid Loss Additive	7.264%	<p><u>Acute Toxicity:</u> Oral Toxicity LD50: > 5,000 mg/kg (Rat) Dermal Toxicity LD50: > 2,000 mg/kg (Rabbit) <i>Humic acids, sodium salts, polymers with N,N-dimethyl-2-propenamide, sodium 2-methyl-2-[(1-oxo-2-propen-1-yl)amino]-1-propanesulfonate (1:1) and 2-propenenitrile, sodium bisulfite-terminated as an ingredient (10-30%)</i> Algae Toxicity EC50 (72h): 1,102 mg/L (Skeletonema costatum) Crustacean Toxicity LC50 (48h): >2,000 mg/L (Acartia tonsa) Fish Toxicity LC50 (96h): >1,000 mg/L (Scophthalmus maximus) (juvenile turbot) Water makes up the remainder of this product.</p> <p><u>Chronic Toxicity:</u> No data available to indicate product or components present at greater than 1% are chronic health hazards.</p> <p><u>Biodegradation/bioaccumulation:</u> Slowly biodegradable. Humic acids, sodium salts, polymers with N,N-dimethyl-2-propenamide, sodium 2-methyl-2-[(1-oxo-2-propen-1-yl)amino]-1-propanesulfonate (1:1) and 2-propenenitrile, sodium bisulfite-terminated As an ingredient (10-30%) Log Pow: <0 (OECD 117) Biodegradation (28 Days): 6.1% (OECD 306)</p>	Yes
NF-6	Halliburton	Reduces air entrainment into cement slurry	0.153%	<p><u>Acute Toxicity:</u> Not determined for Fish, Crustaceans and Algae as a complete mix. <i>Rape oil as an ingredient (60-100%)</i> Oral Toxicity LD50: >5,000 mg/kg (Rat) Dermal Toxicity LD50: >5,000 mg/kg (Rabbit) Fish Toxicity LC50: >5,600 mg/L Algae Toxicity EC50: >3,200 mg/L <i>Monopropylene glycol monooleate as an ingredient (5-10%)</i> Fish Toxicity LC50: 3,200 mg/L Algae Toxicity EC50: 990 mg/L <i>Sorbitan, monopalmitate as an ingredient (1-5%)</i> Fish Toxicity LC50: >,1800 mg/L Algae Toxicity EC50: 41 mg/L <i>Aluminium stearate as an ingredient (1-5%)</i> Fish Toxicity LC50: >5,600 mg/L EC50: 6,500 mg/L Water makes up the remainder of this product.</p> <p><u>Chronic Toxicity:</u> No data available to indicate product or components present at greater than 1% are chronic health hazards.</p> <p><u>Biodegradation/bioaccumulation:</u> Readily biodegradable. Low bioaccumulation potential due to rapid degradation.</p>	Yes

B. PRODUCT LIST: cont'd

Trade name	Supplier	Purpose	Product in system fluid (mass %)	Toxicity & Ecotoxicity Info	MSDS Attached
D-AIR 3000L	Halliburton	Defoamer	0.177%	<p>CONSTITUENT 1 (≤100%): Acute Algae Toxicity 96h EC50 : 22 mg/L (Pseudokirchneriella subcapitata) Acute Fish Toxicity Data 96h LC50 : >1000 mg/L (Salmo gairdneri) Acute Crustacean Toxicity 48h EC50: 480 mg/L (Daphnia magna)</p> <p>CONSTITUENT 2 (≤60%): Marine Water Acute Algae Toxicity 72h EC50: 426 mg/L (Skeletonema costatum) [OSPAR]; Marine Water Acute Crustacean Toxicity 48h EC50: 433.2 mg/L (Acartia tonsa) [OSPAR]; Marine Water Acute Fish Toxicity 96h LC50: > 1000 mg/L (Scophthalmus maximus) [Halliburton Funded Study]; Bioaccumulation Log Pow: 5.06 [Halliburton Funded Study];</p> <p>CONSTITUENT 3 (≤30%): Component is a synthetic surface modified Amorphous Silica (CAS #: 7631 86-9); Fish and Invertebrate toxicity testing with Amorphous Silica have shown low hazard for this component. Source: OECD SIDS</p> <p>D-AIR 3000L: Oral Toxicity: LD50: >5000 mg/kg (Rat) Dermal Toxicity: LD50: >2000 mg/kg (Rat) Readily Biodegradable (28days): 77-81%</p>	Yes
total			100.00%		

C. CHEMICAL LIST

Chemicals within products in Part B	CAS number	Maximum Mass fraction in System (%)
Mix Water	NA	9.755%
Portland cement	65997-15-1	51.734%
Water in Product	7732-18-5	22.620%
Sodium silicate	1344-09-8	4.607%
Silica, amorphous - fumed	7631-86-9	4.223%
Crystalline silica, quartz	14808-60-7	2.574%
Humic acids, sodium salts, polymers with N,N-dimethyl-2-propenamide, sodium 2-methyl-2-[(1-oxo-2-propen-1-yl)amino]-1-propanesulfonate (1:1) and 2-propenenitrile, sodium bisulfite-terminated	473268-27-8	1.810%
Glass, oxide	65997-17-3	1.030%
Sodium Lignosulfonate	8061-51-6	0.663%
Sulfurous acid, monosodium salt, polymer with formaldehyde and acetone	40104-76-5	0.481%
Alkenes, C15-C18	93762-80-2	0.147%
Rape Oil	8002-13-9	0.127%
Polypropylene glycol	25322-69-4	0.088%
Sodium hydroxide	1310-73-2	0.070%
Silica, amorphous precipitated	67762-90-7	0.044%
Monopropylene glycol monooleate	1330-80-9	0.013%
Sorbitan, monopalmitate	26266-57-9	0.006%
Aluminium stearate	637-12-7	0.006%
	Total	100.00%

244mm (9 3/4") Cement Job

A. SYSTEM DETAILS:

OPERATOR:	Finder
WELLS:	Helios-1
SYSTEM:	Class G
TOTAL VOLUME OF SYSTEM (m ³):	42

B. PRODUCT LIST:

Trade name	Supplier	Purpose	Product in system fluid (mass %)	Toxicity & Ecotoxicity Info	MSDS Attached
Fresh water	Bore water sourced onsite	Mix water	9.755%	Bore water sourced onsite - Natural Product	N/A
Cement- Class G	Halliburton	Cement	61.357%	<p>CONSTITUENT 1 (≤100%):</p> <p>After hardening with water or moisture, cement presents no ecotoxicity risks. (Source: IUCLID 2000)</p> <p>Static Acute Aquatic Toxicity- Freshwater and Marine Fish:- 96 hour LC50: >1,500 mg/L</p> <p>Static Acute Aquatic Toxicity -Freshwater and Marine Invertebrates:- 48 hour LC50: >1,000 mg/L</p> <p>Static Acute Aquatic Toxicity - Freshwater and Marine Algae:- 72 hour EC50: >1,000 mg/L</p> <p>Partition Coefficient, n-Octanol/Water: Not Applicable for inorganics</p> <p>Oxygen Demand, Chemical Oxygen Demand: Not Applicable for inorganics</p> <p>Biodegradability, Seawater – Indigenous microbes: Not Applicable for inorganics</p> <p>CONSTITUENT 2 (≤10%):</p> <p>Carcinogenicity: Classified as a human carcinogen (IARC Group 1)</p>	Yes
Gascon 469	Halliburton	Cement Additive Stabiliser	6.214%	<p>CONSTITUENT 1 (≤1%):</p> <p>The inorganic substance has a high water solubility, and is not expected to bioconcentrate in organisms; "Biodegradation is not applicable." Algae toxicity (i.e. mortality) has been shown at pH >8.5. Concentration-based toxicity values were not available.</p> <p>Acute Fish Toxicity 96h LC50: 45.4 mg/L (Oncorhynchus mykiss); Source: IUCLID 2000</p> <p>Included on the OSPAR List of Substances Used and Discharged Offshore which Are Considered to Pose Little or No Risk to the Environment</p> <p>CONSTITUENT 2 (≤60%):</p> <p>"SiO2" is a stable substance. In the environment it occurs in different modifications and it is one of the most abundant materials on the Earth's surface." "Biodegradability is "not applicable" for silica since it is inorganic. Additionally, "bioaccumulation is not expected." Acute Algae Toxicity 72h EC50: 440 mg/L (Selenastrum capricornutum); Acute Crustacean Toxicity 48h EC50: 7600 mg/L (Ceriodaphnia dubia); Acute Fish Toxicity 96h LC50 5000 mg/L (Brachydanio rerio); Source: IUCLID 2000</p> <p>PLONOR</p> <p>CONSTITUENT 3 (≤100%):</p> <p>Natural Product (water)</p> <p>Gascon 469: OCNS Group: E</p>	Yes
CFR-3L	Halliburton	Friction Reducer	0.708%	<p>CFR-3L is CFR-3 in solution</p> <p><u>Acute Toxicity:</u></p> <p>Retarder Algae Toxicity EC50 (72h): >100 mg/L (Skeletonema costatum) [Halliburton Funded Study]</p> <p>Fish Toxicity LC50 (48h): 7478 mg/L (Aphyosemion bivittatum) [SKW Trostberg]</p> <p>Crustacean Toxicity LC50 (48h): 1687 mg/L (Acartia tonsa) [Halliburton Funded Study]</p> <p><u>Chronic Toxicity:</u></p> <p>No data available to indicate product or components present at greater than 1% are chronic health hazards.</p> <p><u>Biodegradation/bioaccumulation:</u></p> <p>Slowly biodegradable</p> <p>Bioaccumulation Log Pow: < 0 [Halliburton Funded Study]; Marine Water Biodegradation 28d: 0% [Halliburton Funded Study]; CHARM Category - GOLD</p>	Yes

B. PRODUCT LIST: cont'd

Trade name	Supplier	Purpose	Product in system fluid (mass %)	Toxicity & Ecotoxicity Info	MSDS Attached
Halad-413L	Halliburton	Fluid Loss Additive	5.326%	<p><u>Acute Toxicity:</u> Oral Toxicity LD50: > 5,000 mg/kg (Rat) Dermal Toxicity LD50: > 2,000 mg/kg (Rabbit) Humic acids, sodium salts, polymers with N,N-dimethyl-2-propenamide, sodium 2-methyl-2-[(1-oxo-2-propen-1-yl)amino]-1-propanesulfonate (1:1) and 2-propenenitrile, sodium bisulfite-terminated as an ingredient (10-30%) Algae Toxicity EC50 (72h): 1,102 mg/L (Skeletonema costatum) Crustacean Toxicity LC50 (48h): >2,000 mg/L (Acartia tonsa) Fish Toxicity LC50 (96h): >1,000 mg/L (Scophthalmus maximus) (juvenile turbot) Water makes up the remainder of this product.</p> <p><u>Chronic Toxicity:</u> No data available to indicate product or components present at greater than 1% are chronic health hazards.</p> <p><u>Biodegradation/bioaccumulation:</u> Slowly biodegradable. Humic acids, sodium salts, polymers with N,N-dimethyl-2-propenamide, sodium 2-methyl-2-[(1-oxo-2-propen-1-yl)amino]-1-propanesulfonate (1:1) and 2-propenenitrile, sodium bisulfite-terminated As an ingredient (10-30%) Log Pow: <0 (OECD 117) Biodegradation (28 Days): 6.1% (OECD 306)</p>	Yes
SCR-100L	Halliburton	Cement Retarder	1.170%	<p><u>Acute Toxicity:</u> Acrylic acid polymer with Sodium AMPS, sodium salt as an ingredient (60-100%): Algae EC50(72h): >3300mg/L (Skeletonema costatum) Crustacean LC50(48h): >2000mg/L (Acartia tonsa) Fish LC50(96h): >1000mg/L (Scophthalmus maximus juvenile) 2-Bromo-2- (bromomethyl) pentanedinitrile as an ingredient(<0.1%): LD50 Rat (male) oral 0.77 g/kg. FD&C Blue 1 as an ingredient (0.1%) Rat LD50 (oral) >5000 mg/kg. Water makes up the remainder of the product at percentages less than 100%.</p> <p><u>Biodegradation/bioaccumulation:</u> Acrylic acid polymer with Sodium AMPS, sodium salt (60-100%) as an ingredient: Biodegradation (28 days): 39% (OECD306); CHARM Category: GOLD</p>	Yes
NF-6	Halliburton	Reduces air entrainment into cement slurry	0.112%	<p><u>Acute Toxicity:</u> Not determined for Fish, Crustaceans and Algae as a complete mix. Rape oil as an ingredient (60-100%) Oral Toxicity LD50: >5,000 mg/kg (Rat) Dermal Toxicity LD50: >5,000 mg/kg (Rabbit) Fish Toxicity LC50: >5,600 mg/L Algae Toxicity EC50: >3,200 mg/L Monopropylene glycol monooleate as an ingredient (5-10%) Fish Toxicity LC50: 3,200 mg/L Algae Toxicity EC50: 990 mg/L Sorbitan, monopalmitate as an ingredient (1-5%) Fish Toxicity LC50: >,1800 mg/L Algae Toxicity EC50: 41 mg/L Aluminium stearate as an ingredient (1-5%) Fish Toxicity LC50: >5,600 mg/L EC50: 6,500 mg/L Water makes up the remainder of this product.</p> <p><u>Chronic Toxicity:</u> No data available to indicate product or components present at greater than 1% are chronic health hazards.</p> <p><u>Biodegradation/bioaccumulation:</u> Readily biodegradable. Low bioaccumulation potential due to rapid degradation.</p>	Yes

B. PRODUCT LIST: cont'd					
Trade name	Supplier	Purpose	Product in system fluid (mass %)	Toxicity & Ecotoxicity Info	MSDS Attached
SILICALITE LIQUID	Halliburton	Light weight cement additive	13.920%	CONSTITUENT 1 (≤60%): <p>""SiO2" is a stable substance. In the environment it occurs in different modifications and it is one of the most abundant materials on the Earth's surface."" Biodegradability is "not applicable" for silica since it is inorganic. Additionally, "bioaccumulation is not expected." Acute Algae Toxicity 72h EC50: 440 mg/L (Selenastrum capricornutum); Acute Crustacean Toxicity 48h EC50: 7600 mg/L (Ceriodaphnia dubia); Acute Fish Toxicity 96h LC50 5000 mg/L (Brachydanio rerio); Source: IUCLID 2000</p>	Yes
				CONSTITUENT 2 (≤60%): Natural Product (water)	
				CONSTITUENT 3 (≤1%): LC50(96h): > 1000 mg/L (Brachydanio rerio)LC50(24h): >1000 mg/L (Daphn	
				OCNS Group: E	
WellLife 734	Halliburton	Cement Enhancer	0.909%	Product is an inert, man-made substance and not intrinsically hazardous. <u>Ecotoxicological Information:</u> Acute Crustacean Toxicity: TLM96: > 1,000,000 ppm (Mysidopsis bahia) <u>Biodegradation:</u> Readily Biodegradable (classified in the PLONAR list) CHARM Category: GOLD	
HR-25L	Halliburton	Cement Retarder	0.531%	<u>Acute Toxicity:</u> Algae: EC50(72h): 791.25 mg/L (Skeletonema costatum) Crustacean: LC50(48h): 3753.85 mg/L (Acartia tonsa) Fish: LC50(96h): 250 mg/L (Scophthalmus maximus juvenile) <u>Biodegradation/bioaccumulation:</u> Log Pow: 0 - 4.7 (OECD 117) Biodegradation(28 Days): 77% (OECD 306) CHARM Category: GOLD	Yes
total			100.00%		

C. CHEMICAL LIST		
Chemicals within products in Part B	CAS number	Maximum Mass fraction in System (%)
Water	NA	9.7551%
Portland cement	65997-15-1	36.1240%
Water in Product	7732-18-5	19.9540%
Crystalline silica, quartz	14808-60-7	19.4514%
Silica, amorphous	7732-18-5	7.5655%
Silica, amorphous - fumed	7631-86-9	3.3770%
Humic acids, sodium salts, polymers with N,N-dimethyl-2-propenamide, sodium 2-methyl-2-[(1-oxo-2-propen-1-yl)amino]-1-propanesulfonate (1:1) and 2-propenenitrile, sodium bisulfite-terminated	473268-27-8	1.4473%
Glass, oxide	7440-44-0	0.8233%
Acrylic acid polymer with sodium AMPS, sodium salt	37350-42-8	0.6359%
Sulfurous acid, monosodium salt, polymer with formaldehyde and acetone	40104-76-5	0.3848%
Tartaric acid	7732-18-5	0.2885%
Rape Oil	7783-20-2	0.1015%
Sodium hydroxide	1310-73-2	0.05628%
Sulfurous acid, monosodium salt, polymer with formaldehyde and acetone	40104-76-5	0.01261%
Monopropylene glycol monooleate	26266-57-9	0.01015%
Sorbitan, monopalmitate	637-12-7	0.005077%
Aluminium stearate	7732-18-5	0.005077%
FD&C Blue 1	1330-80-9	0.001060%
2-Bromo-2-(bromomethyl)pentanedinitrile	35691-65-7	0.001060%
Total		100.000%

140mm (5½") Cement Job

A. SYSTEM DETAILS:

OPERATOR:	Finder		
WELLS:	Helios		
SYSTEM:	Class G	Pilot Hole	11
TOTAL VOLUME OF SYSTEM (m ³):	45	Main bore	35

B. PRODUCT LIST:

Trade name	Supplier	Purpose	Product in system fluid (mass %)	Toxicity & Ecotoxicity Info	MSDS Attached
Fresh water	Bore water sourced onsite	Mix water	9.654%	Bore water sourced onsite - Natural Product	N/A
Cement- Class G	Halliburton	Cement	60.956%	<p>CONSTITUENT 1 (≤100%):</p> <p>After hardening with water or moister, cement presents no ecotoxicity risks. (Source: IUCLID 2000)</p> <p>Static Acute Aquatic Toxicity- Freshwater and Marine Fish:- 96 hour LC50: >1,500 mg/L</p> <p>Static Acute Aquatic Toxicity -Freshwater and Marine Invertebrates:- 48 hour LC50: >1,000 mg/L</p> <p>Static Acute Aquatic Toxicity - Freshwater and Marine Algae:- 72 hour EC50: >1,000 mg/L</p> <p>Partition Coefficient, n-Octanol/Water: Not Applicable for inorganics</p> <p>Oxygen Demand, Chemical Oxygen Demand: Not Applicable for inorganics</p> <p>Biodegradability, Seawater – Indigenous microbes: Not Applicable for inorganics</p> <p>CONSTITUENT 2 (≤10%):</p> <p>Carcinogenicity: Classified as a human carcinogen (IARC Group 1)</p>	Yes
Gascon 469	Halliburton	Cement Additive Stabiliser	6.1266%	<p>CONSTITUENT 1 (≤1%):</p> <p>The inorganic substance has a high water solubility, and is not expected to bioconcentrate in organisms; "Biodegradation is not applicable."</p> <p>Algae toxicity (i.e. mortality) has been shown at pH >8.5. Concentration-based toxicity values were not available.</p> <p>Acute Fish Toxicity 96h LC50: 45.4 mg/L (Oncorhynchus mykiss); Source: IUCLID 2000</p> <p>Included on the OSPAR List of Substances Used and Discharged Offshore which Are Considered to Pose Little or No Risk to the Environment</p> <p>CONSTITUENT 2 (≤60%):</p> <p>""SiO2" is a stable substance. In the environment it occurs in different modifications and it is one of the most abundant materials on the Earth's surface."" Biodegradability is "not applicable" for silica since it is inorganic. Additionally, "bioaccumulation is not expected."</p> <p>Acute Algae Toxicity 72h EC50: 440 mg/L (Selenastrum capricornutum);</p> <p>Acute Crustacean Toxicity 48h EC50: 7600 mg/L (Ceriodaphnia dubia);</p> <p>Acute Fish Toxicity 96h LC50 5000 mg/L (Brachydanio rerio);</p> <p>Source: IUCLID 2000</p> <p>PLONOR</p> <p>CONSTITUENT 3 (≤100%):</p> <p>Natural Product (water)</p> <p>Gascon 469:</p> <p>OCNS Group: E</p>	Yes
CFR-3L	Halliburton	Friction Reducer	0.7081%	<p>CFR-3L is CFR-3 in solution</p> <p><u>Acute Toxicity :</u></p> <p>Retarder Algae Toxicity EC50 (72h): >100 mg/L (Skeletonema costatum) [Halliburton Funded Study]</p> <p>Fish Toxicity LC50 (48h): 7478 mg/L (Aphyosemion bivittatum) [SKW Trostberg]</p> <p>Crustacean Toxicity LC50 (48h): 1687 mg/L (Acartia tonsa) [Halliburton Funded Study]</p> <p><u>Chronic Toxicity:</u></p> <p>No data available to indicate product or components present at greater than 1% are chronic health hazards.</p> <p><u>Biodegradation/bioaccumulation:</u></p> <p>Slowly biodegradable</p> <p>Bioaccumulation Log Pow: < 0 [Halliburton Funded Study];</p> <p>Marine Water Biodegradation 28d: 0% [Halliburton Funded Study];</p> <p>CHARM Category - GOLD</p>	Yes

B. PRODUCT LIST: cont'd

Trade name	Supplier	Purpose	Product in system fluid (mass %)	Toxicity & Ecotoxicity Info	MSDS Attached
Halad-413L	Halliburton	Fluid Loss Additive	5.326%	<p><u>Acute Toxicity:</u> Oral Toxicity LD50: > 5,000 mg/kg (Rat) Dermal Toxicity LD50: > 2,000 mg/kg (Rabbit) Humic acids, sodium salts, polymers with N,N-dimethyl-2-propenamide, sodium 2-methyl-2-[(1-oxo-2-propen-1-yl)amino]-1-propanesulfonate (1:1) and 2-propenenitrile, sodium bisulfite-terminated as an ingredient (10-30%) Algae Toxicity EC50 (72h): 1,102 mg/L (Skeletonema costatum) Crustacean Toxicity LC50 (48h): >2,000 mg/L (Acartia tonsa) Fish Toxicity LC50 (96h): >1,000 mg/L (Scophthalmus maximus) (juvenile turbot) Water makes up the remainder of this product.</p> <p><u>Chronic Toxicity:</u> No data available to indicate product or components present at greater than 1% are chronic health hazards.</p> <p><u>Biodegradation/bioaccumulation:</u> Slowly biodegradable. Humic acids, sodium salts, polymers with N,N-dimethyl-2-propenamide, sodium 2-methyl-2-[(1-oxo-2-propen-1-yl)amino]-1-propanesulfonate (1:1) and 2-propenenitrile, sodium bisulfite-terminated As an ingredient (10-30%) Log Pow: <0 (OECD 117) Biodegradation (28 Days): 6.1% (OECD 306)</p>	Yes
SCR-100L	Halliburton	Cement Retarder	1.170%	<p><u>Acute Toxicity:</u> Acrylic acid polymer with Sodium AMPS, sodium salt as an ingredient (60-100%): Algae EC50(72h): >3300mg/L (Skeletonema costatum) Crustacean LC50(48h): >2000mg/L (Acartia tonsa) Fish LC50(96h): >1000mg/L (Scophthalmus maximus juvenile) 2-Bromo-2- (bromomethyl) pentanedinitrile as an ingredient (<0.1%): LD50 Rat (male) oral 0.77 g/kg. FD&C Blue 1 as an ingredient (0.1%) Rat LD50 (oral) >5000 mg/kg. Water makes up the remainder of the product at percentages less than 100%.</p> <p><u>Biodegradation/bioaccumulation:</u> Acrylic acid polymer with Sodium AMPS, sodium salt (60-100%) as an ingredient: Biodegradation (28 days): 39% (OECD306); CHARM Category: GOLD</p>	Yes
NF-6	Halliburton	Reduces air entrainment into cement slurry	0.112%	<p><u>Acute Toxicity:</u> Not determined for Fish, Crustaceans and Algae as a complete mix. Rape oil as an ingredient (60-100%) Oral Toxicity LD50: >5,000 mg/kg (Rat) Dermal Toxicity LD50: >5,000 mg/kg (Rabbit) Fish Toxicity LC50: >5,600 mg/L Algae Toxicity EC50: >3,200 mg/L Monopropylene glycol monooleate as an ingredient (5-10%) Fish Toxicity LC50: 3,200 mg/L Algae Toxicity EC50: 990 mg/L Sorbitan, monopalmitate as an ingredient (1-5%) Fish Toxicity LC50: >,1800 mg/L Algae Toxicity EC50: 41 mg/L Aluminium stearate as an ingredient (1-5%) Fish Toxicity LC50: >5,600 mg/L EC50: 6,500 mg/L Water makes up the remainder of this product.</p> <p><u>Chronic Toxicity:</u> No data available to indicate product or components present at greater than 1% are chronic health hazards.</p> <p><u>Biodegradation/bioaccumulation:</u> Readily biodegradable. Low bioaccumulation potential due to rapid degradation.</p>	Yes

B. PRODUCT LIST: cont'd

Trade name	Supplier	Purpose	Product in system fluid (mass %)	Toxicity & Ecotoxicity Info	MSDS Attached
SILICALITE LIQUID	Halliburton	Light weight cement additive	11.293%	<p>CONSTITUENT 1 (≤60%):</p> <p>""SiO2" is a stable substance. In the environment it occurs in different modifications and it is one of the most abundant materials on the Earth's surface."" Biodegradability is "not applicable" for silica since it is inorganic. Additionally, "bioaccumulation is not expected."</p> <p>Acute Algae Toxicity 72h EC50: 440 mg/L (Selenastrum capricornutum); Acute Crustacean Toxicity 48h EC50: 7600 mg/L (Ceriodaphnia dubia); Acute Fish Toxicity 96h LC50 5000 mg/L (Brachydanio rerio); Source: IUCLID 2000</p> <p>CONSTITUENT 2 (≤60%):</p> <p>Natural Product (water)</p> <p>CONSTITUENT 3 (≤1%):</p> <p>LC50(96h): > 1000 mg/L (Brachydanio rerio)LC50(24h): >1000 mg/L (Daphn SILICALITE LIQUID OCNS Group: E</p>	Yes
WellLife 734	Halliburton	Cement Enhancer	0.901%	<p>Product is an inert, man-made substance and not intrinsically hazardous.</p> <p><u>Ecotoxicological Information:</u> Acute Crustaceous Toxicity: TLM96: > 1,000,000 ppm (Mysidopsis bahia)</p> <p><u>Biodegradation:</u> Readily Biodegradable (classified in the PLONOAR list) CHARM Category: GOLD</p>	Yes
HR-25L	Halliburton	Cement Retarder	0.513%	<p><u>Acute Toxicity:</u> Algae: EC50(72h): 791.25 mg/L (Skeletonema costatum) Crustacean: LC50(48h): 3753.85 mg/L (Acartia tonsa) Fish: LC50(96h): 250 mg/L (Scophthalmus maximus juvenile)</p> <p><u>Biodegradation/bioaccumulation:</u> Log Pow: 0 - 4.7 (OECD 117) Biodegradation(28 Days): 77% (OECD 306) CHARM Category: GOLD</p>	Yes

Microbond	Halliburton	Expander	3.240%	<p>CONSTITUENT 1 (≤ 100%):</p> <p>Freshwater Acute Algae Toxicity 72h EC50: > 100 mg/L (Selenastrum capricornutum) [OECD SIDS];</p> <p>Freshwater Acute Crustacean Toxicity 48h EC50: > 100 mg/L (Daphnia magna) [OECD SIDS];</p> <p>Freshwater Acute Fish Toxicity 96h EC50: > 100 mg/L (Oryzias latipes) [OECD SIDS];</p> <p>Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.</p> <p>Biodegradation: Substance is inorganic - biodegradation is not applicable.</p>	Yes
				<p>CONSTITUENT 2 (≤ 30%):</p> <p>Freshwater Acute Algae Toxicity 72h EC50: 3.6 mg/L (Desmodesmus subspicatus) [ECHA];</p> <p>Freshwater Acute Crustacean Toxicity 48h EC50: 5.4 mg/L (Daphnia magna) [ECHA];</p> <p>Freshwater Acute Fish Toxicity 96h EC50: > 100 mg/L (Danio rerio) [ECHA];</p> <p>Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.</p> <p>Biodegradation: Substance is inorganic - biodegradation is not applicable.</p>	
				<p>CONSTITUENT 3 (≤ 10%):</p> <p>Effect concentrations in the aquatic environment are attributable to a change in pH value.</p> <p>Freshwater Acute Crustacean Toxicity 48h EC50: 49.1 mg/L (Daphnia magna) [ECHA];</p> <p>Marine Water Acute Crustacean Toxicity 96h LC50: 158 mg/L (Crangon septemspinosa) [ECHA];</p> <p>Freshwater Acute Fish Toxicity 96h LC50: 50.6 mg/L (Oncorhynchus mykiss) [ECHA];</p> <p>Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.</p> <p>Biodegradation: Substance is inorganic - biodegradation is not applicable.</p>	
				<p>CONSTITUENT 4 (≤ 5%):</p> <p>Freshwater Acute Algae Toxicity 96h EC50: 650 mg/L (Navicula seminulum) [US EPA ECOTOX];</p> <p>Freshwater Acute Crustacean Toxicity 48h EC50: 1020 mg/L (Ceriodaphnia dubia) [ECHA];</p> <p>Freshwater Acute Fish Toxicity 96h LC50: 7100 mg/L (Lepomis macrochirus) [ECHA];</p> <p>Bioaccumulation: Substance is inorganic - bioaccumulation is not applicable.</p> <p>Biodegradation: Substance is inorganic - biodegradation is not applicable.</p>	
				Total	

C. CHEMICAL LIST		
Chemicals within products in Part B	CAS number	Maximum Mass fraction in System (%)
Water	NA	9.7551%
Portland cement	65997-15-1	36.1240%
Water in Product	7732-18-5	19.9540%
Crystalline silica, quartz	14808-60-7	19.3690%
Silica, amorphous	7732-18-5	7.5655%
Silica, amorphous - fumed	7631-86-9	3.3770%
Humic acids, sodium salts, polymers with N,N-dimethyl-2-propenamide, sodium 2-methyl-2-[(1-oxo-2-propen-1-yl)amino]-1-propanesulfonate (1:1) and 2-propenenitrile, sodium bisulfite-terminated	473268-27-8	1.4473%
Glass, oxide	7440-44-0	0.8233%
Acrylic acid polymer with sodium AMPS, sodium salt	37350-42-8	0.6359%
Sulfurous acid, monosodium salt, polymer with formaldehyde and acetone	40104-76-5	0.3848%
Tartaric acid	7732-18-5	0.2885%
Rape Oil	7783-20-2	0.1015%
Sodium hydroxide	1310-73-2	0.05628%
Calcium aluminate	12042-68-1	0.04106%
Calcium hydroxide	1305-62-0	0.04106%
Sulfurous acid, monosodium salt, polymer with formaldehyde and acetone	40104-76-5	0.01261%
Monopropylene glycol monooleate	26266-57-9	0.01015%
Sorbitan, monopalmitate	637-12-7	0.005077%
Aluminium stearate	7732-18-5	0.005077%
FD&C Blue 1	1330-80-9	0.001060%
2-Bromo-2-(bromomethyl)pentanedinitrile	35691-65-7	0.001060%
Total		100.00%

Tuned Spacer (12.7m3 pumped before each cement job)

A. SYSTEM DETAILS:

OPERATOR:	Finder
WELLS:	Helios
SYSTEM:	Tuned Spacer E+
TOTAL VOLUME OF SYSTEM (m ³):	51

B. PRODUCT LIST:

Trade name	Supplier	Purpose	Product in system fluid (mass %)	Toxicity & Ecotoxicity Info	MSDS Attached
Fresh water	Bore water sourced onsite	Mix water	99.23%	Bore water sourced onsite - Natural Product	N/A
Econolite Liquid	Halliburton	Cement Additive Stabiliser	0.4427%	<p>CONSTITUENT 1 (≤60%): Crustacean Toxicity 100h EC50: 247 mg/L (Daphnia magna); Acute Fish Toxicity 96h LC50: 301-478 mg/L (Lepomis macrochirus); LD50:2000-3000 mg/kg (Rat) Component is an inorganic substance with "No bioaccumulation potential"; "studies on biodegradation are not applicable." Source: IUCLID 2000 PLONOR Bioassay testing where LC50/ EC50: >100mg/L Readily biodegradable</p> <p>CONSTITUENT 2 (≤100%): Natural Product (Water)</p>	Yes
NF-6	Halliburton	Reduces air entrainment into cement slurry	0.0006973%	<p><u>Acute Toxicity:</u> Not determined for Fish, Crustaceans and Algae as a complete mix. <i>Rape oil as an ingredient (60-100%)</i> Oral Toxicity LD50: >5,000 mg/kg (Rat) Dermal Toxicity LD50: >5,000 mg/kg (Rabbit) Fish Toxicity LC50: >5,600 mg/L Algae Toxicity EC50: >3,200 mg/L <i>Monopropylene glycol monooleate as an ingredient (5-10%)</i> Fish Toxicity LC50: 3,200 mg/L Algae Toxicity EC50: 990 mg/L <i>Sorbitan, monopalmitate as an ingredient (1-5%)</i> Fish Toxicity LC50: >.1800 mg/L Algae Toxicity EC50: 41 mg/L <i>Aluminium stearate as an ingredient (1-5%)</i> Fish Toxicity LC50: >5,600 mg/L EC50: 6,500 mg/L Water makes up the remainder of this product.</p> <p><u>Chronic Toxicity:</u> No data available to indicate product or components present at greater than 1% are chronic health hazards.</p> <p><u>Biodegradation/bioaccumulation:</u> Readily biodegradable. Low bioaccumulation potential due to rapid degradation.</p>	Yes
Barite	Halliburton	Weighting Agent	0.2901%	<p>Acute Fish Toxicity 96hr LC50 76000mg/L @ 96 hr Species Oncorhynchus mykiss EPA Ref# 869 48hr LC50 >30lb/gal (>3594790mg/L) Report no BL8279 Species Pimephales promelas (fish) 48hr LC50 >30lb/bbl (>85556mg/L) Report BL8377 Species Daphnia pulex (Water Flea – crustacean) Bioassay testing where LC50/EC50: >100 mg/L Oral Toxicity: LD50: >15000 mg/kg (Rat) Barium sulphate (major ingredient of barite (60-100%) is insoluble in water and not biodegradable. Not expected to bioaccumulate. This product is not anticipated to cause adverse effects to animal or plant life if released to the environment in small quantities. OCNS Group: E</p>	Yes

B. PRODUCT LIST: cont'd

Trade name	Supplier	Purpose	Product in system fluid (mass %)	Toxicity & Ecotoxicity Info	MSDS Attached
TUNED SPACER E+	Halliburton	Mud/Cement Spacer	0.03608%	<p><u>Acute Toxicity:</u> <i>Bentonite as an ingredient (60-100%)</i> Oral Toxicity LD50: 5,000 mg/kg (Rat) Fish Toxicity (Marine) 96h LC50: 8-19 g/L (Salmo gairdneri) Fish Toxicity TLM96: 10,000 ppm (Oncorhynchus mykiss) <i>Crystalline silica, quartz as an ingredient (1-5%)</i> Oral Toxicity LD50: 500 mg/kg (Rat) Fish Toxicity LC50: >10,000 mg/l Algae Toxicity EC50: >5,000 mg/l <i>Crystalline silica, cristobalite as an ingredient (0-1%)</i> As for Crystalline silica, quartz. <i>Crystalline silica, tridymite as an ingredient (0-1%)</i> As for Crystalline silica, quartz. <i>Sodium Lignosulfonate as an ingredient (10-30%)</i> Oral Toxicity LD50 Rat: >6,000 mg/kg <i>Welan gum as an ingredient (5-10%)</i> Fish Toxicity LC50: >750 mg/l Algae Toxicity EC50: 1240 mg/l</p> <p><u>Chronic Toxicity:</u> Silicosis: Excessive inhalation of respirable crystalline silica dust may cause a progressive, disabling, and sometimes fatal lung disease called silicosis. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness, and reduced pulmonary function. Individuals with silicosis are predisposed to develop tuberculosis. Cancer Status: The International Agency for Research on Cancer (IARC) has determined that crystalline silica inhaled in the form of quartz or cristobalite from occupational sources can cause lung cancer in humans (Group 1- carcinogenic to humans) and has determined that there is sufficient evidence in experimental animals for the carcinogenicity of tridymite (Group 2A-possible carcinogen to humans).</p> <p><u>Biodegradation/bioaccumulation:</u> Silica is a naturally occurring, insoluble component of soil. Biodegradation is "not applicable" for crystalline silica since it is inorganic. Concentration-based toxicity values were not available.</p>	Yes
total			100.00%		

C. CHEMICAL LIST

Chemicals within products in Part B	CAS number	Maximum Mass fraction in System (%)
Water	NA	99.23%
Water in Product	7732-18-5	0.3240%
Barite	13462-86-7	0.2123%
Sodium silicate	1344-09-8	0.1944%
Bentonite	1302-78-9	0.02640%
Sodium Lignosulfonate	8061-51-6	0.007921%
Welan gum	72121-88-1	0.002640%
Crystalline silica, quartz	14808-60-7	0.0007921%
Rape Oil	8002-13-9	0.0005103%
Crystalline silica, tridymite	15468-32-3	0.0002640%
Crystalline silica, cristobalite	14464-46-1	0.0002640%
Monopropylene glycol monooleate	1330-80-9	0.00005103%
Sorbitan, monopalmitate	26266-57-9	0.00002551%
Aluminium stearate	637-12-7	0.00002551%
	Total	100.00%

A. SYSTEM DETAILS:

Operator:	Finder Shale
Project/ Well:	Helios-1
System:	Diagnostic Injection Test Fluid
Total Volume of System:	242m3

B. PRODUCT LIST

Product Name	Supplier	Purpose	Product in system fluid (%)	Eco Toxicity Data	Source	MSDS Attached
Water	On site Bore	Base Fluid/water	98.75901%	Natural Product, Non-hazardous	NA	N/A
CF100FSE	Condor	Surfactant	0.04270%	<p>Species: <i>Vibrio fischeri</i>; Exposure: 0.25 h; Test Type: EC50; Value: 6.16 mg/l; Test Descriptor: Product MOBILITY :</p> <p>The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.</p> <p>If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages; Air: <5%; Water: 10 - 30%; Soil/Sediment: 50 - 70%</p> <p>The portion in water is expected to be soluble or dispersible.</p> <p>BIOACCUMULATION POTENTIAL Component substances have a low potential to bioconcentrate.</p> <p>ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION Based on our hazard characterization, the potential environmental hazard is: Moderate Based on our recommended product application and the product's characteristics, the potential environmental exposure is: Low</p>	SDS/EPISuite (Biodegradation)	Yes
CF110GS	Condor	Gel Stabiliser	0.08202%	<p>Sodium Thiosulphate Acute Toxicity: <i>Gambusia affinis</i> (Fish): LC 50 (96h) 26,400 mg/L Chronic Toxicity: No known carcinogenic properties or chronic impacts Biodegradation/bioaccumulation: Inorganic Compound</p> <p>Acute Toxicity: Sodium Sulphate <i>Gambusia affinis</i> (Fish): LC 50 (96h) 120 mg/L D. Magna (Invertebrate): EC50(96h) 630 mg/L <i>Nitzschia linearis</i> (Algae): EC50 (5d) 1900 mg/L Chronic Toxicity: No known carcinogenic properties or chronic impacts Biodegradation/bioaccumulation: Inorganic Compound</p> <p>Sodium Sulphite Acute Toxicity: <i>Leuciscus idus</i> (Fish): LC50 (96h) 220-460 mg/L D. Magna (Invertebrate): TLM(100h): 203 mg/L <i>Chlamydomonas reinhardtii</i> (Algae): EC50 16-32 mg/L Chronic Toxicity: No known carcinogenic properties or chronic impacts Biodegradation/bioaccumulation: Inorganic Compound</p>	IUCLID	Yes
CF110HT	Condor	Clay Control	0.08573%	<p>Choline chloride Acute Toxicity: <i>Leuciscus idus</i> (fish): LC 50 (96h) >10,000 mg/L D. Magna Straus (Invertebrate): EC50(48h) >500 mg/L <i>Scenedesmus subspicatus</i> (Algae): EC50 (72h) >500 mg/L Acute Oral Toxicity LD50 (rat): 3400 mg/kg Chronic Toxicity: No known carcinogenic properties or chronic impacts Biodegradation/bioaccumulation: Log Pow -3.77 @ 25C Biodegradation: 93.5% (14d)</p> <p>Ethylene Glycol Acute Toxicity: <i>Oncorhynchus mykiss</i> (fish): LC50 (96h) 40,761 mg/L <i>Daphnia Magna</i> (Invertebrate): EC50 (24h) >10,000 mg/L <i>Selenastrum capricornutum</i> (Algae): EC50 (7d)24,000 mg/L Acute Oral Toxicity LD50 (rat): 4000 mg/kg Acute inhalation toxicity (rat): LC50 (4h) 2.725 mg/l; Acute dermal toxicity (rabbit): LD50 10,600mg/kg Chronic Toxicity: No known carcinogenic properties or chronic impacts Biodegradation/bioaccumulation: Log Pow -1.34 @ 25C</p>	IUCLID	Yes
CF120HT	Condor	Biocide	0.02572%	<p>The following results are for the active components. Acute Fish Results :Species Exposure, Test Type, Value, Test DescriptorRainbow Trout, 96 hrs, LC50, 42.1 mg/l, 25% Active Ingredient (Glutaraldehyde)Bluegill Sunfish, 96 hrs, LC50, 37.6 mg/l, 25% Active Ingredient (Glutaraldehyde)Acute Toxicity (rat) oral(OECD 401) LD50 316 mg/kg (m) ' LD50 285 mg/kg (f)LD50: 1.87 mg/kg Test Descriptor: 25% Active Ingredient GlutaraldehydeACUTE INVERTEBRATE RESULTS :Species Exposure, Test Type, Value, Test DescriptorDaphnia magna, 48 hrs, LC50, 16.9 mg/l, 25% Active Ingredient (Glutaraldehyde)AQUATIC MICROORGANISM RESULTS Species Exposure, Test Type, Value, Test DescriptorSewage Microorganisms, 96 hrs, LC50, 17 mg/l, 25% Active Ingredient (Glutaraldehyde)Sewage Microorganisms, 96 hrs, NOEC, 5 mg/l, 25% Active Ingredient (Glutaraldehyde)AVIAN RESULTS :Species Exposure, Test Type, Value, Test DescriptorMallard Duck, LD50, 1,631 mg/kg, 25% Active IngredientMallard Duck, LD50, 933 mg/kg, 50% Active Ingredient</p> <p>TOXICITY DATA: Acute Oral Toxicity: LD50: 1.87 mg/kg (Rat) Acute Dermal Toxicity: LD: 8.0-12.8 mg/kg (Rabbit) Acute Inhalation Toxicity: LD: 20.4 mg/kg (Rat)</p> <p>MOBILITY AND BIOACCUMULATION POTENTIAL : The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;Air, Water, Soil/Sediment - <5%, 30-50%, 50-70%The portion in water is expected to be soluble or dispersible. This preparation or material is not expected to bioaccumulate.</p> <p>PERSISTENCY AND DEGRADATION : The organic portion of this preparation is expected to be readily biodegradable.</p>	SDS, OECD	Yes

Product Name	Supplier	Purpose	Product in system fluid (%)	Eco Toxicity Data	Source	MSDS Attached
				ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION: Based on our hazard characterization, the potential environmental hazard is: High		
CF200	Condor	Friction Reducer	0.01413%	<p>Acute Toxicity: Skeletonema costatum (Algae): LC50 (72h) 165.54 mg/L Chronic Toxicity: Skeletonema costatum (Algae): NOEC (72h) 10mg/L No known carcinogenic properties or chronic impacts Biodegradation/bioaccumulation: The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models. If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages; Air <5%; Water 10 - 30%; Soil/Sediment 70 - 90% The portion in water is expected to be soluble or dispersible. This preparation or material is not expected to bioaccumulate. PERSISTENCY AND DEGRADATION : The organic portion of this preparation is expected to be inherently biodegradable. ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION Based on our hazard characterization, the potential environmental hazard is: Moderate</p>	SDS	Yes
CF200PH	Condor	Buffer	0.05468%	<p>Potassium Carbonate Acute Toxicity: Pimephales promelas (Fish): LC50 (48h) 820 mg/L; D. Magna (Invertebrate): LC50 (48h) 650 mg/L; Acute Oral Toxicity LD50 (rat): >2000 mg/kg Chronic Toxicity: No known carcinogenic properties or chronic impacts Biodegradation/bioaccumulation: Log Pow -6.19 (Calculated) Component is predicted to have a low potential to bioaccumulate</p> <p>Potassium Hydroxide Acute Toxicity: Gambusia affinis (Fish): LC 50 (96h) 80 mg/L Acute Oral Toxicity LD50 (rat): 270 mg/kg Chronic Toxicity: No known carcinogenic properties or chronic impacts Biodegradation/bioaccumulation: Inorganic Compound The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models. If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages; The portion in water is expected to be soluble or dispersible Air Water Soil/Sediment <5% 30 - 50% 50 - 70% The portion in water is expected to be soluble or dispersible.</p>	IUCLID/ECOTOX / EPISuite (Bioaccumulation)	Yes
CF305DX L	Condor	Cross Linker	0.05126%	<p>Choline Chloride Acute Toxicity: Leuciscus idus (Fish): LC50 (96h) >10,000 mg/L D. Magna Straus (Invertebrate): EC50 (48h) >500 mg/L Scenedesmus subspicatus (Algae): EC50 (72h) >500 mg/L Acute Oral Toxicity LD50 (rat): 3,400 mg/kg Chronic Toxicity: No known carcinogenic properties or chronic impacts Biodegradation/bioaccumulation: Log Pow -3.77 @ 25C Biodegradation (14d) 93.5%</p> <p>Alkyl Alcohol Acute Toxicity: Carassius auratus (Fish): LC50 (24h) >5000 mg/L D. Magna (Invertebrate): EC50 (24h) >10,000 mg/L Acute Oral Toxicity LD50 (rat): >10,000 mg/kg Chronic Toxicity: No known carcinogenic properties or chronic impacts Biodegradation/bioaccumulation: Log Pow -1.76</p> <p>Sodium Thiosulphate Acute Toxicity: Gambusia affinis (fish): LC50 (96h) 26,400 mg/L Chronic Toxicity: No known carcinogenic properties or chronic impacts Biodegradation/bioaccumulation: Inorganic Compound</p> <p>L-Ascorbic Acid (analogue for Sodium Ascorbate) Acute Toxicity: Oncorhynchus mykiss (Fish): LC50 (96h) >1000 mg/L Acute Oral Toxicity LD50 (rat): >5,000 mg/kg Chronic Toxicity: No known carcinogenic properties or chronic impacts Biodegradation/bioaccumulation: Biodegradation (5d) 97% The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models. If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages; Air Water Soil/Sediment - <5% 10 - 30% 30 - 50% The portion in water is expected to be soluble or dispersible. BIOACCUMULATION POTENTIAL: This preparation or material is not expected to bioaccumulate. ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION Based on our hazard characterization, the potential environmental hazard is: Low Based on our recommended product application and the product's characteristics, the potential environmental exposure is: High</p>	IUCLID EPISuite (Envir. Fate)	Yes
CF110SC	Condor	Scale Inhibitor	0.04287%	<p>Partially neutralized polycarboxylic acid polymer Acute Toxicity: Scop (Fish): LC50 (96h) >1000 mg/L; Acar (Invertebrate): LC50 (48h)100-1000 mg/L; Skel (Algae): EC50 (72h)100-1000 mg/L Chronic Toxicity: No known carcinogenic properties or chronic impacts Biodegradation/bioaccumulation: Biodegradation: 41% (28d)</p>		Yes

Product Name	Supplier	Purpose	Product in system fluid (%)	Eco Toxicity Data	Source	MSDS Attached
CF10GGC	Condor	Gelling Agent	0.42963%	<p>Biodegradation/bioaccumulation: The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models. If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages; Air 10 - 30% - Water 50 - 70% -- Soil 10</p> <p>Hydrotreated Light Distillate Acute Toxicity Pimephales promelas (Fish): LC50 (96h) 45 mg/L; Diatomus forbesi (Invertebrate): LC50 (96h) 140 mg/L; Selenastrum capricornutum (Algae): IC50 (96h) 4.2 mg/L (WSF; dissolved hydrocarbons); Acute Oral Toxicity LD50 (rat): LD50 (rat) >5000 mg/kg Chronic Toxicity: No known carcinogenic properties Jordanella floridae (Fish): NOEC (128d, length) 1 mg/L (WSF) Biodegradation/bioaccumulation: BCF values of <0.2 to <1.4 (carp at 2.0 and 0.2 mg/L concentrations); Low potential to bioconcentrate in aquatic organisms</p> <p>1,6-Hexanediol Acute Toxicity Leuciscus idus (Fish): LC50 (96h) 460-1000 mg/L; D. magna straus (Invertebrate): EC50 (48h) >500 mg/L; Scenedesmus subspicatus (Algae): EC50 (72h, biomass) 2200 mg/L; Acute Oral Toxicity LD50 (rat): LD50 (rat) 3000 mg/kg Chronic Toxicity: No known carcinogenic properties; Leuciscus idus (Fish): NOEC (96h) 460 mg/L; Biodegradation/bioaccumulation: Log Pow 0 @ 25C/ 75% (28d) readily biodegradable</p> <p>Quaternary ammonium compounds, bis(hydrogenated tallow alkyl)dimethyl, salts with bentonite Acute Toxicity D. Magna (Invertebrate): EC50 (48h) >100 mg/L (2M(2Alk) bentonite); Skeletonema costatum (Algae): Er50 (72h, growth) >1,000 mg/L; (2M(2Alk) bentonite); Corophium volutator (sediment reworker) >10,000 mg/kg; (2M(2Alk) bentonite) Chronic Toxicity: minimal to moderate eye irritation, respiratory irritation; observed in acute studies using high exposure levels, potential; carcinogenicity from crystalline silica, which is an impurity in amounts up to 10 percent for some of the substances Biodegradation/bioaccumulation: Inorganic polymers with no water solubility</p>	IUCLID OECD (organoclays (2M(2Alk) bentonite)) ECOTOX (aquatic toxicity); OECD(biodegradation)	Yes
CF600CI	Condor	Acid Corrosion Inhibitor	0.00781%	<p>Formic Acid Acute Toxicity: Leuciscus idus (Fish): LC50 (48h) 122 mg/L - D. Magna (Invertebrate): EC50 (48h) 120 mg/L - Scenedesmus quadricauda (Algae): EC50 (72h) 26.9 mg/L Acute Oral Toxicity LD50 (rat): 730 mg/kg Chronic Toxicity: No known carcinogenic properties or chronic impacts Biodegradation/bioaccumulation: Log Pow -0.54 Biodegradation: 100% (11d) readily biodegradable</p> <p>Cinnamaldehyde Acute Toxicity: Scop (Fish): LC50 (96h) 1-10 mg/L; Acar (Invertebrate): LC50 (48h) 1-10 mg/L; Skel (Algae): EC50 (72h) 1-10 mg/L Chronic Toxicity: No known carcinogenic properties or chronic impacts Biodegradation/bioaccumulation: Log Pow 2.22 @18C Biodegradation: 91% (14d) activated sludge for cinnamyl alcohol (cinnamylaldehyde is metabolite of cinnamyl alcohol so would also be readily biodegradable)</p> <p>Tar bases, quinoline derivs, benzyl chloridequaternized Acute Toxicity: Scop (Fish): LC50 (96h) 10-100 mg/L; Acar (Invertebrate): LC50 (48h) 1-10 mg/L; Skel (Algae): EC50 (72h) 1-10 mg/L Chronic Toxicity: No known carcinogenic properties or chronic impacts Biodegradation/bioaccumulation: Log Pow >3 Biodegradation: 41% (28d)</p> <p>Isopropanol Acute Toxicity: Pimephales promelas(Fish): LC50 (96h) 9640 mg/L; Daphnia Magna (Invertebrate): EC50 (48h) 13299 mg/L Acute inhalation toxicity LC50 (Rat): 30mg/l (4hrs); Accute Dermal toxicity LD50 (Rabbit):12,870 mg/kg Scenedesmus subspicatus(Algae): EC50 (96h) >1,000 mg/L; Acute Oral Toxicity LD50 (rat): 4396 mg/kg Chronic Toxicity: No known carcinogenic properties or chronic impacts Biodegradation/bioaccumulation: Log Pow 0.05 @ 25C; Biodegradation: 95% (21d) readily biodegradable</p> <p>N-Benzyl-Alkylpyridinium Chloride Acute Toxicity: Acar (Invertebrate): LC50 (48h) 10-100 mg/L (WAF); Skel (Algae): EC50 (72h) 1-10 mg/L (WAF) Chronic Toxicity: No known carcinogenic properties or chronic impacts Biodegradation/bioaccumulation: Log Pow 2.9-4.8 (avg 4.0); Biodegradation: 34% (28d)</p> <p>2-Mercaptoethyl Alcohol Acute Toxicity: Lebistes reticulatus (Fish): LC50 (24h) 187 mg/L; D. Magna (Invertebrate): EC50 (48h) 1.52 mg/L; Scenedesmus subspicatus(Algae): EC50 (72h) 12 mg/L Acute Oral Toxicity LD50 (rat): 131 mg/kg; Accute dermal toxicity LD50 (rabbit): 168mg/kg Chronic Toxicity: No known carcinogenic properties or chronic impacts Leuciscus idus (Fish): NOEC(96h) 46 mg/L Biodegradation/bioaccumulation: Log Pow -0.056 @25C</p> <p>Polyoxyethylenepolyoxypropylene Block Copolymer Acute Toxicity: Skel (Algae): EC50 (72h) 100-1000 mg/L Chronic Toxicity: No known carcinogenic properties or chronic impacts Biodegradation/bioaccumulation: Log Pow <0 – 5.1 average 4.0 MW 3000 Biodegradation: 10% (28d)</p> <p>Methanol Acute Toxicity: Lepomis macrochirus (Fish): LC50 (96h) 15400 mg/L; D. Magna (Invertebrate): EC50 (48h) 10000 mg/L; Acute Oral Toxicity LD50 (rat): 5628 mg/kg Chronic Toxicity: No known carcinogenic properties or chronic impacts Biodegradation/bioaccumulation: Log Kow -0.63 The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models. If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages; Air 5-15% ; Water 30-60%; Soil/Sediment 50-70% The portion in water is expected to be soluble or dispersible. This preparation or material is not expected to bioaccumulate.</p> <p>Castor Oil, Ethoxylated Acute Toxicity: Acar (Invertebrate): LC50 (48h) 10-100 mg/L; Skel (Algae): EC50 (72h) 1-10 mg/L Chronic Toxicity: No known carcinogenic properties or chronic impacts Biodegradation/bioaccumulation: Biodegradation: 47% (28d)</p> <p>Diethylene Glycol Acute Toxicity: Gambusia affinis (Fish): LC50 (96h) >32000 mg/L; D. Magna (Invertebrate): EC50 (48h)</p>	IUCLID; EPISuite (Model, Biodegradation)	Yes

Product Name	Supplier	Purpose	Product in system fluid (%)	Eco Toxicity Data	Source	MSDS Attached
				>10000 mg/L; Acute Oral Toxicity LD50 (rat): 12565 mg/kg Chronic Toxicity: No known carcinogenic properties or chronic impacts Scenedesmus quadricauda (Algae): NOEC(7d) 100 mg/L Biodegradation/bioaccumulation: Log Pow-1.98 @25C Biodegradation: >90% after 28d		
CA370FE	Condor	Iron Reducing Agent	0.02265%	Sodium erythorbate Acute Toxicity: Fish: LC50 (48h) 5.25 mg/L; Invertebrate: EC50 (24h) 1.3 mg/L; Algae: EC50 (72h) 86.2 mg/L Chronic Toxicity: No known carcinogenic properties or chronic impacts Biodegradation/bioaccumulation: Log Kow -1.88 The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite™, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models. If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages; Air <1% Water 30-60% Soil/Sediment 60-90% The portion in water is expected to be soluble or dispersible. This preparation or material is not expected to bioaccumulate.	EPA EPI Suite/EC OSAR (Modeled, All)	Yes
CAI200	Condor	Acid Intensifier	0.01562%	Formic Acid Acute Toxicity: Leuciscus idus (Fish): LC50 (48h) 122 mg/L; D. Magna (Invertebrate): EC50 (48h) 120 mg/L; Scenedesmus quadricauda (Algae): EC50 (72h) 26.9 mg/L Acute Oral Toxicity LD50 (rat): 730 mg/kg Chronic Toxicity: No known carcinogenic properties or chronic impacts Biodegradation/bioaccumulation: Log Pow -0.54 Biodegradation: 100% (11d) readily biodegradable	IUCLID	Yes
Acid Raw 32%	Condor	Acid	0.36617%	TOXICITY DATA LC50 (inhalation): 1108ppm/1hour (human – respiratory irritation) LCLo (inhalation): 1300ppm/30minutes (human) LD50 (ingestion): 900mg/kg (rabbit) LDLo (ingestion): 81mg/kg (man) TCLo (inhalation): 450mg/m3/1 hour (pregnant rat – teratogenic effects) Environment If hydrochloric acid is spilled on soil, it will infiltrate. During its transport through soil, the acid will dissolve some of the soil material, in particular carbonates, and will be neutralised to some degree. However, significant amounts of acid are expected to remain for transport down to groundwater. Toxic to aquatic invertebrates at low levels (LC50: 1.21 ppm/96 hours).	SDS	Yes
			100.0000%	TOTAL		

C. CHEMICAL LIST

Compound	CAS Number	% Mass
Water supplied from bore on site	NO CAS	98.759010%
Isopropanol	67-63-0	0.013400%
Alcohols, C9-11, ethoxylated	68439-46-3	0.004300%
Water	7732-18-5	0.236600%
Potassium Chloride	7447-40-7	0.002100%
Ethoxylated C11 Alcohol	34398-01-1	0.012800%
sodium thiosulphate	7772-98-7	0.027200%
sodium sulphate	7757-82-6	0.004100%
sodium sulphite	7757-83-7	0.004100%
Ethylene Glycol	107-21-1	0.000900%
Choline Chloride	67-48-1	0.074500%
Glutaraldehyde	111-30-8	0.007700%
Ammonium Sulphate	7783-20-2	0.004200%
Polyacrylamide	25085-02-3	0.004200%
Sodium polyacrylate	9003-04-7	0.000700%
Sodium bisulfite	7631-90-5	0.000100%
Alkyl Alcohol	56-81-5	0.005300%
2-Propenoic acid, homopolymer, ammonium salt	9003-03-6	0.000100%
Ammonium Persulphate	7727-54-0	0.003000%
Potassium persulfate	7727-21-1	0.000100%
2-Ethoxy-naphthalene	93-18-5	0.000100%
Potassium Hydroxide	1310-58-3	0.016400%
Potassium Carbonate	584-08-7	0.016400%
Ulexite	1319-33-1	0.020500%
L-Ascorbic acid, monosodium salt	134-03-2	0.002600%
Sodium Benzoate	532-32-1	0.000300%
Quartz	14808-60-7	0.000400%
Partially neutralized polycarboxylic acid polymer	68715-83-3	0.021400%
DISTILLATES, HYDROTREATED LIGHT	64742-47-8	0.171900%
Guar Gum	9000-30-0	0.145600%
Polyoxyethylene nonylphenol ether	9016-45-9	0.043000%
Quaternary ammonium compounds, bis(hydrogenated tallow alkyl)dimethyl, salts with bentonite	68953-58-2	0.043000%
1,6-Hexanediol	629-11-8	0.004300%
HydroChloric Acid	7647-01-0	0.304690%
Formic Acid	64-18-6	0.018700%
Cinnamaldehyde	104-55-2	0.000500%
Tar Bases, Quinoline Derivatives, Benzyl Chloride-Quat	72480-70-7	0.000500%
Castor Oil	61791-12-6	0.000500%
Pine Oil	8002-09-3	0.000500%
N-Benzyl-Alkylpyridinium Chloride	68909-18-2	0.000400%
2-Mercaptoethyl Alcohol	60-24-2	0.000400%
Polyoxyethylene-polyoxypropylene Block Copolymer	9003-11-6	0.000400%
Diethylene Glycol	111-46-6	0.000100%
Methanol	67-56-1	0.000300%
Sodium erythorbate	6381-77-7	0.022700%
TOTAL		100.00%

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name BARITE POWDER
Synonym(s) BARITE (API 13A SECTION 7) • NEWBAR • RHEOBAR

1.2 Uses and uses advised against

Use(s) DRILLING FLUID ADDITIVE • WEIGHTING AGENT

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

GHS classification(s) Specific Target Organ Systemic Toxicity (Repeated Exposure): Category 2

2.2 Label elements

Signal word WARNING

Pictogram(s)



Hazard statement(s)

H373 May cause damage to organs through prolonged or repeated exposure.

Prevention statement(s)

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

Response statement(s)

P314 Get medical advice/attention if you feel unwell.

Storage statement(s)

None allocated.

Disposal statement(s)

P501 Dispose of contents/container in accordance with relevant regulations.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
QUARTZ (CRYSTALLINE SILICA)	14808-60-7	238-878-4	<3%
BARIUM SULPHATE	7727-43-7	231-784-4	>89%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye	If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.
Inhalation	If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.
Skin	If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.
Ingestion	For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once).
First aid facilities	Eye wash facilities should be available.

4.2 Most important symptoms and effects, both acute and delayed

Chronic exposure to crystalline silica may result in lung fibrosis (silicosis). Principal symptoms of silicosis are coughing and breathlessness. Crystalline silica is classified as carcinogenic to humans (IARC Group 1).

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve toxic gases (sulphur oxides) when heated to decomposition.

5.3 Advice for firefighters

Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then cover / absorb spill with non-combustible absorbent material (vermiculite, sand, or similar), collect and place in suitable containers for disposal.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

PRODUCT NAME BARITE POWDER

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
Barium sulphate	SWA (AUS)	--	10	--	--
Quartz (respirable dust)	SWA (AUS)	--	0.1	--	--

Biological limits No Biological Limit Value allocated.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended.

PPE

- Eye / Face** Wear dust-proof goggles.
Hands Wear PVC or rubber gloves.
Body When using large quantities or where heavy contamination is likely, wear coveralls.
Respiratory Where an inhalation risk exists, wear a Class P1 (Particulate) respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	OFF-WHITE POWDER
Odour	ODOURLESS
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	NOT RELEVANT
Melting point	> 1300°C
Evaporation rate	NOT RELEVANT
pH	8.2 (20% Slurry)
Vapour density	NOT RELEVANT
Specific gravity	4.20
Solubility (water)	INSOLUBLE
Vapour pressure	NOT RELEVANT
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT RELEVANT
Autoignition temperature	NOT RELEVANT
Decomposition temperature	NOT RELEVANT
Viscosity	NOT RELEVANT
Explosive properties	NOT EXPLOSIVE
Oxidising properties	NON OXIDISING

PRODUCT NAME BARITE POWDER

9.1 Information on basic physical and chemical properties

Odour threshold NOT RELEVANT

9.2 Other information

Bulk density ~1.5 kg/L

10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization is not expected to occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites).

10.6 Hazardous decomposition products

May evolve toxic gases (sulphur oxides) when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity	Information available for the product: Toxicity Data available on the ingredients: QUARTZ (SILICA CRYSTALLINE) (14808-60-7): LCLo (inhalation) = 300 ug/m ³ /10 years (human) TCLo (inhalation) = 16 000 000 particles/ft ³ /8 hours/17.9 years (human-fibrosis)
Skin	Not classified as a skin irritant. Contact may result in mild irritation and dermatitis.
Eye	Not classified as an eye irritant. Contact may cause discomfort, lacrimation and redness.
Sensitization	The available data is not considered sufficient for classification as a skin or respiratory sensitiser.
Mutagenicity	Insufficient data available to classify as a mutagen.
Carcinogenicity	This product contains crystalline silica which is classified as carcinogenic to humans (IARC Group 1). However there is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis. Therefore preventing the onset of silicosis will also reduce the cancer risk.
Reproductive	Insufficient data available to classify as a reproductive toxin.
STOT – single exposure	Not classified as causing organ effects from single exposure.
STOT – repeated exposure	Repeated exposure to respirable silica may result in pulmonary fibrosis (silicosis). Silicosis is a fibronodular lung disease caused deposition in the lungs of fine respirable particles of crystalline silica. Principal symptoms of silicosis are coughing and breathlessness.
Aspiration	This product is not expected to present an aspiration hazard.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Fish Toxicity:
LC50 (Rainbow trout) > 7500 ppm/96hrs.
LC50 (Fresh Water Trout) > 21,000 ppm/96hrs.
LC50 (Salt Water Stickel Back) > 56,000 ppm/96hrs.

12.2 Persistence and degradability

Barium sulphate (major ingredient of barite (60-100%)) is insoluble in water and not biodegradable.

12.3 Bioaccumulative potential

Not expected to bioaccumulate.

PRODUCT NAME BARITE POWDER**12.4 Mobility in soil**

No information provided.

12.5 Other adverse effects

This product is not anticipated to cause adverse effects to animal or plant life if released to the environment in small quantities.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods**Waste disposal** Dispose of to an approved landfill or waste processing site. Contact the manufacturer/supplier for additional information (if required).**Legislation** Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport hazard class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided**14.6 Special precautions for user****Hazchem code** None Allocated

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**Poison schedule** A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).**Classifications** Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes Xn Harmful**Risk phrases** R48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation.**Safety phrases** S22 Do not breathe dust.
S45 In case of accident or if you feel unwell seek medical advice immediately (show the label where possible).**Inventory listing(s)** **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

PRODUCT NAME BARITE POWDER**PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:**

The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:

It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m ³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

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[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name BENTONITE POWDER
Synonym(s) HISWELL • NATURALGEL • NEWGEL • RHEOBEN • RHEOBEN NT • SODIUM BENTONITE • SODIUM MONTMORILLONITE

1.2 Uses and uses advised against

Use(s) DRILLING FLUID

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

GHS classification(s) Specific Target Organ Systemic Toxicity (Repeated Exposure): Category 2

2.2 Label elements

Signal word WARNING

Pictogram(s)



Hazard statement(s)

H373 May cause damage to organs through prolonged or repeated exposure.

Prevention statement(s)

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

Response statement(s)

P314 Get medical advice/attention if you feel unwell.

Storage statement(s)

None allocated.

Disposal statement(s)

P501 Dispose of contents/container in accordance with relevant regulations.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
QUARTZ (CRYSTALLINE SILICA)	14808-60-7	238-878-4	2 to 10%
BENTONITE	1302-78-9	215-108-5	90 to 98%
SODA ASH	-	-	2 to 4%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye	If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.
Inhalation	If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.
Skin	If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water.
Ingestion	For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). Due to product form and application, ingestion is considered unlikely.
First aid facilities	Eye wash facilities and safety shower should be available.

4.2 Most important symptoms and effects, both acute and delayed

Chronic exposure to crystalline silica may result in lung fibrosis (silicosis). Principal symptoms of silicosis are coughing and breathlessness. Crystalline silica is classified as carcinogenic to humans (IARC Group 1).

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve toxic gases if strongly heated.

5.3 Advice for firefighters

Treat as per requirements for surrounding fires. Evacuate area and contact emergency services. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Moisten with water to prevent a dust hazard and place in sealable containers for disposal.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

PRODUCT NAME BENTONITE POWDER

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances and foodstuffs. Ensure packaging are adequately labelled, protected from physical damage and sealed when not in use. Check regularly for leaks or spills.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
Quartz (respirable dust)	SWA (AUS)	--	0.1	--	--

Biological limits No Biological Limit Value allocated.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended.

PPE

- Eye / Face** Wear dust-proof goggles.
Hands Wear PVC or rubber gloves.
Body When using large quantities or where heavy contamination is likely, wear coveralls.
Respiratory Wear a Class P1 (Particulate) respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	BROWN POWDER
Odour	SLIGHT ODOUR
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	NOT AVAILABLE
Melting point	1100°C to 1200°C (Fusion Point)
Evaporation rate	NOT AVAILABLE
pH	NOT AVAILABLE
Vapour density	NOT AVAILABLE
Specific gravity	2.7
Solubility (water)	INSOLUBLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT EXPLOSIVE
Oxidising properties	NON OXIDISING
Odour threshold	NOT AVAILABLE

PRODUCT NAME BENTONITE POWDER

9.2 Other information

Bulk density ~ 0.9 kg/L

10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization is not expected to occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with acids (e.g. nitric acid) and alkalis (e.g. sodium hydroxide).

10.6 Hazardous decomposition products

May evolve toxic gases if heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

Information available for the product:

Toxicity Data available for the ingredients:

QUARTZ (SILICA CRYSTALLINE) (14808-60-7):

LCLo (inhalation) = 300 ug/m³/10 years (human)

TCLo (inhalation) = 16 000 000 particles/ft³/8 hours/17.9 years (human-fibrosis)

BENTONITE (1302-78-9):

LD50 (intravenous) = 35 mg/kg (rat)

LD50 (oral): > 2000mg/kg (rat)

LDLo (intravenous) = 10 mg/kg (dog)

Inhalation LC 50: > 5.27 mg/L, 4hr (rat)

Additional ingredient toxicity value(s):

BENTONITE (1302-78-9)

LD50 (intravenous) 35 mg/kg (rat)

LDLo (intravenous) 10 mg/kg (dog)

Skin

Not classified as a skin irritant. Contact may result in mild irritation and dermatitis.

Eye

Not classified as an eye irritant. Contact may cause discomfort, lacrimation and redness.

Sensitization

Not classified as causing skin or respiratory sensitisation.

Mutagenicity

Insufficient data available to classify as a mutagen.

Carcinogenicity

This product contains crystalline silica which is classified as carcinogenic to humans (IARC Group 1). However, there is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis. Therefore, preventing the onset of silicosis will also reduce the cancer risk.

Reproductive

Insufficient data available to classify as a reproductive toxin.

STOT – single exposure

Not classified as causing organ damage from single exposure.

STOT – repeated exposure

Repeated exposure to respirable silica may result in pulmonary fibrosis (silicosis). Silicosis is a fibronodular lung disease caused deposition in the lungs of fine respirable particles of crystalline silica. Principal symptoms of silicosis are coughing and breathlessness.

Aspiration

Not expected to present an aspiration hazard.

12. ECOLOGICAL INFORMATION

PRODUCT NAME BENTONITE POWDER

12.1 Toxicity

Bentonite (1302-78-9):

EC50 Daphnia > 100 mg/l, 48 hours

EC50 Freshwater algae > 100 mg/l, 72 hours

LC50 Freshwater fish = 16000 mg/l, 96 hours

LC50 Marine water fish = 2800 - 3200 mg/l, 24 hours

EC50 Coon stripe shrimp (Pandalus danae) = 24.8 mg/l, 96 hours

EC50 Dungeness or edible crab (Cancer magister) = 81.6 mg/l, 96 hours

LC50 Rainbow trout, donaldson trout (Oncorhynchus mykiss) = 19000 mg/l, 96 hours

12.2 Persistence and degradability

Not relevant for inorganic substances.

12.3 Bioaccumulative potential

Will not bioaccumulate.

12.4 Mobility in soil

Low water solubility, expected to sink and migrate into the sediment. Expected to partition to sediment and wastewater solids.

12.5 Other adverse effects

The main component/s of this product are not anticipated to cause any adverse effects to plants or animals.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal Reuse where possible. No special precautions are normally required when handling this product.

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport hazard class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

Hazchem code None Allocated

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes Xn Harmful

Risk phrases R48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation.

Safety phrases S22 Do not breathe dust.

PRODUCT NAME BENTONITE POWDER

Inventory listing(s) AUSTRALIA: AICS (Australian Inventory of Chemical Substances)
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m ³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report status This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

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[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name POTASSIUM CHLORIDE
Synonym(s) KCL • MURIATE OF POTASH • POTASH • SYLVITE

1.2 Uses and uses advised against

Use(s) DRILLING FLUID ADDITIVE • FERTILISER • INHIBITOR

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

2.2 Label elements

No signal word, pictograms, hazard or precautionary statements have been allocated.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
POTASSIUM CHLORIDE	7447-40-7	231-211-8	>97%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

Inhalation If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.

Skin If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.

Ingestion For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.

First aid facilities No information provided.

PRODUCT NAME POTASSIUM CHLORIDE

4.2 Most important symptoms and effects, both acute and delayed

Adverse effects not expected from this product under normal conditions of use.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve toxic gases (potassium oxides, chlorides) when heated to decomposition.

5.3 Advice for firefighters

Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then collect and place in suitable containers for disposal. Avoid generating dust.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

No exposure standards have been entered for this product.

Biological limits

No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering controls

Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended.

PRODUCT NAME POTASSIUM CHLORIDE

PPE

Eye / Face	At high dust levels, wear dust-proof goggles.
Hands	With prolonged use, wear PVC or rubber or cotton gloves.
Body	With prolonged use, wear coveralls.
Respiratory	At high dust levels, wear a Class P1 (Particulate) respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	WHITE SOLID
Odour	ODOURLESS
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	1413°C
Melting point	773°C
Evaporation rate	NOT AVAILABLE
pH	NOT AVAILABLE
Vapour density	NOT AVAILABLE
Specific gravity	2.0
Solubility (water)	340 g/L @ 20°C
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	NOT AVAILABLE
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10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization will not occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible (potentially explosive) with oxidising agents (e.g. hypochlorites).

10.6 Hazardous decomposition products

May evolve toxic gases (potassium oxides, chlorides) when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity	May be harmful if swallowed. Oral Toxicity: An oral LD50 in rats of 2600 mg/kg was reported for potassium chloride. Additional toxicity data for potassium chloride: LD50 (Intraperitoneal): 620 mg/kg (mouse) LD50 (Intravenous): 117 mg/kg (mouse) LDLo (Ingestion): 20 mg/kg (man)
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PRODUCT NAME POTASSIUM CHLORIDE

LDLo (Intraperitoneal): 900 mg/kg (guinea pig)
LDLo (Intravenous): 77 mg/kg (guinea pig)
LDLo (Subcutaneous): 2120 mg/kg (frog)
TDLo (Ingestion): 60 mg/kg/days (woman)

Skin	Not classified as a skin irritant. Contact may result in mild irritation and rash.
Eye	Not classified as an eye irritant. Contact may cause mild irritation and lacrimation.
Sensitization	This product is not known to be a skin or respiratory sensitiser.
Mutagenicity	No evidence of mutagenic effects.
Carcinogenicity	No evidence of carcinogenic effects.
Reproductive	No evidence of reproductive effects.
STOT – single exposure	Acute potassium poisoning via ingestion is rare as a large single dose usually induces vomiting, and potassium is rapidly excreted by the body, however this product does have the potential to cause cardiovascular disorders.
STOT – repeated exposure	Not classified as causing organ effects from repeated exposure.
Aspiration	Not relevant.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

In short-term acute toxicity tests with fish, daphnia and algae the following results were found (lowest test result values): Ictalurus punctulatus 48h-LC50 = 720 mg/l; Daphnia magna: 48h-LC50 = 177 mg/l; Nitzschia linearis: 120 h-EC50 = 1337 mg/l. A chronic reproductive test with the invertebrate Daphnia magna gave a LOEC of 101 mg/l. All the studies compiled on the acute and chronic aquatic toxicity were > 100 mg/L. Thus it is concluded that KCl is not hazardous to freshwater organisms. Taking into consideration the background concentrations of KCl in seawater (380 mg/l K+ and 19,000 mg/l Cl-), it is concluded that there is no reason for further investigations of KCl on marine species. The low concern for the environment is supported by the absence of a bioaccumulation potential for the substance.

12.2 Persistence and degradability

Biodegradability does not pertain to inorganic substances.

12.3 Bioaccumulative potential

Does not bioaccumulate.

12.4 Mobility in soil

No impact if small amount is released to the soil.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal Collect and place in sealable containers and dispose of to an approved landfill site. Contact the manufacturer/supplier for additional information (if required).

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport hazard class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

Hazchem code None Allocated

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes None allocated.

Risk phrases None allocated.

Safety phrases None allocated.

Inventory listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:

It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

PRODUCT NAME POTASSIUM CHLORIDE

Abbreviations	ACGIH	American Conference of Governmental Industrial Hygienists
	CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
	CNS	Central Nervous System
	EC No.	EC No - European Community Number
	EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
	GHS	Globally Harmonized System
	GTEPG	Group Text Emergency Procedure Guide
	IARC	International Agency for Research on Cancer
	LC50	Lethal Concentration, 50% / Median Lethal Concentration
	LD50	Lethal Dose, 50% / Median Lethal Dose
	mg/m ³	Milligrams per Cubic Metre
	OEL	Occupational Exposure Limit
	pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
	ppm	Parts Per Million
	STEL	Short-Term Exposure Limit
	STOT-RE	Specific target organ toxicity (repeated exposure)
	STOT-SE	Specific target organ toxicity (single exposure)
	SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
	SWA	Safe Work Australia
	TLV	Threshold Limit Value
	TWA	Time Weighted Average

Report status This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

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[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name SODIUM CHLORIDE BRINE
Synonym(s) NACL BRINE

1.2 Uses and uses advised against

Use(s) COMPLETION FLUID • CORE FLUID • DRILLING FLUID

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

2.2 Label elements

No signal word, pictograms, hazard or precautionary statements have been allocated.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
WATER	7732-18-5	231-791-2	>74%
SODIUM CHLORIDE	7647-14-5	231-598-3	<26%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

Inhalation If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.

Skin If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.

Ingestion For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.

First aid facilities No information provided.

PRODUCT NAME SODIUM CHLORIDE BRINE

4.2 Most important symptoms and effects, both acute and delayed

Adverse effects not expected from this product under normal conditions of use.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve toxic gases if strongly heated.

5.3 Advice for firefighters

Treat as per requirements for surrounding fires. Evacuate area and contact emergency services. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then cover / absorb spill with non-combustible absorbent material (vermiculite, sand, or similar), collect and place in suitable containers for disposal.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

No exposure standards have been entered for this product.

Biological limits

No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas.

PRODUCT NAME SODIUM CHLORIDE BRINE

PPE

Eye / Face	Wear splash-proof goggles.
Hands	Wear PVC or rubber gloves.
Body	When using large quantities or where heavy contamination is likely, wear coveralls.
Respiratory	Not required under normal conditions of use.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	COLOURLESS LIQUID
Odour	ODOURLESS
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	100°C to 106°C
Melting point	0°C to -19°C
Evaporation rate	NOT AVAILABLE
pH	7 to 9
Vapour density	NOT AVAILABLE
Specific gravity	1.00 to 1.20
Solubility (water)	SOLUBLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization is not expected to occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Compatible with most commonly used materials.

10.6 Hazardous decomposition products

May evolve toxic gases if heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity	This product is expected to be of low toxicity. Under normal conditions of use, adverse health effects are not anticipated. Sodium Chloride: LD50 (oral) is 3000 mg/kg (rat).
Skin	Not classified as a skin irritant. Contact may result in mild irritation.
Eye	Not classified as an eye irritant. Contact may result in mechanical irritation.
Sensitization	This product is not known to be a skin or respiratory sensitiser.
Mutagenicity	No evidence of mutagenic effects.
Carcinogenicity	This product is not classified as a carcinogen.
Reproductive	No evidence of reproductive effects.
STOT – single exposure	No known effects from this product.
STOT – repeated exposure	No known effects from this product.
Aspiration	This product does not present an aspiration hazard.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Sodium Chloride: LC50 (water flea) is 2122 mg/L/48 hours; LC50 (fathead minnow) is 6.57 g/L/96 hours.

12.2 Persistence and degradability

No information provided.

12.3 Bioaccumulative potential

Not expected to bioaccumulate.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

This product is not anticipated to cause adverse effects to animal or plant life if released to the environment in small quantities.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal	Solutions: Cover with sodium carbonate (soda ash), lime or similar alkali to ensure pH greater than 8.5. Collect precipitated solids in sealable containers and label accordingly. Solids: Dampen if necessary and avoid dust generation. Collect solids and store in sealable labelled containers. Absorb with soil and contact the manufacturer for disposal instructions.
Legislation	Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport hazard class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

None Allocated

Hazchem code

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule	A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).
Classifications	Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals. The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].
Hazard codes	None allocated.
Risk phrases	None allocated.
Safety phrases	None allocated.
Inventory listing(s)	AUSTRALIA: AICS (Australian Inventory of Chemical Substances) All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:

It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations	ACGIH	American Conference of Governmental Industrial Hygienists
	CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
	CNS	Central Nervous System
	EC No.	EC No - European Community Number
	GHS	Globally Harmonized System
	IARC	International Agency for Research on Cancer
	LC50	Lethal Concentration, 50% / Median Lethal Concentration
	LD50	Lethal Dose, 50% / Median Lethal Dose
	mg/m ³	Milligrams per Cubic Metre
	OEL	Occupational Exposure Limit
	pH	relates to hydrogen ion concentration using a scale of 0 (highly acidic) to 14 (highly alkaline).
	ppm	Parts Per Million
	STEL	Short-Term Exposure Limit
	STOT-RE	Specific target organ toxicity (repeated exposure)
	STOT-SE	Specific target organ toxicity (single exposure)
	SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
	SWA	Safe Work Australia
	TLV	Threshold Limit Value
	TWA	Time Weighted Average

Revision history

Revision	Description
1.1	Standard SDS Review.
1.0	Initial SDS Creation

PRODUCT NAME SODIUM CHLORIDE BRINE

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

Prepared by

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Revision: 1.1

SDS date: 06 January 2015

[End of SDS]

SECTION 1: IDENTIFICATION

Product Identifier

Product Form: Substance

Product Name: NewZan D

CAS No: 11138-66-2

Synonyms: Xanthum gum, Polysaccharaide gum

Intended Use of the Product

Drilling aid - Viscosifier

Name, Address, and Telephone of the Responsible Party

Manufacturer

Newpark Drilling Fluids

21920 Merchants Way

Katy, Texas 77449

T: 800-444-0682

<http://www.newpark.com/>

Emergency Telephone Number

Emergency number : North America - 800-424-9300 International & Maritime - 703-527-3887

For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident, call CHEMTREC – Day or Night

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture

Classification (GHS-US)

Comb. Dust

Label Elements

GHS-US Labeling

Signal Word (GHS-US) : Warning

Hazard Statements (GHS-US) : May form combustible dust concentrations in air.

Other Hazards

Other Hazards Not Contributing to the Classification:

Other Hazards: No additional information available

Unknown Acute Toxicity (GHS-US) Not available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substances

Name	Product identifier	% (w/w)	Classification (GHS-US)
Xanthan gum	(CAS No) 11138-66-2	100	Comb. Dust

Full text of H-phrases: see section 16

SECTION 4: FIRST AID MEASURES

Description of First Aid Measures

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

Inhalation: When symptoms occur: go into open air and ventilate suspected area.

Skin Contact: Rinse with plenty of water.

Eye Contact: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Ingestion: Rinse mouth. Do not induce vomiting.

Most Important Symptoms and Effects Both Acute and Delayed

General: Not expected to present a significant hazard under anticipated conditions of normal use.

Inhalation: Prolonged inhalation of dust may cause respiratory irritation.

NewZan D

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Skin Contact: Dust may cause irritation in skin folds or by contact in combination with tight clothing.

Eye Contact: Dust from this product may cause minor eye irritation.

Ingestion: None under normal use.

Chronic Symptoms: Not available

Indication of Any Immediate Medical Attention and Special Treatment Needed

If medical advice is needed, have product container or label at hand.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: Foam. Dry powder. Carbon dioxide. Water spray. Sand.

Unsuitable Extinguishing Media: Do not use a heavy water stream.

Special Hazards Arising From the Substance or Mixture

Fire Hazard: Combustible Dust. Dust explosion hazard in air. Supports combustion at high temperatures. Under conditions of fire this material may produce: Carbon dioxide. Carbon monoxide.

Explosion Hazard: Avoid dust clouds in combination with static electricity. Dust clouds can be explosive.

Reactivity: Stable at ambient temperature and under normal conditions of use.

Advice for Firefighters

Precautionary Measures Fire: Do not breathe fumes from fires or vapors from decomposition.

Firefighting Instructions: Exercise caution when fighting any chemical fire. Do not allow run-off from fire fighting to enter drains or water courses.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

Hazardous Combustion Products: Not available

Reference to Other Sections

Refer to section 9 for flammability properties.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Avoid generating dust. Handle in accordance with good industrial hygiene and safety practice. Good housekeeping is needed during storage, transfer, handling, and use of this material to avoid excessive dust accumulation.

For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Ventilate area.

Environmental Precautions

Prevent entry to sewers and public waters.

Methods and Material for Containment and Cleaning Up

Methods for Cleaning Up: Practice good housekeeping - spillage can be slippery on smooth surface either wet or dry. Vacuum must be fitted with HEPA filter to prevent release of particulates during clean-up. Avoid generation of dust during clean-up of spills.

Reference to Other Sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures.

Conditions for Safe Storage, Including Any Incompatibilities

Storage Conditions: Keep only in the original container in a cool, well ventilated place away from : Heat sources. Keep container closed when not in use. Protect from moisture.

Incompatible Materials: Strong bases. strong acids.

Specific End Use(s) Drilling aid - Viscosifier

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

No Occupational Exposure Limits (OELs) have been established for this product or its chemical components.

NewZan D

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Exposure Controls

Appropriate Engineering Controls: Provide adequate ventilation to minimize dust concentrations. Ensure all national/local regulations are observed. Proper grounding procedures to avoid static electricity should be followed.

Personal Protective Equipment: Dust formation: dust mask. Gloves. Protective goggles.



Materials for Protective Clothing: Not available

Hand Protection: Wear protective gloves.

Eye Protection: Chemical goggles or safety glasses.

Skin and Body Protection: Not available

Respiratory Protection: Use NIOSH-approved air-purifying or supplied-air respirator where airborne concentrations of vapor or mist are expected to exceed exposure limits.

Other Information: When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	: Solid
Appearance	: Cream-colored powder,white
Odor	: Odorless
Odor Threshold	: Not available
pH	: 6 - 8 (1% by weight in water)
Evaporation Rate	: Not available
Melting Point	: Not available
Freezing Point	: Not available
Boiling Point	: Not available
Flash Point	: Not available
Auto-ignition Temperature	: Not available
Decomposition Temperature	: Not available
Flammability (solid, gas)	: Not available
Lower Flammable Limit	: Not available
Upper Flammable Limit	: Not available
Vapor Pressure	: Not available
Relative Vapor Density at 20 °C	: Not available
Relative Density	: 1.02 - 1.45
Specific Gravity	: 1.02 - 1.45
Solubility	: Complete.
Partition coefficient: n-octanol/water	: Not available
Viscosity	: Not available
Explosion Data – Sensitivity to Mechanical Impact	: Not expected to present an explosion hazard due to mechanical impact.
Explosion Data – Sensitivity to Static Discharge	: Static discharge could act as an ignition source.

NewZan D

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 10: STABILITY AND REACTIVITY

Reactivity: Stable at ambient temperature and under normal conditions of use.

Chemical Stability: Stable under normal conditions.

Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

Conditions to Avoid: Direct sunlight. Extremely high or low temperatures. Protect from moisture. Use good housekeeping practices during storage, transfer, handling, to avoid excessive dust accumulation.

Incompatible Materials: strong acids. Strong bases.

Hazardous Decomposition Products: Under fire conditions this material may produce hazardous carbon dioxide (CO₂), carbon monoxide (CO), various low molecular weight hydrocarbons, and smoke.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on Toxicological Effects - Product

Acute Toxicity: Not classified

LD50 and LC50 Data: Not available

Skin Corrosion/Irritation: Not classified

pH: 6 - 8 (1% by weight in water)

Serious Eye Damage/Irritation: Not classified

pH: 6 - 8 (1% by weight in water)

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: Not classified

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: Prolonged inhalation of dust may cause respiratory irritation.

Symptoms/Injuries After Skin Contact: Dust may cause irritation in skin folds or by contact in combination with tight clothing.

Symptoms/Injuries After Eye Contact: Dust from this product may cause minor eye irritation.

Symptoms/Injuries After Ingestion: None under normal use.

Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data: Not available

SECTION 12: ECOLOGICAL INFORMATION

Toxicity Not classified

Persistence and Degradability

NewZan D (11138-66-2)

Persistence and Degradability	Not established.
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Bioaccumulative Potential

NewZan D (11138-66-2)

Bioaccumulative Potential	Not established.
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Mobility in Soil Not available

Other Adverse Effects

Other Information: Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Recommendations: Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.

Ecology – Waste Materials: Avoid release to the environment.

SECTION 14: TRANSPORT INFORMATION

14.1 In Accordance with DOT Not regulated for transport

14.2 In Accordance with IMDG Not regulated for transport

NewZan D

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

14.3 In Accordance with IATA Not regulated for transport

14.4 In Accordance with TDG Not regulated for transport

SECTION 15: REGULATORY INFORMATION

US Federal Regulations

Xanthan gum (11138-66-2)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

US State Regulations

Neither this product nor its chemical components appear on any US state lists.

Canadian Regulations

NewZan D (11138-66-2)

WHMIS Classification Uncontrolled product according to WHMIS classification criteria

Xanthan gum (11138-66-2)

Listed on the Canadian DSL (Domestic Substances List) inventory.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision date :

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

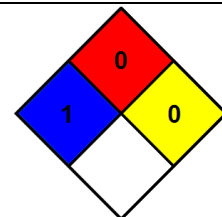
GHS Full Text Phrases:

Comb. Dust	Combustible Dust
	May form combustible dust concentrations in air

NFPA Health Hazard : 1 - Exposure could cause irritation but only minor residual injury even if no treatment is given.

NFPA Fire Hazard : 0 - Materials that will not burn.

NFPA Reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



Party Responsible for the Preparation of This Document

Newpark Drilling Fluids T: 800-444-0682

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North America GHS US 2012 & WHMIS 2



NewPac LV

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 07/22/2014

Supersedes Date: 11/24/2014

Version: 1.0

SECTION 1: IDENTIFICATION

Product Identifier

Product Form: Mixture

Product Name: NewPac LV

CAS No: 9004-32-4, 7647-14-5

Intended Use of the Product

Filtration Control Agent

Name, Address, and Telephone of the Responsible Party

Manufacturer

Newpark Drilling Fluids

21920 Merchants Way

Katy, Texas 77449

T: 800-444-0682

<http://www.newpark.com/>

Emergency Telephone Number

Emergency number : North America - 800-424-9300 International & Maritime - 703-527-3887

For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident, call CHEMTREC – Day or Night

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture

Classification (GHS-US)

Comb. Dust

Label Elements

GHS-US Labeling

Signal Word (GHS-US) : Warning

Hazard Statements (GHS-US) : May form combustible dust concentrations in air

Other Hazards

Other Hazards Not Contributing to the Classification:

Other Hazards: As with most solid particulate organic materials and some inorganic materials, high concentrations of dusts from this product suspended in air in the presence of other dusts, are an explosion hazard in the presence of sparks, flames, and heat. Do not allow dust to accumulate on equipment and surfaces where this product is used. In the National Fire Protection Association (NFPA) Code 499, a "combustible dust" is any finely divided solid material 420 microns or less in diameter that presents a fire or explosion hazard when dispersed in air.

Unknown Acute Toxicity (GHS-US) Not available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substances

Name	Product identifier	% (w/w)	Classification (GHS-US)
Sodium carboxymethyl cellulose	(CAS No) 9004-32-4	> 85	Comb. Dust
Sodium chloride	(CAS No) 7647-14-5	>= 15	Not classified

Full text of H-phrases: see section 16

SECTION 4: FIRST AID MEASURES

Description of First Aid Measures

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

Inhalation: When symptoms occur: go into open air and ventilate suspected area.

Skin Contact: Rinse with plenty of water.

Eye Contact: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Ingestion: Rinse mouth. Do not induce vomiting.

NewPac LV

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Most Important Symptoms and Effects Both Acute and Delayed

General: Not expected to present a significant hazard under anticipated conditions of normal use.

Inhalation: Prolonged inhalation of dust may cause respiratory irritation.

Skin Contact: Dust may cause irritation in skin folds or by contact in combination with tight clothing.

Eye Contact: Dust from this product may cause minor eye irritation.

Ingestion: None under normal use.

Chronic Symptoms: Not available

Indication of Any Immediate Medical Attention and Special Treatment Needed

If medical advice is needed, have product container or label at hand.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: Foam. Dry powder. Carbon dioxide. Water spray. Sand.

Unsuitable Extinguishing Media: Do not use a heavy water stream.

Special Hazards Arising From the Substance or Mixture

Fire Hazard: Combustible Dust. Dust explosion hazard in air. Supports combustion at high temperatures. Under conditions of fire this material may produce: Carbon dioxide. Carbon monoxide.

Explosion Hazard: Avoid dust clouds in combination with static electricity. Dust clouds can be explosive.

Reactivity: Product itself is not explosive but if dust is generated, dust clouds suspended in air can be explosive.

Advice for Firefighters

Precautionary Measures Fire: Do not breathe fumes from fires or vapors from decomposition.

Firefighting Instructions: Exercise caution when fighting any chemical fire. Do not allow run-off from fire fighting to enter drains or water courses.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

Hazardous Combustion Products: Not available

Reference to Other Sections

Refer to section 9 for flammability properties.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Avoid generating dust. Handle in accordance with good industrial hygiene and safety practice. Good housekeeping is needed during storage, transfer, handling, and use of this material to avoid excessive dust accumulation.

For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Ventilate area.

Environmental Precautions

Prevent entry to sewers and public waters.

Methods and Material for Containment and Cleaning Up

Methods for Cleaning Up: Practice good housekeeping - spillage can be slippery on smooth surface either wet or dry. Vacuum must be fitted with HEPA filter to prevent release of particulates during clean-up. Avoid generation of dust during clean-up of spills.

Reference to Other Sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures.

Conditions for Safe Storage, Including Any Incompatibilities

Storage Conditions: Keep only in the original container in a cool, well ventilated place away from : Direct sunlight, Heat sources. Keep container closed when not in use. Protect from moisture.

Incompatible Materials: Strong bases. strong acids.

NewPac LV

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Specific End Use(s)

Filtration Control Agent.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

No Occupational Exposure Limits (OELs) have been established for this product or its chemical components.

Exposure Controls

Appropriate Engineering Controls: Provide adequate ventilation to minimize dust concentrations. Ensure all national/local regulations are observed. Proper grounding procedures to avoid static electricity should be followed.

Personal Protective Equipment: Dust formation: dust mask. Gloves. Protective goggles.



Materials for Protective Clothing: Not available

Hand Protection: Wear protective gloves.

Eye Protection: Chemical goggles or safety glasses.

Skin and Body Protection: Not available

Respiratory Protection: Use NIOSH-approved air-purifying or supplied-air respirator where airborne concentrations of vapor or mist are expected to exceed exposure limits.

Other Information: When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	:	Solid
Appearance	:	White or slightly yellowish or greyish granular or fibrous powder
Odor	:	Odorless
Odor Threshold	:	Not available
pH	:	6 - 8.5 (1% by weight in water)
Relative Evaporation Rate (butylacetate=1)	:	Not available
Melting Point	:	Not available
Freezing Point	:	Not available
Boiling Point	:	Not available
Flash Point	:	Not available
Auto-ignition Temperature	:	Not available
Decomposition Temperature	:	Not available
Flammability (solid, gas)	:	Not available
Lower Flammable Limit	:	Not available
Upper Flammable Limit	:	Not available
Vapor Pressure	:	Not available
Relative Vapor Density at 20 °C	:	Not available
Relative Density	:	Not available
Specific Gravity	:	1.6
Solubility	:	Soluble in water.
Partition coefficient: n-octanol/water	:	Not available
Viscosity	:	15 - 40 cP (1.43% in KCl/Seawater solution)
Explosion Data – Sensitivity to Mechanical Impact	:	Not expected to present an explosion hazard due to mechanical impact.
Explosion Data – Sensitivity to Static Discharge	:	Static discharge could act as an ignition source.

NewPac LV

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 10: STABILITY AND REACTIVITY

Reactivity: Product itself is not explosive but if dust is generated, dust clouds suspended in air can be explosive.

Chemical Stability: Stable under normal conditions.

Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

Conditions to Avoid: Avoid formation of dust. Sparks, heat, open flame and other sources of ignition. Protect from moisture.

Incompatible Materials: Avoid strong oxidizers.

Hazardous Decomposition Products: Under fire conditions this material may produce hazardous carbon dioxide (CO₂), carbon monoxide (CO), various low molecular weight hydrocarbons, and smoke.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on Toxicological Effects - Product

Acute Toxicity: Not classified

LD50 and LC50 Data: Not available

Skin Corrosion/Irritation: Not classified

pH: 6 - 8.5 (1% by weight in water)

Serious Eye Damage/Irritation: Not classified

pH: 6 - 8.5 (1% by weight in water)

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: Not classified

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: Prolonged inhalation of dust may cause respiratory irritation.

Symptoms/Injuries After Skin Contact: Dust may cause irritation in skin folds or by contact in combination with tight clothing.

Symptoms/Injuries After Eye Contact: Dust from this product may cause minor eye irritation.

Symptoms/Injuries After Ingestion: None under normal use.

Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data:

Sodium carboxymethyl cellulose (9004-32-4)	
LD50 Oral Rat	27000 mg/kg
LD50 Dermal Rabbit	> 2000 mg/kg
LC50 Inhalation Rat	> 5800 mg/m ³ (Exposure time: 4 h)
Sodium chloride (7647-14-5)	
LD50 Oral Rat	3 g/kg
LC50 Inhalation Rat	> 42 g/m ³ (Exposure time: 1 h)

SECTION 12: ECOLOGICAL INFORMATION

Toxicity Not classified

Sodium chloride (7647-14-5)	
LC50 Fish 1	5560 (5560 - 6080) mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [flow-through])
EC50 Daphnia 1	1000 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC 50 Fish 2	12946 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])
EC50 Daphnia 2	340.7 (340.7 - 469.2) mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])

Persistence and Degradability

NewPac LV (9004-32-4, 7647-14-5)	
Persistence and Degradability	Not established.

NewPac LV

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Bioaccumulative Potential

NewPac LV (9004-32-4, 7647-14-5)	
Bioaccumulative Potential	Not established.
Sodium chloride (7647-14-5)	
BCF fish 1	(no bioaccumulation)

Mobility in Soil Not available

Other Adverse Effects

Other Information: Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Recommendations: Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.

Ecology – Waste Materials: Avoid release to the environment.

SECTION 14: TRANSPORT INFORMATION

14.1 In Accordance with DOT Not regulated for transport

14.2 In Accordance with IMDG Not regulated for transport

14.3 In Accordance with IATA Not regulated for transport

14.4 In Accordance with TDG Not regulated for transport

SECTION 15: REGULATORY INFORMATION

US Federal Regulations

Sodium carboxymethyl cellulose (9004-32-4)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Sodium chloride (7647-14-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

US State Regulations

Neither this product nor its chemical components appear on any US state lists.

Canadian Regulations

NewPac LV (9004-32-4, 7647-14-5)	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
Sodium carboxymethyl cellulose (9004-32-4)	
Listed on the Canadian DSL (Domestic Substances List) inventory.	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
Sodium chloride (7647-14-5)	
Listed on the Canadian DSL (Domestic Substances List) inventory.	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision date : 07/22/2014

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

GHS Full Text Phrases:

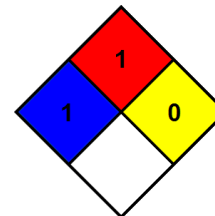
Comb. Dust	Combustible Dust
	May form combustible dust concentrations in air

NewPac LV

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

- NFPA Health Hazard** : 1 - Exposure could cause irritation but only minor residual injury even if no treatment is given.
- NFPA Fire Hazard** : 1 - Must be preheated before ignition can occur.
- NFPA Reactivity** : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



Party Responsible for the Preparation of This Document

Newpark Drilling Fluids T: 800-444-0682

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North America GHS US 2012 & WHMIS 2

SECTION 1: IDENTIFICATION

Product Identifier

Product Form: Mixture

Product Name: NewPac R

CAS No: 9004-32-4, 7647-14-5

Intended Use of the Product

Filtration Control Agent

Name, Address, and Telephone of the Responsible Party

Manufacturer

Newpark Drilling Fluids

21920 Merchants Way

Katy, Texas 77449

T: 800-444-0682

<http://www.newpark.com/>

Emergency Telephone Number

Emergency number : North America - 800-424-9300 International & Maritime - 703-527-3887

For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident, call CHEMTREC – Day or Night

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture

Classification (GHS-US)

Comb. Dust

Label Elements

GHS-US Labeling

Signal Word (GHS-US) : Warning

Hazard Statements (GHS-US) : May form combustible dust concentrations in air.

Other Hazards

Other Hazards Not Contributing to the Classification:

Other Hazards: As with most solid particulate organic materials and some inorganic materials, high concentrations of dusts from this product suspended in air in the presence of other dusts, are an explosion hazard in the presence of sparks, flames, and heat. Do not allow dust to accumulate on equipment and surfaces where this product is used. In the National Fire Protection Association (NFPA) Code 499, a “combustible dust” is any finely divided solid material 420 microns or less in diameter that presents a fire or explosion hazard when dispersed in air.

Unknown Acute Toxicity (GHS-US) Not available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

Name	Product identifier	% (w/w)	Classification (GHS-US)
Sodium carboxymethyl cellulose	(CAS No) 9004-32-4	> 85	Comb. Dust
Sodium chloride	(CAS No) 7647-14-5	<= 15	Not classified

Full text of H-phrases: see section 16

SECTION 4: FIRST AID MEASURES

Description of First Aid Measures

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

Inhalation: When symptoms occur: go into open air and ventilate suspected area.

Skin Contact: Rinse with plenty of water.

Eye Contact: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Ingestion: Rinse mouth. Do not induce vomiting.

NewPac R

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Most Important Symptoms and Effects Both Acute and Delayed

General: Not expected to present a significant hazard under anticipated conditions of normal use.

Inhalation: Prolonged inhalation of dust may cause respiratory irritation.

Skin Contact: Dust may cause irritation in skin folds or by contact in combination with tight clothing.

Eye Contact: Dust from this product may cause minor eye irritation.

Ingestion: None under normal use.

Chronic Symptoms: Not available

Indication of Any Immediate Medical Attention and Special Treatment Needed

If medical advice is needed, have product container or label at hand.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: Foam. Dry powder. Carbon dioxide. Water spray. Sand. Use extinguishing media appropriate for surrounding fire.

Unsuitable Extinguishing Media: Do not use water jet. Use of heavy stream of water may spread fire.

Special Hazards Arising From the Substance or Mixture

Fire Hazard: Combustible Dust. Dust explosion hazard in air. Supports combustion at high temperatures. Under conditions of fire this material may produce: Carbon dioxide. Carbon monoxide.

Explosion Hazard: Avoid dust clouds in combination with static electricity. Dust clouds can be explosive.

Reactivity: Product itself is not explosive but if dust is generated, dust clouds suspended in air can be explosive.

Advice for Firefighters

Precautionary Measures Fire: Do not breathe fumes from fires or vapors from decomposition.

Firefighting Instructions: Exercise caution when fighting any chemical fire. Do not allow run-off from fire fighting to enter drains or water courses.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

Hazardous Combustion Products: Not available

Reference to Other Sections

Refer to section 9 for flammability properties.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Avoid generating dust. Handle in accordance with good industrial hygiene and safety practice. Good housekeeping is needed during storage, transfer, handling, and use of this material to avoid excessive dust accumulation.

For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Ventilate area.

Environmental Precautions

Prevent entry to sewers and public waters.

Methods and Material for Containment and Cleaning Up

Methods for Cleaning Up: Practice good housekeeping - spillage can be slippery on smooth surface either wet or dry. Vacuum must be fitted with HEPA filter to prevent release of particulates during clean-up. Avoid generation of dust during clean-up of spills.

Reference to Other Sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures.

Conditions for Safe Storage, Including Any Incompatibilities

Storage Conditions: Keep only in the original container in a cool, well ventilated place away from : Direct sunlight, Heat sources.

Keep container closed when not in use. Protect from moisture.

Incompatible Materials: Strong bases. strong acids.

NewPac R

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Specific End Use(s) Filtration Control Agent

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

No Occupational Exposure Limits (OELs) have been established for this product or its chemical components.

Exposure Controls

Appropriate Engineering Controls: Provide adequate ventilation to minimize dust concentrations. Ensure all national/local regulations are observed. Proper grounding procedures to avoid static electricity should be followed.

Personal Protective Equipment: Dust formation: dust mask. Gloves. Protective goggles.



Materials for Protective Clothing: Not available

Hand Protection: Wear protective gloves.

Eye Protection: Chemical goggles or safety glasses.

Skin and Body Protection: Not available

Respiratory Protection: Use NIOSH-approved air-purifying or supplied-air respirator where airborne concentrations of vapor or mist are expected to exceed exposure limits.

Other Information: When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	: Solid
Appearance	: White or slightly yellowish or greyish granular or fibrous powder
Odor	: Odorless
Odor Threshold	: Not available
pH	: 6 - 8.5 (1% by weight in water)
Evaporation Rate	: Not available
Melting Point	: Not available
Freezing Point	: Not available
Boiling Point	: Not available
Flash Point	: Not available
Auto-ignition Temperature	: Not available
Decomposition Temperature	: Not available
Flammability (solid, gas)	: Not available
Lower Flammable Limit	: Not available
Upper Flammable Limit	: Not available
Vapor Pressure	: Not available
Relative Vapor Density at 20 °C	: Not available
Relative Density	: Not available
Density	: Not available
Specific Gravity	: 1.6
Solubility	: Soluble in water.
Partition coefficient: n-octanol/water	: Not available
Viscosity	: 50 cP (0.88% IN KCl/Seawater solution)
Explosion Data – Sensitivity to Mechanical Impact	: Not expected to present an explosion hazard due to mechanical impact.
Explosion Data – Sensitivity to Static Discharge	: Static discharge could act as an ignition source.

NewPac R

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 10: STABILITY AND REACTIVITY

Reactivity: Product itself is not explosive but if dust is generated, dust clouds suspended in air can be explosive.

Chemical Stability: Stable under normal conditions.

Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

Conditions to Avoid: Avoid formation of dust. Sparks, heat, open flame and other sources of ignition. Protect from moisture.

Incompatible Materials: Avoid strong oxidizers.

Hazardous Decomposition Products: Under fire conditions this material may produce hazardous carbon dioxide (CO₂), carbon monoxide (CO), various low molecular weight hydrocarbons, and smoke.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on Toxicological Effects - Product

Acute Toxicity: Not classified

LD50 and LC50 Data: Not available

Skin Corrosion/Irritation: Not classified

pH: 6 - 8.5 (1% by weight in water)

Serious Eye Damage/Irritation: Not classified

pH: 6 - 8.5 (1% by weight in water)

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: Not classified

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: Prolonged inhalation of dust may cause respiratory irritation.

Symptoms/Injuries After Skin Contact: Dust may cause irritation in skin folds or by contact in combination with tight clothing.

Symptoms/Injuries After Eye Contact: Dust from this product may cause minor eye irritation.

Symptoms/Injuries After Ingestion: None under normal use.

Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data:

Sodium carboxymethyl cellulose (9004-32-4)	
LD50 Oral Rat	27000 mg/kg
LD50 Dermal Rabbit	> 2000 mg/kg
LC50 Inhalation Rat	> 5800 mg/m ³ (Exposure time: 4 h)
ATE US (oral)	27,000.00 mg/kg body weight
Sodium chloride (7647-14-5)	
LD50 Oral Rat	3 g/kg
LC50 Inhalation Rat	> 42 g/m ³ (Exposure time: 1 h)
ATE US (oral)	3,000.00 mg/kg body weight

SECTION 12: ECOLOGICAL INFORMATION

Toxicity Not classified

Sodium chloride (7647-14-5)	
LC50 Fish 1	5560 (5560 - 6080) mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [flow-through])
EC50 Daphnia 1	1000 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC 50 Fish 2	12946 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])
EC50 Daphnia 2	340.7 (340.7 - 469.2) mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])

NewPac R

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Persistence and Degradability

NewPac R (9004-32-4, 7647-14-5)

Persistence and Degradability	Not established.
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Bioaccumulative Potential

NewPac R (9004-32-4, 7647-14-5)

Bioaccumulative Potential	Not established.
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Sodium chloride (7647-14-5)

BCF fish 1	(no bioaccumulation)
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Mobility in Soil Not available

Other Adverse Effects

Other Information: Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Recommendations: Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.

Ecology – Waste Materials: Avoid release to the environment.

SECTION 14: TRANSPORT INFORMATION

In Accordance With ICAO/IATA/DOT/TDG

- 14.1. UN Number** Not regulated for transport
- 14.2. UN Proper Shipping Name** Not regulated for transport
- 14.3. Additional Information** Not regulated for transport

Transport by Sea Not regulated for transport

Air Transport Not regulated for transport

SECTION 15: REGULATORY INFORMATION

US Federal Regulations

Sodium carboxymethyl cellulose (9004-32-4)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Sodium chloride (7647-14-5)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

US State Regulations

Neither this product nor its chemical components appear on any US state lists.

Canadian Regulations

NewPac R (9004-32-4, 7647-14-5)

WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
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Sodium carboxymethyl cellulose (9004-32-4)

Listed on the Canadian DSL (Domestic Substances List) inventory.

WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
----------------------	---

Sodium chloride (7647-14-5)

Listed on the Canadian DSL (Domestic Substances List) inventory.

WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
----------------------	---

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision date :

NewPac R

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

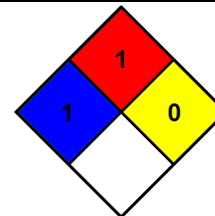
GHS Full Text Phrases:

Comb. Dust	Combustible Dust
H232	May form combustible dust concentrations in air

NFPA Health Hazard : 1 - Exposure could cause irritation but only minor residual injury even if no treatment is given.

NFPA Fire Hazard : 1 - Must be preheated before ignition can occur.

NFPA Reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



Party Responsible for the Preparation of This Document

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North America GHS US 2012 & WHMIS 2

SAFETY DATA SHEET

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name JK-161 LV
Synonym(s) JK - 161 LV • LOW MOLECULAR WEIGHT PHPA • PARTIALLY HYDROLYZED POLYACRYLAMIDE • PHPA

1.2 Uses and uses advised against

Use(s) ENCAPSULATING AGENT • HIGH PERFORMANCE WBM

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

2.2 Label elements

No signal word, pictograms, hazard or precautionary statements have been allocated.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
ACRYLAMIDE, SODIUM ACRYLATE COPOLYMER	25085-02-3	607-529-1	>90%
WATER	7732-18-5	231-791-2	Remainder

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

Inhalation If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.

Skin If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water.

Ingestion For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.

First aid facilities Eye wash facilities and safety shower should be available.

4.2 Most important symptoms and effects, both acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve toxic gases (carbon/ nitrogen oxides, amines, ammonia, hydrocarbons) when heated to decomposition.

5.3 Advice for firefighters

Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Clear area of all unprotected personnel. Contact emergency services where appropriate.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then collect and place in suitable containers for reuse or disposal. Avoid generating dust.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances and foodstuffs. Ensure containers are adequately labelled and tightly closed when not in use.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
Acrylamide	SWA (AUS)	--	0.03	--	--

Biological limits No Biological Limit Value allocated.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended.

PPE

- Eye / Face** Wear dust-proof goggles.
- Hands** Wear PVC or rubber gloves.
- Body** When using large quantities or where heavy contamination is likely, wear coveralls.
- Respiratory** Where an inhalation risk exists, wear a Class P1 (Particulate) respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	WHITE GRANULAR SOLID
Odour	ODOURLESS
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	NOT AVAILABLE
Melting point	NOT AVAILABLE
Evaporation rate	NOT AVAILABLE
pH	NOT AVAILABLE
Vapour density	NOT AVAILABLE
Specific gravity	0.8
Solubility (water)	10 g/L
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	NOT AVAILABLE
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10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization is not expected to occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites) and acids (e.g. nitric acid).

10.6 Hazardous decomposition products

May evolve toxic gases (carbon/ nitrogen oxides, amines, ammonia, hydrocarbons) when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity	This product is expected to be of low toxicity. Under normal conditions of use, adverse health effects are not anticipated. LD50 rat (oral): > 2,000 mg/kg (OECD Guideline 401).
Skin	Low irritant. Prolonged or repeated contact may result in mild irritation, rash and dermatitis.
Eye	Low to moderate irritant. Contact may result in mild irritation, lacrimation and redness.
Sensitization	This product is not classified to be a skin or respiratory sensitiser. However, allergic reactions are possible.
Mutagenicity	This product is not classified as a mutagen.
Carcinogenicity	This product may contain trace amounts of residual acrylamide, which is classified as a probable human carcinogen (IARC Group 2A). However, due to the very low levels present, adverse health effects are not anticipated with normal use.
Reproductive	This product is not classified as a reproductive toxin.
STOT – single exposure	Not classified as causing organ effects from single exposure.
STOT – repeated exposure	Not classified as causing organ effects from repeated exposure.
Aspiration	This product is not classified as causing aspiration.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

(10000 ppm test concentration) (EPA-821-R-02-012)
 Mysidopsis bahia = 48hr LC50 = 16.2 mg/L.
 Menidia beryllina = 48hr LC50 = 34.2 mg/L.
 Scophthalmus Maximus = 96hr LC50 > 1000 mg/L.
 Skeletonemia costatum = 72hr EC50 = 393 mg/L [NOEC = 118 mg/L]
 Acartia tonsa = 48 hr EC50 = 393 mg/L [NOEC = 112 mg/L]
 Corophium Volutator = 10 Day LC50 = 9338 mg/Kg [NOEC = 1000 mg/Kg]

12.2 Persistence and degradability

Not readily biodegradable (by OECD criteria).

12.3 Bioaccumulative potential

Based on its structural properties, the polymer is not biologically available. Accumulation in organisms is not to be expected.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal	Dispose of to an approved landfill or waste processing site. Contact the manufacturer/supplier for additional information (if required).
Legislation	Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport hazard class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

Hazchem code None Allocated

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes None allocated.

Risk phrases None allocated.

Safety phrases None allocated.

Inventory listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information ACRYLIC - ACRYLAMIDE RESINS: These resins are generally of low toxicity. Toxicity increases with presence of significant concentrations of acrylic - acrylamide monomers. These monomers have been linked with the development of skin sensitisation.

RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m ³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

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[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name IDCIDE-20
Synonym(s) IDCIDE 20

1.2 Uses and uses advised against

Use(s) BIOCIDES • DRILLING FLUID ADDITIVE • WATER TREATMENT

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

GHS classification Skin Sensitization: Category 1
Skin Corrosion/Irritation: Category 2
Serious Eye Damage / Eye Irritation: Category 2A

2.2 Label elements

Signal word WARNING

Pictograms



Hazard statement(s)

H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.

Prevention statement(s)

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 Wash thoroughly after handling.
P272 Contaminated work clothing should not be allowed out of the workplace.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response statement(s)

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P321 Specific treatment is advised - see first aid instructions.
P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.
P362 Take off contaminated clothing and wash before re-use.

PRODUCT NAME IDCIDE-20**Storage statement(s)**

None allocated.

Disposal statement(s)

P501 Dispose of contents/container in accordance with relevant regulations.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	Identification	Classification		Content
		GHS	Risk	
TETRAKIS(HYDROXYMETHYL)PHOSPHONIUM SULPHATE	CAS: 55566-30-8 EC: 259-709-0	Not Available	Not Available	18 to 25%
WATER	CAS: 7732-18-5 EC: 231-791-2	Not Available	Not Available	Remainder

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye	If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.
Inhalation	If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.
Skin	If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.
Ingestion	For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.
First aid facilities	Eye wash facilities should be available.

4.2 Most important symptoms and effects, both acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve toxic gases if strongly heated. May evolve carbon oxides, sulphur oxides and phosphates when heated to decomposition.

5.3 Advice for firefighters

Treat as per requirements for surrounding fires. Evacuate area and contact emergency services. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in Section 8. Clear area of all unprotected personnel. Ventilate area where possible.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then cover/absorb spill with non-combustible absorbent material (vermiculite, sand, or similar), collect and place in suitable containers for disposal.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances, heat or ignition sources and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

No exposure standards have been entered for this product.

Biological limits

No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended.

PPE

Eye / Face	Wear a faceshield and splash-proof goggles.
Hands	Wear PVC or rubber gloves.
Body	Not required under normal conditions of use.
Respiratory	Not required under normal conditions of use.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	COLOURLESS TO PALE YELLOW LIQUID
Odour	SLIGHT ODOUR
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	> 100°C
Melting point	< 0°C
Evaporation rate	AS FOR WATER
pH	3.0 to 3.5
Vapour density	NOT AVAILABLE
Specific gravity	1.08
Solubility (water)	SOLUBLE

9.1 Information on basic physical and chemical properties

Vapour pressure	18 mm Hg @ 20°C
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	> 60 % (Water)
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10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization is not expected to occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (eg. hypochlorites) and acids (eg. nitric acid).

10.6 Hazardous decomposition products

May evolve carbon oxides, sulphur oxides and phosphates when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Health hazard summary	May be harmful - irritant. This product has the potential to cause adverse health effects with over exposure. Upon dilution, the potential for adverse health effects may be reduced.
Eye	Irritant. Contact may result in irritation, lacrimation, pain and redness.
Inhalation	Low to moderate irritant. Over exposure to vapours may result in irritation of the nose and throat, with coughing. High level exposure may result in dizziness, nausea and headache. Due to the low vapour pressure, an inhalation hazard is not anticipated with normal use.
Skin	Irritant. Contact may result in irritation. May cause sensitisation by skin contact.
Ingestion	May be harmful. Ingestion may result in gastrointestinal irritation, nausea, vomiting, abdominal pain and diarrhoea.
Toxicity data	TETRAKIS(HYDROXYMETHYL)PHOSPHONIUM SULPHATE (55566-30-8) LD50 (ingestion) 248 mg/kg (rat) TDLo (ingestion) 650 mg/kg/13 weeks - intermittent (rat)

12. ECOLOGICAL INFORMATION

12.1 Toxicity

75% TETRAKIS(HYDROXYMETHYL)PHOSPHONIUM SULPHATE (55566-30-8):
 LC50 (Rainbow Trout) = 119 mg/L/96 hr
 LC50(Bluegill Sunfish) = 93 mg/L/ 96 hr
 EC50 (Daphnia Magna) = 19 mg/L/48 hr
 LC50 (Brown Shrimp) = 340 mg/L/96 hr
 LC50 (Mysid Shrimp) = 9.5 mg/L/96 hr
 LC50 (Sheepshead Minnow) = 94 mg/L/96 hr
 LC50 (Jevenile Plaice) = 86 mg/L/96 hr

Waste Water management
 EC50 (Activated Sludge) = 24 mg/L/3 hr

12.2 Persistence and degradability

This product is readily biodegradable.

12.3 Bioaccumulative potential

No information provided.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal For small amounts, absorb with sand, vermiculite or similar and dispose of to an approved landfill site. For larger amounts, contact the manufacturer for additional information. Prevent contamination of drains or waterways as aquatic life may be threatened and environmental damage may result.

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport hazard class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

Hazchem code None Allocated

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

PRODUCT NAME IDCIDE-20

Hazard codes	Xi	Irritant
Risk phrases	R36/38 R43	Irritating to eyes and skin. May cause sensitisation by skin contact.
Safety phrases	S23 S24/25 S36	Do not breathe gas/fumes/vapour/spray (where applicable). Avoid contact with skin and eyes. Wear suitable protective clothing.
Inventory listing(s)	AUSTRALIA: AICS (Australian Inventory of Chemical Substances) All components are listed on AICS, or are exempt.	

16. OTHER INFORMATION

Additional information	<p>EXPOSURE CONTROL: If utilised in a closed system the potential for over exposure is reduced. If not used in a closed system, local exhaust ventilation is recommended to control exposure. Provide eye wash and safety shower in close proximity to points of potential exposure. Where the potential for an inhalation risk exists, an approved respirator may be required. Do not eat, store, consume food, tobacco or drink in areas where product is used.</p> <p>RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.</p> <p>PERSONAL PROTECTIVE EQUIPMENT GUIDELINES: The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.</p> <p>HEALTH EFFECTS FROM EXPOSURE: It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.</p>
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Abbreviations	ACGIH	American Conference of Governmental Industrial Hygienists
	CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
	CNS	Central Nervous System
	EC No.	EC No - European Community Number
	GHS	Globally Harmonized System
	IARC	International Agency for Research on Cancer
	LC50	Lethal Concentration, 50% / Median Lethal Concentration
	LD50	Lethal Dose, 50% / Median Lethal Dose
	mg/m ³	Milligrams per Cubic Metre
	OEL	Occupational Exposure Limit
	PEL	Permissible Exposure Limit
	pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
	ppm	Parts Per Million
	REACH	Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals
	STEL	Short-Term Exposure Limit
	STOT-RE	Specific target organ toxicity (repeated exposure)
	STOT-SE	Specific target organ toxicity (single exposure)
	SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
	SWA	Safe Work Australia
	TLV	Threshold Limit Value
	TWA	Time Weighted Average

PRODUCT NAME IDCIDE-20**Revision history**

Revision	Description
2.0	Converted to GHS.
1.0	Initial SDS creation

Report status

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Revision: 2
SDS date: 28 July 2014

[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name CAUSTIC SODA
Synonym(s) SODIUM HYDROXIDE SOLID

1.2 Uses and uses advised against

Use(s) MANUFACTURE OF CHEMICALS • REAGENT • SCRUBBING AGENT

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

GHS classification(s) Skin Corrosion/Irritation: Category 1A

2.2 Label elements

Signal word DANGER

Pictogram(s)



Hazard statement(s)

H314 Causes severe skin burns and eye damage.

Prevention statement(s)

P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P264 Wash thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response statement(s)

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor/physician.
P321 Specific treatment is advised - see first aid instructions.
P363 Wash contaminated clothing before reuse.

Storage statement(s)

P405 Store locked up.

PRODUCT NAME CAUSTIC SODA**Disposal statement(s)**

P501 Dispose of contents/container in accordance with relevant regulations.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
SODIUM HYDROXIDE	1310-73-2	215-185-5	>99%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye	If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.
Inhalation	If inhaled, remove from contaminated area. To protect rescuer, use an Air-line respirator where an inhalation risk exists. Apply artificial respiration if not breathing.
Skin	If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.
Ingestion	For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.
First aid facilities	Eye wash facilities and safety shower should be available.

4.2 Most important symptoms and effects, both acute and delayed

Causes severe skin burns and eye damage.

4.3 Immediate medical attention and special treatment needed

CORROSIVE POISONING TREATMENT: Immediate treatment preferably in a hospital is mandatory. In treating corrosive poisoning, DO NOT INDUCE VOMITING; DO NOT ATTEMPT GASTRIC LAVAGE; and DO NOT ATTEMPT TO NEUTRALISE THE CORROSIVE SUBSTANCE. Vomiting will increase the severity of damage to the oesophagus as the corrosive substance will again come in contact with it. Attempting gastric lavage may result in perforating either the oesophagus or stomach. Immediately dilute the corrosive substance by having the patient drink milk or water. If the trachea has been damaged tracheostomy may be required. For oesophageal burns begin broad-spectrum antibiotics and corticosteroid therapy. Intravenous fluids will be required if oesophageal or gastric damage prevents ingestion of liquids. Long-range therapy will be directed toward preventing or treating oesophageal scars and strictures.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire. Use carbon dioxide or suitable dry chemical extinguisher. Do NOT use water.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve flammable hydrogen gas in contact with some metals. Direct contact with water can produce a violent exothermic reaction.

5.3 Advice for firefighters

Treat as per requirements for surrounding fires. Evacuate area and contact emergency services. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

- 2X
2 Fine Water Spray.
X Wear liquid-tight chemical protective clothing and breathing apparatus. Contain spill and run-off.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Allow only trained personnel wearing appropriate protective equipment to be involved in spill response. Avoid accidents, clean up immediately. Increase ventilation. Avoid walking through spilled product as it is slippery when spilt. Isolate the danger area. Use clean, non-sparking tools and equipment. Shut off all possible sources of ignition.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Mechanically collect as much of the spill as possible. Absorb with sand, earth or clay. Transfer to suitable, labelled, corrosion-resistant containers and dispose of promptly as hazardous waste. Spill on areas other than pavement, dirt or sand may be handled by removing the affected soils and placing into approved containers.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Ensure an eye bath and safety shower are available and ready for use. Observe good personal hygiene practices and recommended procedures. Wash thoroughly after handling. Take precautionary measures against static discharges by bonding and grounding equipment. Avoid contact with eyes, skin and clothing. Do not inhale product vapours. Avoid prolonged or repeated exposure. Do not smoke, eat or drink when handling product. Product can react violently with water and acids. Caustic solution generates heat when further diluted with water. Concentrations greater than 40%, the heat generated can raise temperatures above the boiling point resulting in sporadic, violent eruptions or spattering. Emergency showers and eye-washes must be available. When used in its various applications, the product must be prevented from coming into uncontrolled direct contact with other products such as acids and metals. Never neutralise the solid product.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well-ventilated area. Keep containers tightly closed when not in use. Inspect regularly for deficiencies such as damage or leaks. Protect against physical damage. Store away from incompatible materials as listed in section 10. Store away from aluminium, tin, zinc and alloys (bronzes), chrome and lead. Protect from damp and kept apart from acids, halogenated hydrocarbons, nitroparaffins, etc. The floor must be waterproof and anti-slip. A water supply or source must be provided in the place of storage. Emergency showers and eye-washes must be available. Special conditions: Prevent the product from becoming damp or erated. Hygroscopic product. Becomes carbonated in contact with the air or moisture.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
Sodium hydroxide (peak limitation)	SWA (AUS)	--	2	--	--

Biological limits

No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain dust levels below the recommended exposure standard.

PRODUCT NAME CAUSTIC SODA**PPE**

Eye / Face	Wear a faceshield and dust-proof goggles.
Hands	Wear PVC or rubber gloves.
Body	Wear coveralls and rubber boots and a PVC apron.
Respiratory	Where an inhalation risk exists, wear a Class P1 (Particulate) respirator. At high dust levels, wear an Air-line respirator or a Full-face Class P3 (Particulate) respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	WHITE DELIQUESCENT PEARLS
Odour	ODOURLESS
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	1390°C
Melting point	318°C
Evaporation rate	NOT AVAILABLE
pH	13.5 (1 % solution)
Vapour density	NOT AVAILABLE
Specific gravity	2.12
Solubility (water)	1110 kg/m ³ @ 20°C
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	NOT AVAILABLE
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10. STABILITY AND REACTIVITY

10.1 Reactivity

Highly exothermal reaction with strong acids. Reacts dangerously with acetic acid, allyl chloride, chlorine trifluoride, chloroform, methylic alcohol, chloronitrotoluene, chlorosulphonic acid, glyoxal, cyanohydrin, hydrochloric acid, hydrofluoric acid, hydroquinone, nitric acid, sulphuric acid and oleum, nitropropane, phosphorous, propiolactone, phosphorous pentoxide, tetrachlorobenzene, tetrahydrofuran, etc. Caustic soda forms salts with nitromethane and nitroparaffins that explode on impact. Heat is generated when mixed with water. Spattering and boiling can occur. Caustic soda solution reacts readily with various reducing sugars (ie: fructose, galactose, maltose, dry whey solids) to produce carbon monoxide. Caustic soda forms salts with nitromethane and nitroparaffins that explode on impact. Reacts with aluminium, tin, zinc and their alloys, copper, lead, etc. giving off hydrogen.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization is not expected to occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites), acids (e.g. nitric acid), metals, heat and ignition sources.

10.6 Hazardous decomposition products

Reacts with aluminium, tin, zinc and their alloys, copper, lead, etc. giving off hydrogen. When the product decomposes, toxic sodium oxide gases are evolved.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity	Highly corrosive. This product has the potential to cause serious adverse health effects. Use safe work practices to avoid eye or skin contact and inhalation. Over exposure may result in severe burns with corrosive tissue damage. Upon dilution, the potential for corrosive effects may be reduced. SODIUM HYDROXIDE (1310-73-2): LD50 (Intraperitoneal): 40 mg/kg (mouse) LDLo (Ingestion): 1.57 mg/kg (human)
Skin	Causes severe burns. Contact may result in irritation, redness, pain, rash, dermatitis and possible burns.
Eye	Causes severe burns. Contact may result in irritation, lacrimation, pain, redness and corneal burns with possible permanent eye damage.
Sensitization	This product is not known to be a skin or respiratory sensitiser.
Mutagenicity	Insufficient data available to classify as a mutagen. Both the in vitro and the in vivo genetic toxicity tests indicated no evidence of mutagenic activity. Furthermore the substance is not expected to be systemically available in the body under normal handling and use conditions and for this reason additional testing is considered unnecessary (EU RAR, 2007).
Carcinogenicity	Insufficient data available to classify as a carcinogen. Systemic carcinogenicity is not expected to occur because the substance is not expected to be systemically available in the body under normal handling and use conditions.
Reproductive	Insufficient data available to classify as a reproductive toxin. The substance is not expected to be systemically available in the body under normal handling and use conditions and for this reason it can be stated that the substance will not reach the foetus nor reach male and female reproductive organs. The substance is not expected to be systemically available in the body under normal handling and use conditions and for this reason additional testing is considered unnecessary.
STOT – single exposure	Over exposure may result in irritation of the nose and throat, with coughing. High level exposure may result in breathing difficulties.
STOT – repeated exposure	Not classified as causing organ effects from repeated exposure.
Aspiration	This product does not present an aspiration hazard.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

EC50 Ceriodaphnia: 40 mg/L.

No other valid studies available. The hazard of NaOH for the environment is caused by the hydroxyl ion (pH effect). For this reason the effect of NaOH on the organisms depends on the buffer capacity of the aquatic or terrestrial ecosystem (see also 3.1.2). Also the variation in acute toxicity for aquatic organisms can be explained for a significant extent by the variation in buffer capacity of the test medium. LC50 values ranged between 33 and 189 mg/L.

12.2 Persistence and degradability

Readily biodegradable. NaOH is a strong alkaline substance that dissociates completely in water to Na⁺ and OH⁻. High water solubility and low vapour pressure indicate that NaOH will be found predominantly in aquatic environment. This implies that it will not adsorb on particulate matter or surfaces. Atmospheric emissions as aerosols are rapidly neutralized by carbon dioxide and the salts will be washed out by rain.

12.3 Bioaccumulative potential

Does not bioaccumulate. Considering its high water solubility, NaOH is not expected to bioconcentrate in organisms. In addition, sodium is a naturally-occurring element that is prevalent in the environment and to which organisms are exposed regularly, for which they have some capacity to regulate the concentration in the organism.

12.4 Mobility in soil

High water solubility and mobility

12.5 Other adverse effects

WATER: If released to waterways, alkaline products may change the pH of the waterway. Fish will die if the pH reaches 10-11 (goldfish 10.9, bluegill 10.5). SOIL: May leach to groundwater with toxic effects on aquatic life as above. ATMOSPHERE: Not expected to reside in the atmosphere. Drops or particles released to atmosphere should be removed by gravity and/or be rained out.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal Collect without generating dust. Place in clean, sealed containers and dispose of to an approved landfill site. Contact the manufacturer/supplier for additional information (if required). The product can be neutralised using highly diluted hydrochloric acid, which should be added very slowly by specialised personnel wearing proper protection. Never neutralise the solid product.

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE



	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	1823	1823	1823
14.2 Proper Shipping Name	SODIUM HYDROXIDE, SOLID	SODIUM HYDROXIDE, SOLID	SODIUM HYDROXIDE, SOLID
14.3 Transport hazard class	8	8	8
14.4 Packing Group	II	II	II

14.5 Environmental hazards No information provided

14.6 Special precautions for user

Hazchem code 2X
 GTEPG 8A1
 EMS F-A, S-B

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule Classified as a Schedule 6 (S6) Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.
 The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes C Corrosive

Risk phrases R35 Causes severe burns.

Safety phrases S1/2 Keep locked up and out of reach of children.
 S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
 S37/39 Wear suitable gloves and eye/face protection.
 S45 In case of accident or if you feel unwell seek medical advice immediately (show the label where possible).

Inventory listing(s) AUSTRALIA: AICS (Australian Inventory of Chemical Substances)
 All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:

It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m ³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

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[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name SODIUM SULPHITE
Synonym(s) SODIUM SULFITE

1.2 Uses and uses advised against

Use(s) ANTIOXIDANT • FOOD PRESERVATIVE • LABORATORY REAGENT • PAPER INDUSTRY • PHOTOGRAPHIC DEVELOPER • REDUCING AGENT • WATER TREATMENT

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

GHS classification(s) Acute Toxicity: Oral: Category 4
Serious Eye Damage / Eye Irritation: Category 1

2.2 Label elements

Signal word DANGER

Pictogram(s)



Hazard statement(s)

H302 Harmful if swallowed.
H318 Causes serious eye damage.
AUH031 Contact with acids liberates toxic gas

Prevention statement(s)

P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response statement(s)

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor/physician.
P330 Rinse mouth.

Storage statement(s)

None allocated.

PRODUCT NAME SODIUM SULPHITE**Disposal statement(s)**

P501 Dispose of contents/container in accordance with relevant regulations.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
SODIUM SULPHITE	7757-83-7	231-821-4	>97%
SODIUM SULPHATE	7757-82-6	231-820-9	<2.5%
SODIUM CARBONATE	497-19-8	207-838-8	<0.1%
WATER	7732-18-5	231-791-2	<0.1%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye	If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.
Inhalation	If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.
Skin	If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.
Ingestion	For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). Urgent hospital treatment is likely to be needed. If swallowed, do not induce vomiting.
First aid facilities	Eye wash facilities and safety shower are recommended.

4.2 Most important symptoms and effects, both acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve toxic gases (sulphur oxides) when heated to decomposition.

5.3 Advice for firefighters

Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Clear area of all unprotected personnel. Contact emergency services where appropriate.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then collect and place in suitable containers for reuse or disposal. Avoid generating dust.

PRODUCT NAME SODIUM SULPHITE

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. Check regularly for leaks or spills.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
Sodium Carbonate (total dust)	SWA (AUS)	--	10	--	--

Biological limits

No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended.

PPE

- Eye / Face** Wear dust-proof goggles.
- Hands** Wear PVC or rubber gloves.
- Body** When using large quantities or where heavy contamination is likely, wear coveralls.
- Respiratory** Where an inhalation risk exists, wear a Class P1 (Particulate) respirator. At high dust levels, wear a Full-face Class P3 (Particulate) respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	WHITE CRYSTALLINE SOLID
Odour	ODOURLESS
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	NOT AVAILABLE
Melting point	NOT AVAILABLE
Evaporation rate	NOT AVAILABLE
pH	9.0 to 10.5
Vapour density	NOT AVAILABLE
Specific gravity	2.6
Solubility (water)	SOLUBLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT

PRODUCT NAME SODIUM SULPHITE**9.1 Information on basic physical and chemical properties**

Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

10. STABILITY AND REACTIVITY**10.1 Reactivity**

Contact with acids liberates toxic gas.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization is not expected to occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources. Sensitive to air and moisture.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites) and acids (e.g. nitric acid).

10.6 Hazardous decomposition products

May evolve toxic gases (sulphur oxides) when heated to decomposition.

11. TOXICOLOGICAL INFORMATION**11.1 Information on toxicological effects**

Acute toxicity Information available for the product:
Harmful if swallowed.

Information available for the ingredient(s):

Ingredient	Oral Toxicity (LD50)	Dermal Toxicity (LD50)	Inhalation Toxicity (LC50)
SODIUM SULPHITE	820 mg/kg (mouse)	--	--
SODIUM SULPHATE	5989 mg/kg (mouse)	--	--
SODIUM CARBONATE	4090 mg/kg (rat)	> 2000 mg/kg (rabbit)	800 mg/m ³ /2 hours

Additional ingredient toxicity value(s):**SODIUM SULPHITE (7757-83-7)**

LD50 (intraperitoneal)	950 mg/kg (mouse)
LD50 (intravenous)	175 mg/kg (mouse)
LDLo (intravenous)	400 mg/kg (cat)
LDLo (oral)	2825 mg/kg (rabbit)
LDLo (subcutaneous)	600 mg/kg (rabbit)

SODIUM SULPHATE (7757-82-6)

LD50 (intravenous)	1220 mg/kg (rabbit)
LDLo (intravenous)	1220 mg/kg (mouse)
TDLo (oral)	14 g/kg (mouse - 8-12 days pregnant)
TDLo (subcutaneous)	806 mg/kg/26 weeks intermittently (mouse)

SODIUM CARBONATE (497-19-8)

LD50 (intraperitoneal)	117 mg/kg (mouse)
LD50 (subcutaneous)	2210 mg/kg (mouse)

Skin Not classified as a skin irritant. Contact may result in mild irritation, redness, rash and dermatitis.

Eye Causes serious eye damage. Contact may result in irritation, lacrimation, pain and redness.

PRODUCT NAME SODIUM SULPHITE

Sensitisation	Not classified as causing skin or respiratory sensitisation. Some individuals are hypersensitive to sulphites, and may experience asthma like symptoms (wheezing and shortness of breath) immediately following exposure.
Mutagenicity	Not classified as a mutagen.
Carcinogenicity	Not classified as a carcinogen.
Reproductive	Not classified as a reproductive toxin.
STOT – single exposure	Over exposure may result in mucous membrane irritation of the respiratory tract, with coughing.
STOT – repeated exposure	Not classified as causing organ damage from repeated exposure.
Aspiration	Not classified as causing aspiration.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No information provided.

12.2 Persistence and degradability

Biodegradability does not pertain to inorganic substances.

12.3 Bioaccumulative potential

This product does not bioaccumulate.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal Cover spill with soda ash or sodium bicarbonate. Mix and spray with water, may be effervescent. Wait until reaction is complete, scoop into a large beaker and cautiously add equal volume of sodium hypochlorite (reaction may be vigorous). Add more water, stir and allow to stand (~1hr). Dilute and neutralise. Absorb with sand/similar dispose of to an approved landfill site, or alternatively (for small amounts) flush to sewer with large excess of water.

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport Hazard Class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

Hazchem code None Allocated

15. REGULATORY INFORMATION

PRODUCT NAME SODIUM SULPHITE

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule	A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).	
Classifications	Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals. The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].	
Hazard codes	T	Toxic
	Xi	Irritant
	Xn	Harmful
Risk phrases	R22	Harmful if swallowed.
	R31	Contact with acids liberates toxic gas.
	R41	Risk of serious damage to eyes.
Safety phrases	S25	Avoid contact with eyes.
	S46	If swallowed, contact a doctor or Poisons Information Centre immediately and show container or label.
Inventory listing(s)	AUSTRALIA: AICS (Australian Inventory of Chemical Substances) All components are listed on AICS, or are exempt.	

16. OTHER INFORMATION

Additional information	<p>RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.</p> <p>WORKPLACE CONTROLS AND PRACTICES: Unless a less toxic chemical can be substituted for a hazardous substance, ENGINEERING CONTROLS are the most effective way of reducing exposure. The best protection is to enclose operations and/or provide local exhaust ventilation at the site of chemical release. Isolating operations can also reduce exposure. Using respirators or protective equipment is less effective than the controls mentioned above, but is sometimes necessary.</p> <p>PERSONAL PROTECTIVE EQUIPMENT GUIDELINES: The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.</p> <p>HEALTH EFFECTS FROM EXPOSURE: It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.</p>
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PRODUCT NAME SODIUM SULPHITE**Abbreviations**

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m ³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

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[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name SODA ASH
Synonym(s) SODA ASH DENSE • SODIUM CARBONATE

1.2 Uses and uses advised against

Use(s) DRILLING AID

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

GHS classification(s) Specific Target Organ Systemic Toxicity (Single Exposure): Category 3
Serious Eye Damage / Eye Irritation: Category 1

2.2 Label elements

Signal word DANGER

Pictogram(s)



Hazard statement(s)

H318 Causes serious eye damage.
H335 May cause respiratory irritation.

Prevention statement(s)

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response statement(s)

P304 + P340 IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor/physician.

Storage statement(s)

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.

PRODUCT NAME SODA ASH

Disposal statement(s)

P501 Dispose of contents/container in accordance with relevant regulations.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
SODIUM CARBONATE	497-19-8	207-838-8	>97%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

Inhalation If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.

Skin If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.

Ingestion For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.

First aid facilities Eye wash facilities should be available.

4.2 Most important symptoms and effects, both acute and delayed

Irritating to the eyes and skin.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve toxic gases if strongly heated.

5.3 Advice for firefighters

Treat as per requirements for surrounding fires. Evacuate area and contact emergency services. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Ventilate area where possible.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then collect and place in suitable containers for disposal. Avoid generating dust.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. Check regularly for leaks or spills.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
Sodium Carbonate (total dust)	SWA (AUS)	--	10	--	--

Biological limits

No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas.

PPE

- Eye / Face** Wear dust-proof goggles.
- Hands** Wear PVC or rubber gloves.
- Body** When using large quantities or where heavy contamination is likely, wear coveralls.
- Respiratory** Where an inhalation risk exists, wear a Class P1 (Particulate) respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	WHITE POWDER
Odour	ODOURLESS
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	NOT AVAILABLE
Melting point	854°C
Evaporation rate	NOT AVAILABLE
pH	NOT AVAILABLE
Vapour density	NOT AVAILABLE
Specific gravity	2.533
Solubility (water)	170 g/L
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE

PRODUCT NAME SODA ASH

9.1 Information on basic physical and chemical properties

Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization is not expected to occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites) and acids (e.g. nitric acid).

10.6 Hazardous decomposition products

May evolve toxic gases if heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity **Information available for the product:**
Based on available data, the classification criteria are not met.

Information available for the ingredient(s):

Ingredient	Oral Toxicity (LD50)	Dermal Toxicity (LD50)	Inhalation Toxicity (LC50)
SODIUM CARBONATE	4090 mg/kg (rat)	> 2000 mg/kg (rabbit)	800 mg/m ³ /2 hours

Additional ingredient toxicity value(s):

SODIUM CARBONATE (497-19-8)
LD50 (intraperitoneal) 117 mg/kg (mouse)
LD50 (subcutaneous) 2210 mg/kg (mouse)

Skin Contact may result in irritation, redness, rash and dermatitis.

Eye Irritating to the eyes. Contact may result in irritation, lacrimation, pain and redness. May result in burns with prolonged contact.

Sensitization Not classified as causing skin or respiratory sensitisation.

Mutagenicity Not classified as a mutagen.

Carcinogenicity Not classified as a carcinogen.

Reproductive Not classified as a reproductive toxin.

STOT – single exposure Over exposure may result in irritation of the nose and throat, with coughing. High level exposure may result in breathing difficulties.

STOT – repeated exposure Not classified as causing organ damage from repeated exposure.

Aspiration Not classified as causing aspiration.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Fishes, *Lepomis macrochirus*, LC50, 96 h, 300 mg/l. Crustaceans, *Ceriodaphnia dubia*, EC50, 48 h, 200 - 227 mg/l.

12.2 Persistence and degradability

The methods for determining the biological degradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

Not expected to bioaccumulate.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

WATER: If released to waterways, alkaline products may change the pH of the waterway. Fish will die if the pH reaches 10-11 (goldfish 10.9, bluegill 10.5). SOIL: May leach to groundwater with toxic effects on aquatic life as above. ATMOSPHERE: Not expected to reside in the atmosphere. Drops or particles released to atmosphere should be removed by gravity and/or be rained out.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal Collect without generating dust. Place in clean, sealed containers and dispose of to an approved landfill site. Contact the manufacturer/supplier for additional information (if required).

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport hazard class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

Hazchem code None Allocated

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes Xi Irritant

Risk phrases R37 Irritating to respiratory system.
R41 Risk of serious damage to eyes.

Safety phrases S22 Do not breathe dust.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice

Inventory listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:

It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m ³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

Prepared by

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[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name SODIUM BICARBONATE
Synonym(s) BAKING SODA • BICARBONATE OF SODA • CARBONIC ACID, MONOSODIUM SALT • MONOSODIUM CARBONATE • SODIUM ACID CARBONATE • SODIUM HYDROGEN CARBONATE

1.2 Uses and uses advised against

Use(s) PH CONTROL

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

2.2 Label elements

No signal word, pictograms, hazard or precautionary statements have been allocated.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
SODIUM BICARBONATE	144-55-8	205-633-8	>99%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

Inhalation If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.

Skin If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water.

Ingestion For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once).

First aid facilities Eye wash facilities should be available. Eye wash facilities and safety shower are recommended.

PRODUCT NAME SODIUM BICARBONATE

4.2 Most important symptoms and effects, both acute and delayed

No adverse health effects expected if the product is handled in accordance with the SDS and the product label.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve carbon oxides and hydrocarbons when heated to decomposition.

5.3 Advice for firefighters

Treat as per requirements for surrounding fires. Evacuate area and contact emergency services. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then collect and place in suitable containers for disposal. Avoid generating dust.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances and foodstuffs. Ensure packages are adequately labelled, protected from physical damage and sealed when not in use.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
Sodium Bicarbonate (total dust)	SWA (AUS)	--	10	--	--

Biological limits

No biological limit values have been entered for this product.

PRODUCT NAME SODIUM BICARBONATE

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended.

PPE

Eye / Face	When using large quantities or where heavy contamination is likely, wear dust-proof goggles.
Hands	When using large quantities or where heavy contamination is likely, wear PVC or rubber gloves.
Body	Not required under normal conditions of use.
Respiratory	Where an inhalation risk exists, wear a Class P1 (Particulate) respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	WHITE POWDER
Odour	ODOURLESS
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	NOT AVAILABLE
Melting point	854°C
Evaporation rate	NOT AVAILABLE
pH	8 (1% Solution)
Vapour density	NOT AVAILABLE
Specific gravity	2.533
Solubility (water)	170 g/L @ 25°C
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	NOT AVAILABLE
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10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization is not expected to occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with acids (e.g. nitric acid).

10.6 Hazardous decomposition products

May evolve carbon oxides and hydrocarbons when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity This product is expected to be of low toxicity. Under normal conditions of use, adverse health effects are not

PRODUCT NAME SODIUM BICARBONATE

anticipated. Sodium bicarbonate can neutralise the gastric juices in the stomach. During neutralisation, carbon dioxide gas is evolved and may cause stretching of the stomach, and with very large doses possible damage or rupture.

LD50 (Ingestion): 3360 mg/kg (mouse)
LC50 (inhalation): 4.74 mg/L (rat)

Skin	Not classified as a skin irritant. Prolonged or repeated contact may result in mild irritation.
Eye	Not classified as an eye irritant. Contact may result in mild irritation, lacrimation and redness.
Sensitization	This product is not known to be a skin or respiratory sensitiser.
Mutagenicity	This product is not classified as a mutagen.
Carcinogenicity	This product is not classified as a carcinogen.
Reproductive	This product is not classified as a reproductive toxin.
STOT – single exposure	Not classified as causing organ effects from single exposure.
STOT – repeated exposure	Not classified as causing organ effects from repeated exposure.
Aspiration	Not relevant.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

LC50 (Oncorhynchus mykiss) = 7.700 mg/l/96hrs.
LC50 (Lepomis macrochirus) = 7.100 mg/l/96hrs.
EC50 (Crustaceans, Daphnia magna) = 4.100 mg/l/48hrs
LOEC (Crustaceans, Daphnia magna) = 3.100 mg/l/48hrs.

12.2 Persistence and degradability

Biodegradability does not pertain to inorganic substances.

12.3 Bioaccumulative potential

Does not bioaccumulate.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

This product is not anticipated to cause adverse effects to animal or plant life if released to the environment in small quantities.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal Dispose of to an approved landfill or waste processing site. Contact the manufacturer/supplier for additional information (if required).

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport hazard class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

PRODUCT NAME SODIUM BICARBONATE

Hazchem code None Allocated

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule	A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).
Classifications	Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals. The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].
Hazard codes	None allocated.
Risk phrases	None allocated.
Safety phrases	None allocated.
Inventory listing(s)	AUSTRALIA: AICS (Australian Inventory of Chemical Substances) All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information	<p>PERSONAL PROTECTIVE EQUIPMENT GUIDELINES: The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.</p> <p>HEALTH EFFECTS FROM EXPOSURE: It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.</p>																																										
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PRODUCT NAME SODIUM BICARBONATE

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

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Prepared by

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[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name ANCOR 1
Synonym(s) CORROSION INHIBITOR

1.2 Uses and uses advised against

Use(s) BRINE • CORROSION INHIBITOR • DRILLING FLUID ADDITIVE • OIL AND GAS INDUSTRY

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

GHS classification(s) Serious Eye Damage / Eye Irritation: Category 2A

2.2 Label elements

Signal word WARNING

Pictogram(s)



Hazard statement(s)

H319 Causes serious eye irritation.

Prevention statement(s)

P264 Wash thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response statement(s)

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 If eye irritation persists: Get medical advice/attention.

Storage statement(s)

None allocated.

Disposal statement(s)

None allocated.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
TRIETHANOLAMINE	102-71-6	203-049-8	68 to 72%
NON HAZARDOUS INGREDIENTS	Not Available	Not Available	28 to 32%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye	If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.
Inhalation	If inhaled, remove from contaminated area. To protect rescuer, use a Type A (Organic vapour) respirator or an Air-line respirator (in poorly ventilated areas). Apply artificial respiration if not breathing.
Skin	If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.
Ingestion	For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.
First aid facilities	Eye wash facilities and safety shower should be available.

4.2 Most important symptoms and effects, both acute and delayed

Over exposure may result in irritation to the eyes, nose and respiratory system. May cause allergic contact dermatitis.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Dry agent, carbon dioxide, foam or water fog. Prevent contamination of drains and waterways.

5.2 Special hazards arising from the substance or mixture

Combustible. May evolve toxic gases (carbon/ nitrogen oxides, amines, ammonia, hydrocarbons) when heated to decomposition.

5.3 Advice for firefighters

Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Clear area of all unprotected personnel. Ventilate area where possible. Contact emergency services where appropriate.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then cover / absorb spill with non-combustible absorbent material (vermiculite, sand, or similar), collect and place in suitable containers for disposal.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances, heat or ignition sources and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. Check regularly for leaks or spills. Store as a Class C1 Combustible Liquid (AS1940).

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
Triethanolamine	SWA (AUS)	--	5	--	--

Biological limits

No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain vapour levels below the recommended exposure standard.

PPE

- Eye / Face** Wear splash-proof goggles.
- Hands** Wear PVC or rubber gloves.
- Body** Wear coveralls.
- Respiratory** Where an inhalation risk exists, wear a Type A (Organic vapour) respirator. If spraying, wear a Type A-Class P1 (Organic gases/vapours and Particulate) respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	COLOURLESS LIQUID
Odour	SLIGHT ODOUR
Flammability	CLASS C1 COMBUSTIBLE
Flash point	> 100°C
Boiling point	NOT AVAILABLE
Melting point	NOT AVAILABLE
Evaporation rate	NOT AVAILABLE
pH	NOT AVAILABLE
Vapour density	NOT AVAILABLE
Specific gravity	1.1
Solubility (water)	SOLUBLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT AVAILABLE
Lower explosion limit	NOT AVAILABLE
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE

9.1 Information on basic physical and chemical properties

Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	NOT AVAILABLE
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10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Hazardous polymerization is not expected to occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites), acids (e.g. nitric acid), nitrites, heat and ignition sources.

10.6 Hazardous decomposition products

May evolve toxic gases (carbon/ nitrogen oxides, amines, ammonia, hydrocarbons) when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity	May be harmful if swallowed, in contact with skin, and/or if inhaled. Toxicity Data available for the ingredient: TRIETHANOLAMINE (102-71-6): LD50 (Ingestion): 2200 mg/kg (rabbit) LD50 (Intraperitoneal): 1450 mg/kg (mouse) LD50 (Skin): > 20 mL/kg (rabbit) TDLo (Ingestion): 16 g/kg/64 weeks (mouse - cancer)
Skin	Contact may result in mild irritation, redness, pain and rash.
Eye	Contact may result in irritation, lacrimation, pain and redness. May result in burns with prolonged contact.
Sensitization	Triethanolamine has been reported to cause allergic contact dermatitis. It is not known to cause respiratory sensitisation.
Mutagenicity	Insufficient data available to classify as a mutagen.
Carcinogenicity	Triethanolamine is not classifiable as to its carcinogenicity to humans (IARC Group 3).
Reproductive	Insufficient data available to classify as a reproductive toxin.
STOT – single exposure	Over exposure may result in irritation of the nose and throat, with coughing. High level exposure may result in breathing difficulties.
STOT – repeated exposure	Not classified as causing organ effects from repeated exposure.
Aspiration	This product is not expected to present an aspiration hazard.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

LC50 (shrimp): > 100 ppm.

12.2 Persistence and degradability

In soil and water, triethanolamine will biodegrade fairly rapidly following acclimation (half-life in the order of days to weeks).

12.3 Bioaccumulative potential

Not expected to bioaccumulate.

12.4 Mobility in soil

In soil, residual triethanolamine may leach to groundwater.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal Reduce with sodium thiosulphate/ bisulphite (not strong reducing agent), acidify with 3M sulphuric acid. Scoop into a container of water and neutralise with soda ash. Absorb with sand or similar and dispose of to an approved landfill site. Contact the manufacturer/supplier for additional information (if required).

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport hazard class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

Hazchem code None Allocated

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule Classified as a Schedule 5 (S5) Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.
The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes Xi Irritant

Risk phrases R36 Irritating to eyes.

Safety phrases S36 Wear suitable protective clothing.

Inventory listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:

It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m ³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

Prepared by

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[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name CITRIC ACID
Synonym(s) 2-HYDROXY-1,2,3-PROPANETRICARBOXYLIC ACID • CITRIC ACID ANHYDROUS • CITRIC ACID MONOHYDRATE

1.2 Uses and uses advised against

Use(s) INDUSTRIAL APPLICATIONS

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

GHS classification(s) Specific Target Organ Systemic Toxicity (Single Exposure): Category 3
Skin Corrosion/Irritation: Category 2
Serious Eye Damage / Eye Irritation: Category 2A

2.2 Label elements

Signal word WARNING

Pictogram(s)



Hazard statement(s)

H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.

Prevention statement(s)

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 Wash thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

PRODUCT NAME CITRIC ACID

Response statement(s)

P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P304 + P340	IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312	Call a POISON CENTER or doctor/physician if you feel unwell.
P321	Specific treatment is advised - see first aid instructions.
P362	Take off contaminated clothing and wash before re-use.

Storage statement(s)

P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.

Disposal statement(s)

P501	Dispose of contents/container in accordance with relevant regulations.
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2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
CITRIC ACID	77-92-9	201-069-1	>99%
WATER	7732-18-5	231-791-2	<1%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye	If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.
Inhalation	If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.
Skin	If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.
Ingestion	For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.
First aid facilities	No information provided.

4.2 Most important symptoms and effects, both acute and delayed

Acute: Irritating to the eyes and skin. Delayed: No information available.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Dry agent, carbon dioxide, foam or water fog. Prevent contamination of drains and waterways.

5.2 Special hazards arising from the substance or mixture

Combustible. May evolve carbon oxides and hydrocarbons when heated to decomposition.

5.3 Advice for firefighters

Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Ventilate area where possible.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then collect and place in suitable containers for disposal. Avoid generating dust.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from moisture, incompatible substances and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

No exposure standards have been entered for this product.

Biological limits No Biological Limit Value allocated.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain dust levels below the recommended exposure standard.

PPE

Eye / Face	Wear dust-proof goggles.
Hands	Wear PVC or rubber gloves.
Body	When using large quantities or where heavy contamination is likely, wear coveralls.
Respiratory	At high dust levels, wear a Class P1 (Particulate) respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	WHITE CRYSTALLINE POWDER
Odour	ODOURLESS
Flammability	COMBUSTIBLE
Flash point	174°C
Boiling point	175°C (Decomposes)
Melting point	153°C
Evaporation rate	NOT AVAILABLE

9.1 Information on basic physical and chemical properties

pH	2.2 (0.1M Solution)
Vapour density	NOT AVAILABLE
Specific gravity	1.665
Solubility (water)	1330 kg/m ³ @ 20°C
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT AVAILABLE
Lower explosion limit	NOT AVAILABLE
Partition coefficient	NOT AVAILABLE
Autoignition temperature	345°C
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	NOT AVAILABLE
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10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization is not expected to occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites) and alkalis (e.g. sodium hydroxide).

10.6 Hazardous decomposition products

May evolve carbon oxides and hydrocarbons when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity	Based on available data, the classification criteria are not met. LD50 (Ingestion): 3000 mg/kg (rat) LD50 (Intraperitoneal): 290 mg/kg (rat) LD50 (Intravenous): 42 mg/kg (mouse) LDLo (Ingestion): 7000 mg/kg (rabbit)
Skin	Irritating to the skin. Contact may result in irritation, redness, rash and dermatitis.
Eye	Irritating to the eyes. Contact may result in irritation, lacrimation, pain and redness. May result in burns with prolonged contact.
Sensitization	This product is not classified as causing skin or respiratory sensitisation. However, citric acid has the potential to cause allergic effects.
Mutagenicity	Insufficient data available to classify as a mutagen.
Carcinogenicity	Insufficient data available to classify as a carcinogen.
Reproductive	Insufficient data available to classify as a reproductive toxin.
STOT – single exposure	Irritating to the respiratory system. Over exposure may result in irritation of the nose and throat, with coughing.
STOT – repeated exposure	Not classified as causing organ effects from repeated exposure.
Aspiration	This product does not present an aspiration hazard.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

LC50 (Leuciscus idus melanotus): 440 mg/L/48hrs.
 LC50 (Daphnia magna (Water flea)): 1.535 mg/L/24hrs.

12.2 Persistence and degradability

This product is readily biodegradable.

12.3 Bioaccumulative potential

This product does not bioaccumulate.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

WATER: If citric acid is released to water, it is expected to biodegrade rapidly. May be toxic to fish at moderately high levels (120 ppm is fatal to daphnia; 894 ppm with pH 4 is fatal to goldfish) due to acidic nature. Fairly high biological oxygen demand (BOD) which may cause oxygen depletion in large spills. Citric acid occurs naturally in many plants.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal Neutralise with lime, anion exchanger or similar. For small amounts, absorb with sand or similar and dispose of to an approved landfill site. Contact the manufacturer/supplier for additional information (if required).

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport hazard class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

Hazchem code None Allocated

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes Xi Irritant

Risk phrases R36/37/38 Irritating to eyes, respiratory system and skin.

Safety phrases S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
 S37/39 Wear suitable gloves and eye/face protection.

PRODUCT NAME CITRIC ACID

Inventory listing(s) AUSTRALIA: AICS (Australian Inventory of Chemical Substances)
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m ³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report status This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

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[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name FRACSEAL FINE/MEDIUM
Synonym(s) FRACSEAL F • FRACSEAL FINE • FRACSEAL M • FRACSEAL MEDIUM

1.2 Uses and uses advised against

Use(s) DRILLING FLUID ADDITIVE

1.3 Details of the supplier of the product

Supplier name **NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD**
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

2.2 Label elements

No signal word, pictograms, hazard or precautionary statements have been allocated.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
CELLULOSE	9004-34-6	232-674-9	100%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

Inhalation If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.

Skin Exposure is considered unlikely. Skin irritation is not anticipated.

Ingestion For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). Due to product form and application, ingestion is considered unlikely.

First aid facilities No information provided.

4.2 Most important symptoms and effects, both acute and delayed

This product is expected to be of low toxicity. Under normal conditions of use, adverse health effects are not anticipated.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Dry agent, carbon dioxide, foam or water fog. Prevent contamination of drains and waterways.

5.2 Special hazards arising from the substance or mixture

Combustible. May evolve toxic gases (carbon oxides, hydrocarbons) when heated to decomposition. Finely divided dust may form explosive mixtures with air.

5.3 Advice for firefighters

Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Moisten with water to prevent a dust hazard and place in sealable containers for disposal.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances, heat or ignition sources and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. Check regularly for damage to containers.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
Cellulose (paper fibre) (a)	SWA (AUS)	--	10	--	--

Biological limits

No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas. Maintain dust levels below the recommended exposure standard.

PPE

- Eye / Face** When using large quantities or where heavy contamination is likely, wear dust-proof goggles.
- Hands** Wear PVC or rubber gloves.
- Body** When using large quantities or where heavy contamination is likely, wear coveralls.
- Respiratory** Where an inhalation risk exists, wear a Class P1 (Particulate) respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	YELLOW TO BROWN SOLID
Odour	ODOURLESS
Flammability	COMBUSTIBLE
Flash point	NOT AVAILABLE
Boiling point	NOT AVAILABLE
Melting point	500°C to 518°C
Evaporation rate	NOT AVAILABLE
pH	6.5 to 7.5
Vapour density	NOT AVAILABLE
Specific gravity	0.9
Solubility (water)	INSOLUBLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT AVAILABLE
Lower explosion limit	NOT AVAILABLE
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	NOT AVAILABLE
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10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization is not expected to occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites).

10.6 Hazardous decomposition products

May evolve carbon oxides and hydrocarbons when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity	This product is expected to be of low toxicity. Under normal conditions of use, adverse health effects are not anticipated. Oral LD50 (rat) is > 5000 mg/kg. Dermal LD50 (rabbit) is > 2000 mg/kg. LC50 (rat) is 510 mg/m ³ /2 hours.
Skin	Not classified as a skin irritant.
Eye	Not classified as an eye irritant. Contact may cause mild discomfort.
Sensitization	This product is not known to be a skin or respiratory sensitiser.
Mutagenicity	No evidence of mutagenic effects.
Carcinogenicity	No evidence of carcinogenic effects.
Reproductive	No evidence of reproductive effects.
STOT – single exposure	Not classified as causing organ effects from single exposure.
STOT – repeated exposure	Not classified as causing organ effects from repeated exposure.
Aspiration	Not relevant.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No information provided.

12.2 Persistence and degradability

No information provided.

12.3 Bioaccumulative potential

No information provided.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal	Reuse where possible. No special precautions are normally required when handling this product.
Legislation	Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport hazard class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

Hazchem code None Allocated

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule	A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).
Classifications	Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals. The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].
Hazard codes	None allocated.
Risk phrases	None allocated.
Safety phrases	None allocated.
Inventory listing(s)	AUSTRALIA: AICS (Australian Inventory of Chemical Substances) All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information	<p>PERSONAL PROTECTIVE EQUIPMENT GUIDELINES: The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.</p> <p>HEALTH EFFECTS FROM EXPOSURE: It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.</p>	
Abbreviations	ACGIH	American Conference of Governmental Industrial Hygienists
	CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
	CNS	Central Nervous System
	EC No.	EC No - European Community Number
	GHS	Globally Harmonized System
	IARC	International Agency for Research on Cancer
	LC50	Lethal Concentration, 50% / Median Lethal Concentration
	LD50	Lethal Dose, 50% / Median Lethal Dose
	mg/m ³	Milligrams per Cubic Metre
	OEL	Occupational Exposure Limit
	pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
	ppm	Parts Per Million
	STEL	Short-Term Exposure Limit
	STOT-RE	Specific target organ toxicity (repeated exposure)
	STOT-SE	Specific target organ toxicity (single exposure)
	SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
	SWA	Safe Work Australia
	TLV	Threshold Limit Value
	TWA	Time Weighted Average

PRODUCT NAME FRACSEAL FINE/MEDIUM**Revision history**

Revision	Description
3.2	Standard SDS Review.
3.1	Standard SDS Review.
3.0	Converted to GHS.
2.0	Standard SDS Review
1.0	Initial SDS creation

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

Prepared by

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Revision: 3.2

SDS date: 25 November 2014

[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **MAGNESIUM OXIDE**
Synonym(s) CALCINED MAGNESIA • MAGNESIA • MAGOXI16 / 27 - PRODUCT CODE

1.2 Uses and uses advised against

Use(s) DRILLING FLUID ADDITIVE • PH INDICATOR

1.3 Details of the supplier of the product

Supplier name **NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD**
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

2.2 Label elements

No signal word, pictograms, hazard or precautionary statements have been allocated.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
CALCIUM OXIDE	1305-78-8	215-138-9	<3.5%
MAGNESIUM OXIDE	1309-48-4	215-171-9	>94%
SILICA, AMORPHOUS	7631-86-9	231-545-4	<2.5%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

Inhalation If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.

Skin If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.

Ingestion For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.

PRODUCT NAME MAGNESIUM OXIDE

First aid facilities Eye wash facilities and safety shower should be available.

4.2 Most important symptoms and effects, both acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve magnesium oxides when heated to decomposition.

5.3 Advice for firefighters

Treat as per requirements for surrounding fires. Evacuate area and contact emergency services. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Ventilate area where possible.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then collect and place in suitable containers for disposal. Avoid generating dust.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances and foodstuffs. Ensure product is adequately labelled, protected from physical damage and sealed when not in use.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
Calcium oxide	SWA (AUS)	--	2	--	--
Fumed silica (respirable dust)	SWA (AUS)	--	2	--	--
Magnesium oxide (fume)	SWA (AUS)	--	10	--	--

PRODUCT NAME MAGNESIUM OXIDE

Biological limits

No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended.

PPE

- Eye / Face** Wear dust-proof goggles.
- Hands** Wear PVC or rubber gloves.
- Body** Not required under normal conditions of use.
- Respiratory** Where an inhalation risk exists, wear a Class P1 (Particulate) respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	WHITE GRANULES
Odour	ODOURLESS
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	3600°C
Melting point	2800°C
Evaporation rate	NOT AVAILABLE
pH	NOT AVAILABLE
Vapour density	NOT AVAILABLE
Specific gravity	3.6 - 3.7
Solubility (water)	SLIGHTLY SOLUBLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	0 %
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10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization is not expected to occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible (violently) with interhalogens (e.g. bromine pentafluoride, chlorine trifluoride) and phosphorus pentachloride. May ignite or explode when heated with aluminium powder. Also incompatible with acids (e.g. nitric acid) and dampness as material hydrates.

10.6 Hazardous decomposition products

May evolve magnesium oxides when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects**Acute toxicity****Information available for the product:**

This product is expected to be of low toxicity. Based on available data, the classification criteria are not met.

Information available for the ingredient(s):

Ingredient	Oral Toxicity (LD50)	Dermal Toxicity (LD50)	Inhalation Toxicity (LC50)
SILICA, AMORPHOUS	3160 mg/kg (rat)	--	--

Skin

Contact may result in irritation, redness, rash and dermatitis.

Eye

Contact may result in irritation, lacrimation, pain and redness.

Sensitization

This product is not classified as causing skin or respiratory sensitisation.

Mutagenicity

This product is not classified as a mutagen.

Carcinogenicity

This product is not classified as a carcinogen.

Reproductive

This product is not classified as a reproductive toxin.

STOT – single exposure

Not classified as causing organ effects from single exposure.

STOT – repeated exposure

Not classified as causing organ effects from repeated exposure.

Aspiration

Not relevant.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No information provided.

12.2 Persistence and degradability

The methods for determining the biological degradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

Not expected to bioaccumulate.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods**Waste disposal**

For small amounts, cover with moist sand, vermiculite or similar to avoid dust hazard and dispose of to an approved landfill site. Contact the manufacturer/supplier for additional information if disposing of large quantities (if required).

Legislation

Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

PRODUCT NAME MAGNESIUM OXIDE

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport hazard class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

Hazchem code None Allocated

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes None allocated.

Risk phrases None allocated.

Safety phrases None allocated.

Inventory listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information **EXPOSURE STANDARDS - TIME WEIGHTED AVERAGES:** Exposure standards are established on the premise of an 8 hour work period of normal intensity, under normal climatic conditions and where a 16 hour break between shifts exists to enable the body to eliminate absorbed contaminants. In the following circumstances, exposure standards must be reduced: Strenuous work conditions; hot, humid climates; high altitude conditions; extended shifts (which increase the exposure period and shorten the period of recuperation).

RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:

It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

PRODUCT NAME MAGNESIUM OXIDE

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m ³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

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[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name DEFOAM A (I)
Synonym(s) DEFOAM E • DEFOAM-A (I)

1.2 Uses and uses advised against

Use(s) COMPLETION FLUID • DRILLING FLUID

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

GHS classification(s) Flammable Liquids: Category 4
Skin Corrosion/Irritation: Category 2
Serious Eye Damage / Eye Irritation: Category 2A
Specific Target Organ Systemic Toxicity (Single Exposure): Category 3
Specific Target Organ Systemic Toxicity (Single Exposure): Category 3

2.2 Label elements

Signal word WARNING

Pictogram(s)



Hazard statement(s)

H227 Combustible liquid.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H336 May cause drowsiness or dizziness.

Prevention statement(s)

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 Wash thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

PRODUCT NAME DEFOAM A (I)**Response statement(s)**

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312 Call a POISON CENTER or doctor/physician if you feel unwell.
P321 Specific treatment is advised - see first aid instructions.
P332 + P337 + P313 If skin or eye irritation occurs: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before re-use.
P370 + P378 In case of fire: Use appropriate media for extinction.

Storage statement(s)

P403 + P233 + P235 Store in a well-ventilated place. Keep cool. Keep container tightly closed.
P405 Store locked up.

Disposal statement(s)

P501 Dispose of contents/container in accordance with relevant regulations.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
OCTAN-2-OL	123-96-6	204-667-0	>98%
WATER	7732-18-5	231-791-2	Remainder

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

Inhalation If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.

Skin If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.

Ingestion For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.

First aid facilities No information provided.

4.2 Most important symptoms and effects, both acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Dry agent, carbon dioxide or foam. Prevent contamination of drains and waterways.

5.2 Special hazards arising from the substance or mixture

Combustible. May evolve carbon oxides and hydrocarbons when heated to decomposition.

5.3 Advice for firefighters

Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Clear area of all unprotected personnel. Ventilate area where possible. Contact emergency services where appropriate.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then cover / absorb spill with non-combustible absorbent material (vermiculite, sand, or similar), collect and place in suitable containers for disposal. Eliminate all sources of ignition.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances, heat or ignition sources and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. Large storage areas should have appropriate ventilation systems. Store as a Class C1 Combustible Liquid (AS1940).

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

No exposure standards have been entered for this product.

Biological limits

No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended.

PPE

Eye / Face	Wear splash-proof goggles.
Hands	Wear nitrile or neoprene gloves.
Body	When using large quantities or where heavy contamination is likely, wear coveralls.
Respiratory	Where an inhalation risk exists, wear a Type A (Organic vapour) respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	CLEAR LIQUID
Odour	SLIGHT ODOUR
Flammability	CLASS C1 COMBUSTIBLE
Flash point	88°C (cc)
Boiling point	180°C
Melting point	-39°C
Evaporation rate	NOT AVAILABLE
pH	NOT AVAILABLE
Vapour density	4.5 (Air = 1)
Specific gravity	0.87
Solubility (water)	INSOLUBLE
Vapour pressure	1 mm Hg @ 33°C
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	100 %
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10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization is not expected to occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites), acids (e.g. nitric acid), heat and ignition sources.

10.6 Hazardous decomposition products

May evolve carbon oxides and hydrocarbons when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Health hazard summary	May be harmful - irritant. This product has the potential to cause adverse health effects with over exposure. Use safe work practices to avoid eye or skin contact and inhalation. Over exposure may result in central nervous system (CNS) effects.
Eye	Irritant. Contact may result in irritation, lacrimation, pain and redness.
Inhalation	Irritant. Over exposure may result in irritation of the nose and throat, coughing and headache. High level exposure may result in nausea, dizziness and drowsiness.
Skin	Irritant. Contact may result in drying and defatting of the skin, rash and dermatitis.
Ingestion	May be harmful. Ingestion may result in nausea, vomiting, abdominal pain, diarrhoea, dizziness and drowsiness. Aspiration or inhalation may cause chemical pneumonitis and pulmonary oedema.
Toxicity data	No LD50 data available for this product.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish LC50 - Oncorhynchus mykiss (rainbow trout) - 75 mg/l - 96 h.

12.2 Persistence and degradability

No information provided.

12.3 Bioaccumulative potential

No information provided.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal Incinerate where available. For small amounts, absorb with sand, vermiculite or similar and dispose of to an approved landfill site.

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport Hazard Class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

Hazchem code None Allocated

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes Xi Irritant
Xn Harmful

Risk phrases R36/37/38 Irritating to eyes, respiratory system and skin.
R67 Vapours may cause drowsiness and dizziness.

Safety phrases S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
S36 Wear suitable protective clothing.

Inventory listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information

RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

WORK PRACTICES - SOLVENTS: Organic solvents may present both a health and flammability hazard. It is recommended that engineering controls should be adopted to reduce exposure where practicable (for example, if using indoors, ensure explosion proof extraction ventilation is available). Flammable or combustible liquids with explosive limits have the potential for ignition from static discharge. Refer to AS 1020 (The control of undesirable static electricity) and AS 1940 (The storage and handling of flammable and combustible liquids) for control procedures.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:

It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m ³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

PRODUCT NAME DEFOAM A (I)

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

Prepared by

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[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **CALCIUM CHLORIDE POWDER 94-97%**
Synonym(s) **CALCIUM CHLORIDE ANHYDRATE**

1.2 Uses and uses advised against

Use(s) **CONCRETE CONDITIONER • DESICCANT • DUST CONTROL AGENT • FOOD ADDITIVE • INDUSTRIAL APPLICATIONS**

1.3 Details of the supplier of the product

Supplier name **NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD**
Address **11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA**
Telephone **+61 8 9410 8200**
Fax **+61 8 9410 8299**
Website **www.newpark.com**

1.4 Emergency telephone number(s)

Emergency **1800 127 406 (Australia); +64 3 3530199 (International)**

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

GHS classification(s) **Serious Eye Damage / Eye Irritation: Category 2A**

2.2 Label elements

Signal word **WARNING**

Pictogram(s)



Hazard statement(s)

H319 Causes serious eye irritation.

Prevention statement(s)

P264 Wash thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response statement(s)

P305 + P351 + P338 **IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.**
P337 + P313 **If eye irritation persists: Get medical advice/attention.**

Storage statement(s)

None allocated.

Disposal statement(s)

None allocated.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
CALCIUM CHLORIDE ANHYDROUS	10043-52-4	233-140-8	94 to 97%
SODIUM CHLORIDE	7647-14-5	231-598-3	1 to 5%
WATER	7732-18-5	231-791-2	1%

4. FIRST AID MEASURES

4.1 Description of first aid measures

- Eye** If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.
- Inhalation** If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.
- Skin** If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.
- Ingestion** For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.
- First aid facilities** Eye wash facilities and safety shower should be available.

4.2 Most important symptoms and effects, both acute and delayed

Irritating to the eyes and skin.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve toxic gases (chlorides) when heated to decomposition.

5.3 Advice for firefighters

Treat as per requirements for surrounding fires. Evacuate area and contact emergency services. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Clear area of all unprotected personnel. Contact emergency services where appropriate.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then collect and place in suitable containers for reuse or disposal. Avoid generating dust.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances, heat or ignition sources and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

No exposure standards have been entered for this product.

Biological limits No Biological Limit Value allocated.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain dust levels below the recommended exposure standard.

PPE

Eye / Face	Wear dust-proof goggles.
Hands	Wear PVC or rubber gloves.
Body	When using large quantities or where heavy contamination is likely, wear coveralls.
Respiratory	Where an inhalation risk exists, wear a Class P1 (Particulate) respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	WHITE POWDER
Odour	ODOURLESS
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	> 1600°C
Melting point	772°C
Evaporation rate	NOT RELEVANT
pH	7.0 to 9.0
Vapour density	NOT AVAILABLE
Specific gravity	2.15
Solubility (water)	590 kg/m ³ (Approximately)
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles

NOT AVAILABLE

10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization is not expected to occur.

10.4 Conditions to avoid

Avoid contact with incompatible substances.

10.5 Incompatible materials

Incompatible with acids (e.g. nitric acid), methyl vinyl ether, zinc/ galvanised metals, bromine trifluoride, boron oxide and calcium oxide. May react exothermically with water (i.e. releasing heat).

10.6 Hazardous decomposition products

May evolve toxic gases (chlorides) when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

Based on available data, the classification criteria are not met. Toxicity Data available for the ingredients:
CALCIUM CHLORIDE ANHYDROUS (10043-52-4):
LD50 (Ingestion): 1000 mg/kg (rat)
LD50 (Intraperitoneal): 210 mg/kg (mouse)
LD50 (Intravenous): 42 mg/kg (mouse)
LD50 (Subcutaneous): 823 mg/kg (mouse)
LDLo (Ingestion): 1384 mg/kg (rabbit)
LDLo (Intravenous): 150 mg/kg (guinea pig)
LDLo (Subcutaneous): 249 mg/kg (cat)
TDLo (Intravenous): 20 mg/kg/1 hour (woman)
SODIUM CHLORIDE (7647-14-5):
LC50 (Inhalation): > 42000 mg/m³/1 hour (rat)
LD50 (Ingestion): 3000 mg/kg (rat)
LD50 (Intraperitoneal): 2602 mg/kg (mouse)
LD50 (Intravenous): 645 mg/kg (mouse)
LD50 (Skin): > 10000 mg/kg (rabbit)
LD50 (Subcutaneous): 3000 mg/kg (mouse)
LDLo (Ingestion): 8000 mg/kg (rabbit)
LDLo (Intravenous): 300 mg/kg (guinea pig)
LDLo (Subcutaneous): 2160 mg/kg (guinea pig)
TDLo (Ingestion): 12357 mg/kg (human)

Skin Not classified as a skin irritant. Contact may result in mechanical irritation, redness and rash.

Eye Irritating to the eyes. Contact may result in irritation, lacrimation, pain and redness.

Sensitization This product is not known to be a skin or respiratory sensitiser.

Mutagenicity Insufficient data available to classify as a mutagen.

Carcinogenicity Insufficient data available to classify as a carcinogen.

Reproductive Insufficient data available to classify as a reproductive toxin.

STOT – single exposure Not classified as causing organ effects from single exposure.

STOT – repeated exposure Not classified as causing organ effects from repeated exposure.

Aspiration This product does not present an aspiration hazard.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No information provided.

12.2 Persistence and degradability

Biodegradability does not pertain to inorganic substances.

12.3 Bioaccumulative potential

This product does not bioaccumulate.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal Ensure product is covered with moist soil to prevent dust generation and dispose of to approved Council landfill. Contact the manufacturer/supplier for additional information (if required).

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport hazard class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

Hazchem code None Allocated

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes Xi Irritant

Risk phrases R36 Irritating to eyes.

Safety phrases S22 Do not breathe dust.
S24 Avoid contact with skin.

Inventory listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

PRODUCT NAME CALCIUM CHLORIDE POWDER 94-97%**Additional information**

RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:

It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m ³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report status

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[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name TOPSPOT
Synonym(s) TOP SPOT

1.2 Uses and uses advised against

Use(s) SURFACTANT

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

2.2 Label elements

No signal word, pictograms, hazard or precautionary statements have been allocated.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
NON HAZARDOUS INGREDIENTS	Not Available	Not Available	Remainder
SURFACTANT(S)	-	-	Not Available

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

Inhalation If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.

Skin If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.

Ingestion For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.

First aid facilities Eye wash facilities and safety shower should be available.

4.2 Most important symptoms and effects, both acute and delayed

Adverse effects not expected from this product under normal conditions of use.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve toxic gases if strongly heated.

5.3 Advice for firefighters

No fire or explosion hazard exists.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then cover / absorb spill with non-combustible absorbent material (vermiculite, sand, or similar), collect and place in suitable containers for disposal.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

No exposure standards have been entered for this product.

Biological limits

No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas.

PPE

Eye / Face	Wear splash-proof goggles.
Hands	Wear PVC or rubber gloves.
Body	When using large quantities or where heavy contamination is likely, wear coveralls. In a laboratory situation, wear a laboratory coat.
Respiratory	Not required under normal conditions of use.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	DARK AMBER COLOURED TO BLACK LIQUID
Odour	MILD ODOUR
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	NOT AVAILABLE
Melting point	NOT AVAILABLE
Evaporation rate	NOT AVAILABLE
pH	NOT AVAILABLE
Vapour density	NOT AVAILABLE
Specific gravity	1.1 to 1.2
Solubility (water)	NOT AVAILABLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization is not expected to occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites) and acids (e.g. nitric acid).

10.6 Hazardous decomposition products

May evolve toxic gases if heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

PRODUCT NAME TOPSPOT

Acute toxicity	Information available for the product: This product is expected to be of low toxicity. Under normal conditions of use, adverse health effects are not anticipated.
Skin	Not classified as a skin irritant. Contact may result in mild irritation.
Eye	Not classified as an eye irritant. Contact may cause discomfort, lacrimation and redness.
Sensitization	This product is not known to be a skin or respiratory sensitiser.
Mutagenicity	No evidence of mutagenic effects.
Carcinogenicity	No evidence of carcinogenic effects.
Reproductive	No evidence of reproductive effects.
STOT – single exposure	No known effects from this product.
STOT – repeated exposure	No known effects from this product.
Aspiration	This product does not present an aspiration hazard.

12. ECOLOGICAL INFORMATION**12.1 Toxicity**

No information provided.

12.2 Persistence and degradability

No information provided.

12.3 Bioaccumulative potential

No information provided.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS**13.1 Waste treatment methods**

Waste disposal	For small amounts, absorb with sand or similar and dispose of to an approved landfill site. Contact the manufacturer/supplier for additional information (if required). Ensure that appropriate personal protective equipment is used during disposal.
Legislation	Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION**NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA**

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport hazard class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided**14.6 Special precautions for user****Hazchem code** None Allocated**15. REGULATORY INFORMATION**

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule	A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).
Classifications	Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals. The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].
Hazard codes	None allocated.
Risk phrases	None allocated.
Safety phrases	None allocated.
Inventory listing(s)	AUSTRALIA: AICS (Australian Inventory of Chemical Substances) All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information	PERSONAL PROTECTIVE EQUIPMENT GUIDELINES: The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made. HEALTH EFFECTS FROM EXPOSURE: It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.
Abbreviations	ACGIH American Conference of Governmental Industrial Hygienists CAS # Chemical Abstract Service number - used to uniquely identify chemical compounds CNS Central Nervous System EC No. EC No - European Community Number EMS Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods) GHS Globally Harmonized System GTEPG Group Text Emergency Procedure Guide IARC International Agency for Research on Cancer LC50 Lethal Concentration, 50% / Median Lethal Concentration LD50 Lethal Dose, 50% / Median Lethal Dose mg/m ³ Milligrams per Cubic Metre OEL Occupational Exposure Limit pH relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline). ppm Parts Per Million STEL Short-Term Exposure Limit STOT-RE Specific target organ toxicity (repeated exposure) STOT-SE Specific target organ toxicity (single exposure) SUSMP Standard for the Uniform Scheduling of Medicines and Poisons SWA Safe Work Australia TLV Threshold Limit Value TWA Time Weighted Average

PRODUCT NAME TOPSPOT

Report status

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[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name STRATA-VANGUARD
Synonym(s) STRATA VANGUARD

1.2 Uses and uses advised against

Use(s) DRILLING FLUID ADDITIVE

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

2.2 Label elements

No signal word, pictograms, hazard or precautionary statements have been allocated.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
CRISTOBALITE	14464-46-1	238-455-4	<5%
QUARTZ (CRYSTALLINE SILICA)	14808-60-7	238-878-4	<2%
2-PROPENENITRILE-1,3-BUTADIENE RUBBER	9003-18-3	618-357-1	<50%
NATURAL RUBBER	9006-04-6	232-689-0	<50%
POLYISOPRENE	9003-31-0	618-362-9	<50%
SBR ELASTOMERS	9003-55-8	618-370-2	<50%
CELLULOSE	9004-34-6	232-674-9	<30%
DIATOMACEOUS EARTH, FLUX CALCINED	68855-54-9	272-489-0	<15%
FULLERS EARTH	8031-18-3	617-052-0	<10%
LIMESTONE (CALCIUM CARBONATE)	1317-65-3	215-279-6	<10%

PRODUCT NAME STRATA-VANGUARD

POLYETHYLENE	9002-88-4	618-339-3	<3%
MAGNESIUM OXIDE	1309-48-4	215-171-9	<1%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye	If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.
Inhalation	If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.
Skin	If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.
Ingestion	For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.
First aid facilities	No information provided.

4.2 Most important symptoms and effects, both acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve toxic gases if strongly heated.

5.3 Advice for firefighters

No fire or explosion hazard exists.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Clear area of all unprotected personnel. Contact emergency services where appropriate.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then collect and place in suitable containers for reuse or disposal. Avoid generating dust.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
Calcium carbonate (Limestone, Marble, Whiting)	SWA (AUS)	--	10	--	--
Cellulose (paper fibre) (a)	SWA (AUS)	--	10	--	--
Cristobalite	SWA (AUS)	--	0.1	--	--
Magnesium oxide (fume)	SWA (AUS)	--	10	--	--
Quartz (respirable dust)	SWA (AUS)	--	0.1	--	--

Biological limits

No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain dust levels below the recommended exposure standard.

PPE

- Eye / Face** Wear dust-proof goggles.
- Hands** Wear PVC or rubber gloves.
- Body** When using large quantities or where heavy contamination is likely, wear coveralls.
- Respiratory** Where an inhalation risk exists, wear a Class P1 (Particulate) respirator. At high dust levels, wear a Powered Air Purifying Respirator (PAPR) with Class P3 (Particulate) filter or a Full-face Class P3 (Particulate) respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	TAN COLOURED POWDER
Odour	MILD ODOUR
Flammability	NON FLAMMABLE
Flash point	NOT AVAILABLE
Boiling point	NOT AVAILABLE
Melting point	NOT AVAILABLE
Evaporation rate	NOT AVAILABLE
pH	6.3 (5% Suspension)
Vapour density	NOT AVAILABLE
Specific gravity	2.1
Solubility (water)	INSOLUBLE
Vapour pressure	1 mm Hg @ 20°C
Upper explosion limit	NOT AVAILABLE
Lower explosion limit	NOT AVAILABLE
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles

NOT AVAILABLE

10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization is not expected to occur.

10.4 Conditions to avoid

Avoid contact with incompatible substances.

10.5 Incompatible materials

Incompatible with acids (e.g. nitric acid). Also incompatible with oxygen difluoride, chlorine and trifluoride.

10.6 Hazardous decomposition products

May evolve toxic gases if heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

Toxicity Data available for the ingredients:
CRISTOBALITE (14464-46-1):
TCLo (inhalation) 16 mppcf/8hours/17.9 years (human-fibrosis)
QUARTZ (SILICA CRYSTALLINE) (14808-60-7):
LCLo (inhalation) 300 ug/m³/10 years (human)
TCLo (inhalation) 16 000 000 particles/ft³/8 hours/17.9 years (human-fibrosis)
CELLULOSE (9004-34-6):
LC50 (inhalation) > 5800 mg/m³/4 hours (rat)
LD50 (ingestion) > 5000 mg/kg (rat)
LD50 (intraperitoneal) > 31600 mg/kg (rat)
LD50 (skin) > 2000 mg/kg (rabbit)
POLYETHYLENE (9002-88-4):
LDLo (ingestion) 3000 mg/kg (rat)
MAGNESIUM OXIDE (1309-48-4):
TCLo (inhalation) 400 mg/kg (human)

Skin

Not classified as a skin irritant. Contact may result in mechanical irritation.

Eye

Not classified as an eye irritant. Contact may result in mechanical irritation.

Sensitization

This product is not known to be a skin or respiratory sensitiser.

Mutagenicity

No evidence of mutagenic effects.

Carcinogenicity

Crystalline silica is classified as carcinogenic to humans (IARC Group 1). However, there is insufficient respirable silica in this product to be classified as a carcinogen.

Reproductive

No evidence of reproductive effects.

STOT – single exposure

No known effects from this product.

STOT – repeated exposure

Adverse health effects associated with silica, such as the development of silicosis (lung fibrosis), is not anticipated unless chronic (i.e. prolonged and repeated) exposure to silica quartz dust occurs.

Aspiration

This product does not present an aspiration hazard.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

This product is not anticipated to cause adverse effects to animal or plant life if released to the environment in small quantities.

12.2 Persistence and degradability

Not applicable.

12.3 Bioaccumulative potential

This product is not expected to bioaccumulate.

12.4 Mobility in soil

This product has low mobility in soil.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal Ensure product is covered with moist soil to prevent dust generation and dispose of to approved Council landfill. Contact the manufacturer/supplier for additional information (if required).

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport hazard class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

Hazchem code None Allocated

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes None allocated.

Risk phrases None allocated.

Safety phrases None allocated.

Inventory listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:

It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m ³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

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[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name FRAC ATTACK
Synonym(s) FRAC-ATTACK

1.2 Uses and uses advised against

Use(s) LOST CIRCULATION MATERIAL

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

GHS classification(s) Skin Corrosion/Irritation: Category 2
Serious Eye Damage / Eye Irritation: Category 1
Specific Target Organ Systemic Toxicity (Single Exposure): Category 3

2.2 Label elements

Signal word DANGER

Pictogram(s)



Hazard statement(s)

H315 Causes skin irritation.
H318 Causes serious eye damage.
H335 May cause respiratory irritation.

Prevention statement(s)

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 Wash thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

PRODUCT NAME FRAC ATTACK

Response statement(s)

P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P304 + P340	IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER or doctor/physician.
P321	Specific treatment is advised - see first aid instructions.
P332 + P313	If skin irritation occurs: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before re-use.

Storage statement(s)

P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.

Disposal statement(s)

P501	Dispose of contents/container in accordance with relevant regulations.
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2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
CALCIUM OXIDE	1305-78-8	215-138-9	<10%
CALCIUM HYDROXIDE	1305-62-0	215-137-3	<5%
CRISTOBALITE	14464-46-1	238-455-4	<5%
QUARTZ (CRYSTALLINE SILICA)	14808-60-7	238-878-4	<3%
2-PROPENENITRILE-1,3-BUTADIENE RUBBER	9003-18-3	618-357-1	<50%
NATURAL RUBBER	9006-04-6	232-689-0	<50%
POLYISOPRENE	9003-31-0	618-362-9	<50%
SBR ELASTOMERS	9003-55-8	618-370-2	<50%
CELLULOSE	9004-34-6	232-674-9	<30%
DIATOMACEOUS EARTH	61790-53-2	612-383-7	<15%
FULLERS EARTH	8031-18-3	617-052-0	<12%
MAGNESIUM OXIDE	1309-48-4	215-171-9	<2%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye	If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.
Inhalation	If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.
Skin	If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.
Ingestion	For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once).
First aid facilities	Eye wash facilities should be available.

4.2 Most important symptoms and effects, both acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Non flammable.

5.3 Advice for firefighters

Treat as per requirements for surrounding fires. Evacuate area and contact emergency services. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Clear area of all unprotected personnel. Contact emergency services where appropriate.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then collect and place in suitable containers for reuse or disposal. Avoid generating dust.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. Check regularly for leaks or spills.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
Calcium hydroxide	SWA (AUS)	--	5	--	--
Calcium oxide	SWA (AUS)	--	2	--	--
Cellulose (paper fibre) (a)	SWA (AUS)	--	10	--	--
Cristobalite	SWA (AUS)	--	0.1	--	--
Diatomaceous earth (uncalcined) (a)	SWA (AUS)	--	10	--	--
Magnesium oxide (fume)	SWA (AUS)	--	10	--	--
Quartz (respirable dust)	SWA (AUS)	--	0.1	--	--

Biological limits

No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain dust levels below the recommended exposure standard.

PPE

- Eye / Face** Wear dust-proof goggles.
- Hands** Wear PVC or rubber gloves.
- Body** Wear coveralls.
- Respiratory** Where an inhalation risk exists, wear a Class P1 (Particulate) respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	BROWN/GREY POWDER
Odour	ODOURLESS
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	NOT RELEVANT
Melting point	NOT AVAILABLE
Evaporation rate	NON VOLATILE
pH	ALKALINE
Vapour density	NOT AVAILABLE
Specific gravity	2.10
Solubility (water)	NEGLIGIBLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	NOT RELEVANT
--------------------	--------------

10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization will not occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites) and acids (e.g. nitric acid).

10.6 Hazardous decomposition products

May evolve Fluorine, Oxygen Difluoride, Chlorine, Trifluoride and Hydrofluoric Acid when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity	Toxicity Data available for the ingredients: CALCIUM HYDROXIDE (1305-62-0): LD50 (ingestion): 7300 mg/kg (mouse) CRISTOBALITE (14464-46-1): TCLo (inhalation) 16 mppcf/8hours/17.9 years (human-fibrosis) QUARTZ (SILICA CRYSTALLINE) (14808-60-7): LCLo (inhalation): 300 ug/m ³ /10 years (human) TCLo (inhalation): 16 000 000 particles/ft ³ /8 hours/17.9 years (human-fibrosis) CELLULOSE (9004-34-6): LC50 (inhalation) > 5800 mg/m ³ /4 hours (rat) LD50 (ingestion) > 5000 mg/kg (rat) LD50 (intraperitoneal) > 31600 mg/kg (rat) LD50 (skin) > 2000 mg/kg (rabbit) MAGNESIUM OXIDE (1309-48-4): TCLo (inhalation): 400 mg/kg (human)
Skin	Irritating to the skin. Contact may result in irritation, redness, pain, rash, dermatitis and possible skin burns.
Eye	Irritating to the eyes. Contact may result in irritation, lacrimation, pain, redness, conjunctivitis and possible burns.
Sensitization	This product is not classified as causing skin or respiratory sensitisation.
Mutagenicity	Insufficient data available to classify as a mutagen.
Carcinogenicity	Crystalline silica is classified as carcinogenic to humans (IARC Group 1). However, there is insufficient respirable silica in this product to be classified as a carcinogen.
Reproductive	Insufficient data available to classify as a reproductive toxin.
STOT – single exposure	Irritating to the respiratory system. Over exposure may result in irritation of the nose and throat, with coughing.
STOT – repeated exposure	Chronic exposure to crystalline silica may cause lung fibrosis (silicosis), however due to the low levels of crystalline silica in this product, chronic health effects are not anticipated with normal use.
Aspiration	Not relevant.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

The manufacturer reports that this product is harmful to aquatic life.

12.2 Persistence and degradability

No information provided.

12.3 Bioaccumulative potential

No information provided.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal	Collect without generating dust. Place in clean, sealed containers and dispose of to an approved landfill site. Contact the manufacturer/supplier for additional information (if required).
Legislation	Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

PRODUCT NAME FRAC ATTACK

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport hazard class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

Hazchem code None Allocated

15. REGULATORY INFORMATION**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes Xi Irritant

Risk phrases R37/38 Irritating to respiratory system and skin.
R41 Risk of serious damage to eyes.

Safety phrases S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S45 In case of accident or if you feel unwell seek medical advice immediately (show the label where possible).

Inventory listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:

It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

PRODUCT NAME **FRAC ATTACK**

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m ³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

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[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name HIPERM
Synonym(s) NONE

1.2 Uses and uses advised against

Use(s) DRILLING FLUID ADDITIVE • SHALE INHIBITOR

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

GHS classification(s) Acute Toxicity: Oral: Category 4
Serious Eye Damage / Eye Irritation: Category 1
Skin Corrosion/Irritation: Category 1A
Acute Toxicity: Skin: Category 4
Specific Target Organ Systemic Toxicity (Single Exposure): Category 3
Aquatic Toxicity (Acute): Category 3

2.2 Label elements

Signal word DANGER

Pictogram(s)



Hazard statement(s)

H302 Harmful if swallowed.
H312 Harmful in contact with skin.
H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H335 May cause respiratory irritation.
H402 Harmful to aquatic life.

PRODUCT NAME HIPERM**Prevention statement(s)**

P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P264	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

Response statement(s)

P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340	IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER or doctor/physician.
P321	Specific treatment is advised - see first aid instructions.
P363	Wash contaminated clothing before reuse.

Storage statement(s)

P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.

Disposal statement(s)

P501	Dispose of contents/container in accordance with relevant regulations.
------	--

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
HEXAMETHYLENEDIAMINE	124-09-4	204-679-6	30 to 60%
FORMIC ACID	64-18-6	200-579-1	10 to 30%
NON HAZARDOUS INGREDIENTS	Not Available	Not Available	<10%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye	If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.
Inhalation	If inhaled, remove from contaminated area. To protect rescuer, use a Type A (Organic vapour) respirator or an Air-line respirator (in poorly ventilated areas). Apply artificial respiration if not breathing.
Skin	If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water.
Ingestion	For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting. Rinse mouth out with water and give plenty of water to drink.
First aid facilities	Eye wash facilities and safety shower are recommended.

4.2 Most important symptoms and effects, both acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Dry agent, carbon dioxide or foam. Prevent contamination of drains and waterways.

5.2 Special hazards arising from the substance or mixture

Combustible. May evolve toxic gases (carbon/ nitrogen oxides, amines, ammonia, hydrocarbons) when heated to decomposition. Eliminate all ignition sources including cigarettes, open flames, spark producing switches/tools, pilot lights, heaters, naked lights, mobile phones, etc when handling. Earth containers when dispensing fluids.

5.3 Advice for firefighters

Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas. Thermal decomposition generates corrosive vapours.

5.4 Hazchem code

2X
2 Fine Water Spray.
X Wear liquid-tight chemical protective clothing and breathing apparatus. Contain spill and run-off.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Clear area of all unprotected personnel. Ventilate area where possible. Contact emergency services where appropriate.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then cover / absorb spill with non-combustible absorbent material (vermiculite, sand, or similar), collect and place in suitable containers for disposal. Only trained personnel should undertake clean up.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances, heat or ignition sources and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. Check regularly for leaks or spills. Large storage areas should be bunded and have appropriate ventilation systems. Store as a Class C1 Combustible Liquid (AS1940).

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters**Exposure standards**

Ingredient	Reference	TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
Formic acid	SWA (AUS)	5	9.4	10	19

Biological limits

No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Flammable/explosive vapours may accumulate in poorly ventilated areas. Vapours are heavier than air and may travel some distance to an ignition source and flash back. Maintain vapour levels below the recommended exposure standard.

PPE

Eye / Face	Wear splash-proof goggles.
Hands	Wear butyl or nitrile gloves.
Body	Wear coveralls.
Respiratory	Where an inhalation risk exists, wear a Type A (Organic vapour) respirator. If spraying, wear a Type A-Class P1 (Organic gases/vapours and Particulate) respirator or an Air-line respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	CLEAR COLOURLESS LIQUID
Odour	ODOURLESS
Flammability	CLASS C1 COMBUSTIBLE
Flash point	> 100°C
Boiling point	100°C
Melting point	< -35°C
Evaporation rate	NOT AVAILABLE
pH	9 to 10
Vapour density	NOT AVAILABLE
Specific gravity	1.07
Solubility (water)	SOLUBLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

10. STABILITY AND REACTIVITY

10.1 Reactivity

Thermal decomposition generates corrosive vapours.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Hazardous polymerization is not expected to occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites), acids (e.g. nitric acid), metals, nitrites, heat and ignition sources.

10.6 Hazardous decomposition products

May evolve toxic gases (carbon/ nitrogen oxides, amines, ammonia, hydrocarbons) when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

PRODUCT NAME HIPERM**Acute toxicity****Information available for the product:**

Harmful if swallowed or in contact with skin. LD50 (oral) = 500 mg/kg. LD50 (dermal) = 1100 mg/kg.

Information available for the ingredient(s):

Ingredient	Oral Toxicity (LD50)	Dermal Toxicity (LD50)	Inhalation Toxicity (LC50)
HEXAMETHYLENEDIAMINE	750 mg/kg (rat)	1110 mg/kg (rabbit)	--
FORMIC ACID	700 mg/kg (mouse)	--	6200 mg/m ³ /15 min.

Skin	Causes severe burns. Contact may result in irritation, redness, pain, rash, dermatitis and severe burns.
Eye	Causes severe burns. Contact may result in irritation, lacrimation, pain, redness, corneal burns and possible permanent damage.
Sensitization	Not classified as causing skin or respiratory sensitisation.
Mutagenicity	Not classified as a mutagen.
Carcinogenicity	Not classified as a carcinogen.
Reproductive	Not classified as a reproductive toxin.
STOT – single exposure	Over exposure may result in irritation of the nose and throat, coughing, nausea, dizziness and headache. High level exposure may result in breathing difficulties.
STOT – repeated exposure	Not classified as causing organ damage from repeated exposure. Adverse effects are generally associated with single exposure.
Aspiration	Not classified as causing aspiration.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No data of Hiperm is available on the product itself. However the ecotoxicity data of the main components:

Hexamethylenediamine (124-09-4):

LC50 (Lepomis macrochirus [static]) > 56 mg/l/96 hours.

EC (Daphnia magna) = 23.4 mg/l/48 hours.

LC50 (Pimephlaes promelas [static]) = 1825 mg/l/96 hours.

Formic Acid (64-18-6):

EC (Daphnia magna) = 120 mg/l/48 hours.

EC (Daphnia magna [static]) = 138 to 165.6 mg/l/48 hours.

12.2 Persistence and degradability

No data available for the product.

12.3 Bioaccumulative potential

No data available for the product.

12.4 Mobility in soil

Not available.

12.5 Other adverse effects

Avoid release to the environment.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods**Waste disposal**

For small amounts, absorb with sand, vermiculite or similar and dispose of to an approved landfill site. For large quantities, contact the manufacturer/supplier for additional information. Prevent contamination of drains and waterways as aquatic life may be threatened and environmental damage may result.

Legislation

Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE



	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	2735	2735	2735
14.2 Proper Shipping Name	AMINES, LIQUID, CORROSIVE, N.O.S. or POLYAMINES, LIQUID, CORROSIVE, N.O.S.	AMINES, LIQUID, CORROSIVE, N.O.S. or POLYAMINES, LIQUID, CORROSIVE, N.O.S.	AMINES, LIQUID, CORROSIVE, N.O.S. or POLYAMINES, LIQUID, CORROSIVE, N.O.S.
14.3 Transport hazard class	8	8	8
14.4 Packing Group	II	II	II

14.5 Environmental hazards Not a Marine Pollutant

14.6 Special precautions for user

Hazchem code 2X
GTEPG 8A1
EMS F-A, S-B

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule Classified as a Schedule 6 (S6) Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.
 The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes
 C Corrosive
 N Dangerous for the environment
 Xi Irritant
 Xn Harmful

Risk phrases
 R21/22 Harmful in contact with skin and if swallowed.
 R35 Causes severe burns.
 R37 Irritating to respiratory system.
 R41 Risk of serious damage to eyes.
 R52 Harmful to aquatic organisms.

Safety phrases
 S23 Do not breathe gas/fumes/vapour/spray (where applicable).
 S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
 S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
 S45 In case of accident or if you feel unwell seek medical advice immediately (show the label where possible).

Inventory listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
 All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information AMINE: CAUTION: THIS PRODUCT CONTAINS AN AMINE. DO NOT ADD NITRITES or other NITROSATING AGENTS to this product due to the potential for NITROSAMINE formation. Nitrosamines are potent carcinogens and some have been shown to cause severe acute (heart, brain, blood, liver - kidney) damage as well as chronic effects (reproductive effects, liver - lung and kidney tumours).

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:

It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m ³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

Prepared by

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[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name STARCH B
Synonym(s) PREGEL STARCH • STARCH (API 13A SECTION 16) • VICTOSAL

1.2 Uses and uses advised against

Use(s) DRILLING FLUID ADDITIVE

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

2.2 Label elements

No signal word, pictograms, hazard or precautionary statements have been allocated.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
DAZOMET (ISO)[TETRAHYDRO-3,5-DIMETHYL-1,3,5-THIA DIAZINE-2-THIONE]	533-74-4	208-576-7	<1%
STARCH	9005-25-8	232-679-6	>98%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

Inhalation Due to product form / nature of use, an inhalation hazard is not anticipated.

Skin If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water.

Ingestion For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). Due to product form and application, ingestion is considered unlikely.

First aid facilities No information provided.

PRODUCT NAME STARCH B

4.2 Most important symptoms and effects, both acute and delayed

Adverse effects not expected from this product under normal conditions of use.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Dry agent, carbon dioxide, foam or water fog. Prevent contamination of drains and waterways.

5.2 Special hazards arising from the substance or mixture

Combustible. May evolve carbon oxides and hydrocarbons when heated to decomposition.

5.3 Advice for firefighters

Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then collect and place in suitable containers for disposal. Avoid generating dust.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances, heat or ignition sources and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. Check regularly for leaks or spills.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
Starch (a)	SWA (AUS)	--	10	--	--

Biological limits

No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering controls No special precautions are normally required when handling this product. Maintain dust levels below the recommended exposure standard.

PPE

- Eye / Face** When using large quantities or where heavy contamination is likely, wear dust-proof goggles.
- Hands** When using large quantities or where heavy contamination is likely, wear PVC or rubber gloves.
- Body** Not required under normal conditions of use.
- Respiratory** Where an inhalation risk exists, wear a Class P1 (Particulate) respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	OFF WHITE POWDER
Odour	ODOURLESS
Flammability	COMBUSTIBLE
Flash point	> 125°C
Boiling point	NOT AVAILABLE
Melting point	NOT AVAILABLE
Evaporation rate	NOT AVAILABLE
pH	5 - 8
Vapour density	NOT AVAILABLE
Specific gravity	NOT AVAILABLE
Solubility (water)	DISPERSIBLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT AVAILABLE
Lower explosion limit	NOT AVAILABLE
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

Bulk density	550 - 700 kg/m ³
---------------------	-----------------------------

10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization is not expected to occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites).

10.6 Hazardous decomposition products

May evolve carbon oxides and hydrocarbons when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity Information available for the product:

PRODUCT NAME STARCH B

This product is expected to be of low toxicity. This product contains Dazomet (ISO) [Tetrahydro-3,5-dimethyl-1,3,5-thiadiazine-2-thione], however due to the low levels present, adverse health effects are not anticipated.

Information available for the ingredient(s):

Ingredient	Oral Toxicity (LD50)	Dermal Toxicity (LD50)	Inhalation Toxicity (LC50)
DAZOMET (ISO)[TETRAHYDRO-3,5-DIMETHYL-1,3,5-THIADIAZINE-2-THIONE]	180 mg/kg (mouse)	2260 mg/kg (rat)	--

Additional ingredient toxicity value(s):

DAZOMET (ISO) [TETRAHYDRO-3,5-DIMETHYL-1,3,5-THIADIAZINE-2-THIONE] (533-74-4)	
LCLo (inhalation)	8400 mg/m ³ /4h (rat)
LD50 (intraperitoneal)	87 mg/kg (rat)
LD50 (subcutaneous)	248 mg/kg (mouse)
LDLo (intramuscular)	250 mg/kg (dog)
TDL0 (oral)	3120 mg/kg/30 days-continuous (rat)

Skin	Not classified as a skin irritant. Contact may result in mild irritation.
Eye	Not classified as an eye irritant. Contact may cause mild irritation and lacrimation.
Sensitisation	Not classified as causing skin or respiratory sensitisation.
Mutagenicity	No evidence of mutagenic effects.
Carcinogenicity	No evidence of carcinogenic effects.
Reproductive	No relevant or reliable studies were identified.
STOT – single exposure	No known effects from this product.
STOT – repeated exposure	No known effects from this product.
Aspiration	Not relevant.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Starch B is not harmful to aquatic organisms and does not cause long-term adverse effects in the aquatic environment. This product contains Dazomet (ISO) [Tetrahydro-3,5-dimethyl-1,3,5-thiadiazine-2-thione], however due to the low levels present, adverse environmental effects are not anticipated.

12.2 Persistence and degradability

No information provided.

12.3 Bioaccumulative potential

No information provided.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal	No special precautions are required for the disposal of this product.
Legislation	Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

PRODUCT NAME STARCH B

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport Hazard Class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

Hazchem code None Allocated

15. REGULATORY INFORMATION**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes None allocated.

Risk phrases None allocated.

Safety phrases None allocated.

Inventory listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information **WORKPLACE CONTROLS AND PRACTICES:** Unless a less toxic chemical can be substituted for a hazardous substance, **ENGINEERING CONTROLS** are the most effective way of reducing exposure. The best protection is to enclose operations and/or provide local exhaust ventilation at the site of chemical release. Isolating operations can also reduce exposure. Using respirators or protective equipment is less effective than the controls mentioned above, but is sometimes necessary.

RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:

It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

PRODUCT NAME STARCH B

Abbreviations	ACGIH	American Conference of Governmental Industrial Hygienists
	CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
	CNS	Central Nervous System
	EC No.	EC No - European Community Number
	EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
	GHS	Globally Harmonized System
	GTEPG	Group Text Emergency Procedure Guide
	IARC	International Agency for Research on Cancer
	LC50	Lethal Concentration, 50% / Median Lethal Concentration
	LD50	Lethal Dose, 50% / Median Lethal Dose
	mg/m ³	Milligrams per Cubic Metre
	OEL	Occupational Exposure Limit
	pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
	ppm	Parts Per Million
	STEL	Short-Term Exposure Limit
	STOT-RE	Specific target organ toxicity (repeated exposure)
	STOT-SE	Specific target organ toxicity (single exposure)
	SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
	SWA	Safe Work Australia
	TLV	Threshold Limit Value
	TWA	Time Weighted Average

Report status This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

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[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name SAPP
Synonym(s) DISODIUM DIHYDROGEN PYROPHOSPHATE • DISODIUM PYROPHOSPHATE

1.2 Uses and uses advised against

Use(s) ACIDIFIER • BUFFERING AGENT

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

2.2 Label elements

No signal word, pictograms, hazard or precautionary statements have been allocated.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
DISODIUM PYROPHOSPHATE	7758-16-9	231-835-0	100%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

Inhalation If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.

Skin If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water.

Ingestion For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once).

First aid facilities Eye wash facilities and safety shower should be available.

4.2 Most important symptoms and effects, both acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve toxic gases (phosphorus oxides) when heated to decomposition.

5.3 Advice for firefighters

Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Ventilate area where possible.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then collect and place in suitable containers for disposal. Avoid generating dust.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances and foodstuffs. Ensure containers are adequately labelled and tightly closed when not in use.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
Nuisance dust	SWA (AUS)	--	10	--	--

Biological limits

No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas.

PPE

Eye / Face	Wear dust-proof goggles.
Hands	Wear PVC or rubber gloves.
Body	When using large quantities or where heavy contamination is likely, wear coveralls.
Respiratory	Where an inhalation risk exists, wear a Class P1 (Particulate) respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	WHITE POWDER
Odour	SLIGHT ODOUR
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	NOT AVAILABLE
Melting point	> 600°C
Evaporation rate	NOT AVAILABLE
pH	4 - 5 (10% Solution)
Vapour density	NOT AVAILABLE
Specific gravity	1.35 - 1.41
Solubility (water)	119 g/L
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	NOT AVAILABLE
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10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization is not expected to occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites) and acids (e.g. nitric acid).

10.6 Hazardous decomposition products

May evolve toxic gases (phosphorus oxides) when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity Low toxicity. Ingestion of large quantities may result in nausea, vomiting and gastrointestinal irritation. Ingestion of large quantities may also result in serious disturbances in calcium metabolism.

LD50 (Ingestion): 2650 mg/kg (mouse)
 LD50 (Intraperitoneal): 1 g/kg (mouse)
 LD50 (Intravenous): 59 mg/kg (mouse)
 LD50 (Subcutaneous): 480 mg/kg (mouse)

Skin Low to moderate irritant. Prolonged or repeated contact may result in irritation and rash.

Eye Low to moderate irritant. Contact may result in mild irritation, lacrimation and redness.

Sensitization Not classified as causing skin or respiratory sensitisation.

Mutagenicity This product is not classified as a mutagen.

Carcinogenicity This product is not classified as a carcinogen.

Reproductive This product is not classified as a reproductive toxin.

STOT – single exposure Low irritant. Over exposure may result in irritation of the nose and throat, with coughing.

STOT – repeated exposure Not classified as causing organ effects from repeated exposure.

Aspiration This product does not present an aspiration hazard.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No information provided.

12.2 Persistence and degradability

Biodegradability does not pertain to inorganic substances.

12.3 Bioaccumulative potential

Does not bioaccumulate.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal Dispose of to an approved landfill or waste processing site. Contact the manufacturer/supplier for additional information (if required).

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport hazard class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

Hazchem code None Allocated

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule	A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).
Classifications	Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals. The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].
Hazard codes	None allocated.
Risk phrases	None allocated.
Safety phrases	None allocated.
Inventory listing(s)	AUSTRALIA: AICS (Australian Inventory of Chemical Substances) All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information	<p>PERSONAL PROTECTIVE EQUIPMENT GUIDELINES: The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.</p> <p>HEALTH EFFECTS FROM EXPOSURE: It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.</p>	
Abbreviations	ACGIH	American Conference of Governmental Industrial Hygienists
	CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
	CNS	Central Nervous System
	EC No.	EC No - European Community Number
	EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
	GHS	Globally Harmonized System
	GTEPG	Group Text Emergency Procedure Guide
	IARC	International Agency for Research on Cancer
	LC50	Lethal Concentration, 50% / Median Lethal Concentration
	LD50	Lethal Dose, 50% / Median Lethal Dose
	mg/m ³	Milligrams per Cubic Metre
	OEL	Occupational Exposure Limit
	pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
	ppm	Parts Per Million
	STEL	Short-Term Exposure Limit
	STOT-RE	Specific target organ toxicity (repeated exposure)
	STOT-SE	Specific target organ toxicity (single exposure)
	SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
	SWA	Safe Work Australia
	TLV	Threshold Limit Value
	TWA	Time Weighted Average

PRODUCT NAME SAPP

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

Prepared by

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[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name LIMESTONE LSC/L80
Synonym(s) CALCIUM CARBONATE • STONE DUST

1.2 Uses and uses advised against

Use(s) BRIDGING AGENT • WEIGHTING AGENT

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

2.2 Label elements

No signal word, pictograms, hazard or precautionary statements have been allocated.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
QUARTZ (CRYSTALLINE SILICA)	14808-60-7	238-878-4	<1%
CALCIUM CARBONATE	471-34-1	207-439-9	>96%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

Inhalation If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.

Skin If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water.

Ingestion For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.

First aid facilities No information provided.

4.2 Most important symptoms and effects, both acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve toxic gases if strongly heated.

5.3 Advice for firefighters

No fire or explosion hazard exists.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

If spilt, collect and reuse where possible. Contain spillage, then collect and place in suitable containers for disposal. Avoid generating dust.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
Calcium carbonate (Limestone, Marble, Whiting)	SWA (AUS)	--	10	--	--
Quartz (respirable dust)	SWA (AUS)	--	0.1	--	--

Biological limits

No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain dust levels below the recommended exposure standard.

PPE

Eye / Face	Wear dust-proof goggles.
Hands	When using large quantities or where heavy contamination is likely, wear PVC or rubber gloves.
Body	When using large quantities or where heavy contamination is likely, wear coveralls.
Respiratory	Wear a Class P3 (Particulate) respirator. Where an inhalation risk exists, wear a Class P1 (Particulate) respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	OFF-WHITE POWDER
Odour	SLIGHT ODOUR
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	NOT AVAILABLE
Melting point	825°C
Evaporation rate	NOT AVAILABLE
pH	NOT AVAILABLE
Vapour density	NOT AVAILABLE
Specific gravity	2.7
Solubility (water)	INSOLUBLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	NOT AVAILABLE
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10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization will not occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with acids (e.g. nitric acid), fluorine, aluminium (hot) and ammonium salts.

10.6 Hazardous decomposition products

May evolve toxic gases if heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity	This product is expected to be of low toxicity. Under normal conditions of use, adverse health effects are not anticipated. LD50 (Ingestion): 6450 mg/kg (rat).
Skin	Not classified as a skin irritant. Prolonged or repeated contact may result in mild irritation and rash.
Eye	Not classified as an eye irritant. Contact may result in mild irritation, lacrimation and redness.
Sensitization	This product is not known to be a skin or respiratory sensitiser.
Mutagenicity	Insufficient data available to classify as a mutagen.
Carcinogenicity	Crystalline silica is classified as carcinogenic to humans (IARC Group 1). However, there is insufficient respirable silica in this product to be classified as a carcinogen.
Reproductive	Insufficient data available to classify as a reproductive toxin.
STOT – single exposure	Not classified as causing organ effects from single exposure.
STOT – repeated exposure	Chronic exposure to respirable silica may result in pulmonary fibrosis (silicosis). However, given the low levels present, over exposure is not anticipated.
Aspiration	Not relevant.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Calcium carbonate occurs naturally in a wide variety of substances including limestone, marble and egg shells. It is not anticipated to cause adverse environmental effects.

12.2 Persistence and degradability

Biodegradability does not pertain to inorganic substances. Dissolved calcium carbonate dissociates into calcium and carbonate ions. Calcium ions will be assimilated by living organisms in the water and the carbonate will become part of the carbon cycle.

12.3 Bioaccumulative potential

This product does not bioaccumulate.

12.4 Mobility in soil

Due to its limited solubility, calcium carbonate precipitates and deposits on the sediment.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal	Ensure product is covered with moist soil to prevent dust generation and dispose of to approved Council landfill. Contact the manufacturer/supplier for additional information (if required).
Legislation	Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport hazard class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

Hazchem code None Allocated

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes None allocated.

Risk phrases None allocated.

Safety phrases None allocated.

Inventory listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information **RESPIRATORS:** In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

EXPOSURE CONTROL: If utilised in a closed system the potential for over exposure is reduced. If not used in a closed system, local exhaust ventilation is recommended to control exposure. Provide eye wash and safety shower in close proximity to points of potential exposure. Where the potential for an inhalation risk exists, an approved respirator may be required. Do not eat, store, consume food, tobacco or drink in areas where product is used.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations	ACGIH	American Conference of Governmental Industrial Hygienists
	CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
	CNS	Central Nervous System
	EC No.	EC No - European Community Number
	EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
	GHS	Globally Harmonized System
	GTEPG	Group Text Emergency Procedure Guide
	IARC	International Agency for Research on Cancer
	LC50	Lethal Concentration, 50% / Median Lethal Concentration
	LD50	Lethal Dose, 50% / Median Lethal Dose
	mg/m ³	Milligrams per Cubic Metre
	OEL	Occupational Exposure Limit
	pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
	ppm	Parts Per Million
	STEL	Short-Term Exposure Limit
	STOT-RE	Specific target organ toxicity (repeated exposure)
	STOT-SE	Specific target organ toxicity (single exposure)
	SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
	SWA	Safe Work Australia
	TLV	Threshold Limit Value
	TWA	Time Weighted Average

Report status This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

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[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name OMYACARB
Synonym(s) AGRICULTURAL LIME • CALCIUM CARBONATE • CHALK • LIMESTONE • OMYACARB 10 • OMYACARB 20 • OMYACARB 40

1.2 Uses and uses advised against

Use(s) BRIDGING AGENT • DRILLING FLUID ADDITIVE • WEIGHTING AGENT

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

2.2 Label elements

No signal word, pictograms, hazard or precautionary statements have been allocated.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
QUARTZ (CRYSTALLINE SILICA)	14808-60-7	238-878-4	<1%
LIMESTONE (CALCIUM CARBONATE)	1317-65-3	215-279-6	>96%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

Inhalation If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.

Skin If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water.

Ingestion For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.

First aid facilities No information provided.

4.2 Most important symptoms and effects, both acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve toxic gases if strongly heated.

5.3 Advice for firefighters

No fire or explosion hazard exists.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

If spilt, collect and reuse where possible. Contain spillage, then collect and place in suitable containers for disposal. Avoid generating dust.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
Calcium carbonate (Limestone, Marble, Whiting)	SWA (AUS)	--	10	--	--
Quartz (respirable dust)	SWA (AUS)	--	0.1	--	--

Biological limits

No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain dust levels below the recommended exposure standard.

PPE

- Eye / Face** Wear dust-proof goggles.
- Hands** When using large quantities or where heavy contamination is likely, wear PVC or rubber gloves.
- Body** When using large quantities or where heavy contamination is likely, wear coveralls.
- Respiratory** Where an inhalation risk exists, wear a Class P1 (Particulate) respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	OFF-WHITE POWDER
Odour	ODOURLESS
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	NOT AVAILABLE
Melting point	825°C
Evaporation rate	NOT RELEVANT
pH	NOT RELEVANT
Vapour density	NOT AVAILABLE
Specific gravity	2.7
Solubility (water)	INSOLUBLE
Vapour pressure	NOT RELEVANT
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	NOT RELEVANT
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10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization will not occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with acids (e.g. nitric acid), fluorine, aluminium (hot) and ammonium salts.

10.6 Hazardous decomposition products

May evolve toxic gases if heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity	Information available for the product: This product is expected to be of low toxicity. Under normal conditions of use, adverse health effects are not anticipated.
Skin	Not classified as a skin irritant. Prolonged or repeated contact may result in mild irritation and rash.
Eye	Not classified as an eye irritant. Contact may result in mild irritation, lacrimation and redness.
Sensitization	This product is not known to be a skin or respiratory sensitiser.
Mutagenicity	Insufficient data available to classify as a mutagen.
Carcinogenicity	Crystalline silica is classified as carcinogenic to humans (IARC Group 1). However, there is insufficient respirable silica in this product to be classified as a carcinogen.
Reproductive	Insufficient data available to classify as a reproductive toxin.
STOT – single exposure	Not classified as causing organ effects from single exposure.
STOT – repeated exposure	Chronic exposure to respirable silica may result in pulmonary fibrosis (silicosis). However, given the low levels present, over exposure is not anticipated.
Aspiration	Not relevant.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Calcium carbonate occurs naturally in a wide variety of substances including limestone, marble and egg shells. It is not anticipated to cause adverse environmental effects.

12.2 Persistence and degradability

Dissolved calcium carbonate dissociates into calcium and carbonate ions. Calcium ions will be assimilated by living organisms in the water and the carbonate will become part of the carbon cycle.

12.3 Bioaccumulative potential

This product does not bioaccumulate.

12.4 Mobility in soil

Due to its limited solubility, calcium carbonate precipitates and deposits on the sediment.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal Ensure product is covered with moist soil to prevent dust generation and dispose of to approved Council landfill. Contact the manufacturer/supplier for additional information (if required).

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport hazard class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

Hazchem code None Allocated

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule	A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).
Classifications	Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals. The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].
Hazard codes	None allocated.
Risk phrases	None allocated.
Safety phrases	None allocated.
Inventory listing(s)	AUSTRALIA: AICS (Australian Inventory of Chemical Substances) All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information	<p>RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.</p> <p>EXPOSURE CONTROL: If utilised in a closed system the potential for over exposure is reduced. If not used in a closed system, local exhaust ventilation is recommended to control exposure. Provide eye wash and safety shower in close proximity to points of potential exposure. Where the potential for an inhalation risk exists, an approved respirator may be required. Do not eat, store, consume food, tobacco or drink in areas where product is used.</p> <p>PERSONAL PROTECTIVE EQUIPMENT GUIDELINES: The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.</p> <p>HEALTH EFFECTS FROM EXPOSURE: It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.</p>
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PRODUCT NAME OMYACARB**Abbreviations**

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m ³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

Prepared by

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[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name CIRCAL
Synonym(s) CALCIUM CARBONATE • LIMESTONE • MARBLE • OMYACARB • RHEOCARB

1.2 Uses and uses advised against

Use(s) DRILLING FLUID ADDITIVE • WEIGHTING AGENT

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

2.2 Label elements

No signal word, pictograms, hazard or precautionary statements have been allocated.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	Identification	Classification		Content
		GHS	Risk	
QUARTZ (SILICA CRYSTALLINE)	CAS: 14808-60-7 EC: 238-878-4	Not Available	Not Available	<1%
CALCIUM CARBONATE	CAS: 471-34-1 EC: 207-439-9	Not Available	Not Available	>96%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

Inhalation If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.

Skin If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water.

Ingestion For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.

PRODUCT NAME CIRCAL

First aid facilities No information provided.

4.2 Most important symptoms and effects, both acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve toxic gases if strongly heated.

5.3 Advice for firefighters

No fire or explosion hazard exists.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in Section 8.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then cover/absorb spill with non-combustible absorbent material (vermiculite, sand, or similar), collect and place in suitable containers for disposal.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
Calcium carbonate	SWA (AUS)	--	10	--	--
Quartz (respirable dust)	SWA (AUS)	--	0.1	--	--

Biological limits No Biological Limit Value allocated.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain dust levels below the recommended exposure standard.

PPE

- Eye / Face** Wear dust-proof goggles.
- Hands** When using large quantities or where heavy contamination is likely, wear PVC or rubber gloves.
- Body** When using large quantities or where heavy contamination is likely, wear coveralls.
- Respiratory** Where an inhalation risk exists, wear a Class P1 (Particulate) respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	OFF-WHITE POWDER
Odour	ODOURLESS
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	NOT AVAILABLE
Melting point	825°C
Evaporation rate	NOT AVAILABLE
pH	9
Vapour density	NOT AVAILABLE
Specific gravity	2.7
Solubility (water)	INSOLUBLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	840°C
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	NOT AVAILABLE
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10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization will not occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with acids (eg. nitric acid), fluorine, aluminium (hot) and ammonium salts. Incompatible with oxidising agents (eg. hypochlorites).

10.6 Hazardous decomposition products

May evolve toxic gases if heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity	This product is expected to be of low toxicity. Based on available data, the classification criteria are not met. LD50 (Ingestion) = 6450 mg/kg (rat).
Skin	Not classified as a skin irritant. Contact may result in mild irritation, redness and rash.
Eye	Not classified as an eye irritant. Contact may cause discomfort, lacrimation and redness.
Sensitization	This product is not known to be a skin or respiratory sensitiser.
Mutagenicity	Insufficient data available to classify as a mutagen.
Carcinogenicity	Insufficient data available to classify as a carcinogen.
Reproductive	Insufficient data available to classify as a reproductive toxin.
STOT – single exposure	Not classified as causing organ effects from single exposure.
STOT – repeated exposure	Not classified as causing organ effects from repeated exposure. Chronic exposure to respirable silica may result in pulmonary fibrosis (silicosis). However, given the low levels present, over exposure is not anticipated.
Aspiration	This product does not present an aspiration hazard.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Calcium carbonate occurs naturally in a wide variety of substances including limestone, marble and egg shells. It is not anticipated to cause adverse environmental effects.

12.2 Persistence and degradability

No information provided.

12.3 Bioaccumulative potential

No information provided.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

Avoid contaminating waterways.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal	Ensure product is covered with moist soil to prevent dust generation and dispose of to approved Council landfill. Contact the manufacturer if additional information is required.
Legislation	Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport hazard class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

Hazchem code None Allocated

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes None allocated.

Risk phrases None allocated.

Safety phrases None allocated.

Inventory listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information

RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

EXPOSURE CONTROL: If utilized in a closed system the potential for over exposure is reduced. If not used in a closed system, local exhaust ventilation is recommended to control exposure. Provide eye wash and safety shower in close proximity to points of potential exposure. Where the potential for an inhalation risk exists, an approved respirator may be required. Do not eat, store, consume food, tobacco or drink in areas where product is used.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

PRODUCT NAME CIRCAL**Abbreviations**

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
GHS	Globally Harmonized System
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m ³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
PEL	Permissible Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
REACH	Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Revision history

Revision	Description
2.0	Converted to GHS.
1.0	Initial SDS creation

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

Prepared by

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Web: www.rmt.com.au.

Revision: 2
SDS date: 19 August 2014

[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name JK-261
Synonym(s) HIGH MOLECULAR WEIGHT PHPA • JK 261 • JK261 • PARTIALLY HYDROLYZED POLYACRYLAMIDE • PHPA

1.2 Uses and uses advised against

Use(s) DRILLING FLUID ADDITIVE

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

2.2 Label elements

No signal word, pictograms, hazard or precautionary statements have been allocated.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
COPOLYMER OF ACRYLAMIDE AND ACRYLIC ACID,	25987-30-8	607-842-3	>90%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

Inhalation If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.

Skin If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water.

Ingestion For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.

First aid facilities Eye wash facilities and safety shower should be available.

4.2 Most important symptoms and effects, both acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve toxic gases (carbon/ nitrogen oxides, amines, ammonia, hydrocarbons) when heated to decomposition.

5.3 Advice for firefighters

Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Clear area of all unprotected personnel. Contact emergency services where appropriate.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then collect and place in suitable containers for reuse or disposal. Avoid generating dust.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances and foodstuffs. Ensure containers are adequately labelled and tightly closed when not in use.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

No exposure standards have been entered for this product.

Biological limits No Biological Limit Value allocated.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended.

PPE

Eye / Face	Wear dust-proof goggles.
Hands	Wear PVC or rubber gloves.
Body	When using large quantities or where heavy contamination is likely, wear coveralls.
Respiratory	Where an inhalation risk exists, wear a Class P1 (Particulate) respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	WHITE GRANULAR SOLID
Odour	SLIGHT ODOUR
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	NOT AVAILABLE
Melting point	NOT AVAILABLE
Evaporation rate	NOT AVAILABLE
pH	NOT AVAILABLE
Vapour density	NOT AVAILABLE
Specific gravity	0.8
Solubility (water)	10 g/L
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	NOT AVAILABLE
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10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization is not expected to occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites) and acids (e.g. nitric acid).

10.6 Hazardous decomposition products

May evolve toxic gases (carbon/ nitrogen oxides, amines, ammonia, hydrocarbons) when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity	This product is expected to be of low toxicity. Under normal conditions of use, adverse health effects are not anticipated. LD50 rat (oral): > 2,000 mg/kg (OECD Guideline 401).
Skin	Not classified as a skin irritant. Prolonged or repeated contact may result in mild irritation, rash and dermatitis.
Eye	Not classified as an eye irritant. Contact may result in mild irritation, lacrimation and redness.
Sensitization	This product is not classified as causing skin or respiratory sensitisation.
Mutagenicity	Insufficient data available to classify as a mutagen.
Carcinogenicity	This product is not classified as a carcinogen. This product may contain trace amounts of residual acrylamide, which is classified as a probable human carcinogen (IARC Group 2A). However, due to the very low levels present, adverse health effects are not anticipated with normal use.
Reproductive	Insufficient data available to classify as a reproductive toxin.
STOT – single exposure	Not classified as causing organ effects from single exposure.
STOT – repeated exposure	Not classified as causing organ effects from repeated exposure.
Aspiration	This product is not expected to present an aspiration hazard.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

(10000 ppm test concentration) (EPA-821-R-02-012)
 Mysidopsis bahia = 48hr LC50 = 16.2 mg/L.
 Menidia beryllina = 48hr LC50 = 34.2 mg/L.
 Scophthalmus Maximus = 96hr LC50 > 1000 mg/L.
 Skeletonemia costatum = 72hr EC50 = 393 mg/L [NOEC = 118 mg/L]
 Acartia tonsa = 48 hr EC50 = 393 mg/L [NOEC = 112 mg/L]
 Corophium Volutator = 10 Day LC50 = 9338 mg/Kg [NOEC = 1000 mg/Kg]

12.2 Persistence and degradability

Not readily biodegradable (by OECD criteria).

12.3 Bioaccumulative potential

Based on its structural properties, the polymer is not biologically available. Accumulation in organisms is not to be expected.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal	Dispose of to an approved landfill or waste processing site. Contact the manufacturer/supplier for additional information (if required).
Legislation	Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport hazard class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

Hazchem code None Allocated

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes None allocated.

Risk phrases None allocated.

Safety phrases None allocated.

Inventory listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information ACRYLIC - ACRYLAMIDE RESINS: These resins are generally of low toxicity. Toxicity increases with presence of significant concentrations of acrylic - acrylamide monomers. These monomers have been linked with the development of skin sensitisation.

RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m ³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

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[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name QUICKSEAL (F,M,C)
Synonym(s) QUICKSEAL

1.2 Uses and uses advised against

Use(s) DRILLING FLUID ADDITIVE

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

2.2 Label elements

No signal word, pictograms, hazard or precautionary statements have been allocated.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
CELLULOSE	9004-34-6	232-674-9	100%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

Inhalation If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.

Skin If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water.

Ingestion For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.

First aid facilities No information provided.

4.2 Most important symptoms and effects, both acute and delayed

Adverse effects not expected from this product under normal conditions of use.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Dry agent, carbon dioxide, foam or water fog. Prevent contamination of drains and waterways.

5.2 Special hazards arising from the substance or mixture

Combustible. May evolve carbon oxides and hydrocarbons when heated to decomposition. Dust may form explosive mixtures with air.

5.3 Advice for firefighters

Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Difficult to extinguish once burning.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Moisten with water to prevent a dust hazard and place in sealable containers for disposal.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances, heat or ignition sources and foodstuffs. Ensure containers are labelled, protected from light, freezing or physical damage and tightly sealed when not in use. Keep out of reach of children.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
Cellulose (paper fibre) (a)	SWA (AUS)	--	10	--	--

Biological limits No Biological Limit Value allocated.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas.

PRODUCT NAME QUICKSEAL (F,M,C)

PPE

Eye / Face	Wear dust-proof goggles.
Hands	Wear PVC or rubber gloves.
Body	When using large quantities or where heavy contamination is likely, wear coveralls.
Respiratory	Where an inhalation risk exists, wear a Class P1 (Particulate) respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	YELLOW TO BROWN SOLID
Odour	SLIGHT ODOUR
Flammability	COMBUSTIBLE
Flash point	NOT AVAILABLE
Boiling point	NOT RELEVANT
Melting point	NOT AVAILABLE
Evaporation rate	NOT AVAILABLE
pH	7 to 8
Vapour density	NOT AVAILABLE
Specific gravity	0.9 - 1.2
Solubility (water)	INSOLUBLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	NOT AVAILABLE
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10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization is not expected to occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with calcium oxides, bleaching powder, perchlorates, perchloric acid, sodium chlorate, fluorine, nitric acid, sodium nitrate and sodium nitrite.

10.6 Hazardous decomposition products

May evolve carbon oxides and hydrocarbons when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity	This product is expected to be of low toxicity. Under normal conditions of use, adverse health effects are not anticipated. Acute Oral Toxicity: LD50 (oral) > 5000 mg/kg (rats). Acute Dermal Toxicity: LD50 (dermal) > 2000 mg/kg (rats). Acute Inhalation Toxicity: LC50 (Inhalation) = 5800 mg/m ³ /4hrs (rat).
Skin	Not classified as a skin irritant. Contact may result in mechanical irritation, redness and rash.
Eye	Not classified as an eye irritant. However, this product may cause mechanical eye irritation with redness and lacrimation.
Sensitization	This product is not known to be a skin or respiratory sensitiser.
Mutagenicity	No evidence of mutagenic effects.
Carcinogenicity	No evidence of carcinogenic effects.
Reproductive	No evidence of reproductive effects.
STOT – single exposure	Not classified as causing organ effects from single exposure.
STOT – repeated exposure	Not classified as causing organ effects from repeated exposure.
Aspiration	This product does not present an aspiration hazard.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Low toxicity to aquatic organisms.

12.2 Persistence and degradability

This product is readily biodegradable.

12.3 Bioaccumulative potential

This product is not expected to bioaccumulate.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal Reuse where possible. No special precautions are normally required when handling this product.

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport hazard class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

PRODUCT NAME QUICKSEAL (F,M,C)

Hazchem code None Allocated

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule	A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).
Classifications	Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals. The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].
Hazard codes	None allocated.
Risk phrases	None allocated.
Safety phrases	None allocated.
Inventory listing(s)	AUSTRALIA: AICS (Australian Inventory of Chemical Substances) All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information	<p>PERSONAL PROTECTIVE EQUIPMENT GUIDELINES: The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.</p> <p>HEALTH EFFECTS FROM EXPOSURE: It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.</p>																																										
Abbreviations	<table><tr><td>ACGIH</td><td>American Conference of Governmental Industrial Hygienists</td></tr><tr><td>CAS #</td><td>Chemical Abstract Service number - used to uniquely identify chemical compounds</td></tr><tr><td>CNS</td><td>Central Nervous System</td></tr><tr><td>EC No.</td><td>EC No - European Community Number</td></tr><tr><td>EMS</td><td>Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)</td></tr><tr><td>GHS</td><td>Globally Harmonized System</td></tr><tr><td>GTEPG</td><td>Group Text Emergency Procedure Guide</td></tr><tr><td>IARC</td><td>International Agency for Research on Cancer</td></tr><tr><td>LC50</td><td>Lethal Concentration, 50% / Median Lethal Concentration</td></tr><tr><td>LD50</td><td>Lethal Dose, 50% / Median Lethal Dose</td></tr><tr><td>mg/m³</td><td>Milligrams per Cubic Metre</td></tr><tr><td>OEL</td><td>Occupational Exposure Limit</td></tr><tr><td>pH</td><td>relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).</td></tr><tr><td>ppm</td><td>Parts Per Million</td></tr><tr><td>STEL</td><td>Short-Term Exposure Limit</td></tr><tr><td>STOT-RE</td><td>Specific target organ toxicity (repeated exposure)</td></tr><tr><td>STOT-SE</td><td>Specific target organ toxicity (single exposure)</td></tr><tr><td>SUSMP</td><td>Standard for the Uniform Scheduling of Medicines and Poisons</td></tr><tr><td>SWA</td><td>Safe Work Australia</td></tr><tr><td>TLV</td><td>Threshold Limit Value</td></tr><tr><td>TWA</td><td>Time Weighted Average</td></tr></table>	ACGIH	American Conference of Governmental Industrial Hygienists	CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds	CNS	Central Nervous System	EC No.	EC No - European Community Number	EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)	GHS	Globally Harmonized System	GTEPG	Group Text Emergency Procedure Guide	IARC	International Agency for Research on Cancer	LC50	Lethal Concentration, 50% / Median Lethal Concentration	LD50	Lethal Dose, 50% / Median Lethal Dose	mg/m ³	Milligrams per Cubic Metre	OEL	Occupational Exposure Limit	pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).	ppm	Parts Per Million	STEL	Short-Term Exposure Limit	STOT-RE	Specific target organ toxicity (repeated exposure)	STOT-SE	Specific target organ toxicity (single exposure)	SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons	SWA	Safe Work Australia	TLV	Threshold Limit Value	TWA	Time Weighted Average
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PRODUCT NAME QUICKSEAL (F,M,C)**Revision history**

Revision	Description
2.3	Standard SDS Review.
2.2	Standard SDS Review.
2.1	Provided Ingredient CAS No.
2.0	Converted to GHS.
1.0	Initial SDS creation

Report status

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Prepared by

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Revision: 2.3

SDS date: 13 February 2015

[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name FLEXFIRM KA
Synonym(s) POTASSIUM SILICATE POWDER

1.2 Uses and uses advised against

Use(s) DRILLING AID

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

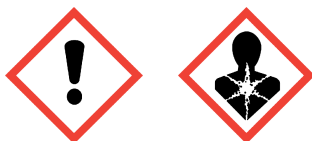
CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

GHS classification(s) Specific Target Organ Systemic Toxicity (Repeated Exposure): Category 2
Specific Target Organ Systemic Toxicity (Single Exposure): Category 3
Acute Toxicity: Oral: Category 4
Serious Eye Damage / Eye Irritation: Category 2A
Skin Corrosion/Irritation: Category 2

2.2 Label elements

Signal word WARNING

Pictogram(s)



Hazard statement(s)

H302 Harmful if swallowed.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H373 May cause damage to organs through prolonged or repeated exposure.

Prevention statement(s)

P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

PRODUCT NAME FLEXFIRM KA**Response statement(s)**

P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P314 Get medical advice/attention if you feel unwell.
P321 Specific treatment is advised - see first aid instructions.
P330 Rinse mouth.
P332 + P337 + P313 If skin or eye irritation occurs: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before re-use.

Storage statement(s)

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.

Disposal statement(s)

P501 Dispose of contents/container in accordance with relevant regulations.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
QUARTZ (CRYSTALLINE SILICA)	14808-60-7	238-878-4	0.1 to 1%
POTASSIUM SILICATE	1312-76-1	215-199-1	99%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.
Inhalation If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.
Skin If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.
Ingestion For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.
First aid facilities No information provided.

4.2 Most important symptoms and effects, both acute and delayed

Irritating to the eyes and skin.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve toxic gases if strongly heated.

5.3 Advice for firefighters

Treat as per requirements for surrounding fires. Evacuate area and contact emergency services. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Ventilate area where possible.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then collect and place in suitable containers for disposal. Avoid generating dust.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. Check regularly for leaks or spills.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
Quartz (respirable dust)	SWA (AUS)	--	0.1	--	--

Biological limits

No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas.

PPE

Eye / Face	Wear dust-proof goggles.
Hands	Wear PVC or rubber gloves.
Body	When using large quantities or where heavy contamination is likely, wear coveralls.
Respiratory	Where an inhalation risk exists, wear a Class P1 (Particulate) respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	WHITE POWDER
Odour	ODOURLESS
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT

9.1 Information on basic physical and chemical properties

Boiling point	NOT AVAILABLE
Melting point	NOT AVAILABLE
Evaporation rate	NOT AVAILABLE
pH	11.3 (50 % solution) (Approximately)
Vapour density	NOT AVAILABLE
Specific gravity	NOT AVAILABLE
Solubility (water)	SOLUBLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization is not expected to occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites) and acids (e.g. nitric acid).

10.6 Hazardous decomposition products

May evolve toxic gases if heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity Information available for the product:
Harmful if swallowed.

Information available for the ingredient(s):

Ingredient	Oral Toxicity (LD50)	Dermal Toxicity (LD50)	Inhalation Toxicity (LC50)
POTASSIUM SILICATE	1600 mg/kg (rat)	--	--

Skin	Irritating to the skin. Contact may result in irritation, redness, pain, rash, dermatitis and possible skin burns.
Eye	Irritating to the eyes. Contact may result in irritation, lacrimation, pain, redness, conjunctivitis and possible burns.
Sensitization	Not classified as causing skin or respiratory sensitisation.
Mutagenicity	Insufficient data available to classify as a mutagen.
Carcinogenicity	Crystalline silica is classified as carcinogenic to humans (IARC Group 1). However, there is a body of evidence supporting the fact that increased cancer risk would be limited to people already suffering from silicosis.
Reproductive	Insufficient data available to classify as a reproductive toxin.
STOT – single exposure	Irritating to the respiratory system. Over exposure may result in irritation of the nose and throat, with coughing. High level exposure may result in breathing difficulties.
STOT – repeated	Repeated exposure to respirable silica may result in pulmonary fibrosis (silicosis). Silicosis is a fibronodular

PRODUCT NAME FLEXFIRM KA

exposure lung disease caused deposition in the lungs of fine respirable particles of crystalline silica. Principal symptoms of silicosis are coughing and breathlessness.

Aspiration Not classified as causing aspiration.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

The high pH when undiluted or unneutralized is acutely harmful to aquatic life. The following data is reported for chemically similar Sodium Silicates on a 100% solids basis: A 96 hour median tolerance for fish (*Gambusia affinis*) of 2320 ppm; a 96 hour median tolerance for water fleas (*Daphnia magna*) of 247 ppm; a 96 hour median tolerance for snail eggs (*Lymnea*) of 632 ppm; and a 96 hour median tolerance for Amphipoda of 160 ppm.

12.2 Persistence and degradability

This material is not persistent in aquatic systems.

12.3 Bioaccumulative potential

Neither silica nor potassium will appreciably bio-concentrate up the food chain.

12.4 Mobility in soil

Expected to be mobile in soil. Diluted material rapidly depolymerizes to yield dissolved silica in a form that is indistinguishable from natural dissolved silica.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal Collect without generating dust. Place in clean, sealed containers and dispose of to an approved landfill site. Contact the manufacturer/supplier for additional information (if required).

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport hazard class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

Hazchem code None Allocated

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule Classified as a Schedule 5 (S5) Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes Xi Irritant
Xn Harmful

PRODUCT NAME FLEXFIRM KA

Risk phrases	R22	Harmful if swallowed.
	R36/37/38	Irritating to eyes, respiratory system and skin.
	R48/20	Harmful: danger of serious damage to health by prolonged exposure through inhalation.
Safety phrases	S22	Do not breathe dust.
	S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
	S36/37/39	Wear suitable protective clothing, gloves and eye/face protection.
Inventory listing(s)	AUSTRALIA: AICS (Australian Inventory of Chemical Substances) All components are listed on AICS, or are exempt.	

16. OTHER INFORMATION

Additional information	PERSONAL PROTECTIVE EQUIPMENT GUIDELINES: The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.	
	HEALTH EFFECTS FROM EXPOSURE: It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.	
Abbreviations	ACGIH	American Conference of Governmental Industrial Hygienists
	CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
	CNS	Central Nervous System
	EC No.	EC No - European Community Number
	EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
	GHS	Globally Harmonized System
	GTEPG	Group Text Emergency Procedure Guide
	IARC	International Agency for Research on Cancer
	LC50	Lethal Concentration, 50% / Median Lethal Concentration
	LD50	Lethal Dose, 50% / Median Lethal Dose
	mg/m ³	Milligrams per Cubic Metre
	OEL	Occupational Exposure Limit
	pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
	ppm	Parts Per Million
	STEL	Short-Term Exposure Limit
	STOT-RE	Specific target organ toxicity (repeated exposure)
	STOT-SE	Specific target organ toxicity (single exposure)
	SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
	SWA	Safe Work Australia
	TLV	Threshold Limit Value
TWA	Time Weighted Average	

Report status	This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').	
	It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.	
	While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.	

PRODUCT NAME FLEXFIRM KA

Prepared by

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Phone: +61 8 9322 1711
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[End of SDS]

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name GAGETROL

Synonym(s)

1.2 Uses and uses advised against

Use(s) DRILLING AID

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

2.2 Label elements

No signal word, pictograms, hazard or precautionary statements have been allocated.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
CARBOXYMETHYL STARCH	9057-06-1	-	100%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

Inhalation Due to product form / nature of use, an inhalation hazard is not anticipated.

Skin If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water.

Ingestion For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). Due to product form and application, ingestion is considered unlikely.

First aid facilities No information provided.

4.2 Most important symptoms and effects, both acute and delayed

Adverse effects not expected from this product under normal conditions of use.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Dry agent, carbon dioxide, foam or water fog. Prevent contamination of drains and waterways.

5.2 Special hazards arising from the substance or mixture

Combustible. May evolve carbon oxides and hydrocarbons when heated to decomposition. Dust may form explosive mixtures with air.

5.3 Advice for firefighters

Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then collect and place in suitable containers for disposal. Avoid generating dust.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances, heat or ignition sources and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. Check regularly for leaks or spills.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

No exposure standards have been entered for this product.

Biological limits

No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering controls Use engineering controls to eliminate potential dust exposure.

PPE

Eye / Face	When using large quantities or where heavy contamination is likely, wear dust-proof goggles.
Hands	When using large quantities or where heavy contamination is likely, wear PVC or rubber gloves.
Body	Not required under normal conditions of use.
Respiratory	Where an inhalation risk exists, wear a Class P1 (Particulate) respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	OFF-WHITE POWDER
Odour	SLIGHT ODOUR
Flammability	COMBUSTIBLE
Flash point	NOT AVAILABLE
Boiling point	NOT AVAILABLE
Melting point	NOT AVAILABLE
Evaporation rate	NOT AVAILABLE
pH	9.0 to 10.5 (4 % solution)
Vapour density	NOT AVAILABLE
Specific gravity	NOT AVAILABLE
Solubility (water)	SOLUBLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT AVAILABLE
Lower explosion limit	NOT AVAILABLE
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization is not expected to occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites).

10.6 Hazardous decomposition products

May evolve carbon oxides and hydrocarbons when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity	Information available for the product: This product is expected to be of low toxicity. Under normal conditions of use, adverse health effects are not anticipated.
Skin	Not classified as a skin irritant. Contact may result in mild irritation.
Eye	Not classified as an eye irritant. Contact may cause mild irritation and lacrimation.
Sensitization	This product is not known to be a skin or respiratory sensitiser.

PRODUCT NAME GAGETROL

Mutagenicity	No evidence of mutagenic effects.
Carcinogenicity	No evidence of carcinogenic effects.
Reproductive	No evidence of reproductive effects.
STOT – single exposure	No known effects from this product.
STOT – repeated exposure	No known effects from this product.
Aspiration	Not relevant.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

This product is not anticipated to cause adverse effects to animal or plant life if released to the environment in small quantities.

12.2 Persistence and degradability

No information provided.

12.3 Bioaccumulative potential

Not expected to bioaccumulate.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal No special precautions are required for the disposal of this product.

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport hazard class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

Hazchem code None Allocated

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

PRODUCT NAME GAGETROL

Hazard codes	None allocated.
Risk phrases	None allocated.
Safety phrases	None allocated.
Inventory listing(s)	AUSTRALIA: AICS (Australian Inventory of Chemical Substances) All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:

It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
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STEL	Short-Term Exposure Limit
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TLV	Threshold Limit Value
TWA	Time Weighted Average

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Prepared by

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[End of SDS]

SAFETY DATA SHEET
 EC 1272/2008 Regulation
AVAGREEN LUBE

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY		
1.1. Substance Identification		
Product Name:	AVAGREEN LUBE	
1.2. Substance Use		
Application:	Ecological lubricant for drilling fluids	
1.3. Company Identification		
Name:	Newpark Drilling Fluids S.p.A.	
Address:	Via Salaria 1313/C	
City/Country:	00138 ROMA (Italy)	
Phone numbers:	+39 06 885611386 / +39 06 885611324 / +39 06 8856111	
Fax:	+39 06 8889363	
1.4. Emergency Phone Numbers		
	+39 06 885611386	+39 06 885611324
		+39 06 8856111
1.5. Responsible Person E-Mail Address		
e-mail:	laboratorio.roma@newpark.com	

2. HAZARDS IDENTIFICATION		
2.1. Substance/Mixture Classification		
<i>Indication of hazards specific for human health and environment:</i>		
THE SUBSTANCE/MIXTURE IS NOT CLASSIFIED AS DANGEROUS IN ACCORDANCE TO FOLLOWING REGULATIONS		
Classification according to EC Regulation n. 1272/2008 - (CLP)		
---	---	NOT CLASSIFIED AS DANGEROUS IN ACCORDANCE TO FOLLOWING REGULATIONS
2.2. Label Elements		
Label according to EC Regulation n. 1272/2008 (CLP)		
Hazards Identification:	---	NOT CLASSIFIED AS DANGEROUS IN ACCORDANCE TO FOLLOWING REGULATIONS
Precautionary Statements:		
Disposal		
2.3. Other Hazards		

3. COMPOSITION / INFORMATION ON INGREDIENTS						
3.1. Chemical Properties of Substance or Mixture						
Composition:	Substance					
Contains:	As per following table					
Molecular Formula:	---					
EC Number:	---					
CAS Number:	---					
UN Number:	---					
REACH Number:	---					
3.2. Information on ingredients						
Name	CAS No.	EC No.	Quantity	Classification	Symbols	Hazard Statements
Methyl esters of fatty acids	68990-52-3	273-606-8	100%	---	---	---

4. FIRST AID MEASURES	
4.1. Description of First Aid Measures	
General information:	In case of diseases, get medical attention. Show to the doctor this Material Safety Data Sheet
After inhalation:	At room temperature or normal handling the risk of inhalation of vapors is negligible
After skin contact:	Take off contaminated clothing and shoes. Wash thoroughly with plenty of water; use, if available, mild soap. Seek immediate medical attention if irritation, swelling or redness develops and persists
After eye contact:	It may cause irritation. Immediately remove any contact lenses. Immediately flush eyes with running water for at least 15-20 minutes while holding eyelids open. If irritation, blurred vision or swelling persist, consult a medical specialist
After swallowing:	In case of disease contact a physician
Other information:	N.a.
4.2. Main symptoms and effects, both acute and delayed	
Symptoms:	N.a.
4.3. Indication of any immediate medical attention and special treatment needed	
Medical surveillance:	Medical surveillance during job not required. In case of disease or accident, consult immediately a doctor and show him this MSDS
Special intervention means:	N.a.

5. FIREFIGHTING MEASURES	
5.1. Extinguishing Media	
Precautions in case of fire:	In case of fire respect following instructions:
Suitable extinguishing media:	In case of fire use: foam, dry chemical, carbon dioxide
Unsuitable extinguishing media:	Avoid the use of water jets on the burning product; could cause splattering and spread the fire. Simultaneous use of foam and water on the same surface as water destroys the foam. Use water spray to cool fire exposed surfaces and to protect personnel in fire fighting
Hazards arising from combustion:	In case of incomplete combustion can form smoke and carbon monoxide. Acrolein thermal decomposition
Special firefighting equipment:	In case of fire wear a full face positive pressure self-contained breathing apparatus and protective suit
Others:	N.a.

6. ACCIDENTAL RELEASE MEASURES	
6.1. Personal Precautions	
Protective equipment:	Wear personal protective equipment (PPE)
Emergency procedures:	Remove personnel not involved from the spill. Warn emergency crews. Avoid skin contact and contact with eyes by wearing appropriate personal protective equipment. Respiratory protection: respiratory protection will be necessary only in special cases, such as: oil mist
6.2. Environmental Precautions	
Containment media:	Confine the spill immediately with floating barriers
Containment methods:	<u>Small spills:</u> can be dried with paper towels. The normal antistatic working clothes are usually adequate. <u>For large spills:</u> Recover by skimming or pumping using explosion-proof equipment, or contain spilled liquid with sand, or other non-combustible absorbent such as sand, earth, vermiculite, diatomaceous earth and place into containers. In the case in which the situation cannot be completely assessed, or if there is a risk of oxygen deficiency, use only SCBA
Additional information:	N.a.

7. HANDLING AND STORAGE	
7.1. Precautions for Handling	
Handling precautions:	Wear proper personal protective equipment. Avoid contact with eyes, skin and clothes. Avoid breathing vapor or mist. Do not swallow. Wash hands after handling. If handling at elevated temperatures or with high speed mechanical equipment, vapors or mists can form and require a well ventilated workplace. Keep the product in cool, well ventilated area away from heat sources and exposure direct sunlight. Electrical equipment and fittings must comply with local regulations regarding fire prevention materials of this type
7.2. Precautions for Storage	
Storage conditions:	MATERIALS AND COVERINGS SUITABLE: Carbon steel, stainless steel, Teflon. The compatibility with plastic materials may vary; It is advisable to check before use
Storage area specifications:	TEMPERATURE loading / unloading: environment STORAGE TEMPERATURE: Store in closed containers at temperatures between 10°C and 40°C
Containers specifications:	EMPTY CONTAINER WARNING: Do not pressurize, cut etc. or expose container to heat, flame or sparks; containers may explode causing injury or death. Not groped to clean since residue is difficult to remove. Empty drums should be drained, capped and sent to reconditioning according to current regulations
Incompatibility:	N.a.
7.3. Particular Uses:	
Particular uses:	N.a.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION		
8.1. Exposure Limits		
TLV _{Ceiling} :	---	
TLV _{TWA} :	---	
TLV _{STEL} :	---	
Biological limit:	---	
8.2. Professional Exposure Controls		
Plant protections:	General ventilation recommended	
Collective protections:	Provide adequate ventilation	
Individual protections:	Respiratory:	When concentrations in air may exceed the exposure limit, and where engineering, work procedures and other means to limit exposure are not adequate, they are necessary means of respiratory protection: masks against vapor and dust/mist
	Eyes:	Where only incidental contact is likely, wear safety glasses with side shields
	Hand:	In cases of prolonged contact, use gloves resistant to oils and solvents. No protection is ordinarily required under normal conditions of use
	Body:	Protective standard clothing
8.3. Environmental Exposure Controls		
Exposure Scenarios:	N.a.	

9. PHYSICAL AND CHEMICAL PROPERTIES	
9.1. General Information	
Form:	Liquid
Appearance:	Liquid
Color:	Yellow
Odor:	Sweet vegetables
Olfactory threshold:	N.a.
9.2. Information about Health, Safety and Environment	
pH:	Not applicable
Melting point:	N.a.
Pour point:	ASTM D 97 : < - 13°C
Boiling temperature:	> 300°C
Flash point:	180°C
Flammability (solid, gas):	N.a.
Auto ignition temperature:	260°C
Decomposition temperature:	N.a.
Danger of explosion:	N.a.
Upper flammability limit:	N.a.
Lower flammability limit:	N.a.
Vapor pressure:	< 0.01 Pa a 20°C
Density at 20°C:	0.91 – 0.92
Apparent density (20°C):	N.a.
Relative density:	N.a.
Vapor density:	N.a.
Evaporation rate:	N.a.
Solubility in water (20°C):	< 1%
Distribution coefficient (n-Octanol):	20 - 25 (approx)
Viscosity:	30 (approx)
9.3. Other information	
Other information:	N.a.

10. STABILITY AND REACTIVITY	
10.1. Reactivity	
Stability:	Keep away from heat sources, open flames, direct sunlight and other sources of ignition
10.2. Chemical Stability	
Incompatible materials:	Avoid contact with acids and bases and strong oxidizing agents. This may result in the evolution of harmful and flammable gases or vapors
Possibility of dangerous reactions:	Hazardous polymerization will not occur
10.3. Hazardous Decomposition Products	
Other information:	Under normal conditions of storage and use, you should not generate dangerous decomposition products. The high temperature, above 150°C, may result in the development of acrolein

11. TOXICOLOGICAL INFORMATION	
11.1. Acute Toxicity	
Substance Toxicity	
Oral toxicity:	N.a.
Inhalation toxicity:	N.a.
Dermal toxicity:	N.a.
11.2. Corrosively	
Skin:	N.a.
Eyes:	N.a.
11.3. Primary Irritability	
Skin:	After long-term exposure can be a risk of irritation
Eyes:	It is possible an irritation of the mucous membranes
11.4. Harmfulness	
Ingestion:	Rinse your mouth and drink plenty of water. Seek medical advice immediately
Inhalation:	No data available
11.5. Sensitization	
Skin:	Not skin sensitizer. Were not observed skin allergies
Eyes:	N.a.

12. ECOLOGICAL INFORMATION	
12.1. Toxicity	
Toxicity in the water:	LC50 (Fish) 48 h: > 10000 µg / L LC50 (Mollusc) 48 h: > 10000 µg /L LC50 (Amphibious) 48 h: > 7600 µg/L
Toxicity in the air:	N.a.
Toxicity in the soil:	N.a.
12.2. Persistence and Degradability	
Other information:	70% 28 days (method OECD 301 B)
12.3. Bio cumulative Potential	
Other information:	Low potential for bio-accumulation in aquatic organisms or terrestrial even after repeated exposure
12.4. Mobility in Soil	
Other information:	It is not volatile and are not expected to persist in the environment
12.5. Results of PBT e vPvB Assessment	
PBT:	This product is not, or does not contain a substance classified as PBT or vPvB
vPvB:	This product is not, or does not contain a substance classified as PBT or vPvB
12.6. Other Adverse Effects	
Other information:	Spills can cause the formation of film on water surfaces causing physical damage to organisms, limiting the exchange of oxygen

13. DISPOSAL CONSIDERATIONS	
13.1. Product Disposal Methods	
Advices	Dispose of in accordance with local and national regulations
Waste code:	N.a.
13.2. Methods of Disposal of packaging	
Advices:	Dispose of in accordance with local and national regulations
Other information:	N.a.

14. TRANSPORT INFORMATION	
14.1. Land/Rail Transport (ADR/RID)	
UN Number:	No dangerous good under transport regulations
UN shipping norms:	N.a.
Hazard class:	N.a.
Packaging group:	N.a.
Dangers for the environment:	N.a.
14.2. Maritime Transport (IMDG)	
IMDG Class:	No dangerous good under transport regulations
Marine pollutant:	N.a.
14.3. Air Transport (ICAO-TI and IATA-DGR)	
ICAO Class:	No dangerous good under transport regulations
IATA Class:	N.a.
14.4. Bulk Transport	
Annex II of MARPOL73/78:	No dangerous good under transport regulations
IBC Code:	N.a.

15. REGULATORY INFORMATION	
15.1. Health, Safety and Environment Regulations/Legislation Specific for the Substance or Mixture	
D.Lgs. 3/2/1997 n. 52 (Classification, packaging and labeling of hazardous substances)	
D.Lgs. 14/3/2003 n. 65 (Classification, packaging and labeling of hazardous mixtures)	
D.Lgs. 2/2/2002 n. 25 (Risks due to chemical agents during the work)	
D.M. Lavoro 26/02/2004 (Professional exposure limits)	
D.M. 03/04/2007 (Implementation of the Directive n. 2006/8/CE)	
CE Regulation n. 1907/2006 (REACH)	
CE Regulation n.1272/2008 (CLP)	
CE Regulation n.790/2009 (Adequacy to technical progress to CLP Regulation)	
CE Regulation n. 453/2010 (Modification of REACH Regulation)	
CE Regulation n.790/2009 (adaptation to technical and scientific progress of CLP Regulation)	
CE Regulation n° 453/2010 (Modification of REACH Regulation)	

16. OTHER INFORMATION**16.1. Main Bibliographic Sources**

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities

SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition – Van Nostrand Reinold

Istituto Superiore di Sanità - Inventario Nazionale Sostanze Chimiche

ACGIH - Threshold Limit Values - 2009 edition

16.2. Declarations

This sheet completes the technical bulletin without to substitute it. The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication.

The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

This material safety datasheet only contains information relating to health and safety. The product has to be used in applications consistent with Newpark Drilling Fluids S.p.A. technology. Individuals handling this product should be informed of the safety precautions and should have access to this information.

This safety data sheet has been completely updated in compliance to Regulation 453/2010/EU.

This MSDS cancels and replaces any preceding release.

16.3. Abbreviations and Acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

GHS: Globally Harmonized System of Classification and Labeling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

ACGIH: American Conference of Industrial Hygienists

EC50: median effective concentration

LC50: median lethal concentration

LD50: median lethal dose

NOEC: no observable effect concentration

PNEC: predicted no-effect concentration

PBT: persistent, bio accumulative, toxic chemicals

vPvB: very persistent, very bio accumulative chemicals

TLV-TWA: Threshold limit value – Time weighted average; professional exposure limit average on 8 hours

TLV-STEL: Threshold limit value – Short Term exposure limit ; professional exposure limit at short term

TLV-C : Threshold limit value – Ceiling



SAFETY DATA SHEET

DeepDrill® Inhibitor

NDF00008

Revision Date 28-May-2015

Version 2

1. IDENTIFICATION

Product identifier

Product Name DeepDrill® Inhibitor

Recommended use of the chemical and restrictions on use

Recommended Use shale inhibitor.

Details of the supplier of the safety data sheet

Supplier

Newpark Drilling Fluids LLC
21920 Merchants Way
Katy, Texas 77449
Tel: +1 (800)-444-0682
<http://www.newpark.com/>

Emergency telephone number

Emergency Telephone Chemtrec - US +1 (800) 424-9300
Chemtrec - International +1 (703) 527-3887

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status

This product is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Label elements

Emergency Overview

The product contains no substances which at their given concentration, are considered to be hazardous to health

Appearance viscous

Physical state liquid

Odor No information available

Hazards not otherwise classified (HNOC)

Not applicable

Other Information

Not applicable.

Unknown acute toxicity

59.07% of the mixture consists of ingredient(s) of unknown toxicity

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance

Chemical Name	CAS No.	Weight-%
Glycerol	56-81-5	7 - 13*

*The exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

Description of first aid measures

General advice	If symptoms persist, call a physician.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If symptoms persist, call a physician. Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Keep eyes wide open while rinsing.
Skin contact	Wash skin with soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing before reuse. Get medical attention if irritation develops and persists.
Inhalation	Remove to fresh air. If symptoms persist, call a physician. Immediate medical attention is not required. Move to fresh air in case of accidental inhalation of vapors.
Ingestion	Immediate medical attention is not required. Rinse mouth. Drink plenty of water. Do NOT induce vomiting. Clean mouth with water and afterwards drink plenty of water. Never give anything by mouth to an unconscious person. Call a physician.
Self-protection of the first aider	Use personal protective equipment as required.

Most important symptoms and effects, both acute and delayed

Symptoms No information available.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media Caution: Use of water spray when fighting fire may be inefficient.

Specific hazards arising from the chemical

No information available.

Explosion data

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge None.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions	Keep people away from and upwind of spill/leak. Ensure adequate ventilation, especially in confined areas.
For emergency responders	In the case of vapor formation use a respirator with an approved filter.

Environmental precautions**Environmental precautions**

Prevent entry into waterways, sewers, basements or confined areas. Do not flush into surface water or sanitary sewer system. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. See Section 12 for additional ecological information.

Methods and material for containment and cleaning up**Methods for containment**

Prevent further leakage or spillage if safe to do so. Dike to collect large liquid spills.

Methods for cleaning up

Use personal protective equipment as required. Use a non-combustible material like vermiculite or sand to soak up the product and place into a container for later disposal. Use clean non-sparking tools to collect absorbed material.

7. HANDLING AND STORAGE**Precautions for safe handling****Advice on safe handling**

Handle in accordance with good industrial hygiene and safety practice. Wash thoroughly after handling. Wash contaminated clothing before reuse.

Conditions for safe storage, including any incompatibilities**Storage Conditions**

Keep container tightly closed. Keep out of the reach of children. Keep containers tightly closed in a cool, well-ventilated place. Keep in properly labeled containers.

Incompatible materials

Strong acids. Strong oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Control parameters****Exposure Guidelines**

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Glycerol 56-81-5	-	TWA: 15 mg/m ³ mist, total particulate TWA: 5 mg/m ³ mist, respirable fraction (vacated) TWA: 10 mg/m ³ mist, total particulate (vacated) TWA: 5 mg/m ³ mist, respirable fraction	-

NIOSH IDLH *Immediately Dangerous to Life or Health*

Other Information

Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

Appropriate engineering controls**Engineering Controls**

Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment**Eye/face protection**

Tight sealing safety goggles. Face protection shield.

Skin and body protection

Wear protective gloves and protective clothing.

Respiratory protection

If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

General Hygiene Considerations

When using do not eat, drink or smoke. Wash contaminated clothing before reuse. Regular cleaning of equipment, work area and clothing is recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	liquid	Odor	No information available
Appearance	viscous	Odor threshold	No information available
Color	brown		

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	11.0	
Melting point/freezing point	No information available	
Boiling point / boiling range	No information available	
Flash point	> 149 °C / > 300 °F	
Evaporation rate	No information available	
Flammability (solid, gas)	No information available	
Flammability Limit in Air		
Upper flammability limit:	No information available	
Lower flammability limit:	No information available	
Vapor pressure	No information available	
Vapor density	No information available	
Specific Gravity	1.18-1.22	
Water solubility	No information available	
Solubility in other solvents	No information available	
Partition coefficient	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	

Other Information

Softening point	No information available
Molecular weight	No information available
VOC Content (%)	No information available
Density	No information available
Bulk density	No information available

10. STABILITY AND REACTIVITY

Reactivity

No data available

Chemical stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

Hazardous polymerization does not occur.

Conditions to avoid

Extremes of temperature and direct sunlight. Incompatible materials.

Incompatible materials

Strong acids. Strong oxidizing agents.

Hazardous Decomposition Products

None known based on information supplied.

11. TOXICOLOGICAL INFORMATION**Information on likely routes of exposure**

Product Information	No data available
Inhalation	No data available.
Eye contact	No data available.
Skin contact	No data available.
Ingestion	No data available.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Glycerol 56-81-5	= 12600 mg/kg (Rat)	> 10 g/kg (Rabbit)	> 570 mg/m ³ (Rat) 1 h

Information on toxicological effects

Symptoms No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization	No information available.
Germ cell mutagenicity	No information available.
Carcinogenicity	No information available.
Reproductive toxicity	No information available.
STOT - single exposure	No information available.
STOT - repeated exposure	No information available.
Chronic toxicity	Avoid repeated exposure.
Target Organ Effects	Eyes, kidney, Respiratory system, Skin.
Aspiration hazard	No information available.

Numerical measures of toxicity - Product Information

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (dermal) 40,971.00 mg/kg

12. ECOLOGICAL INFORMATION**Ecotoxicity**

59.07% of the mixture consists of components(s) of unknown hazards to the aquatic environment

Chemical Name	Algae/aquatic plants	Fish	Crustacea
Glycerol 56-81-5	-	51 - 57: 96 h Oncorhynchus mykiss mL/L LC50 static	500: 24 h Daphnia magna mg/L EC50

Persistence and degradability

No information available.

Bioaccumulation

No information available.

Mobility

No information available.

Chemical Name	Partition coefficient
Glycerol 56-81-5	-1.76

Other adverse effects No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of wastes Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated packaging Do not reuse container. Dispose of in accordance with federal, state and local regulations.

This product contains one or more substances that are listed with the State of California as a hazardous waste.

14. TRANSPORT INFORMATION

DOT Not regulated.

TDG Not regulated

MEX Not regulated

ICAO (air) Not regulated

IATA Not regulated

IMDG Not regulated

RID Not regulated

ADR Not regulated

ADN Not regulated

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Does not comply
ENCS	Does not comply
IECSC	Complies
KECL	Complies
PICCS	Does not comply
AICS	Complies
NZIoC	Complies

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AICS - Australian Inventory of Chemical Substances

NZIoC - New Zealand Inventory of Chemicals

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories

Acute health hazard	No
Chronic Health Hazard	No
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Glycerol 56-81-5	X	X	X


U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION

<p>NFPA</p> <table border="0"> <tr> <td>Health hazards</td> <td>1</td> </tr> <tr> <td>Flammability</td> <td>1</td> </tr> <tr> <td>Instability</td> <td>0</td> </tr> <tr> <td>Physical and Chemical Properties</td> <td>-</td> </tr> </table>	Health hazards	1	Flammability	1	Instability	0	Physical and Chemical Properties	-		<p>HMIS</p> <table border="0"> <tr> <td>Health hazards</td> <td>1</td> </tr> <tr> <td>Flammability</td> <td>1</td> </tr> <tr> <td>Physical hazards</td> <td>0</td> </tr> <tr> <td>Personal protection</td> <td>X</td> </tr> </table>	Health hazards	1	Flammability	1	Physical hazards	0	Personal protection	X
Health hazards	1																	
Flammability	1																	
Instability	0																	
Physical and Chemical Properties	-																	
Health hazards	1																	
Flammability	1																	
Physical hazards	0																	
Personal protection	X																	

Revision Date 28-May-2015

Disclaimer

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End of Safety Data Sheet

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name NEW 100N
Synonym(s) NEW100N

1.2 Uses and uses advised against

Use(s) DRILLING FLUID

1.3 Details of the supplier of the product

Supplier name NEWPARK DRILLING FLUIDS (AUSTRALIA) LTD
Address 11 Alacrity Place, Henderson, WA, 6166, AUSTRALIA
Telephone +61 8 9410 8200
Fax +61 8 9410 8299
Website www.newpark.com

1.4 Emergency telephone number(s)

Emergency 1800 127 406 (Australia); +64 3 3530199 (International)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

2.2 Label elements

No signal word, pictograms, hazard or precautionary statements have been allocated.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
POLYGLYCEROL	25618-55-7	-	30 to 60%
WATER	7732-18-5	231-791-2	Remainder
GLYCEROL (GLYCERINE)	56-81-5	200-289-5	10 to 30%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

Inhalation If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.

Skin If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.

Ingestion For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once).

First aid facilities No information provided.

4.2 Most important symptoms and effects, both acute and delayed

Adverse effects not expected from this product under normal conditions of use.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve carbon oxides and hydrocarbons when heated to decomposition.

5.3 Advice for firefighters

Treat as per requirements for surrounding fires. Evacuate area and contact emergency services. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Clear area of all unprotected personnel. Ventilate area where possible. Contact emergency services where appropriate.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then cover / absorb spill with non-combustible absorbent material (vermiculite, sand, or similar), collect and place in suitable containers for disposal. Eliminate all sources of ignition.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances, heat or ignition sources and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. Check regularly for leaks or spills. Large storage areas should have appropriate ventilation systems.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
Glycerin mist (a)	SWA (AUS)	--	10	--	--

Biological limits

No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas.

PPE

- Eye / Face** Wear splash-proof goggles.
- Hands** Wear PVC or rubber gloves.
- Body** When using large quantities or where heavy contamination is likely, wear coveralls.
- Respiratory** Where an inhalation risk exists, wear a Type A (Organic vapour) respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	VISCOUS DARK BROWN LIQUID
Odour	SLIGHT ODOUR
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	176°C
Melting point	NOT AVAILABLE
Evaporation rate	NOT AVAILABLE
pH	7 to 8.5
Vapour density	NOT AVAILABLE
Specific gravity	1.16 to 1.25
Solubility (water)	SOLUBLE
Vapour pressure	< 4 mm Hg @ 20°C
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization is not expected to occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites), acids (e.g. nitric acid), heat and ignition sources.

10.6 Hazardous decomposition products

May evolve carbon oxides and hydrocarbons when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

Information available for the product:

This product is expected to be of low toxicity. Under normal conditions of use, adverse health effects are not anticipated.

Information available for the ingredient(s):

Ingredient	Oral Toxicity (LD50)	Dermal Toxicity (LD50)	Inhalation Toxicity (LC50)
GLYCEROL (GLYCERINE)	4090 mg/kg (mouse)	--	--

Additional ingredient toxicity value(s):

GLYCEROL (GLYCERINE) (56-81-5)
 LD50 (intraperitoneal) 4420 mg/kg (rat)
 LD50 (intravenous) 4250 mg/kg (mouse)
 LD50 (subcutaneous) 91 mg/kg (mouse)
 TDLo (oral) 1428 mg/kg (human)

Skin Not classified as a skin irritant. Contact may cause temporary mild skin irritation.
Eye Not classified as an eye irritant. Contact may cause discomfort, lacrimation and redness.
Sensitization Not classified as causing skin or respiratory sensitisation.
Mutagenicity Not classified as a mutagen.
Carcinogenicity Not classified as a carcinogen.
Reproductive Not classified as a reproductive toxin.
STOT – single exposure Not classified as causing organ effects from single exposure.
STOT – repeated exposure Not classified as causing organ effects from repeated exposure.
Aspiration Not classified as causing aspiration.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No information provided.

12.2 Persistence and degradability

No information provided.

12.3 Bioaccumulative potential

No information provided.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal Dispose of to an approved landfill or waste processing site. Contact the manufacturer/supplier for additional information (if required).
Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None Allocated	None Allocated	None Allocated
14.2 Proper Shipping Name	None Allocated	None Allocated	None Allocated
14.3 Transport hazard class	None Allocated	None Allocated	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

Hazchem code None Allocated

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes None allocated.

Risk phrases None allocated.

Safety phrases None allocated.

Inventory listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:

It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m ³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

Prepared by

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[End of SDS]



SAFETY DATA SHEET

EvoLube® TR

NDF00132

Revision Date 22-Oct-2015

Version 1

1. IDENTIFICATION

Product identifier

Product Name EvoLube® TR

Recommended use of the chemical and restrictions on use

Recommended Use Lubricant

Details of the supplier of the safety data sheet

Supplier

Newpark Drilling Fluids LLC
21920 Merchants Way
Katy, Texas 77449
Tel: +1 (800)-444-0682
<http://www.newpark.com/>

Emergency telephone number

Emergency Telephone Chemtrec - US +1 (800) 424-9300
Chemtrec - International +1 (703) 527-3887

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Oral	Category 4 - (H302)
Acute toxicity - Inhalation (Dusts/Mists)	Category 4 - (H332)
Serious eye damage/eye irritation	Category 1 - (H318)
Carcinogenicity	Category 2 - (H351)
Specific target organ toxicity (repeated exposure)	Category 2 - (H373)

Label elements

Emergency Overview

Danger

Hazard statements

H302 - Harmful if swallowed
H318 - Causes serious eye damage
H332 - Harmful if inhaled
H351 - Suspected of causing cancer
H373 - May cause damage to organs through prolonged or repeated exposure

**Appearance** No information available**Physical state** liquid**Odor** No information available**Precautionary statements**

P264 - Wash face, hands and any exposed skin thoroughly after handling

P270 - Do not eat, drink or smoke when using this product

P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell

P330 - Rinse mouth

P261 - Avoid breathing dust/fume/gas/mist/vapors/spray

P271 - Use only outdoors or in a well-ventilated area

P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

P312 - Call a POISON CENTER or doctor/physician if you feel unwell

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P310 - Immediately call a POISON CENTER or doctor/physician

P201 - Obtain special instructions before use

P202 - Do not handle until all safety precautions have been read and understood

P281 - Use personal protective equipment as required

P308 + P313 - IF exposed or concerned: Get medical advice/attention

P405 - Store locked up

P260 - Do not breathe dust/fume/gas/mist/vapors/spray

P314 - Get medical advice/attention if you feel unwell

P501 - Dispose of contents/ container to an approved waste disposal plant

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P501 - Dispose of contents/container to industrial incineration plant

Hazards not otherwise classified (HNOC)

Not applicable

Other Information

May be harmful in contact with skin. Causes mild skin irritation.

Unknown acute toxicity

84 % of the mixture consists of ingredient(s) of unknown toxicity

3. COMPOSITION/INFORMATION ON INGREDIENTS**Substance**

Chemical Name	CAS No.	Weight-%
Triethylene glycol, monobutyl ether	143-22-6	7 - 13*
2-Butoxyethanol	111-76-2	3 - 7*
Diethanolamine	111-42-2	1 - 5*

*The exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES**Description of first aid measures****General advice**

In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

Eye contact	Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Keep eyes wide open while rinsing. If symptoms persist, call a physician.
Skin contact	Wash skin with soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing before reuse. Get medical attention if irritation develops and persists.
Inhalation	Remove to fresh air. If not breathing, give artificial respiration. If symptoms persist, call a physician.
Ingestion	Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice. If symptoms persist, call a physician.
Self-protection of the first aider	Use personal protective equipment as required.

Most important symptoms and effects, both acute and delayed

Symptoms No information available.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media CAUTION: Use of water spray when fighting fire may be inefficient.

Specific hazards arising from the chemical

No information available.

Hazardous combustion products Carbon oxides, Nitrogen oxides (NOx)

Explosion data

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge None.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Ensure adequate ventilation, especially in confined areas. Keep people away from and upwind of spill/leak.

For emergency responders In the case of vapor formation use a respirator with an approved filter.

Environmental precautions

Environmental precautions See Section 12 for additional Ecological Information.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so. Dike to collect large liquid spills.

Methods for cleaning up Use personal protective equipment as required. Use a non-combustible material like vermiculite or sand to soak up the product and place into a container for later disposal. Use clean non-sparking tools to collect absorbed material.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice. Wash thoroughly after handling. Wash contaminated clothing before reuse.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place.

Incompatible materials Strong acids. Strong oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
2-Butoxyethanol 111-76-2	TWA: 20 ppm	TWA: 50 ppm TWA: 240 mg/m ³ (vacated) TWA: 25 ppm (vacated) TWA: 120 mg/m ³ (vacated) S* S*	IDLH: 700 ppm TWA: 5 ppm TWA: 24 mg/m ³
Diethanolamine 111-42-2	TWA: 1 mg/m ³ inhalable fraction and vapor S*	(vacated) TWA: 3 ppm (vacated) TWA: 15 mg/m ³	TWA: 3 ppm TWA: 15 mg/m ³

NIOSH IDLH *Immediately Dangerous to Life or Health*

Other Information Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

Appropriate engineering controls

Engineering Controls Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

- Eye/face protection** Tight sealing safety goggles.
- Skin and body protection** Wear protective gloves and protective clothing.
- Respiratory protection** If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	liquid	Odor	No information available
Appearance	No information available	Odor threshold	No information available
Color	clear to Pale yellow		
Property	Values	Remarks • Method	
pH	8.9	5% solution	
Melting point / freezing point	No information available		
Boiling point / boiling range	No information available		
Flash point	> 93 °C / > 200 °F		
Evaporation rate	No information available		
Flammability (solid, gas)	No information available		
Flammability Limit in Air			
Upper flammability limit:	No information available		
Lower flammability limit:	No information available		
Vapor pressure	No information available		
Vapor density	No information available		
Specific Gravity	0.94		
Water solubility	No information available		
Solubility in other solvents	No information available		
Partition coefficient	No information available		
Autoignition temperature	No information available		
Decomposition temperature	No information available		
Kinematic viscosity	No information available		
Dynamic viscosity	No information available		
Explosive properties	No information available		
Oxidizing properties	No information available		
<u>Other Information</u>			
Softening point	No information available		
Molecular weight	No information available		
VOC Content (%)	No information available		
Density	No information available		
Bulk density	No information available		

10. STABILITY AND REACTIVITY

Reactivity

No data available

Chemical stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

Hazardous polymerization does not occur.

Conditions to avoid

Extremes of temperature and direct sunlight. Incompatible materials.

Incompatible materials

Strong acids. Strong oxidizing agents.

Hazardous Decomposition Products

None known based on information supplied.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information No data available

Inhalation	No data available.
Eye contact	No data available.
Skin contact	No data available.
Ingestion	No data available.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Triethylene glycol, monobutyl ether 143-22-6	= 5300 mg/kg (Rat)	= 3480 mg/kg (Rabbit)	-
2-Butoxyethanol 111-76-2	= 470 mg/kg (Rat)	= 99 mg/kg (Rabbit)	= 450 ppm (Rat) 4 h
Diethanolamine 111-42-2	= 620 µL/kg (Rat) = 0.62 mL/kg (Rat)	= 7640 µL/kg (Rabbit)	-

Information on toxicological effects

Symptoms No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization No information available.

Germ cell mutagenicity No information available.

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
2-Butoxyethanol 111-76-2	A3	Group 3	-	-
Diethanolamine 111-42-2	A3	Group 2B	-	X

ACGIH (American Conference of Governmental Industrial Hygienists)

A3 - Animal Carcinogen

IARC (International Agency for Research on Cancer)

Group 2B - Possibly Carcinogenic to Humans

Not classifiable as a human carcinogen

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

X - Present

Reproductive toxicity No information available.

STOT - single exposure No information available.

STOT - repeated exposure No information available.

Chronic toxicity May cause adverse effects on the bone marrow and blood-forming system. May cause adverse liver effects.

Target Organ Effects blood, Central nervous system, Eyes, Hematopoietic System, kidney, liver, Respiratory system, Skin.

Aspiration hazard No information available.

Numerical measures of toxicity - Product Information

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral)	500.00 mg/kg
ATEmix (dermal)	2,022.00 mg/kg mg/l
ATEmix (inhalation-dust/mist)	1.50 mg/l
ATEmix (inhalation-vapor)	450.00 mg/l

12. ECOLOGICAL INFORMATION

Ecotoxicity

84 % of the mixture consists of component(s) of unknown hazards to the aquatic environment

Chemical Name	Algae/aquatic plants	Fish	Crustacea

Triethylene glycol, monobutyl ether 143-22-6	500: 72 h <i>Desmodesmus subspicatus</i> mg/L EC50	2200 - 4600: 96 h <i>Leuciscus idus</i> mg/L LC50 static 2400: 96 h <i>Pimephales promelas</i> mg/L LC50 static 2400: 96 h <i>Pimephales promelas</i> mg/L LC50	500: 48 h <i>Daphnia magna</i> mg/L EC50
2-Butoxyethanol 111-76-2	-	2950: 96 h <i>Lepomis macrochirus</i> mg/L LC50 1490: 96 h <i>Lepomis macrochirus</i> mg/L LC50 static	1000: 48 h <i>Daphnia magna</i> mg/L EC50 1698 - 1940: 24 h <i>Daphnia magna</i> mg/L EC50
Diethanolamine 111-42-2	7.8: 72 h <i>Desmodesmus subspicatus</i> mg/L EC50 2.1 - 2.3: 96 h <i>Pseudokirchneriella subcapitata</i> mg/L EC50	4460 - 4980: 96 h <i>Pimephales promelas</i> mg/L LC50 flow-through 1200 - 1580: 96 h <i>Pimephales promelas</i> mg/L LC50 static 600 - 1000: 96 h <i>Lepomis macrochirus</i> mg/L LC50 static	55: 48 h <i>Daphnia magna</i> mg/L EC50

Persistence and degradability

No information available.

Bioaccumulation

No information available.

Mobility

No information available.

Chemical Name	Partition coefficient
Triethylene glycol, monobutyl ether 143-22-6	0.51
2-Butoxyethanol 111-76-2	0.81
Diethanolamine 111-42-2	-2.18

Other adverse effects

No information available

13. DISPOSAL CONSIDERATIONS**Waste treatment methods****Disposal of wastes**

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated packaging

Do not reuse container. Dispose of in accordance with federal, state and local regulations.

14. TRANSPORT INFORMATION**DOT**

Not regulated.

TDG

Not regulated

MEX

Not regulated

ICAO (air)

Not regulated

IATA

Not regulated

IMDG

Not regulated

RID

Not regulated

ADR Not regulated

ADN Not regulated

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Complies
ENCS	Does not comply
IECSC	Complies
KECL	Complies
PICCS	Complies
AICS	Complies
NZIoC	Complies

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AICS - Australian Inventory of Chemical Substances

NZIoC - New Zealand Inventory of Chemicals

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	SARA 313 - Threshold Values %
Triethylene glycol, monobutyl ether - 143-22-6	1.0
2-Butoxyethanol - 111-76-2	1.0
Diethanolamine - 111-42-2	1.0

SARA 311/312 Hazard Categories

Acute health hazard	Yes
Chronic Health Hazard	Yes
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Diethanolamine 111-42-2	100 lb	-	RQ 100 lb final RQ RQ 45.4 kg final RQ

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals

Chemical Name	California Proposition 65
Diethanolamine - 111-42-2	Carcinogen

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Vegetable oil	-	-	X
Triethylene glycol, monobutyl ether 143-22-6	X	-	X
2-Butoxyethanol 111-76-2	X	X	X
Diethanolamine 111-42-2	X	X	X

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR
WHMIS Hazard Class



D2A - Very toxic materials

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION

NFPA	Health hazards	2		HMIS	Health hazards	2
	Flammability	1			Flammability	1
	Instability	0			Physical hazards	0
	Physical and Chemical Properties	-			Personal protection	X

Revision Date 22-Oct-2015

Disclaimer

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End of Safety Data Sheet

MATERIAL SAFETY DATA SHEET

Product Trade Name: **CEMENT - CLASS G**

Revision Date: 29-Apr-2013

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Statement of Hazardous Nature Hazardous according to the criteria of NOHSC, Non-Dangerous Goods according to the criteria of ADG.

Manufacturer/Supplier Halliburton Australia Pty. Ltd.
15 Marriott Road
Jandakot
WA 6164
Australia

ACN Number: 009 000 775
Telephone Number: 61 (08) 9455 8300
Fax Number: 61 (08) 9455 5300

Product Emergency Telephone

Australia: 08-64244950
Papua New Guinea: 05 1 281 575 5000
NewZealand: 06-7559274

Fire, Police & Ambulance - Emergency Telephone

Australia: 000
Papua New Guinea: 000
New Zealand: 111

Identification of Substances or Preparation

Product Trade Name: CEMENT - CLASS G
Synonyms: None
Chemical Family: Cement
UN Number: None
Dangerous Goods Class: None
Subsidiary Risk: None
Hazchem Code: None Allocated
Poisons Schedule: None Allocated
Application: Cement

Prepared By Chemical Compliance
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

2. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	PERCENT	Australia NOHSC	New Zealand WES	ACGIH TLV-TWA
Portland cement	65997-15-1	60 - 100%	TWA: 10 mg/m ³	TWA: 10 mg/m ³	TWA: 1 mg/m ³
Crystalline silica, quartz	14808-60-7	<3	TWA: 0.1 mg/m ³	TWA: 0.2 mg/m ³	TWA: 0.025 mg/m ³

Non-Hazardous Substance to Total of 100%

3. HAZARDS IDENTIFICATION

Hazard Overview

CAUTION! - ACUTE HEALTH HAZARD

May cause eye, skin, and respiratory irritation.

DANGER! - CHRONIC HEALTH HAZARD

Breathing crystalline silica can cause lung disease, including silicosis and lung cancer. Crystalline silica has also been associated with scleroderma and kidney disease.

This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposures below recommended exposure limits. Wear a NIOSH certified, European Standard EN 149, or equivalent respirator when using this product. Review the Material Safety Data Sheet (MSDS) for this product, which has been provided to your employer.

Risk Phrases

R41 Risk of serious damage to eyes.

R43 May cause sensitization by skin contact.

R37/38 Irritating to respiratory system and skin.

HSNO Classification

6.1E (Inhalation) Acutely Toxic Substances 8.2C Corrosive to dermal tissue if exposed for greater than 1 hour 8.3A Corrosive to ocular tissue 6.5B Contact sensitizers 6.7A Known or presumed human carcinogens 6.9A Toxic to human target organs or systems

4. FIRST AID MEASURES

Inhalation

If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Skin

Wash with soap and water. Get medical attention if irritation persists.

Eyes

In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.

Ingestion

Under normal conditions, first aid procedures are not required.

Notes to Physician

Not Applicable

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media

None - does not burn.

Extinguishing media which must not be used for safety reasons

None known.

Special Exposure Hazards

Not applicable.

Special Protective Equipment for Fire-Fighters

Not applicable.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures Use appropriate protective equipment. Avoid creating and breathing dust.

CEMENT - CLASS G

Page 2 of 7

Environmental Precautionary Measures None known.

Procedure for Cleaning / Absorption Collect using dustless method and hold for appropriate disposal. Consider possible toxic or fire hazards associated with contaminating substances and use appropriate methods for collection, storage and disposal.

7. HANDLING AND STORAGE

Handling Precautions Avoid contact with eyes, skin, or clothing. This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposure below recommended exposure limits. Wear a NIOSH certified, European Standard En 149, or equivalent respirator when using this product. Material is slippery when wet.

Storage Information Store in a cool well ventilated area. Keep container closed when not in use. Store locked up. Store in a cool, dry location. Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. Product has a shelf life of 24 months.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits.

Respiratory Protection Wear a NIOSH certified, European Standard EN 149 (FFP2/FFP3), or equivalent respirator when using this product.

Hand Protection Normal work gloves.

Skin Protection Wear clothing appropriate for the work environment. Dusty clothing should be laundered before reuse. Use precautionary measures to avoid creating dust when removing or laundering clothing.

Eye Protection Wear safety glasses or goggles to protect against exposure.

Other Precautions Eyewash fountains and safety showers must be easily accessible.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid
Color:	Gray
Odor:	Odorless
pH:	12.4
Specific Gravity @ 20 C (Water=1):	3.14
Density @ 20 C (kg/l):	Not Determined
Bulk Density @ 20 C (kg/m³):	Not Determined
Boiling Point/Range (C):	Not Determined
Freezing Point/Range (C):	Not Determined
Pour Point/Range (C):	Not Determined
Flash Point/Range (C):	Not Determined
Flash Point Method:	Not Determined
Autoignition Temperature (C):	Not Determined
Flammability Limits in Air - Lower (g/m³):	Not Determined
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (g/m³):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined

9. PHYSICAL AND CHEMICAL PROPERTIES

Vapor Pressure @ 20 C (mmHg):	Not Determined
Vapor Density (Air=1):	Not Determined
Percent Volatiles:	0
Evaporation Rate (Butyl Acetate=1):	Not Determined
Solubility in Water (g/100ml):	Not Determined
Solubility in Solvents (g/100ml):	Not Determined
VOCs (g/l):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	Not Determined
Viscosity, Kinematic @ 20 C (centistokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined
Molecular Weight (g/mole):	Not Determined
Decomposition Temperature (C):	Not Determined

10. STABILITY AND REACTIVITY

Stability Data:	Stable
Hazardous Polymerization:	Will Not Occur
Conditions to Avoid	Keep away from any contact with water.
Incompatibility (Materials to Avoid)	Hydrofluoric acid.
Hazardous Decomposition Products	Amorphous silica may transform at elevated temperatures to tridymite (870 C) or cristobalite (1470 C).
Additional Guidelines	Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure Eye or skin contact, inhalation.

Symptoms related to exposure **Inhalation**

Inhaled crystalline silica in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (IARC, Group 1). There is sufficient evidence in experimental animals for the carcinogenicity of tridymite (IARC, Group 2A).

Breathing silica dust may cause irritation of the nose, throat, and respiratory passages. Breathing silica dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Inhalation of dust may also have serious chronic health effects (See "Chronic Effects/Carcinogenicity" subsection below).

Skin Contact Can dry skin. May cause an allergic skin reaction. May cause alkali burns with confined contact.

Eye Contact May cause severe eye irritation.

Ingestion None known

Aggravated Medical Conditions Individuals with respiratory disease, including but not limited to asthma and bronchitis, or subject to eye irritation, should not be exposed to quartz dust.

Chronic Effects/Carcinogenicity Silicosis: Excessive inhalation of respirable crystalline silica dust may cause a progressive, disabling, and sometimes-fatal lung disease called silicosis. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness, and reduced pulmonary function. This disease is exacerbated by smoking. Individuals with silicosis are predisposed to develop tuberculosis.

Cancer Status: The International Agency for Research on Cancer (IARC) has determined that crystalline silica inhaled in the form of quartz or cristobalite from occupational sources can cause lung cancer in humans (Group 1 - carcinogenic to humans) and has determined that there is sufficient evidence in experimental animals for the carcinogenicity of tridymite (Group 2A - possible carcinogen to humans). Refer to IARC Monograph 68, Silica, Some Silicates and Organic Fibres (June 1997) in conjunction with the use of these minerals. The National Toxicology Program classifies respirable crystalline silica as "Known to be a human carcinogen". Refer to the 9th Report on Carcinogens (2000). The American Conference of Governmental Industrial Hygienists (ACGIH) classifies crystalline silica, quartz, as a suspected human carcinogen (A2).

There is some evidence that breathing respirable crystalline silica or the disease silicosis is associated with an increased incidence of significant disease endpoints such as scleroderma (an immune system disorder manifested by scarring of the lungs, skin, and other internal organs) and kidney disease.

Other Information For further information consult "Adverse Effects of Crystalline Silica Exposure" published by the American Thoracic Society Medical Section of the American Lung Association, American Journal of Respiratory and Critical Care Medicine, Volume 155, pages 761-768 (1997).

Toxicity Tests

Oral Toxicity:	Not determined
Dermal Toxicity:	Not determined
Inhalation Toxicity:	Not determined
Primary Irritation Effect:	Not determined
Carcinogenicity	Refer to <u>IARC Monograph 68, Silica, Some Silicates and Organic Fibres</u> (June 1997).
Genotoxicity:	Not determined
Reproductive / Developmental Toxicity:	Not determined

12. ECOLOGICAL INFORMATION

Mobility (Water/Soil/Air)	Not determined
Persistence/Degradability	Not applicable
Bio-accumulation	Not determined

Ecotoxicological Information

Acute Fish Toxicity:	Not determined
Acute Crustaceans Toxicity:	Not determined

Acute Algae Toxicity:	Not determined
Chemical Fate Information	Not determined
Other Information	Not applicable

13. DISPOSAL CONSIDERATIONS

Disposal Method	Bury in a licensed landfill according to federal, state, and local regulations. Substance should NOT be deposited into a sewage facility.
Contaminated Packaging	Follow all applicable national or local regulations. Contaminated packaging may be disposed of by: rendering packaging incapable of containing any substance, or treating packaging to remove residual contents, or treating packaging to make sure the residual contents are no longer hazardous, or by disposing of packaging into commercial waste collection.

14. TRANSPORT INFORMATION

Land Transportation

ADR
Not restricted

Air Transportation

ICAO/IATA
Not restricted

Sea Transportation

IMDG
Not restricted

Other Transportation Information

Labels: None

15. REGULATORY INFORMATION

Chemical Inventories

Australian AICS Inventory	All components listed on inventory or are exempt.
New Zealand Inventory of Chemicals	All components listed on inventory or are exempt.
US TSCA Inventory	All components listed on inventory or are exempt.
EINECS Inventory	This product, and all its components, complies with EINECS

Classification Xi - Irritant.

Risk Phrases R41 Risk of serious damage to eyes.
R43 May cause sensitization by skin contact.
R37/38 Irritating to respiratory system and skin.

Safety Phrases

S2 Keep out of reach of children.

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S37 Wear suitable gloves.

S24/25 Avoid contact with skin and eyes.

16. OTHER INFORMATION

The following sections have been revised since the last issue of this SDS

Not applicable

Contact**Australian Poisons Information Centre**

24 Hour Service: - 13 11 26

Police or Fire Brigade: - 000 (exchange): - 1100

New Zealand National Poisons Centre

0800 764 766

Additional Information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

*****END OF MSDS*****

MATERIAL SAFETY DATA SHEET

Product Trade Name: ECONOLITE LIQUID

Revision Date: 17-Jan-2013

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Statement of Hazardous Nature Hazardous according to the criteria of NOHSC, Non-Dangerous Goods according to the criteria of ADG.

Manufacturer/Supplier Halliburton Australia Pty. Ltd.
15 Marriott Road
Jandakot
WA 6164
Australia

ACN Number: 009 000 775
Telephone Number: 61 (08) 9455 8300
Fax Number: 61 (08) 9455 5300

Product Emergency Telephone

Australia: 08-64244950
Papua New Guinea: 05 1 281 575 5000
NewZealand: 06-7559274

Fire, Police & Ambulance - Emergency Telephone

Australia: 000
Papua New Guinea: 000
New Zealand: 111

Identification of Substance or Preparation

Product Trade Name: ECONOLITE LIQUID
Synonyms: None
Chemical Family: Silicate
UN Number: None
Dangerous Goods Class: None
Subsidiary Risk: None
Hazchem Code: None
Poisons Schedule: S5
Application: Light Weight Cement Additive

Prepared By Chemical Compliance
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

2. COMPOSITION/INFORMATION ON INGREDIENTS

Substance	CAS Number	Percent	Australia NOHSC	New Zealand WES	ACGIH TLV-TWA
Sodium silicate	1344-09-8	35-49	Not determined	Not determined	Not applicable

Non-hazardous Substance to Total of 100%

3. HAZARDS IDENTIFICATION

Hazard Overview	May cause eye and skin burns. May cause respiratory irritation. May be harmful if swallowed.
Risk Phrases	R34 Causes burns.
HSNO Classification	Not Determined

4. FIRST AID MEASURES

Inhalation	If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
Skin	In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes. Get medical attention. Remove contaminated clothing and launder before reuse.
Eyes	In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.
Ingestion	Do not induce vomiting. Slowly dilute with 1-2 glasses of water or milk and seek medical attention. Never give anything by mouth to an unconscious person.
Notes to Physician	Not Applicable

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media	Water fog, carbon dioxide, foam, dry chemical.
Unsuitable Extinguishing Media	None known
Special Exposure Hazards	Decomposition in fire may produce toxic gases.
Special Protective Equipment for Fire-Fighters	Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures	Use Appropriate protective equipment.
Environmental Precautionary Measures	Prevent from entering sewers, waterways or low areas.
Procedure for Cleaning/Absorption	Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Neutralise to pH of 6-8. Scoop up and remove. Do NOT spread spilled product with water.

7. HANDLING AND STORAGE

Handling Precautions	Avoid contact with eyes, skin, or clothing. Avoid breathing vapours. Wash hands after use. Launder contaminated clothing before reuse. Avoid breathing mist.
Storage Information	Store away from acids. Store in a cool well ventilated area. Keep container closed when not in use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls	Use in a well ventilated area. Local exhaust ventilation should be used in areas without good cross ventilation.
Respiratory Protection	Dust/mist respirator. (N95,P2/P3)
Hand Protection	Impervious rubber gloves.
Skin Protection	Full protective clothing.
Eye Protection	Chemical goggles; also wear a face shield if splashing hazard exists.
Other Precautions	Eyewash fountains and safety showers must be easily accessible.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Colour:	Clear to hazy
Odour:	Slightly soapy
pH:	11.2
Specific Gravity @ 20 C (Water=1):	1.4
Density @ 20 C (kg/l):	1.4
Bulk Density @ 20 C (kg/l):	Not Determined
Boiling Point/Range (C):	101
Freezing Point/Range (C):	-1
Pour Point/Range (C):	Not Determined
Flash Point/Range (C):	Not Determined
Flash Point Method:	Not Determined
Autoignition Temperature (C):	Not Determined
Flammability Limits in Air - Lower (g/m³):	Not Determined
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (g/m³):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined
Vapour Pressure @ 20 C (mmHg):	Not Determined
Vapour Density (Air=1):	Not Determined
Percent Volatiles:	Not Determined
Evaporation Rate (Butyl Acetate = 1):	Not determined.
Solubility in Water (g/100ml):	Soluble
Solubility in Solvents (g/100ml):	Not Determined
VOCs (g/l):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	Not Determined
Viscosity, Kinematic @ 20 C (centistokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined
Molecular Weight (g/mole):	Not Determined
Decomposition Temperature (C):	Not Determined

10. STABILITY AND REACTIVITY

Stability Data:	Stable
Hazardous Polymerisation:	Will Not Occur
Conditions to Avoid	None anticipated
Incompatibility (Materials to Avoid)	Strong acids. Amphoteric metals such as aluminium, magnesium, lead, tin, or zinc.

Hazardous Decomposition Products	Toxic fumes.
Additional Guidelines	Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure	Eye or skin contact, inhalation.
<u>Symptoms related to exposure</u>	
Inhalation	Causes severe respiratory irritation.
Skin Contact	May cause skin burns.
Eye Contact	May cause eye burns.
Ingestion	Causes burns of the mouth, throat and stomach.
Aggravated Medical Conditions	Skin disorders.
Chronic Effects/Carcinogenicity	No data available to indicate product or components present at greater than 1% are chronic health hazards.
Other Information	None known.
Toxicity Tests	
Oral Toxicity:	LD50: 2000-3000 mg/kg (Rat)
Dermal Toxicity:	Not determined.
Inhalation Toxicity:	Not determined
Primary Irritation Effect:	Not determined
Carcinogenicity:	Not determined
Genotoxicity:	Not determined
Reproductive/Developmental Toxicity:	Not determined

12. ECOLOGICAL INFORMATION

Mobility (Water/Soil/Air)	Not determined
Persistence/Degradability	Not determined
Bio-accumulation	Not Determined

Ecotoxicological Information

Acute Fish Toxicity:	Not determined
Acute Crustaceans Toxicity:	Not determined
Acute Algae Toxicity:	Not determined
Chemical Fate Information	Not determined
Other Information	Not applicable

13. DISPOSAL CONSIDERATIONS

Disposal Method	Disposal should be made in accordance with federal, state and local regulations.
Contaminated Packaging	Follow all applicable national or local regulations.

14. TRANSPORT INFORMATION

Land Transportation

ADR Not restricted

Air Transportation

ICAO/IATA Not restricted

Sea Transportation

IMDG Not restricted

Other Shipping Information

Labels: None

15. REGULATORY INFORMATION

Chemical Inventories

Australian AICS Inventory	All components listed.
New Zealand Inventory of Chemicals	All components listed on inventory or are exempt.
US TSCA Inventory	All components listed.
EINECS Inventory	All components are listed on the inventory.

Classification C - Corrosive.

Risk Phrases R34 Causes burns.

Safety Phrases S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36 Wear suitable protective clothing.

16. OTHER INFORMATION

The following sections have been revised since the last issue of this MSDS:
Not applicable

Contact

Australian Poisons Information Centre

24 Hour Service: - 13 11 26

Police or Fire Brigade: - 000 (exchange): - 1100

New Zealand National Poisons Centre

0800 764 766

Additional Information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Material Safety Data Sheet for this or other Halliburton products, contact Product Stewardship at 1-580-251-4335.

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

*****END OF MSDS*****

MATERIAL SAFETY DATA SHEET

Product Trade Name: GASCON 469

Revision Date: 26-Mar-2014

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Statement of Hazardous Nature Non-Hazardous according to the criteria of NOHSC, Non-Dangerous Goods according to the criteria of ADG.

Manufacturer/Supplier Halliburton Australia Pty. Ltd.
15 Marriott Road
Jandakot
WA 6164
Australia

ACN Number: 009 000 775
Telephone Number: 61 (08) 9455 8300
Fax Number: 61 (08) 9455 5300

Product Emergency Telephone

Australia: 08-64244950
Papua New Guinea: 05 1 281 575 5000
NewZealand: 06-7559274

Fire, Police & Ambulance - Emergency Telephone

Australia: 000
Papua New Guinea: 000
New Zealand: 111

Identification of Substances or Preparation

Product Trade Name: GASCON 469
Synonyms: None
Chemical Family: Blend
UN Number: None
Dangerous Goods Class: None
Subsidiary Risk: None
Hazchem Code: None Allocated
Poisons Schedule: None Allocated
Application: Cement Additive

Prepared By Chemical Compliance
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

2. HAZARDS IDENTIFICATION

Statement of Hazardous Nature Non-Hazardous according to the criteria of NOHSC, Non-Dangerous Goods according to the criteria of ADG.

Hazard Overview May cause mild eye irritation. May cause mild skin irritation.

Classification None

Risk Phrases None

Safety Phrases S24/25 Avoid contact with skin and eyes.

HSNO Classification 6.3B Mildly irritating to the skin

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	PERCENT (w/w)	Australia NOHSC	New Zealand WES	ACGIH TLV-TWA
Contains no hazardous substances	Mixture	60 - 100%	Not applicable	Not applicable	Not applicable

Non-Hazardous Substance to Total of 100%

4. FIRST AID MEASURES

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Skin Wash with soap and water. Get medical attention if irritation persists.

Eyes In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.

Ingestion Do not induce vomiting. Slowly dilute with 1-2 glasses of water or milk and seek medical attention. Never give anything by mouth to an unconscious person.

Notes to Physician Not Applicable

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media
All standard fire fighting media

Extinguishing media which must not be used for safety reasons
None known.

Special Exposure Hazards Not applicable.

Special Protective Equipment for Fire-Fighters Not applicable.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures Use appropriate protective equipment.

Environmental Precautionary Measures None known.

Procedure for Cleaning / Absorption Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

7. HANDLING AND STORAGE

Handling Precautions	Avoid contact with eyes, skin, or clothing. Avoid breathing vapors.
Storage Information	Store in a cool well ventilated area. Keep from excessive heat. Keep from freezing. Keep container closed when not in use. Store in non-rusting containers. Product has a shelf life of 12 months.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls	Use in a well ventilated area.
Respiratory Protection	Dust/mist respirator. (N95, P2/P3)
Hand Protection	Impervious rubber gloves.
Skin Protection	Normal work coveralls.
Eye Protection	Chemical goggles; also wear a face shield if splashing hazard exists.
Other Precautions	Eyewash fountains and safety showers must be easily accessible.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Color:	Transparent
Odor:	Odorless
pH:	10
Specific Gravity @ 20 C (Water=1):	1.1
Density @ 20 C (kg/l):	1.098
Bulk Density @ 20 C (kg/M3):	Not Determined
Boiling Point/Range (C):	100
Freezing Point/Range (C):	Not Determined
Pour Point/Range (C):	Not Determined
Flash Point/Range (C):	Not Determined
Flash Point Method:	Not Determined
Autoignition Temperature (C):	Not Determined
Flammability Limits in Air - Lower (g/m³):	Not Determined
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (g/m³):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined
Vapor Pressure @ 20 C (mmHg):	Not Determined
Vapor Density (Air=1):	Not Determined
Percent Volatiles:	80
Evaporation Rate (Butyl Acetate=1):	Not Determined
Solubility in Water (g/100ml):	10
Solubility in Solvents (g/100ml):	Not Determined
VOCs (g/l):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	Not Determined
Viscosity, Kinematic @ 20 C (centistokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined
Molecular Weight (g/mole):	Not Determined
Decomposition Temperature (C):	Not Determined

10. STABILITY AND REACTIVITY

Stability Data:	Stable
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Hazardous Polymerization: Will Not Occur

Conditions to Avoid None anticipated

Incompatibility (Materials to Avoid) Strong oxidizers. Strong acids.

Hazardous Decomposition Products None known.

Additional Guidelines Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure Eye or skin contact, inhalation.

Symptoms related to exposure

Acute Toxicity

Inhalation May cause mild respiratory irritation.

Eye Contact May cause mild eye irritation.

Skin Contact May cause mild skin irritation.

Ingestion Irritation of the mouth, throat, and stomach.

Chronic Effects/Carcinogenicity No data available to indicate product or components present at greater than 1% are chronic health hazards.

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Contains no hazardous substances	Mixture	No data available	No data available	No data available

12. ECOLOGICAL INFORMATION

Ecotoxicological Information

Ecotoxicity Product

Acute Fish Toxicity: Not determined

Acute Crustaceans Toxicity: Not determined

Acute Algae Toxicity: Not determined

Ecotoxicity Substance

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Contains no hazardous substances	Mixture	No information available	No information available	No information available	No information available

12.2 Persistence and degradability

The methods for determining biodegradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

Does not bioaccumulate

12.4 Mobility in soil

No information available

12.5 Results of PBT and vPvB assessment

No information available.

12.6 Other adverse effects

13. DISPOSAL CONSIDERATIONS

Disposal Method	Disposal should be made in accordance with federal, state, and local regulations. Incineration recommended in approved incinerator according to federal, state, and local regulations. Substance should NOT be deposited into a sewage facility.
Contaminated Packaging	Follow all applicable national or local regulations. Contaminated packaging may be disposed of by: rendering packaging incapable of containing any substance, or treating packaging to remove residual contents, or treating packaging to make sure the residual contents are no longer hazardous, or by disposing of packaging into commercial waste collection.

14. TRANSPORT INFORMATION

Land Transportation

ADR
Not restricted

Air Transportation

ICAO/IATA
Not restricted

Sea Transportation

IMDG
Not restricted

Other Transportation Information

Labels: None

15. REGULATORY INFORMATION

Chemical Inventories

Australian AICS Inventory	All components listed on inventory or are exempt.
New Zealand Inventory of Chemicals	All components listed on inventory or are exempt.
US TSCA Inventory	All components listed on inventory or are exempt.
EINECS Inventory	This product, and all its components, complies with EINECS
Classification	Not Classified
Risk Phrases	Not classified

Safety Phrases
S24/25 Avoid contact with skin and eyes.

16. OTHER INFORMATION

The following sections have been revised since the last issue of this SDS

Not applicable

Contact

Australian Poisons Information Centre

24 Hour Service: - 13 11 26

Police or Fire Brigade: - 000 (exchange): - 1100

New Zealand National Poisons Centre

0800 764 766

Additional information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

*****END OF MSDS*****

MATERIAL SAFETY DATA SHEET

Product Trade Name: HR-6L

Revision Date: 02-May-2013

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Statement of Hazardous Nature Non-Hazardous according to the criteria of NOHSC, Non-Dangerous Goods according to the criteria of ADG.

Manufacturer/Supplier Halliburton Australia Pty. Ltd.
15 Marriott Road
Jandakot
WA 6164
Australia

ACN Number: 009 000 775
Telephone Number: 61 (08) 9455 8300
Fax Number: 61 (08) 9455 5300

Product Emergency Telephone
Australia: 08-64244950
Papua New Guinea: 05 1 281 575 5000
NewZealand: 06-7559274

Fire, Police & Ambulance - Emergency Telephone
Australia: 000
Papua New Guinea: 000
New Zealand: 111

Identification of Substances or Preparation

Product Trade Name: HR-6L
Synonyms: None
Chemical Family: Lignosulfonate
UN Number: None
Dangerous Goods Class: None
Subsidiary Risk: None
Hazchem Code: None Allocated
Poisons Schedule: None Allocated
Application: Cement Retarder

Prepared By Chemical Compliance
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

2. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	PERCENT	Australia NOHSC	New Zealand WES	ACGIH TLV-TWA
Modified lignosulfonate	Proprietary	30 - 60%	Not applicable	Not applicable	Not applicable

Non-Hazardous Substance to Total of 100%

3. HAZARDS IDENTIFICATION

Hazard Overview May cause eye and respiratory irritation.

Risk Phrases None

HSNO Classification Non-hazardous

4. FIRST AID MEASURES

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Skin Wash with soap and water. Get medical attention if irritation persists.

Eyes In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

Ingestion Under normal conditions, first aid procedures are not required.

Notes to Physician Not Applicable

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media Water fog, carbon dioxide, foam, dry chemical.

Extinguishing media which must not be used for safety reasons None known.

Special Exposure Hazards Decomposition in fire may produce toxic gases.

Special Protective Equipment for Fire-Fighters Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures Use appropriate protective equipment.

Environmental Precautionary Measures Prevent from entering sewers, waterways, or low areas.

Procedure for Cleaning / Absorption Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

7. HANDLING AND STORAGE

Handling Precautions Avoid contact with eyes, skin, or clothing. Avoid breathing vapors.

Storage Information Store away from oxidizers. Keep container closed when not in use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls Use in a well ventilated area.

Respiratory Protection	Not normally necessary.
Hand Protection	Normal work gloves.
Skin Protection	Normal work coveralls.
Eye Protection	Wear safety glasses or goggles to protect against exposure.
Other Precautions	None known.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Color:	Dark brown
Odor:	Molasses
pH:	9.5
Specific Gravity @ 20 C (Water=1):	1.21
Density @ 20 C (kg/l):	1.208
Bulk Density @ 20 C (kg/m³):	Not Determined
Boiling Point/Range (C):	Not Determined
Freezing Point/Range (C):	Not Determined
Pour Point/Range (C):	Not Determined
Flash Point/Range (C):	Not Determined Min: > 98
Flash Point Method:	Not Determined
Autoignition Temperature (C):	Not Determined
Flammability Limits in Air - Lower (g/m³):	Not Determined
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (g/m³):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined
Vapor Pressure @ 20 C (mmHg):	Not Determined
Vapor Density (Air=1):	Not Determined
Percent Volatiles:	Not Determined
Evaporation Rate (Butyl Acetate=1):	Not Determined
Solubility in Water (g/100ml):	Soluble
Solubility in Solvents (g/100ml):	Not Determined
VOCs (g/l):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	Not Determined
Viscosity, Kinematic @ 20 C (centistokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined
Molecular Weight (g/mole):	Not Determined
Decomposition Temperature (C):	Not Determined

10. STABILITY AND REACTIVITY

Stability Data:	Stable
Hazardous Polymerization:	Will Not Occur
Conditions to Avoid	None anticipated
Incompatibility (Materials to Avoid)	Strong oxidizers.
Hazardous Decomposition Products	Oxides of sulfur. Carbon monoxide and carbon dioxide.
Additional Guidelines	Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure	Eye or skin contact, inhalation.
Symptoms related to exposure	
Inhalation	May cause mild respiratory irritation.
Skin Contact	None known.
Eye Contact	May cause mild eye irritation.
Ingestion	None known
Aggravated Medical Conditions	None known.
Chronic Effects/Carcinogenicity	No data available to indicate product or components present at greater than 1% are chronic health hazards.
Other Information	None known.
Toxicity Tests	
Oral Toxicity:	Not determined
Dermal Toxicity:	Not determined
Inhalation Toxicity:	Not determined
Primary Irritation Effect:	Not determined
Carcinogenicity	Not determined
Genotoxicity:	Not determined
Reproductive / Developmental Toxicity:	Not determined

12. ECOLOGICAL INFORMATION

Mobility (Water/Soil/Air)	Not determined
Persistence/Degradability	Slowly biodegradable
Bio-accumulation	Not determined

Ecotoxicological Information

Acute Fish Toxicity:	Not determined
Acute Crustaceans Toxicity:	Not determined
Acute Algae Toxicity:	Not determined
Chemical Fate Information	Not determined
Other Information	Not applicable

13. DISPOSAL CONSIDERATIONS

Disposal Method	This product is not regarded as hazardous waste. Dispose in accordance with local regulations.
Contaminated Packaging	Follow all applicable national or local regulations.

14. TRANSPORT INFORMATION

Land Transportation

ADR
Not restricted

Air Transportation

ICAO/IATA
Not restricted

Sea Transportation

IMDG
Not restricted

Other Transportation Information

Labels: None

15. REGULATORY INFORMATION

Chemical Inventories

Australian AICS Inventory	All components listed on inventory or are exempt.
New Zealand Inventory of Chemicals	All components listed on inventory or are exempt.
US TSCA Inventory	All components listed on inventory or are exempt.
EINECS Inventory	This product, and all its components, complies with EINECS

Classification Not Classified

Risk Phrases None

Safety Phrases None

16. OTHER INFORMATION

The following sections have been revised since the last issue of this SDS
Not applicable

Contact

Australian Poisons Information Centre
24 Hour Service: - 13 11 26
Police or Fire Brigade: - 000 (exchange): - 1100

New Zealand National Poisons Centre
0800 764 766

Additional Information For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

*****END OF MSDS*****

MATERIAL SAFETY DATA SHEET

Product Trade Name: **CFR-3L**

Revision Date: 22-Feb-2012

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Statement of Hazardous Nature Non-Hazardous according to the criteria of NOHSC, Non-Dangerous Goods according to the criteria of ADG.

Manufacturer/Supplier Halliburton Australia Pty. Ltd.
15 Marriott Road
Jandakot
WA 6164
Australia

ACN Number: 009 000 775
Telephone Number: 61 (08) 9455 8300
Fax Number: 61 (08) 9455 5300

Product Emergency Telephone

Australia: 08-64244950
Papua New Guinea: 05 1 281 575 5000
NewZealand: 06-7559274

Fire, Police & Ambulance - Emergency Telephone

Australia: 000
Papua New Guinea: 000
New Zealand: 111

Identification of Substances or Preparation

Product Trade Name: CFR-3L
Synonyms: None
Chemical Family: Blend
UN Number: None
Dangerous Goods Class: None
Subsidiary Risk: None
Hazchem Code: None
Poisons Schedule: None
Application: Friction Reducer

Prepared By Chemical Compliance
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

2. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	PERCENT	Australia NOHSC	New Zealand OEL	ACGIH TLV-TWA
Sulfonic acid salt		30 - 60%	Not applicable	Not applicable	Not applicable

Non-Hazardous Substance to Total of 100%

3. HAZARDS IDENTIFICATION

Hazard Overview May cause eye and skin irritation.

Risk Phrases None

HSNO Classification Non-hazardous

4. FIRST AID MEASURES

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Skin Wash with soap and water. Get medical attention if irritation persists.

Eyes In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

Ingestion Do not induce vomiting. Slowly dilute with 1-2 glasses of water or milk and seek medical attention. Never give anything by mouth to an unconscious person.

Notes to Physician Not Applicable

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media Water fog, carbon dioxide, foam, dry chemical.

Extinguishing media which must not be used for safety reasons None known.

Special Exposure Hazards Decomposition in fire may produce toxic gases.

Special Protective Equipment for Fire-Fighters Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures Use appropriate protective equipment.

Environmental Precautionary Measures Prevent from entering sewers, waterways, or low areas.

Procedure for Cleaning / Absorption Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

7. HANDLING AND STORAGE

Handling Precautions Avoid contact with eyes, skin, or clothing.

Storage Information Store away from oxidizers. Store in a cool well ventilated area. Keep container closed when not in use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls Use in a well ventilated area.

Respiratory Protection	Dust/mist respirator. (N95, P2/P3)
Hand Protection	Normal work gloves.
Skin Protection	Normal work coveralls.
Eye Protection	Chemical goggles; also wear a face shield if splashing hazard exists.
Other Precautions	None known.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Color:	Red
Odor:	Musty
pH:	7
Specific Gravity @ 20 C (Water=1):	1.17
Density @ 20 C (kg/l):	1.17
Bulk Density @ 20 C (kg/m³):	Not Determined
Boiling Point/Range (C):	Not Determined
Freezing Point/Range (C):	Not Determined
Pour Point/Range (C):	Not Determined
Flash Point/Range (C):	Not Determined Min: > 98
Flash Point Method:	PMCC
Autoignition Temperature (C):	Not Determined
Flammability Limits in Air - Lower (g/m³):	Not Determined
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (g/m³):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined
Vapor Pressure @ 20 C (mmHg):	Not Determined
Vapor Density (Air=1):	Not Determined
Percent Volatiles:	67
Evaporation Rate (Butyl Acetate=1):	Not Determined
Solubility in Water (g/100ml):	Soluble
Solubility in Solvents (g/100ml):	Not Determined
VOCs (g/l):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	Not Determined
Viscosity, Kinematic @ 20 C (centistokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined
Molecular Weight (g/mole):	Not Determined
Decomposition Temperature (C):	Not Determined

10. STABILITY AND REACTIVITY

Stability Data:	Stable
Hazardous Polymerization:	Will Not Occur
Conditions to Avoid	None anticipated
Incompatibility (Materials to Avoid)	Strong oxidizers.
Hazardous Decomposition Products	Oxides of sulfur. Carbon monoxide and carbon dioxide.
Additional Guidelines	Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure	Eye or skin contact, inhalation.
Inhalation	None known.
Skin Contact	May cause skin irritation.
Eye Contact	May cause mild eye irritation.
Ingestion	None known
Aggravated Medical Conditions	None known.
Chronic Effects/Carcinogenicity	No data available to indicate product or components present at greater than 1% are chronic health hazards.
Other Information	None known.
Toxicity Tests	
Oral Toxicity:	LD50: 8670 mg/kg (Rat)
Dermal Toxicity:	Not determined
Inhalation Toxicity:	Not determined
Primary Irritation Effect:	Not determined
Carcinogenicity	Not determined
Genotoxicity:	Not determined
Reproductive / Developmental Toxicity:	Not determined

12. ECOLOGICAL INFORMATION

Mobility (Water/Soil/Air)	Not determined
Persistence/Degradability	Not determined
Bio-accumulation	Not determined

Ecotoxicological Information

Acute Fish Toxicity:	Not determined
Acute Crustaceans Toxicity:	Not determined
Acute Algae Toxicity:	Not determined
Chemical Fate Information	Not determined
Other Information	Not applicable

13. DISPOSAL CONSIDERATIONS

Disposal Method	Disposal should be made in accordance with federal, state, and local regulations.
Contaminated Packaging	Follow all applicable national or local regulations.

14. TRANSPORT INFORMATION

Land Transportation

ADR
Not restricted

Air Transportation

ICAO/IATA
Not restricted

Sea Transportation

IMDG
Not restricted

Other Transportation Information

Labels: None

15. REGULATORY INFORMATION

Chemical Inventories

Australian AICS Inventory	All components listed on inventory or are exempt.
New Zealand Inventory of Chemicals	This product does not comply with NZIOC
US TSCA Inventory	All components listed on inventory or are exempt.
EINECS Inventory	This product, and all its components, complies with EINECS

Classification Not Classified

Risk Phrases None

Safety Phrases None

16. OTHER INFORMATION

The following sections have been revised since the last issue of this MSDS

Not applicable

Contact

Australian Poisons Information Centre

24 Hour Service: - 13 11 26
Police or Fire Brigade: - 000 (exchange): - 1100

New Zealand National Poisons Centre

0800 764 766

Additional Information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Material Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

*****END OF MSDS*****

MATERIAL SAFETY DATA SHEET

Product Trade Name: HALAD® 413L CEMENT ADDITIVE

Revision Date: 02-May-2013

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Statement of Hazardous Nature Non-Hazardous according to the criteria of NOHSC, Non-Dangerous Goods according to the criteria of ADG.

Manufacturer/Supplier Halliburton Australia Pty. Ltd.
15 Marriott Road
Jandakot
WA 6164
Australia

ACN Number: 009 000 775
Telephone Number: 61 (08) 9455 8300
Fax Number: 61 (08) 9455 5300

Product Emergency Telephone

Australia: 08-64244950
Papua New Guinea: 05 1 281 575 5000
NewZealand: 06-7559274

Fire, Police & Ambulance - Emergency Telephone

Australia: 000
Papua New Guinea: 000
New Zealand: 111

Identification of Substances or Preparation

Product Trade Name: HALAD® 413L CEMENT ADDITIVE
Synonyms: None
Chemical Family: Polymer
UN Number: None
Dangerous Goods Class: None
Subsidiary Risk: None
Hazchem Code: None Allocated
Poisons Schedule: None Allocated
Application: Fluid Loss Additive

Prepared By Chemical Compliance
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

2. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	PERCENT	Australia NOHSC	New Zealand WES	ACGIH TLV-TWA
Acrylic polymer	Proprietary	10 - 30%	Not applicable	Not applicable	Not applicable

HALAD® 413L CEMENT ADDITIVE

Non-Hazardous Substance to Total of 100%

3. HAZARDS IDENTIFICATION

Hazard Overview No significant hazards expected.

Risk Phrases None

HSNO Classification Non-hazardous

4. FIRST AID MEASURES

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Skin Wash with soap and water. Get medical attention if irritation persists.

Eyes In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

Ingestion Under normal conditions, first aid procedures are not required.

Notes to Physician Not Applicable

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media All standard fire fighting media

Extinguishing media which must not be used for safety reasons None known.

Special Exposure Hazards Decomposition in fire may produce toxic gases.

Special Protective Equipment for Fire-Fighters Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures Use appropriate protective equipment.

Environmental Precautionary Measures None known.

Procedure for Cleaning / Absorption Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

7. HANDLING AND STORAGE

Handling Precautions Avoid contact with eyes, skin, or clothing.

Storage Information Store away from oxidizers. Product has a shelf life of 24 months.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls Use in a well ventilated area.

Respiratory Protection	If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.
	Not normally needed. But if significant exposures are possible then the following respirator is recommended: Dust/mist respirator. (N95, P2/P3)
Hand Protection	Normal work gloves.
Skin Protection	Normal work coveralls.
Eye Protection	Wear safety glasses or goggles to protect against exposure.
Other Precautions	None known.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Color:	Brown-black
Odor:	Sweet
pH:	7.5
Specific Gravity @ 20 C (Water=1):	1.1
Density @ 20 C (kg/l):	1.098
Bulk Density @ 20 C (kg/m³):	Not Determined
Boiling Point/Range (C):	Not Determined
Freezing Point/Range (C):	Not Determined
Pour Point/Range (C):	Not Determined
Flash Point/Range (C):	Not Determined
Flash Point Method:	Not Determined
Autoignition Temperature (C):	Not Determined
Flammability Limits in Air - Lower (g/m³):	Not Determined
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (g/m³):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined
Vapor Pressure @ 20 C (mmHg):	Not Determined
Vapor Density (Air=1):	Not Determined
Percent Volatiles:	Not Determined
Evaporation Rate (Butyl Acetate=1):	Not Determined
Solubility in Water (g/100ml):	Miscible
Solubility in Solvents (g/100ml):	Not Determined
VOCs (g/l):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	Not Determined
Viscosity, Kinematic @ 20 C (centistokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined
Molecular Weight (g/mole):	Not Determined
Decomposition Temperature (C):	Not Determined

10. STABILITY AND REACTIVITY

Stability Data:	Stable
Hazardous Polymerization:	Will Not Occur
Conditions to Avoid	None anticipated
Incompatibility (Materials to Avoid)	Strong oxidizers.

Hazardous Decomposition Products Oxides of nitrogen. Carbon monoxide and carbon dioxide.

Additional Guidelines Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure Eye or skin contact, inhalation.

Symptoms related to exposure

Inhalation None known.

Skin Contact None known.

Eye Contact None known.

Ingestion None known

Aggravated Medical Conditions None known.

Chronic Effects/Carcinogenicity No data available to indicate product or components present at greater than 1% are chronic health hazards.

Other Information None known.

Toxicity Tests

Oral Toxicity: LD50: > 5000 mg/kg (Rat)

Dermal Toxicity: LD50: > 2000 mg/kg (Rabbit)

Inhalation Toxicity: Not determined

Primary Irritation Effect: Draize Rating (Skin): 0.09/8.0 (Rabbit) Practically Non-irritating

Carcinogenicity Not determined

Genotoxicity: Not determined

Reproductive / Developmental Toxicity: Not determined

12. ECOLOGICAL INFORMATION

Mobility (Water/Soil/Air) Not determined

Persistence/Degradability Slowly biodegradable

Bio-accumulation Not determined

Ecotoxicological Information

Acute Fish Toxicity: Not determined

Acute Crustaceans Toxicity: Not determined

Acute Algae Toxicity: Not determined

Chemical Fate Information Not determined

Other Information Not applicable

13. DISPOSAL CONSIDERATIONS

Disposal Method Disposal should be made in accordance with federal, state, and local regulations.
Contaminated Packaging Follow all applicable national or local regulations.

14. TRANSPORT INFORMATION

Land Transportation

ADR
Not restricted

Air Transportation

ICAO/IATA
Not restricted

Sea Transportation

IMDG
Not restricted

Other Transportation Information

Labels: None

15. REGULATORY INFORMATION

Chemical Inventories

Australian AICS Inventory Product contains one or more components not listed on inventory.
New Zealand Inventory of Chemicals All components listed on inventory or are exempt.
US TSCA Inventory All components listed on inventory or are exempt.
EINECS Inventory This product does not comply with EINECS

Classification Not Classified

Risk Phrases None

Safety Phrases None

16. OTHER INFORMATION

The following sections have been revised since the last issue of this SDS
Not applicable

Contact

Australian Poisons Information Centre
24 Hour Service: - 13 11 26
Police or Fire Brigade: - 000 (exchange): - 1100

New Zealand National Poisons Centre
0800 764 766

Additional Information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

Disclaimer Statement

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*****END OF MSDS*****

MATERIAL SAFETY DATA SHEET

Product Trade Name: **NF-6**

Revision Date: 10-Apr-2013

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Statement of Hazardous Nature Non-Hazardous according to the criteria of NOHSC, Non-Dangerous Goods according to the criteria of ADG.

Manufacturer/Supplier Halliburton Australia Pty. Ltd.
15 Marriott Road
Jandakot
WA 6164
Australia

ACN Number: 009 000 775
Telephone Number: 61 (08) 9455 8300
Fax Number: 61 (08) 9455 5300

Product Emergency Telephone

Australia: 08-64244950
Papua New Guinea: 05 1 281 575 5000
NewZealand: 06-7559274

Fire, Police & Ambulance - Emergency Telephone

Australia: 000
Papua New Guinea: 000
New Zealand: 111

Identification of Substances or Preparation

Product Trade Name: NF-6
Synonyms: None
Chemical Family: Blend
UN Number: None
Dangerous Goods Class: None
Subsidiary Risk: None
Hazchem Code: None Allocated
Poisons Schedule: None Allocated
Application: Defoamer

Prepared By Chemical Compliance
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

2. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	PERCENT	Australia NOHSC	New Zealand WES	ACGIH TLV-TWA
Vegetable oil	Proprietary	60 - 100%	10 mg/m ³	Not applicable	Not applicable
Aluminum stearate	637-12-7	1 - 5%	10 mg/m ³	Not applicable	2 mg/m ³

Non-Hazardous Substance to Total of 100%

3. HAZARDS IDENTIFICATION

Hazard Overview	May cause mild eye, skin, and respiratory irritation. May be harmful if swallowed.
Risk Phrases	None
HSNO Classification	9.1D Slightly harmful in the aquatic environment

4. FIRST AID MEASURES

Inhalation	If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
Skin	Wash with soap and water. Get medical attention if irritation persists.
Eyes	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.
Ingestion	Get medical attention! If vomiting occurs, keep head lower than hips to prevent aspiration.
Notes to Physician	Not Applicable

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media	Carbon dioxide, dry chemical, foam.
Extinguishing media which must not be used for safety reasons	None known.
Special Exposure Hazards	Use water spray to cool fire exposed surfaces. Decomposition in fire may produce toxic gases.
Special Protective Equipment for Fire-Fighters	Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures	Use appropriate protective equipment.
Environmental Precautionary Measures	Prevent from entering sewers, waterways, or low areas.
Procedure for Cleaning / Absorption	Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

7. HANDLING AND STORAGE

Handling Precautions	Avoid contact with eyes, skin, or clothing. Avoid breathing vapors.
Storage Information	Store away from oxidizers. Keep container closed when not in use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls	A well ventilated area to control dust levels. Local exhaust ventilation should be used in areas without good cross ventilation.
Respiratory Protection	Not normally needed. But if significant exposures are possible then the following respirator is recommended: Organic vapor respirator with a dust/mist filter. (A2P2/P3)
Hand Protection	Polyvinylchloride gloves.
Skin Protection	Normal work coveralls.
Eye Protection	Chemical goggles; also wear a face shield if splashing hazard exists.
Other Precautions	Eyewash fountains and safety showers must be easily accessible.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Color:	Yellow
Odor:	Mild
pH:	Not Determined
Specific Gravity @ 20 C (Water=1):	0.93
Density @ 20 C (kg/l):	0.93
Bulk Density @ 20 C (kg/m³):	Not Determined
Boiling Point/Range (C):	182
Freezing Point/Range (C):	Not Determined
Pour Point/Range (C):	Not Determined
Flash Point/Range (C):	>170
Flash Point Method:	Not Determined
Autoignition Temperature (C):	385
Flammability Limits in Air - Lower (g/m³):	Not Determined
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (g/m³):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined
Vapor Pressure @ 20 C (mmHg):	Not Determined
Vapor Density (Air=1):	Not Determined
Percent Volatiles:	Not Determined
Evaporation Rate (Butyl Acetate=1):	Not Determined
Solubility in Water (g/100ml):	Disperses
Solubility in Solvents (g/100ml):	Not Determined
VOCs (g/l):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	Not Determined
Viscosity, Kinematic @ 20 C (centistokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined
Molecular Weight (g/mole):	Not Determined
Decomposition Temperature (C):	Not Determined

10. STABILITY AND REACTIVITY

Stability Data:	Stable
Hazardous Polymerization:	Will Not Occur
Conditions to Avoid	None known.
Incompatibility (Materials to Avoid)	Strong oxidizers.

Hazardous Decomposition Products Hydrocarbons. Carbon monoxide and carbon dioxide.

Additional Guidelines Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure Eye or skin contact, inhalation.

Symptoms related to exposure

Inhalation None known.

Skin Contact May cause mild skin irritation. May cause an allergic skin reaction.

Eye Contact May cause mild eye irritation.

Ingestion May cause abdominal pain, vomiting, nausea, and diarrhea.

Aggravated Medical Conditions None known.

Chronic Effects/Carcinogenicity No data available to indicate product or components present at greater than 1% are chronic health hazards.

Other Information None known.

Toxicity Tests

Oral Toxicity: Not determined

Dermal Toxicity: Not determined

Inhalation Toxicity: Not determined

Primary Irritation Effect: Not determined

Carcinogenicity Not determined

Genotoxicity: Not determined

Reproductive / Developmental Toxicity: Not determined

12. ECOLOGICAL INFORMATION

Mobility (Water/Soil/Air) Not determined

Persistence/Degradability Readily biodegradable

Bio-accumulation Not determined

Ecotoxicological Information

Acute Fish Toxicity: Not determined

Acute Crustaceans Toxicity: Not determined

Acute Algae Toxicity: Not determined

Chemical Fate Information Not determined

Other Information Not applicable

13. DISPOSAL CONSIDERATIONS

Disposal Method Incineration recommended in approved incinerator according to federal, state, and local regulations. Substance should NOT be deposited into a sewage facility.

Contaminated Packaging Follow all applicable national or local regulations. Contaminated packaging may be disposed of by: rendering packaging incapable of containing any substance, or treating packaging to remove residual contents, or treating packaging to make sure the residual contents are no longer hazardous, or by disposing of packaging into commercial waste collection.

14. TRANSPORT INFORMATION

Land Transportation

ADR
Not restricted

Air Transportation

ICAO/IATA
Not restricted

Sea Transportation

IMDG
Not restricted

Other Transportation Information

Labels: None

15. REGULATORY INFORMATION

Chemical Inventories

Australian AICS Inventory All components listed on inventory or are exempt.
New Zealand Inventory of Chemicals All components listed on inventory or are exempt.
US TSCA Inventory All components listed on inventory or are exempt.
EINECS Inventory This product, and all its components, complies with EINECS

Classification Not Classified

Risk Phrases None

Safety Phrases None

16. OTHER INFORMATION

The following sections have been revised since the last issue of this SDS
Not applicable

Contact

Australian Poisons Information Centre

24 Hour Service: - 13 11 26

Police or Fire Brigade: - 000 (exchange): - 1100

New Zealand National Poisons Centre

0800 764 766

Additional Information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

*****END OF MSDS*****

SAFETY DATA SHEET

D-AIR 3000L

Revision Date: 17-Feb-2015

Revision Number: 16

1. Product Identifier & Identity for the Chemical

Statement of Hazardous Nature Non-Hazardous according to the criteria of NOHSC, Non-Dangerous Goods according to the criteria of ADG.

1.1. Product Identifier

Product Name D-AIR 3000L

Other means of Identification

Synonyms: None
Product Code: HM003191

Recommended use of the chemical and restrictions on use

Recommended Use Defoamer
Uses Advised Against No information available

Supplier's name, address and phone number

Manufacturer/Supplier Halliburton Australia Pty. Ltd.
15 Marriott Road
Jandakot
WA 6164
Australia

ACN Number: 009 000 775
Telephone Number: 61 (08) 9455 8300
Fax Number: 61 (08) 9455 5300

E-Mail address: fdunexchem@halliburton.com

Emergency phone number

61 (08) 9455 8300

Australian Poisons Information Centre

24 Hour Service: - 13 11 26
Police or Fire Brigade: - 000 (exchange): - 1100

2. Hazard Identification

Statement of Hazardous Nature Non-Hazardous according to the criteria of NOHSC, Non-Dangerous Goods according to the criteria of ADG.

Classification of the hazardous chemical

Not classified

Label elements, including precautionary statements

Hazard Pictograms

Signal Word

Not Hazardous

Hazard Statements

Not Classified

Precautionary Statements**Prevention** None**Response** None**Storage** None**Disposal** None**Contains****Substances**

Alkenes

CAS Number

Proprietary

Other hazards which do not result in classification

None known

Australia Classification*For the full text of the R/H-phrases mentioned in this Section, see Section 16***Classification**

Not Classified

Risk Phrases

None

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - Australia
Alkenes	Proprietary	60 - 100%	

4. First aid measures**Description of necessary first aid measures****Inhalation**

If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Eyes

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

Skin

Wash with soap and water. Get medical attention if irritation persists.

Ingestion

Get medical attention! If vomiting occurs, keep head lower than hips to prevent aspiration.

Symptoms caused by exposure

May cause lung damage if swallowed.

Medical Attention and Special Treatment**Notes to Physician**

Treat symptomatically

5. Fire Fighting Measures**Suitable extinguishing equipment**

Suitable Extinguishing Media

Water fog, carbon dioxide, foam, dry chemical.

Extinguishing media which must not be used for safety reasons

None known.

Specific hazards arising from the chemical**Special Exposure Hazards**

Decomposition in fire may produce toxic gases.

Special protective equipment and precautions for fire fighters**Special Protective Equipment for Fire-Fighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment.

6.2. Environmental precautions

None known.

6.3. Methods and material for containment and cleaning up

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

7. Handling and storage

7.1. Precautions for Safe Handling**Handling Precautions**

Avoid contact with eyes, skin, or clothing. Avoid breathing vapors.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities**Storage Information**

Store away from oxidizers. Keep container closed when not in use. Product has a shelf life of 24 months.

Other Guidelines

No information available

8. Exposure Controls/Personal Protection

Control parameters - exposure standards, biological monitoring**Exposure Limits**

Substances	CAS Number	Australia NOHSC	ACGIH TLV-TWA
Alkenes	Proprietary	Not applicable	Not applicable

Appropriate engineering controls**Engineering Controls**

Use in a well ventilated area.

Personal protective equipment (PPE)**Respiratory Protection**

Not normally necessary.

Hand Protection

None known.

Skin Protection

Normal work coveralls.

Eye Protection

Wear safety glasses or goggles to protect against exposure.

Other Precautions

None known.

Environmental Exposure Controls

No information available

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Liquid **Color:** Opaque
Odor: Hydrocarbon **Odor Threshold:** No information available

<u>Property</u>	<u>Values</u>
Remarks/ - Method	
pH:	5.5-7.9
Freezing Point/Range	No data available
Melting Point/Range	No data available
Boiling Point/Range	No data available
Flash Point	> 121 °C PMCC
Evaporation rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	0.92
Water Solubility	Insoluble in water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2. Other information

VOC Content (%) No data available

10. Stability and Reactivity

10.1. Reactivity

Not applicable

10.2. Chemical Stability

Stable

10.3. Possibility of Hazardous Reactions

Will Not Occur

10.4. Conditions to Avoid

None anticipated

10.5. Incompatible Materials

Strong oxidizers.

10.6. Hazardous Decomposition Products

Carbon monoxide and carbon dioxide.

11. Toxicological Information

Information on routes of exposure

Principle Route of Exposure Eye or skin contact, inhalation.

Symptoms related to exposure

Most Important Symptoms/Effects

May cause lung damage if swallowed.

Numerical measures of toxicity

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Alkenes	Proprietary	> 5000 mg/kg (Rat) (similar substance)	> 2000 mg/kg (Rat) (similar substance)	> 2.1 mg/L (Rat)

Immediate, delayed and chronic health effects from exposure

Inhalation	May cause central nervous system depression including headache, dizziness, drowsiness, incoordination, slowed reaction time, slurred speech, giddiness and unconsciousness.
Eye Contact	May cause mild eye irritation.
Skin Contact	May cause mild skin irritation.
Ingestion	May cause abdominal pain, vomiting, nausea, and diarrhea. Aspiration into the lungs may cause chemical pneumonitis including coughing, difficulty breathing, wheezing, coughing up blood and pneumonia, which can be fatal.

Chronic Effects/Carcinogenicity No data available to indicate product or components present at greater than 1% are chronic health hazards.

Exposure Levels

No data available

Interactive effects

None known.

Data limitations

No data available

12. Ecological Information

Ecotoxicity**Product Ecotoxicity Data**

No data available

Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Alkenes	Proprietary	EC50(72h): > 1000 mg/L (Selenastrum capicomutum) (similar substance)	LL50(96h): > 1000 mg/L (Oncorhynchus mykiss) (similar substance) LL50(96h): > 10000 mg/L (Scophthalmus maximus) (similar substance)	No information available	EC50(48h): > 1000 mg/L (Daphnia magna) (similar substance)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Alkenes	Proprietary	Readily biodegradable (77 - 81% @ 28d)

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Alkenes	Proprietary	> 7

12.4. Mobility in soil

No information available

12.6. Other adverse effects**Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

13. Disposal Considerations**Safe handling and disposal methods**

Disposal should be made in accordance with federal, state, and local regulations. Incineration recommended in approved incinerator according to federal, state, and local regulations.

Disposal of any contaminated packaging

Follow all applicable national or local regulations.

Environmental regulations

Not applicable

14. Transport Information**Transportation Information**

UN Number:	Not restricted
UN Proper Shipping Name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

Special precautions during transport

None

HazChem Code

None Allocated

15. Regulatory Information**Safety, health and environmental regulations specific for the product****International Inventories**

Australian AICS Inventory	All components listed on inventory or are exempt.
New Zealand Inventory of Chemicals	All components listed on inventory or are exempt.
EINECS Inventory	This product, and all its components, complies with EINECS
US TSCA Inventory	All components listed on inventory or are exempt.
Canadian DSL Inventory	All components listed on inventory or are exempt.

Poisons Schedule number

None Allocated

16. Other information**Date of preparation or review**

Revision Date: 17-Feb-2015

Revision Note

Update to Format SECTION: 2

Full text of R-phrases referred to under Sections 2 and 3

None

Full text of H-Statements referred to under sections 2 and 3

None

Additional information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

Key abbreviations or acronyms used

Not applicable

Key literature references and sources for data

www.ChemADVISOR.com/

NZ CCID

Disclaimer Statement

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End of Safety Data Sheet

MATERIAL SAFETY DATA SHEET

Product Trade Name: WellLife™ 734

Revision Date: 12-Apr-2013

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING
--

Statement of Hazardous Nature Non-Hazardous according to the criteria of NOHSC, Non-Dangerous Goods according to the criteria of ADG.

Manufacturer/Supplier Halliburton/Baroid Australia Pty. Ltd.
15 Marriott Road
Jandakot
WA 6164
Australia

ACN Number: 009 000 775
Telephone Number: 61 (08) 9455 8300
Fax Number: 61 (08) 9455 5300

Product Emergency Telephone

Australia: 08-64244950
Papua New Guinea: 05 1 281 575 5000
New Zealand: 06-7559274

Fire, Police & Ambulance - Emergency Telephone

Australia: 000
Papua New Guinea: 000
New Zealand: 111

Identification of Substances or Preparation

Product Trade Name: WellLife™ 734
Synonyms: None
Chemical Family: Inorganic
UN Number: None
Dangerous Goods Class: None
Subsidiary Risk: None
Hazchem Code: None Allocated
Poisons Schedule: None Allocated
Application: Cement Enhancer

Prepared By Chemical Compliance
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

2. COMPOSITION/INFORMATION ON INGREDIENTS
--

Substances	CAS Number	PERCENT	Australia NOHSC	New Zealand WES	ACGIH TLV-TWA
Contains no hazardous substances	Mixture	60 - 100%	Not applicable	Not applicable	Not applicable

Non-Hazardous Substance to Total of 100%

3. HAZARDS IDENTIFICATION

Hazard Overview No significant hazards expected.

Risk Phrases None

HSNO Classification Non-hazardous

4. FIRST AID MEASURES

Inhalation Under normal conditions, first aid procedures are not required.

Skin Under normal conditions, first aid procedures are not required.

Eyes In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

Ingestion Under normal conditions, first aid procedures are not required.

Notes to Physician Not Applicable

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media All standard fire fighting media

Extinguishing media which must not be used for safety reasons None known.

Special Exposure Hazards Not applicable.

Special Protective Equipment for Fire-Fighters Not applicable.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures Use appropriate protective equipment.

Environmental Precautionary Measures None known.

Procedure for Cleaning / Absorption Scoop up and remove.

7. HANDLING AND STORAGE

Handling Precautions Material is slippery underfoot. Keep floors clean of spills.

Storage Information Store in a dry location. Product has a shelf life of 60 months.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls None known.

Respiratory Protection Not normally necessary.

Hand Protection	Normal work gloves.
Skin Protection	Normal work coveralls.
Eye Protection	Wear safety glasses or goggles to protect against exposure.
Other Precautions	None known.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid
Color:	White to Variable
Odor:	Odorless
pH:	Not Determined
Specific Gravity @ 20 C (Water=1):	2.6
Density @ 20 C (kg/l):	2.48
Bulk Density @ 20 C (kg/m³):	Not Determined
Boiling Point/Range (C):	Not Determined
Freezing Point/Range (C):	1200
Pour Point/Range (C):	Not Determined
Flash Point/Range (C):	Not Determined
Flash Point Method:	Not Determined
Autoignition Temperature (C):	Not Determined
Flammability Limits in Air - Lower (g/m³):	Not Determined
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (g/m³):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined
Vapor Pressure @ 20 C (mmHg):	Not Determined
Vapor Density (Air=1):	Not Determined
Percent Volatiles:	Not Determined
Evaporation Rate (Butyl Acetate=1):	Not Determined
Solubility in Water (g/100ml):	Insoluble
Solubility in Solvents (g/100ml):	Not Determined
VOCs (g/l):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	Not Determined
Viscosity, Kinematic @ 20 C (centistokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined
Molecular Weight (g/mole):	Not Determined
Decomposition Temperature (C):	Not Determined

10. STABILITY AND REACTIVITY

Stability Data:	Stable
Hazardous Polymerization:	Will Not Occur
Conditions to Avoid	None known.
Incompatibility (Materials to Avoid)	None known.
Hazardous Decomposition Products	None known.
Additional Guidelines	Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure	Eye or skin contact, inhalation.
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Symptoms related to exposure

Inhalation	None known.
Skin Contact	None known.
Eye Contact	May cause mechanical irritation to eye.
Ingestion	None known
Aggravated Medical Conditions	None known.
Chronic Effects/Carcinogenicity	No data available to indicate product or components present at greater than 1% are chronic health hazards.
Other Information	None known.

Toxicity Tests

Oral Toxicity:	Not determined
Dermal Toxicity:	Not determined
Inhalation Toxicity:	Not determined
Primary Irritation Effect:	Draize Rating (Eye): 1.3/110 (Rabbit) Practically Non-irritating Draize Rating (Skin): 0.5/8.0 (Rabbit) Non-Irritating
Carcinogenicity	Not determined
Genotoxicity:	Not determined
Reproductive / Developmental Toxicity:	Not determined

12. ECOLOGICAL INFORMATION

Mobility (Water/Soil/Air)	Not determined
Persistence/Degradability	Not biodegradable
Bio-accumulation	Not determined

Ecotoxicological Information

Acute Fish Toxicity:	Not determined
Acute Crustaceans Toxicity:	TLM96: > 1,000,000 ppm (Mysidopsis bahia) SPP @ 10 ppb
Acute Algae Toxicity:	Not determined

Chemical Fate Information	Not determined
Other Information	Not applicable

13. DISPOSAL CONSIDERATIONS

Disposal Method	Bury in a licensed landfill according to federal, state, and local regulations. Substance should NOT be deposited into a sewage facility.
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Contaminated Packaging

Follow all applicable national or local regulations. Contaminated packaging may be disposed of by: rendering packaging incapable of containing any substance, or treating packaging to remove residual contents, or treating packaging to make sure the residual contents are no longer hazardous, or by disposing of packaging into commercial waste collection.

14. TRANSPORT INFORMATION**Land Transportation**

ADR
Not restricted

Air Transportation

ICAO/IATA
Not restricted

Sea Transportation

IMDG
Not restricted

Other Transportation Information

Labels: None

15. REGULATORY INFORMATION**Chemical Inventories**

Australian AICS Inventory	All components listed on inventory or are exempt.
New Zealand Inventory of Chemicals	All components listed on inventory or are exempt.
US TSCA Inventory	All components listed on inventory or are exempt.
EINECS Inventory	This product, and all its components, complies with EINECS

Classification Not Classified

Risk Phrases None

Safety Phrases None

16. OTHER INFORMATION

The following sections have been revised since the last issue of this SDS
Not applicable

Contact

Australian Poisons Information Centre
24 Hour Service: - 13 11 26
Police or Fire Brigade: - 000 (exchange): - 1100

New Zealand National Poisons Centre
0800 764 766

Additional Information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

*****END OF MSDS*****

MATERIAL SAFETY DATA SHEET

Product Trade Name: **CEMENT - CLASS G + 35% SSA-1**

Revision Date: 29-Apr-2013

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Statement of Hazardous Nature Hazardous according to the criteria of NOHSC, Non-Dangerous Goods according to the criteria of ADG.

Manufacturer/Supplier Halliburton Australia Pty. Ltd.
15 Marriott Road
Jandakot
WA 6164
Australia

ACN Number: 009 000 775
Telephone Number: 61 (08) 9455 8300
Fax Number: 61 (08) 9455 5300

Product Emergency Telephone

Australia: 08-64244950
Papua New Guinea: 05 1 281 575 5000
NewZealand: 06-7559274

Fire, Police & Ambulance - Emergency Telephone

Australia: 000
Papua New Guinea: 000
New Zealand: 111

Identification of Substance or Preparation

Product Trade Name: CEMENT - CLASS G + 35% SSA-1
Synonyms: None
Chemical Family: Cement
UN Number: None
Dangerous Goods Class: None
Subsidiary Risk: None
Hazchem Code: None
Poisons Schedule: None
Application: Cement

Prepared By Chemical Compliance
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

2. COMPOSITION/INFORMATION ON INGREDIENTS

Substance	CAS Number	Percent	Australia NOHSC	New Zealand WES	ACGIH TLV-TWA
Portland cement	65997-15-1	60 - 100%	TWA: 10 mg/m ³	TWA: 10 mg/m ³	TWA: 1 mg/m ³
Crystalline silica, quartz	14808-60-7	30 - 60%	TWA: 0.1 mg/m ³	TWA: 0.2 mg/m ³	TWA: 0.025 mg/m ³

3. HAZARDS IDENTIFICATION

Hazard Overview

CAUTION! - ACUTE HEALTH HAZARD

May cause eye, skin and respiratory irritation.

DANGER! - CHRONIC HEALTH HAZARD

Breathing crystalline silica can cause lung disease, including silicosis and lung cancer. Crystalline silica has also been associated with scleroderma and kidney disease.

This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposures below recommended exposure limits. Wear a NIOSH certified, European Standard EN 149, or equivalent respirator when using this product. Review the Material Safety Data Sheet (MSDS) for this product, which has been provided to your employer.

Risk Phrases

R41 Risk of serious damage to eyes.

R43 May cause sensitisation by skin contact.

R49 May cause cancer by inhalation.

R37/38 Irritating to respiratory system and skin.

R48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation.

HSNO Classification

Not Determined

4. FIRST AID MEASURES

Inhalation

If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Skin

Wash with soap and water. Get medical attention if irritation persists.

Eyes

In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.

Ingestion

Under normal conditions, first aid procedures are not required.

Notes to Physician

Not Applicable

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media

None - does not burn.

Unsuitable Extinguishing Media

None known

Special Exposure Hazards

Not applicable.

Special Protective Equipment for Fire-Fighters

Not applicable.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures Use Appropriate protective equipment. Avoid creating and breathing dust.

Environmental Precautionary Measures None known.

Procedure for Cleaning/Absorption Collect using dustless method and hold for appropriate disposal. Consider possible toxic or fire hazards associated with contaminating substances and use appropriate methods for collection, storage and disposal.

7. HANDLING AND STORAGE

Handling Precautions Avoid contact with eyes, skin, or clothing. This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposure below recommended exposure limits. Wear a NIOSH certified, European Standard En 149, or equivalent respirator when using this product. Material is slippery when wet.

Storage Information Store in a cool, dry location. Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. Product has a shelf life of 24 months

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits listed in Section 2.

Respiratory Protection Wear a NIOSH certified, European Standard EN 149 (FFP2/FFP3), or equivalent respirator when using this product.

Hand Protection Normal work gloves.

Skin Protection Wear clothing appropriate for the work environment. Dusty clothing should be laundered before reuse. Use precautionary measures to avoid creating dust when removing or laundering clothing.

Eye Protection Wear safety glasses or goggles to protect against exposure.

Other Precautions Eyewash fountains and safety showers must be easily accessible.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid
Colour:	Grey
Odour:	Odourless
pH:	12.4
Specific Gravity @ 20 C (Water=1):	Not Determined
Density @ 20 C (kg/l):	Not Determined
Bulk Density @ 20 C (kg/l):	Not Determined
Boiling Point/Range (C):	Not Determined
Freezing Point/Range (C):	Not Determined
Pour Point/Range (C):	Not Determined
Flash Point/Range (C):	Not Determined
Flash Point Method:	Not Determined
Autoignition Temperature (C):	Not Determined
Flammability Limits in Air - Lower (g/m³):	Not Determined
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (g/m³):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined
Vapour Pressure @ 20 C (mmHg):	Not Determined

9. PHYSICAL AND CHEMICAL PROPERTIES

Vapour Density (Air=1):	Not Determined
Percent Volatiles:	0
Evaporation Rate (Butyl Acetate = 1):	Not determined.
Solubility in Water (g/100ml):	Insoluble
Solubility in Solvents (g/100ml):	Not Determined
VOCs (g/l):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	Not Determined
Viscosity, Kinematic @ 20 C (centistokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined
Molecular Weight (g/mole):	Not Determined
Decomposition Temperature (C):	Not Determined

10. STABILITY AND REACTIVITY

Stability Data:	Stable
Hazardous Polymerisation:	Will Not Occur
Conditions to Avoid	Keep away from any contact with water.
Incompatibility (Materials to Avoid)	Hydrofluoric acid
Hazardous Decomposition Products	Amorphous silica may transform at elevated temperatures to tridymite (870 C) or cristobalite (1470 C).
Additional Guidelines	Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure Eye or skin contact, inhalation.

Symptoms related to exposure **Inhalation**

Inhaled crystalline silica in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (IARC, Group 1). There is sufficient evidence in experimental animals for the carcinogenicity of tridymite (IARC, Group 2A).

Breathing silica dust may cause irritation of the nose, throat, and respiratory passages. Breathing silica dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Inhalation of dust may also have serious chronic health effects (See Chronic Effects/Carcinogenicity" subsection below).

"

Skin Contact Can dry skin. May cause an allergic skin reaction. May cause alkali burns with confined contact.

Eye Contact May cause severe eye irritation.

Ingestion None known

Aggravated Medical Conditions Individuals with respiratory disease, including but not limited to asthma and bronchitis, or subject to eye irritation, should not be exposed to quartz dust.

Chronic Effects/Carcinogenicity Silicosis: Excessive inhalation of respirable crystalline silica dust may cause a progressive, disabling, and sometimes-fatal lung disease called silicosis. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness, and reduced pulmonary function. This disease is exacerbated by smoking. Individuals with silicosis are predisposed to develop tuberculosis.

Cancer Status: The International Agency for Research on Cancer (IARC) has determined that crystalline silica inhaled in the form of quartz or cristobalite from occupational sources can cause lung cancer in humans (Group 1 - carcinogenic to humans) and has determined that there is sufficient evidence in experimental animals for the carcinogenicity of tridymite (Group 2A - possible carcinogen to humans). Refer to IARC Monograph 68, Silica, Some Silicates and Organic Fibres (June 1997) in conjunction with the use of these minerals. The National Toxicology Program classifies respirable crystalline silica as Known to be a human carcinogen". Refer to the 9th Report on Carcinogens (2000). The American Conference of Governmental Industrial Hygienists (ACGIH) classifies crystalline silica, quartz, as a suspected human carcinogen (A2).

" There is some evidence that breathing respirable crystalline silica or the disease silicosis is associated with an increased incidence of significant disease endpoints such as scleroderma (an immune system disorder manifested by scarring of the lungs, skin, and other internal organs) and kidney disease.

Other Information For further information consult "Adverse Effects of Crystalline Silica Exposure" published by the American Thoracic Society Medical Section of the American Lung Association, American Journal of Respiratory and Critical Care Medicine, Volume 155, pages 761-768 (1997)."

Toxicity Tests

Oral Toxicity:	Not determined
Dermal Toxicity:	Not determined.
Inhalation Toxicity:	Not determined
Primary Irritation Effect:	Not determined
Carcinogenicity:	Refer to <u>IARC Monograph 68, Silica, Some Silicates and Organic Fibres</u> (June 1997).
Genotoxicity:	Not determined
Reproductive/Developmental Toxicity:	Not determined

12. ECOLOGICAL INFORMATION

Mobility (Water/Soil/Air)	Not determined
Persistence/Degradability	Not applicable
Bio-accumulation	Not Determined

Ecotoxicological Information

Acute Fish Toxicity:	Not determined
Acute Crustaceans Toxicity:	Not determined
Acute Algae Toxicity:	Not determined

Chemical Fate Information Not determined

Other Information Not applicable

13. DISPOSAL CONSIDERATIONS

Disposal Method Bury in a licensed landfill according to federal, state, and local regulations.

Contaminated Packaging Follow all applicable national or local regulations.

14. TRANSPORT INFORMATION

Land Transportation

ADR Not restricted

Air Transportation

ICAO/IATA Not restricted

Sea Transportation

IMDG Not restricted

Other Shipping Information

Labels: None

15. REGULATORY INFORMATION

Chemical Inventories

Australian AICS Inventory All components listed.
New Zealand Inventory of Chemicals All components listed on inventory or are exempt.
US TSCA Inventory All components listed.
EINECS Inventory All components are listed on the inventory.

Classification
T - Toxic.
Xi - Irritant.

Risk Phrases
R41 Risk of serious damage to eyes.
R43 May cause sensitisation by skin contact.
R49 May cause cancer by inhalation.
R37/38 Irritating to respiratory system and skin.
R48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation.

Safety Phrases
S2 Keep out of reach of children.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37 Wear suitable gloves.
S24/25 Avoid contact with skin and eyes.

16. OTHER INFORMATION

The following sections have been revised since the last issue of this MSDS:

Not applicable

Contact

Australian Poisons Information Centre

24 Hour Service: - 13 11 26

Police or Fire Brigade: - 000 (exchange): - 1100

New Zealand National Poisons Centre

0800 764 766

Additional Information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Material Safety Data Sheet for this or other Halliburton products, contact Product Stewardship at 1-580-251-4335.

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

*****END OF MSDS*****

MATERIAL SAFETY DATA SHEET

Product Trade Name: SCR-100L

Revision Date: 12-Apr-2013

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Statement of Hazardous Nature Non-Hazardous according to the criteria of NOHSC, Non-Dangerous Goods according to the criteria of ADG.

Manufacturer/Supplier Halliburton Australia Pty. Ltd.
15 Marriott Road
Jandakot
WA 6164
Australia

ACN Number: 009 000 775
Telephone Number: 61 (08) 9455 8300
Fax Number: 61 (08) 9455 5300

Product Emergency Telephone

Australia: 08-64244950
Papua New Guinea: 05 1 281 575 5000
NewZealand: 06-7559274

Fire, Police & Ambulance - Emergency Telephone

Australia: 000
Papua New Guinea: 000
New Zealand: 111

Identification of Substances or Preparation

Product Trade Name: SCR-100L
Synonyms: None
Chemical Family: Anionic Polymer
UN Number: None
Dangerous Goods Class: None
Subsidiary Risk: None
Hazchem Code: None Allocated
Poisons Schedule: None Allocated
Application: Retarder

Prepared By Chemical Compliance
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

2. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	PERCENT	Australia NOHSC	New Zealand WES	ACGIH TLV-TWA
Contains no hazardous substances	Mixture	60 - 100%	Not applicable	Not applicable	Not applicable

Non-Hazardous Substance to Total of 100%

3. HAZARDS IDENTIFICATION

Hazard Overview May cause eye irritation.

HSNO Classification Non-hazardous

4. FIRST AID MEASURES

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Skin Wash with soap and water. Get medical attention if irritation persists.

Eyes Immediately flush eyes with large amounts of water for at least 15 minutes. Get immediate medical attention.

Ingestion Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

Notes to Physician Not Applicable

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media All standard fire fighting media

Extinguishing media which must not be used for safety reasons None known.

Special Exposure Hazards Decomposition in fire may produce toxic gases.

Special Protective Equipment for Fire-Fighters Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures Use appropriate protective equipment.

Environmental Precautionary Measures Prevent from entering sewers, waterways, or low areas.

Procedure for Cleaning / Absorption Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

7. HANDLING AND STORAGE

Handling Precautions Avoid contact with eyes, skin, or clothing.

Storage Information Store away from oxidizers. Store in a dry location. Keep container closed when not in use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls Use in a well ventilated area.

Respiratory Protection	Not normally needed. But if significant exposures are possible then the following respirator is recommended: Dust/mist respirator. (N95, P2/P3)
Hand Protection	Impervious rubber gloves.
Skin Protection	Normal work coveralls.
Eye Protection	Wear safety glasses or goggles to protect against exposure.
Other Precautions	None known.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Color:	Blue
Odor:	Odorless
pH:	3 - 4 (28%)
Specific Gravity @ 20 C (Water=1):	1.16
Density @ 20 C (kg/l):	1.16
Bulk Density @ 20 C (kg/m³):	Not Determined
Boiling Point/Range (C):	Not Determined
Freezing Point/Range (C):	-4
Pour Point/Range (C):	Not Determined
Flash Point/Range (C):	Not Determined Min: > 93
Flash Point Method:	PMCC
Autoignition Temperature (C):	520
Flammability Limits in Air - Lower (g/m³):	Not Determined
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (g/m³):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined
Vapor Pressure @ 20 C (mmHg):	Not Determined
Vapor Density (Air=1):	Not Determined
Percent Volatiles:	~60
Evaporation Rate (Butyl Acetate=1):	Not Determined
Solubility in Water (g/100ml):	Soluble
Solubility in Solvents (g/100ml):	Not Determined
VOCs (g/l):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	15-30 (25C)
Viscosity, Kinematic @ 20 C (centistokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined
Molecular Weight (g/mole):	Not Determined
Decomposition Temperature (C):	Not Determined

10. STABILITY AND REACTIVITY

Stability Data:	Stable
Hazardous Polymerization:	Will Not Occur
Conditions to Avoid	None anticipated
Incompatibility (Materials to Avoid)	Strong oxidizers.
Hazardous Decomposition Products	Oxides of nitrogen. Oxides of sulfur. Carbon monoxide and carbon dioxide.
Additional Guidelines	Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure	Eye or skin contact, inhalation.
Symptoms related to exposure	
Inhalation	May cause respiratory irritation.
Skin Contact	May cause mild skin irritation.
Eye Contact	May cause mild eye irritation.
Ingestion	Irritation of the mouth, throat, and stomach.
Aggravated Medical Conditions	Skin disorders.
Chronic Effects/Carcinogenicity	No data available to indicate product or components present at greater than 1% are chronic health hazards.
Other Information	None known.
Toxicity Tests	
Oral Toxicity:	Not determined
Dermal Toxicity:	Not determined
Inhalation Toxicity:	Not determined
Primary Irritation Effect:	Not determined
Carcinogenicity	Not determined
Genotoxicity:	Not determined
Reproductive / Developmental Toxicity:	Not determined

12. ECOLOGICAL INFORMATION

Mobility (Water/Soil/Air)	Not determined
Persistence/Degradability	Not determined
Bio-accumulation	Not determined

Ecotoxicological Information

Acute Fish Toxicity:	Not determined
Acute Crustaceans Toxicity:	Not determined
Acute Algae Toxicity:	Not determined
Chemical Fate Information	Not determined
Other Information	Not applicable

13. DISPOSAL CONSIDERATIONS

Disposal Method	Bury in a licensed landfill or burn in an approved incinerator according to federal, state, and local regulations. Substance should NOT be deposited into a sewage facility.
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Contaminated Packaging

Follow all applicable national or local regulations. Contaminated packaging may be disposed of by: rendering packaging incapable of containing any substance, or treating packaging to remove residual contents, or treating packaging to make sure the residual contents are no longer hazardous, or by disposing of packaging into commercial waste collection.

14. TRANSPORT INFORMATION**Land Transportation**

ADR
Not restricted

Air Transportation

ICAO/IATA
Not restricted

Sea Transportation

IMDG
Not restricted

Other Transportation Information

Labels: None

15. REGULATORY INFORMATION**Chemical Inventories**

Australian AICS Inventory	All components listed on inventory or are exempt.
New Zealand Inventory of Chemicals	All components listed on inventory or are exempt.
US TSCA Inventory	All components listed on inventory or are exempt.
EINECS Inventory	This product, and all its components, complies with EINECS

Classification Not Classified

Risk Phrases Not classified

Safety Phrases Not classified

16. OTHER INFORMATION

The following sections have been revised since the last issue of this SDS
Not applicable

Contact

Australian Poisons Information Centre
24 Hour Service: - 13 11 26
Police or Fire Brigade: - 000 (exchange): - 1100

New Zealand National Poisons Centre
0800 764 766

Additional Information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

*****END OF MSDS*****

MATERIAL SAFETY DATA SHEET

Product Trade Name: SILICALITE LIQUID

Revision Date: 22-Feb-2012

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Statement of Hazardous Nature Non-Hazardous according to the criteria of NOHSC, Non-Dangerous Goods according to the criteria of ADG.

Manufacturer/Supplier Halliburton Australia Pty. Ltd.
15 Marriott Road
Jandakot
WA 6164
Australia

ACN Number: 009 000 775
Telephone Number: 61 (08) 9455 8300
Fax Number: 61 (08) 9455 5300

Product Emergency Telephone

Australia: 08-64244950
Papua New Guinea: 05 1 281 575 5000
NewZealand: 06-7559274

Fire, Police & Ambulance - Emergency Telephone

Australia: 000
Papua New Guinea: 000
New Zealand: 111

Identification of Substances or Preparation

Product Trade Name: SILICALITE LIQUID
Synonyms: None
Chemical Family: Blend
UN Number: None
Dangerous Goods Class: None
Subsidiary Risk: None
Hazchem Code: None
Poisons Schedule: None
Application: Light Weight Cement Additive

Prepared By Chemical Compliance
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

2. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	PERCENT	Australia NOHSC	New Zealand OEL	ACGIH TLV-TWA
Silica, amorphous - fumed	7631-86-9	30 - 60%	2 mg/m ³	Not applicable	2 mg/m ³

Non-Hazardous Substance to Total of 100%

3. HAZARDS IDENTIFICATION

Hazard Overview May cause eye irritation.

Risk Phrases None

HSNO Classification Not Determined

4. FIRST AID MEASURES

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Skin Wash with soap and water.

Eyes In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

Ingestion Do not induce vomiting. Slowly dilute with 1-2 glasses of water or milk and seek medical attention. Never give anything by mouth to an unconscious person.

Notes to Physician Not Applicable

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media All standard fire fighting media

Extinguishing media which must not be used for safety reasons None known.

Special Exposure Hazards Not applicable.

Special Protective Equipment for Fire-Fighters Not applicable.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures Use appropriate protective equipment.

Environmental Precautionary Measures None known.

Procedure for Cleaning / Absorption Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

7. HANDLING AND STORAGE

Handling Precautions Avoid contact with eyes, skin, or clothing.

Storage Information Keep container closed when not in use. Product has a shelf life of 24 months.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls Use in a well ventilated area.

Respiratory Protection	Not normally necessary.
Hand Protection	Normal work gloves.
Skin Protection	Normal work coveralls.
Eye Protection	Wear safety glasses or goggles to protect against exposure.
Other Precautions	None known.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Color:	Dark gray
Odor:	Odorless
pH:	6- 8
Specific Gravity @ 20 C (Water=1):	1.37
Density @ 20 C (kg/l):	1.397
Bulk Density @ 20 C (kg/m³):	Not Determined
Boiling Point/Range (C):	100
Freezing Point/Range (C):	0
Pour Point/Range (C):	Not Determined
Flash Point/Range (C):	100
Flash Point Method:	Not Determined
Autoignition Temperature (C):	Not Determined
Flammability Limits in Air - Lower (g/m³):	Not Determined
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (g/m³):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined
Vapor Pressure @ 20 C (mmHg):	22.9
Vapor Density (Air=1):	Not Determined
Percent Volatiles:	Not Determined
Evaporation Rate (Butyl Acetate=1):	Not Determined
Solubility in Water (g/100ml):	Miscible
Solubility in Solvents (g/100ml):	Not Determined
VOCs (g/l):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	Not Determined
Viscosity, Kinematic @ 20 C (centistokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined
Molecular Weight (g/mole):	Not Determined
Decomposition Temperature (C):	Not Determined

10. STABILITY AND REACTIVITY

Stability Data:	Stable
Hazardous Polymerization:	Will Not Occur
Conditions to Avoid	None anticipated
Incompatibility (Materials to Avoid)	None known.
Hazardous Decomposition Products	Amorphous silica may transform at elevated temperatures to tridymite (870 C) or cristobalite (1470 C).
Additional Guidelines	Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure	Eye and skin contact.
Inhalation	None known.
Skin Contact	Practically Non-toxic by Skin Contact.
Eye Contact	May cause mild eye irritation.
Ingestion	None known
Aggravated Medical Conditions	None known.
Chronic Effects/Carcinogenicity	No data available to indicate product or components present at greater than 1% are chronic health hazards.
Other Information	None known.
Toxicity Tests	
Oral Toxicity:	Not determined
Dermal Toxicity:	Not determined
Inhalation Toxicity:	Not determined
Primary Irritation Effect:	Not determined
Carcinogenicity	Not determined
Genotoxicity:	Not determined
Reproductive / Developmental Toxicity:	Ames Test: Negative

12. ECOLOGICAL INFORMATION

Mobility (Water/Soil/Air)	Not determined
Persistence/Degradability	Not determined
Bio-accumulation	Not determined

Ecotoxicological Information

Acute Fish Toxicity:	Not determined
Acute Crustaceans Toxicity:	Not determined
Acute Algae Toxicity:	Not determined
Chemical Fate Information	Not determined
Other Information	Not applicable

13. DISPOSAL CONSIDERATIONS

Disposal Method	Disposal should be made in accordance with federal, state, and local regulations.
Contaminated Packaging	Follow all applicable national or local regulations.

14. TRANSPORT INFORMATION

Land Transportation

ADR
Not restricted

Air Transportation

ICAO/IATA
Not restricted

Sea Transportation

IMDG
Not restricted

Other Transportation Information

Labels: None

15. REGULATORY INFORMATION

Chemical Inventories

Australian AICS Inventory	All components listed on inventory or are exempt.
New Zealand Inventory of Chemicals	This product does not comply with NZIOC
US TSCA Inventory	All components listed on inventory or are exempt.
EINECS Inventory	This product, and all its components, complies with EINECS

Classification Not Classified

Risk Phrases None

Safety Phrases None

16. OTHER INFORMATION

The following sections have been revised since the last issue of this MSDS

Not applicable

Contact

Australian Poisons Information Centre

24 Hour Service: - 13 11 26
Police or Fire Brigade: - 000 (exchange): - 1100

New Zealand National Poisons Centre

0800 764 766

Additional Information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Material Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

*****END OF MSDS*****

MATERIAL SAFETY DATA SHEET

Product Trade Name: HR-25L

Revision Date: 14-May-2013

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Statement of Hazardous Nature Hazardous according to the criteria of NOHSC, Non-Dangerous Goods according to the criteria of ADG.

Manufacturer/Supplier Halliburton Australia Pty. Ltd.
15 Marriott Road
Jandakot
WA 6164
Australia

ACN Number: 009 000 775
Telephone Number: 61 (08) 9455 8300
Fax Number: 61 (08) 9455 5300

Product Emergency Telephone
Australia: 08-64244950
Papua New Guinea: 05 1 281 575 5000
NewZealand: 06-7559274

Fire, Police & Ambulance - Emergency Telephone
Australia: 000
Papua New Guinea: 000
New Zealand: 111

Identification of Substances or Preparation

Product Trade Name: HR-25L
Synonyms: None
Chemical Family: Organic acid
UN Number: None
Dangerous Goods Class: None
Subsidiary Risk: None
Hazchem Code: None Allocated
Poisons Schedule: None Allocated
Application: Cement Retarder

Prepared By Chemical Compliance
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

2. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	PERCENT	Australia NOHSC	New Zealand WES	ACGIH TLV-TWA
Tartaric acid	87-69-4	30 - 60%	Not applicable	Not applicable	Not applicable

Non-Hazardous Substance to Total of 100%

3. HAZARDS IDENTIFICATION

Hazard Overview	May cause eye, skin, and respiratory irritation.
Risk Phrases	R41 Risk of serious damage to eyes.
HSNO Classification	8.3A Corrosive to ocular tissue 9.3C Harmful to terrestrial vertebrates

4. FIRST AID MEASURES

Inhalation	If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
Skin	In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes. Get medical attention. Remove contaminated clothing and launder before reuse.
Eyes	In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.
Ingestion	Do not induce vomiting. Slowly dilute with 1-2 glasses of water or milk and seek medical attention. Never give anything by mouth to an unconscious person.
Notes to Physician	Not Applicable

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media	All standard fire fighting media
Extinguishing media which must not be used for safety reasons	None known.
Special Exposure Hazards	Decomposition in fire may produce toxic gases.
Special Protective Equipment for Fire-Fighters	Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures	Use appropriate protective equipment.
Environmental Precautionary Measures	Prevent from entering sewers, waterways, or low areas.
Procedure for Cleaning / Absorption	Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Neutralize to pH of 6-8. Scoop up and remove.

7. HANDLING AND STORAGE

Handling Precautions	Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Wash hands after use. Launder contaminated clothing before reuse.
Storage Information	Store away from alkalis. Store away from oxidizers. Store in a cool well ventilated area. Keep container closed when not in use. Product has a shelf life of 60 months.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls	Use in a well ventilated area.
Respiratory Protection	Dust/mist respirator. (N95, P2/P3)
Hand Protection	Impervious rubber gloves.
Skin Protection	Rubber apron.
Eye Protection	Chemical goggles; also wear a face shield if splashing hazard exists.
Other Precautions	Eyewash fountains and safety showers must be easily accessible.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Color:	Light yellow-green
Odor:	Odorless
pH:	1.7
Specific Gravity @ 20 C (Water=1):	1.2
Density @ 20 C (kg/l):	1.2
Bulk Density @ 20 C (kg/m ³):	Not Determined
Boiling Point/Range (C):	103
Freezing Point/Range (C):	Not Determined
Pour Point/Range (C):	Not Determined
Flash Point/Range (C):	Not Determined
Flash Point Method:	Not Determined
Autoignition Temperature (C):	Not Determined
Flammability Limits in Air - Lower (g/m ³):	Not Determined
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (g/m ³):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined
Vapor Pressure @ 20 C (mmHg):	Not Determined
Vapor Density (Air=1):	Not Determined
Percent Volatiles:	60
Evaporation Rate (Butyl Acetate=1):	Not Determined
Solubility in Water (g/100ml):	Soluble
Solubility in Solvents (g/100ml):	Not Determined
VOCs (g/l):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	Not Determined
Viscosity, Kinematic @ 20 C (centistokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined
Molecular Weight (g/mole):	Not Determined
Decomposition Temperature (C):	Not Determined

10. STABILITY AND REACTIVITY

Stability Data:	Stable
Hazardous Polymerization:	Will Not Occur
Conditions to Avoid	None anticipated
Incompatibility (Materials to Avoid)	Strong oxidizers. Strong alkalis.
Hazardous Decomposition Products	Carbon monoxide and carbon dioxide.
Additional Guidelines	Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure	Eye or skin contact, inhalation.
Symptoms related to exposure	
Inhalation	May cause respiratory irritation.
Skin Contact	May cause skin irritation.
Eye Contact	May cause moderate eye irritation.
Ingestion	Irritation of the mouth, throat, and stomach.
Aggravated Medical Conditions	Skin disorders.
Chronic Effects/Carcinogenicity	No data available to indicate product or components present at greater than 1% are chronic health hazards.
Other Information	None known.
Toxicity Tests	
Oral Toxicity:	Not determined
Dermal Toxicity:	Not determined
Inhalation Toxicity:	Not determined
Primary Irritation Effect:	Not determined
Carcinogenicity	Not determined
Genotoxicity:	Not determined
Reproductive / Developmental Toxicity:	Not determined

12. ECOLOGICAL INFORMATION

Mobility (Water/Soil/Air)	Not determined
Persistence/Degradability	Not determined
Bio-accumulation	Not determined

Ecotoxicological Information

Acute Fish Toxicity:	Not determined
Acute Crustaceans Toxicity:	Not determined
Acute Algae Toxicity:	Not determined
Chemical Fate Information	Not determined
Other Information	Not applicable

13. DISPOSAL CONSIDERATIONS

Disposal Method Disposal should be made in accordance with federal, state, and local regulations. Incineration recommended in approved incinerator according to federal, state, and local regulations. Substance should NOT be deposited into a sewage facility.

Contaminated Packaging Follow all applicable national or local regulations. Contaminated packaging may be disposed of by: rendering packaging incapable of containing any substance, or treating packaging to remove residual contents, or treating packaging to make sure the residual contents are no longer hazardous, or by disposing of packaging into commercial waste collection.

14. TRANSPORT INFORMATION

Land Transportation

ADR
Not restricted

Air Transportation

ICAO/IATA
Not restricted

Sea Transportation

IMDG
Not restricted

Other Transportation Information

Labels: None

15. REGULATORY INFORMATION

Chemical Inventories

Australian AICS Inventory	All components listed on inventory or are exempt.
New Zealand Inventory of Chemicals	All components listed on inventory or are exempt.
US TSCA Inventory	All components listed on inventory or are exempt.
EINECS Inventory	This product, and all its components, complies with EINECS

Classification Xi - Irritant.

Risk Phrases R41 Risk of serious damage to eyes.

Safety Phrases S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

16. OTHER INFORMATION

The following sections have been revised since the last issue of this SDS
Not applicable

Contact

Australian Poisons Information Centre

24 Hour Service: - 13 11 26

Police or Fire Brigade: - 000 (exchange): - 1100

New Zealand National Poisons Centre

0800 764 766

Additional Information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

*****END OF MSDS*****

MATERIAL SAFETY DATA SHEET

Product Trade Name: MICROBOND EXPANDING ADDITIVE

Revision Date: 03-Apr-2014

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Statement of Hazardous Nature Hazardous according to the criteria of NOHSC, Non-Dangerous Goods according to the criteria of ADG.

Manufacturer/Supplier Halliburton Australia Pty. Ltd.
15 Marriott Road
Jandakot
WA 6164
Australia

ACN Number: 009 000 775
Telephone Number: 61 (08) 9455 8300
Fax Number: 61 (08) 9455 5300

Product Emergency Telephone

Australia: 08-64244950
Papua New Guinea: 05 1 281 575 5000
NewZealand: 06-7559274

Fire, Police & Ambulance - Emergency Telephone

Australia: 000
Papua New Guinea: 000
New Zealand: 111

Identification of Substances or Preparation

Product Trade Name: MICROBOND EXPANDING ADDITIVE
Synonyms: None
Chemical Family: Mineral
UN Number: None
Dangerous Goods Class: None
Subsidiary Risk: None
Hazchem Code: None Allocated
Poisons Schedule: None Allocated
Application: Cement Additive

Prepared By Chemical Compliance
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

2. HAZARDS IDENTIFICATION

Statement of Hazardous Nature Hazardous according to the criteria of NOHSC, Non-Dangerous Goods according to the criteria of ADG.

Hazard Overview May cause severe eye irritation. May cause skin irritation.

Classification Xi - Irritant.

Risk Phrases R38 Irritating to skin.
R41 Risk of serious damage to eyes.

Safety Phrases S22 Do not breathe dust.
S24/25 Avoid contact with skin and eyes.

HSNO Classification 6.3A Irritating to the skin
6.4A Irritating to the eye

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	PERCENT (w/w)	Australia	NOHSC	New Zealand	ACGIH TLV-TWA
			WES			
Calcium aluminate	12042-68-1	10 - 30%	Not applicable		Not applicable	10 mg/m ³
Calcium hydroxide	1305-62-0	10 - 30%	TWA: 5 mg/m ³		TWA: 5 mg/m ³	TWA: 5 mg/m ³

Non-Hazardous Substance to Total of 100%

4. FIRST AID MEASURES

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Skin Wash with soap and water. Get medical attention if irritation persists.

Eyes In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

Ingestion Do not induce vomiting. Slowly dilute with 1-2 glasses of water or milk and seek medical attention. Never give anything by mouth to an unconscious person.

Notes to Physician Not Applicable

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media

All standard fire fighting media

Extinguishing media which must not be used for safety reasons

None known.

Special Exposure Hazards Decomposition in fire may produce toxic gases.

Special Protective Equipment for Fire-Fighters Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures Use appropriate protective equipment. Avoid creating and breathing dust.

Environmental Precautionary Measures Prevent from entering sewers, waterways, or low areas.

Procedure for Cleaning /
Absorption

Scoop up and remove.

7. HANDLING AND STORAGE

Handling Precautions Avoid contact with eyes, skin, or clothing. Avoid creating or inhaling dust.

Storage Information Store in a cool, dry location.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls Use in a well ventilated area.

Respiratory Protection Dust/mist respirator. (N95, P2/P3)

Hand Protection Normal work gloves.

Skin Protection Normal work coveralls.

Eye Protection Wear safety glasses or goggles to protect against exposure.

Other Precautions None known.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid
Color:	Light red
Odor:	Odorless
pH:	Not Determined
Specific Gravity @ 20 C (Water=1):	3.2
Density @ 20 C (kg/l):	Not Determined
Bulk Density @ 20 C (kg/M3):	Not Determined
Boiling Point/Range (C):	Not Determined
Freezing Point/Range (C):	Not Determined
Pour Point/Range (C):	Not Determined
Flash Point/Range (C):	Not Determined
Flash Point Method:	Not Determined
Autoignition Temperature (C):	Not Determined
Flammability Limits in Air - Lower (g/m³):	Not Determined
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (g/m³):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined
Vapor Pressure @ 20 C (mmHg):	Not Determined
Vapor Density (Air=1):	Not Determined
Percent Volatiles:	Not Determined
Evaporation Rate (Butyl Acetate=1):	Not Determined
Solubility in Water (g/100ml):	Insoluble
Solubility in Solvents (g/100ml):	Not Determined
VOCs (g/l):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	Not Determined
Viscosity, Kinematic @ 20 C (centistokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined
Molecular Weight (g/mole):	>600
Decomposition Temperature (C):	Not Determined

10. STABILITY AND REACTIVITY

Stability Data:	Stable
Hazardous Polymerization:	Will Not Occur
Conditions to Avoid	None anticipated
Incompatibility (Materials to Avoid)	None known.
Hazardous Decomposition Products	Oxides of sulfur. Carbon monoxide and carbon dioxide.
Additional Guidelines	Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure Eye or skin contact, inhalation.

Symptoms related to exposure

Acute Toxicity

Inhalation	May cause respiratory irritation.
Eye Contact	May cause severe eye irritation.
Skin Contact	May cause skin irritation.
Ingestion	Irritation of the mouth, throat, and stomach.

Chronic Effects/Carcinogenicity No data available to indicate product or components present at greater than 1% are chronic health hazards.

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Calcium aluminate	12042-68-1	> 2000 mg/kg (Rat) (similar substance)	> 2000 mg/kg (Rat) (similar substance)	No data available
Calcium hydroxide	1305-62-0	7340 mg/kg (Rat) > 2000 mg/kg (Rat)	>2500 mg/kg (Rabbit)	No data available

12. ECOLOGICAL INFORMATION

Ecotoxicological Information

Ecotoxicity Product

Acute Fish Toxicity:	Not determined
Acute Crustaceans Toxicity:	Not determined
Acute Algae Toxicity:	Not determined

Ecotoxicity Substance

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Calcium aluminate	12042-68-1	EC50(72h): 3.6 mg/L (Desmodesmus subspicatus) NOEC(72h): 2.6 mg/L (Desmodesmus subspicatus)	LC50(96h): >100 mg/L (Danio rerio)	EC50(3h): > 1000 mg/L (Activated sludge of a predominantly domestic sewage)	EC50(48h): 5.4 mg/L (Daphnia magna)

Calcium hydroxide	1305-62-0	EC50(72h): 184.57 mg/L (Pseudokirchnerella subcapitata)	TLM96: 100-500 ppm (Oncorhynchus mykiss) 33.884 mg/L (Clarias gariepinus) LC50(96h): 50.6 mg/L (Oncorhynchus mykiss) LC50(96h): 457 mg/L (Gasterosteus aculeatus)	EC50(3h): 300.4 mg/L (respiration rate) (activated sludge of a predominantly domestic sewage)	TLM96: 478,520 ppm (Mysidopsis bahia) EC50(48h): 49.1 mg/L (Daphnia magna) LC50:(96h): 158 mg/L (Crangon septemspinosa) NOEC(14d): 32 mg/L (Crangon septemspinosa)
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12.2 Persistence and degradability

Substances	Persistence and Degradability
Calcium aluminate	The methods for determining biodegradability are not applicable to inorganic substances.
Calcium hydroxide	The methods for determining biodegradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

No information available

12.4 Mobility in soil

No information available

12.5 Results of PBT and vPvB assessment

No information available.

12.6 Other adverse effects

13. DISPOSAL CONSIDERATIONS

Disposal Method Bury in a licensed landfill according to federal, state, and local regulations.

Contaminated Packaging Follow all applicable national or local regulations.

14. TRANSPORT INFORMATION

Land Transportation

ADR

Not restricted

Air Transportation

ICAO/IATA

Not restricted

Sea Transportation

IMDG

Not restricted

Other Transportation Information

Labels: None

15. REGULATORY INFORMATION

Chemical Inventories

Australian AICS Inventory	All components listed on inventory or are exempt.
New Zealand Inventory of Chemicals	This product does not comply with NZIOC
US TSCA Inventory	All components listed on inventory or are exempt.
EINECS Inventory	This product, and all its components, complies with EINECS
Classification	Xi - Irritant.
Risk Phrases	R38 Irritating to skin. R41 Risk of serious damage to eyes.
Safety Phrases	S22 Do not breathe dust. S24/25 Avoid contact with skin and eyes.

16. OTHER INFORMATION

The following sections have been revised since the last issue of this SDS
Not applicable

Contact

Australian Poisons Information Centre

24 Hour Service: - 13 11 26
Police or Fire Brigade: - 000 (exchange): - 1100

New Zealand National Poisons Centre

0800 764 766

Additional information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

END OF MSDS

MATERIAL SAFETY DATA SHEET

Product Trade Name: **BARITE**

Revision Date: 03-Aug-2012

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Statement of Hazardous Nature Hazardous according to the criteria of NOHSC, Non-Dangerous Goods according to the criteria of ADG.

Manufacturer/Supplier Halliburton Australia Pty. Ltd.
53-55 Bannister Road
Canning Vale
WA 6155
Australia

ACN Number: 009 000 775
Telephone Number: 61 (08) 9455 8300
Fax Number: 61 (08) 9455 5300

Product Emergency Telephone
Australia: 08-64244950
Papua New Guinea: 05 1 281 575 5000
NewZealand: 06-7559274

Fire, Police & Ambulance - Emergency Telephone
Australia: 000
Papua New Guinea: 000
New Zealand: 111

Identification of Substances or Preparation

Product Trade Name: BARITE
Synonyms: None
Chemical Family: Mineral
UN Number: None
Dangerous Goods Class: None
Subsidiary Risk: None
Hazchem Code: None
Poisons Schedule: None
Application: Weight Additive

Prepared By Chemical Compliance
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

2. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	PERCENT	Australia NOHSC	New Zealand OEL	ACGIH TLV-TWA
Barium sulfate	7727-43-7	60 - 100%	10 mg/m ³	10 mg/m ³	10 mg/m ³
Crystalline silica, quartz	14808-60-7	1 - 5%	0.1 mg/m ³	0.2 mg/m ³	0.025 mg/m ³

Non-Hazardous Substance to Total of 100%

3. HAZARDS IDENTIFICATION

Hazard Overview

CAUTION! - ACUTE HEALTH HAZARD

May cause eye, skin, and respiratory irritation. May be harmful if swallowed.

DANGER! - CHRONIC HEALTH HAZARD

Breathing crystalline silica can cause lung disease, including silicosis and lung cancer. Crystalline silica has also been associated with scleroderma and kidney disease.

This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposures below recommended exposure limits. Wear a NIOSH certified, European Standard EN 149, or equivalent respirator when using this product. Review the Material Safety Data Sheet (MSDS) for this product, which has been provided to your employer.

Risk Phrases

None

HSNO Classification

6.7A Substances that are known or presumed human carcinogens.
6.9A Substances that are toxic to human target organs or systems.

4. FIRST AID MEASURES

Inhalation

If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Skin

Wash with soap and water. Get medical attention if irritation persists.

Eyes

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

Ingestion

Do not induce vomiting. Slowly dilute with 1-2 glasses of water or milk and seek medical attention. Never give anything by mouth to an unconscious person.

Notes to Physician

Not Applicable

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media All standard fire fighting media

Extinguishing media which must not be used for safety reasons None known.

Special Exposure Hazards Not applicable.

Special Protective Equipment for Fire-Fighters Not applicable.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures Use appropriate protective equipment. Avoid creating and breathing dust.

Environmental Precautionary Measures None known.

Procedure for Cleaning / Absorption

Collect using dustless method and hold for appropriate disposal. Consider possible toxic or fire hazards associated with contaminating substances and use appropriate methods for collection, storage and disposal.

7. HANDLING AND STORAGE

Handling Precautions

This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposure below recommended exposure limits. Wear a NIOSH certified, European Standard En 149, or equivalent respirator when using this product. Material is slippery when wet.

Storage Information

Store in a cool, dry location. Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. Do not reuse empty container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits listed in Section 2.

Personal Protective Equipment

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

Respiratory Protection

Wear a NIOSH certified, European Standard EN 149, or equivalent respirator when using this product.

Hand Protection

Normal work gloves.

Skin Protection

Wear clothing appropriate for the work environment. Dusty clothing should be laundered before reuse. Use precautionary measures to avoid creating dust when removing or laundering clothing.

Eye Protection

Wear safety glasses or goggles to protect against exposure.

Other Precautions

None known.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid
Color:	Pink to tan to gray
Odor:	Odorless
pH:	Not Determined
Specific Gravity @ 20 C (Water=1):	4.23
Density @ 20 C (kg/l):	Not Determined
Bulk Density @ 20 C (kg/m³):	Not Determined
Boiling Point/Range (C):	Not Determined
Freezing Point/Range (C):	Not Determined
Pour Point/Range (C):	Not Determined
Flash Point/Range (C):	> 100
Flash Point Method:	Not Determined
Autoignition Temperature (C):	Not Determined
Flammability Limits in Air - Lower (g/m³):	Not Determined
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (g/m³):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined

9. PHYSICAL AND CHEMICAL PROPERTIES

Vapor Pressure @ 20 C (mmHg):	Not Determined
Vapor Density (Air=1):	Not Determined
Percent Volatiles:	Not Determined
Evaporation Rate (Butyl Acetate=1):	Not Determined
Solubility in Water (g/100ml):	Insoluble
Solubility in Solvents (g/100ml):	Not Determined
VOCs (g/l):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	Not Determined
Viscosity, Kinematic @ 20 C (centistokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined
Molecular Weight (g/mole):	233.4
Decomposition Temperature (C):	Not Determined

10. STABILITY AND REACTIVITY

Stability Data:	Stable
Hazardous Polymerization:	Will Not Occur
Conditions to Avoid	None anticipated
Incompatibility (Materials to Avoid)	None known.
Hazardous Decomposition Products	Amorphous silica may transform at elevated temperatures to tridymite (870 C) or cristobalite (1470 C).
Additional Guidelines	Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure	Eye or skin contact, inhalation.
Inhalation	<p>Inhaled crystalline silica in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (IARC, Group 1). There is sufficient evidence in experimental animals for the carcinogenicity of tridymite (IARC, Group 2A).</p> <p>Breathing silica dust may cause irritation of the nose, throat, and respiratory passages. Breathing silica dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Inhalation of dust may also have serious chronic health effects (See "Chronic Effects/Carcinogenicity" subsection below).</p>
Skin Contact	None known.
Eye Contact	May cause mild eye irritation.
Ingestion	May produce nervous system effects such as feeling of weakness, unsteady walk, and dilation of blood vessels. May affect the heart and cardiovascular system.
Aggravated Medical Conditions	Individuals with respiratory disease, including but not limited to asthma and bronchitis, or subject to eye irritation, should not be exposed to quartz dust.

Chronic Effects/Carcinogenicity Silicosis: Excessive inhalation of respirable crystalline silica dust may cause a progressive, disabling, and sometimes-fatal lung disease called silicosis. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness, and reduced pulmonary function. This disease is exacerbated by smoking. Individuals with silicosis are predisposed to develop tuberculosis.

Cancer Status: The International Agency for Research on Cancer (IARC) has determined that crystalline silica inhaled in the form of quartz or cristobalite from occupational sources can cause lung cancer in humans (Group 1 - carcinogenic to humans) and has determined that there is sufficient evidence in experimental animals for the carcinogenicity of tridymite (Group 2A - possible carcinogen to humans). Refer to IARC Monograph 68, Silica, Some Silicates and Organic Fibres (June 1997) in conjunction with the use of these minerals. The National Toxicology Program classifies respirable crystalline silica as "Known to be a human carcinogen". Refer to the 9th Report on Carcinogens (2000). The American Conference of Governmental Industrial Hygienists (ACGIH) classifies crystalline silica, quartz, as a suspected human carcinogen (A2).

There is some evidence that breathing respirable crystalline silica or the disease silicosis is associated with an increased incidence of significant disease endpoints such as scleroderma (an immune system disorder manifested by scarring of the lungs, skin, and other internal organs) and kidney disease.

Prolonged inhalation of fine barium sulfate dusts form harmless nodular granules in lung, an affliction called baritosis. Baritosis produces no symptoms of bronchitis or emphysema, and lung functioning is not affected although dyspnea, upon exertion, may occur. The nodulation disappears if exposure is stopped.

Other Information For further information consult "Adverse Effects of Crystalline Silica Exposure" published by the American Thoracic Society Medical Section of the American Lung Association, American Journal of Respiratory and Critical Care Medicine, Volume 155, pages 761-768 (1997).

Toxicity Tests

Oral Toxicity:	LD50: >15000 mg/kg (Rat)
Dermal Toxicity:	Not determined
Inhalation Toxicity:	Not determined
Primary Irritation Effect:	Not determined
Carcinogenicity	Refer to <u>IARC Monograph 68, Silica, Some Silicates and Organic Fibres</u> (June 1997).
Genotoxicity:	Not determined
Reproductive / Developmental Toxicity:	Not determined

12. ECOLOGICAL INFORMATION

Mobility (Water/Soil/Air)	Not determined
Persistence/Degradability	Not applicable
Bio-accumulation	Not determined

Ecotoxicological Information

Acute Fish Toxicity: TLM96: 7500 ppm (Oncorhynchus mykiss)
Acute Crustaceans Toxicity: Not determined
Acute Algae Toxicity: Not determined

Chemical Fate Information Not determined

Other Information Not applicable

13. DISPOSAL CONSIDERATIONS

Disposal Method Bury in a licensed landfill according to federal, state, and local regulations.

Contaminated Packaging Follow all applicable national or local regulations.

14. TRANSPORT INFORMATION

Land Transportation

ADR
Not restricted

Air Transportation

ICAO/IATA
Not restricted

Sea Transportation

IMDG
Not restricted

Other Transportation Information

Labels: None

15. REGULATORY INFORMATION

Chemical Inventories

Australian AICS Inventory All components listed on inventory or are exempt.
New Zealand Inventory of Chemicals All components listed on inventory or are exempt.
US TSCA Inventory All components listed on inventory or are exempt.
EINECS Inventory This product, and all its components, complies with EINECS

Classification Crystalline silica is not classified as a carcinogen in EU Council Directives 67/548/EEC and 88/379/EEC.

Risk Phrases None

Safety Phrases None

16. OTHER INFORMATION

The following sections have been revised since the last issue of this MSDS

Not applicable

Contact

Australian Poisons Information Centre

24 Hour Service: - 13 11 26

Police or Fire Brigade: - 000 (exchange): - 1100

New Zealand National Poisons Centre

0800 764 766

Additional Information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Material Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

END OF MSDS

HALLIBURTON

MATERIAL SAFETY DATA SHEET

Product Trade Name: TUNED SPACER E+

Revision Date: 16-Sep-2013

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Statement of Hazardous Nature Hazardous according to the criteria of NOHSC, Non-Dangerous Goods according to the criteria of ADG.

Manufacturer/Supplier Halliburton Australia Pty. Ltd.
15 Marriott Road
Jandakot
WA 6164
Australia

ACN Number: 009 000 775
Telephone Number: 61 (08) 9455 8300
Fax Number: 61 (08) 9455 5300

Product Emergency Telephone
Australia: 08-64244950
Papua New Guinea: 05 1 281 575 5000
NewZealand: 06-7559274

Fire, Police & Ambulance - Emergency Telephone
Australia: 000
Papua New Guinea: 000
New Zealand: 111

Identification of Substances or Preparation

Product Trade Name: TUNED SPACER E+
Synonyms: None
Chemical Family: Mineral
UN Number: None
Dangerous Goods Class: None
Subsidiary Risk: None
Hazchem Code: None Allocated
Poisons Schedule: None Allocated
Application: Cement Spacer

Prepared By Chemical Compliance
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

2. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	PERCENT (w/w)	Australia	NOHSC	New Zealand	ACGIH TLV-TWA
			WES			
Bentonite	1302-78-9	60 - 100%	Not applicable	Not applicable	TWA: 1 mg/m ³	
Crystalline silica, quartz	14808-60-7	1 - 5%	TWA: 0.1 mg/m ³	TWA: 0.2 mg/m ³	TWA: 0.025 mg/m ³	

Crystalline silica, cristobalite	14464-46-1	0 - 1%	TWA: 0.1 mg/m ³	TWA: 0.1 mg/m ³	TWA: 0.025 mg/m ³
Crystalline silica, tridymite	15468-32-3	0 - 1%	TWA: 0.1 mg/m ³	TWA: 0.1 mg/m ³	0.05 mg/m ³

Non-Hazardous Substance to Total of 100%

3. HAZARDS IDENTIFICATION

Hazard Overview

DANGER! - CHRONIC HEALTH HAZARD

Breathing crystalline silica can cause lung disease, including silicosis and lung cancer. Crystalline silica has also been associated with scleroderma and kidney disease.

This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposures below recommended exposure limits. Wear a NIOSH certified, European Standard EN 149, or equivalent respirator when using this product. Review the Material Safety Data Sheet (MSDS) for this product, which has been provided to your employer.

Risk Phrases

R49 May cause cancer by inhalation.

R48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation.

HSNO Classification

6.7A Known or presumed human carcinogens

6.9A Toxic to human target organs or systems

4. FIRST AID MEASURES

Inhalation

If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Skin

Wash with soap and water. Get medical attention if irritation persists.

Eyes

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

Ingestion

Under normal conditions, first aid procedures are not required.

Notes to Physician

Treat symptomatically.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media

Water fog, carbon dioxide, foam, dry chemical.

Extinguishing media which must not be used for safety reasons

None known.

Special Exposure Hazards

Decomposition in fire may produce toxic gases.

Special Protective Equipment for Fire-Fighters

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures	Use appropriate protective equipment. Avoid creating and breathing dust.
Environmental Precautionary Measures	None known.
Procedure for Cleaning / Absorption	Collect using dustless method and hold for appropriate disposal. Consider possible toxic or fire hazards associated with contaminating substances and use appropriate methods for collection, storage and disposal.

7. HANDLING AND STORAGE

Handling Precautions	This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposure below recommended exposure limits. Wear a NIOSH certified, European Standard En 149, or equivalent respirator when using this product. Material is slippery when wet.
Storage Information	Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. Do not reuse empty container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls	Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits.
Respiratory Protection	Wear a NIOSH certified, European Standard EN 149 (FFP2/FFP3), or equivalent respirator when using this product.
Hand Protection	Normal work gloves.
Skin Protection	Wear clothing appropriate for the work environment. Dusty clothing should be laundered before reuse. Use precautionary measures to avoid creating dust when removing or laundering clothing.
Eye Protection	Wear safety glasses or goggles to protect against exposure.
Other Precautions	None known.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid
Color:	White to light straw
Odor:	Odorless
pH:	Not Determined
Specific Gravity @ 20 C (Water=1):	2.65
Density @ 20 C (kg/l):	Not Determined
Bulk Density @ 20 C (kg/M3):	Not Determined
Boiling Point/Range (C):	Not Determined
Freezing Point/Range (C):	Not Determined
Pour Point/Range (C):	Not Determined
Flash Point/Range (C):	Not Determined
Flash Point Method:	Not Determined
Autoignition Temperature (C):	Not Determined

Flammability Limits in Air - Lower (g/m ³):	Not Determined
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (g/m ³):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined
Vapor Pressure @ 20 C (mmHg):	Not Determined
Vapor Density (Air=1):	Not Determined
Percent Volatiles:	Not Determined
Evaporation Rate (Butyl Acetate=1):	Not Determined
Solubility in Water (g/100ml):	5
Solubility in Solvents (g/100ml):	Not Determined
VOCs (g/l):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	Not Determined
Viscosity, Kinematic @ 20 C (centistokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined
Molecular Weight (g/mole):	Not Determined
Decomposition Temperature (C):	Not Determined

10. STABILITY AND REACTIVITY

Stability Data:	Stable
Hazardous Polymerization:	Will Not Occur
Conditions to Avoid	None anticipated
Incompatibility (Materials to Avoid)	Strong oxidizers.
Hazardous Decomposition Products	Oxides of sulfur. Carbon monoxide and carbon dioxide. Amorphous silica may transform at elevated temperatures to tridymite (870 C) or cristobalite (1470 C).
Additional Guidelines	Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure Eye or skin contact, inhalation.

Symptoms related to exposure

Acute Toxicity

Inhalation

Inhaled crystalline silica in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (IARC, Group 1). There is sufficient evidence in experimental animals for the carcinogenicity of tridymite (IARC, Group 2A).

Breathing silica dust may cause irritation of the nose, throat, and respiratory passages. Breathing silica dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Inhalation of dust may also have serious chronic health effects (See "Chronic Effects/Carcinogenicity" subsection below).

Eye Contact

May cause eye irritation.

Skin Contact

May cause mechanical skin irritation.

Ingestion

None known

Chronic Effects/Carcinogenicity

Silicosis: Excessive inhalation of respirable crystalline silica dust may cause a progressive, disabling, and sometimes-fatal lung disease called silicosis. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness, and reduced pulmonary function. This disease is exacerbated by smoking. Individuals with silicosis are predisposed to develop tuberculosis.

Cancer Status: The International Agency for Research on Cancer (IARC) has determined that crystalline silica inhaled in the form of quartz or cristobalite from occupational sources can cause lung cancer in humans (Group 1 - carcinogenic to humans) and has determined that there is sufficient evidence in experimental animals for the carcinogenicity of tridymite (Group 2A - possible carcinogen to humans). Refer to IARC Monograph 68, Silica, Some Silicates and Organic Fibres (June 1997) in conjunction with the use of these minerals. The National Toxicology Program classifies respirable crystalline silica as "Known to be a human carcinogen". Refer to the 9th Report on Carcinogens (2000). The American Conference of Governmental Industrial Hygienists (ACGIH) classifies crystalline silica, quartz, as a suspected human carcinogen (A2).

There is some evidence that breathing respirable crystalline silica or the disease silicosis is associated with an increased incidence of significant disease endpoints such as scleroderma (an immune system disorder manifested by scarring of the lungs, skin, and other internal organs) and kidney disease.

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Bentonite	1302-78-9	5000 mg/kg (Rat)	No data available	No data available
Crystalline silica, quartz	14808-60-7	500 mg/kg (Rat)	No data available	No data available
Crystalline silica, cristobalite	14464-46-1	No data available	No data available	No data available
Crystalline silica, tridymite	15468-32-3	No data available	No data available	No data available

12. ECOLOGICAL INFORMATION

Ecotoxicological Information

Ecotoxicity Product

Acute Fish Toxicity:	Not determined
Acute Crustaceans Toxicity:	Not determined
Acute Algae Toxicity:	Not determined

Ecotoxicity Substance

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
Bentonite	1302-78-9	No information available	TLM96: 10000 ppm (Oncorhynchus mykiss)	No information available	No information available
Crystalline silica, quartz	14808-60-7	No information available	No information available	No information available	No information available
Crystalline silica, cristobalite	14464-46-1	No information available	No information available	No information available	No information available
Crystalline silica, tridymite	15468-32-3	No information available	No information available	No information available	No information available

12.2 Persistence and degradability

No information available

12.3 Bioaccumulative potential

No information available

12.4 Mobility in soil

No information available

12.5 Results of PBT and vPvB assessment

No information available.

12.6 Other adverse effects

13. DISPOSAL CONSIDERATIONS

Disposal Method Bury in a licensed landfill according to federal, state, and local regulations.

Contaminated Packaging Follow all applicable national or local regulations.

14. TRANSPORT INFORMATION

Land Transportation

ADR

Not restricted

Air Transportation

ICAO/IATA

Not restricted

Sea Transportation

IMDG

Not restricted

Other Transportation Information

Labels: None

15. REGULATORY INFORMATION

Chemical Inventories

Australian AICS Inventory All components listed on inventory or are exempt.

New Zealand Inventory of Chemicals All components listed on inventory or are exempt.

US TSCA Inventory All components listed on inventory or are exempt.

EINECS Inventory This product, and all its components, complies with EINECS

Classification T - Toxic.

Crystalline silica is not classified as a carcinogen in EU Council Directives 67/548/EEC and 88/379/EEC.

Risk Phrases R49 May cause cancer by inhalation.
R48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation.

Safety Phrases

S53 Avoid exposure - obtain special instructions before use.
S22 Do not breathe dust.
S38 In case of insufficient ventilation wear suitable respiratory equipment.

16. OTHER INFORMATION

The following sections have been revised since the last issue of this SDS

Not applicable

Contact**Australian Poisons Information Centre**

24 Hour Service: - 13 11 26
Police or Fire Brigade: - 000 (exchange): - 1100

New Zealand National Poisons Centre

0800 764 766

Additional Information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

*****END OF MSDS*****

Condor Energy Services – Safety Data Sheet

CF 100FSE



1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : **CF 100FSE**

APPLICATION : **SURFACTANT**

IMPORTER: **Condor Energy Services Ltd
Level 4, 15 Ogilvie Road
Applecross WA 6153
Australia
+61 8 9315 5986**

EMERGENCY TELEPHONE NUMBER: **+61 430 138 290 (24 Hours)**
+65 6542 9595

NFPA 704M/HMIS RATING
HEALTH: 3/3 FLAMMABILITY: 3/3 INSTABILITY: 0/0 OTHER :
0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme * = Chronic Health Hazard

2. COMPOSITION/INFORMATION ON INGREDIENTS

Our hazard evaluation has identified the following chemical substance(s) as hazardous. Consult Section 15 for the nature of the hazard(s).

Hazardous Substance(s)	CAS NO	% (w/w)
Isopropanol	67-63-0	10.0 - 30.0
Alcohols, C9-11, ethoxylated	68439-46-3	5.0 - 10.0
Oxyalkylated alcohol	Proprietary	10.0 - 30.0

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER

Flammable. Risk of serious damage to eyes. Harmful if swallowed.
Keep away from heat. Keep away from sources of ignition - No smoking. Keep container tightly closed. Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear eye/face protection. Avoid breathing vapor. After contact with skin, wash immediately with plenty of water. Use a mild soap if available.
Wear suitable protective clothing.
Flammable Liquid; may release vapors that form flammable mixtures at or above the flash point. Vapors can travel to a source of ignition and flash back. Empty product containers may contain product residue. Do not pressurize, cut, heat, weld, or expose containers to flame or other sources of ignition. May evolve oxides of carbon (COx) under fire conditions.

PRIMARY ROUTES OF EXPOSURE :
Eye, Skin, Inhalation

Condor Energy Services – Safety Data Sheet

CF 100FSE



HUMAN HEALTH HAZARDS - ACUTE :

EYE CONTACT :

Severely irritating. If not removed promptly, will injure eye tissue and may result in permanent eye damage.

SKIN CONTACT :

May cause irritation with prolonged contact.

INGESTION :

Not a likely route of exposure. Harmful if swallowed.

INHALATION :

Product mist or vapors may cause headache, nausea, vomiting, drowsiness, stupor or unconsciousness. Can cause central nervous system depression.

4.	FIRST AID MEASURES
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EYE CONTACT :

Immediately flush eye with water for at least 15 minutes while holding eyelids open. **PROMPT ACTION IS ESSENTIAL IN CASE OF CONTACT.** Get immediate medical attention.

SKIN CONTACT :

Flush with large amounts of water. Use soap if available. If symptoms develop, seek medical advice.

INGESTION :

Get medical attention. Do not induce vomiting without medical advice. If conscious, washout mouth and give water to drink.

INHALATION :

First aid is normally not required. Remove to fresh air, treat symptomatically. If symptoms develop, seek medical advice.

NOTE TO PHYSICIAN :

Based on the individual reactions of the patient, the physician's judgement should be used to control symptoms and clinical condition.



5. FIRE FIGHTING MEASURES

FLASH POINT : 73.4 - 100 F / 23 - 37.8 C

Estimated

EXTINGUISHING MEDIA :

Foam, Carbon dioxide, Dry powder, Other extinguishing agent suitable for Class B fires, For large fires, use water spray or fog, thoroughly drenching the burning material.

Water mist may be used to cool closed containers.

FIRE AND EXPLOSION HAZARD :

Flammable Liquid; may release vapors that form flammable mixtures at or above the flash point. Vapors can travel to a source of ignition and flash back. Empty product containers may contain product residue. Do not pressurize, cut, heat, weld, or expose containers to flame or other sources of ignition. May evolve oxides of carbon (COx) under fire conditions.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :

In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS :

Restrict access to area as appropriate until clean-up operations are complete. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection). Stop or reduce any leaks if it is safe to do so. Ventilate spill area if possible. Remove sources of ignition. Ensure clean-up is conducted by trained personnel only. Do not touch spilled material. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Notify appropriate government, occupational health and safety and environmental authorities.

METHODS FOR CLEANING UP :

SMALL SPILLS: Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area. **LARGE SPILLS:** Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Clean contaminated surfaces with water or aqueous cleaning agents. Contact an approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

ENVIRONMENTAL PRECAUTIONS :

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment., Prevent material from entering sewers or waterways., If drains, streams, soil or sewers become contaminated, notify local authority.



7. HANDLING AND STORAGE

HANDLING :

Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. Do not breathe vapors/gases/dust. Keep the containers closed when not in use. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Ensure all containers are labeled. Do not use, store, spill or pour near heat, sparks or open flame.

STORAGE CONDITIONS :

Store in suitable labeled containers. Store the containers tightly closed. Store away from heat and sources of ignition. Have appropriate fire extinguishers available in and near the storage area. Connections must be grounded to avoid electrical charges. Store separately from oxidizers.

SUITABLE CONSTRUCTION MATERIAL :

Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS :

Exposure guidelines have not been established for this product. Available exposure limits for the substance(s) are shown below.

Substance(s)	Basis	ppm	mg/m3	Non-Standard Unit
Isopropanol	ACGIH/TWA	200		
	ACGIH/STEL	400		
	NIOSH REL/TWA	400	980	
	NIOSH REL/STEL	500	1,225	
	OSHA Z1/TWA	400	980	

* A skin notation refers to the potential significant contribution to overall exposure by the cutaneous route, including mucous membranes and the eyes.

ENGINEERING MEASURES:

The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fume hood. Provide mechanical ventilation of confined spaces.

RESPIRATORY PROTECTION:

Where concentrations in air may exceed the limits given in this section or when significant mists, vapors, aerosols, or dusts are generated, an approved air purifying respirator equipped with suitable filter cartridges is recommended. Consult the respirator / cartridge manufacturer data to verify the suitability of specific devices. In event of emergency or planned entry into unknown concentrations a positive pressure, full-face SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

HAND PROTECTION:

When handling this product, the use of chemical gloves is recommended. The choice of work glove depends on work conditions and what chemicals are handled. Please contact the PPE manufacturer for advice on what type of glove material may be suitable. Gloves should be replaced immediately if signs of degradation are observed.

Condor Energy Services – Safety Data Sheet

CF 100FSE



SKIN PROTECTION:

Wear standard protective clothing.

EYE PROTECTION:

Wear a face shield with chemical splash goggles.

HYGIENE RECOMMENDATIONS:

Use good work and personal hygiene practices to avoid exposure. Keep an eye wash fountain available. Keep a safety shower available. If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse. Always wash thoroughly after handling chemicals. When handling this product never eat, drink or smoke.

HUMAN EXPOSURE CHARACTERIZATION :

Based on our recommended product application and personal protective equipment, the potential human exposure is: Moderate

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Liquid
APPEARANCE	Clear Colorless to red amber
ODOR	Alcoholic
SPECIFIC GRAVITY	0.95 @ 60.0 °F / 15.5 °C
DENSITY	7.9 lb/gal
SOLUBILITY IN WATER	Complete

Note: These physical properties are typical values for this product and are subject to change.

10. STABILITY AND REACTIVITY

STABILITY :

Stable under normal conditions.

HAZARDOUS POLYMERIZATION :

Hazardous polymerization will not occur.

CONDITIONS TO AVOID :

Avoid extremes of temperature. Heat and sources of ignition including static discharges.

MATERIALS TO AVOID :

Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors.

HAZARDOUS DECOMPOSITION PRODUCTS :

Under fire conditions: Oxides of carbon



11. TOXICOLOGICAL INFORMATION

No toxicity studies have been conducted on this product.

SENSITIZATION :

This product is not expected to be a sensitizer.

CARCINOGENICITY :

None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Hygienists (ACGIH).

HUMAN HAZARD CHARACTERIZATION :

Based on our hazard characterization, the potential human hazard is: High

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL EFFECTS :

The following results are for the product, unless otherwise indicated.

AQUATIC MICROORGANISM RESULTS :

Species	Exposure	Test Type	Value	Test Descriptor
Vibrio fischeri	0.25 h	EC50	6.16 mg/l	Product

MOBILITY :

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.

If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	Water	Soil/Sediment
<5%	10 - 30%	50 - 70%

The portion in water is expected to be soluble or dispersible.

BIOACCUMULATION POTENTIAL

Component substances have a low potential to bioconcentrate.

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION

Based on our hazard characterization, the potential environmental hazard is: Moderate

Based on our recommended product application and the product's characteristics, the potential environmental exposure is: Low

If released into the environment, see CERCLA/SUPERFUND in Section 15.



13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it could meet the criteria of a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Before disposal, it should be determined if the waste meets the criteria of a hazardous waste.

Hazardous Waste: D001

Hazardous wastes must be transported by a licensed hazardous waste transporter and disposed of or treated in a properly licensed hazardous waste treatment, storage, disposal or recycling facility. Consult local, state, and federal regulations for specific requirements.

14. TRANSPORT INFORMATION

The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation. Typical Proper Shipping Names for this product are as follows.

LAND TRANSPORT :

Proper Shipping Name :	FLAMMABLE LIQUID, N.O.S.
Technical Name(s) :	ISOPROPANOL
UN/ID No :	UN 1993
Hazard Class - Primary :	3
Packing Group :	III
Flash Point :	73.4 - 100 F / 23 - 37.8 C

AIR TRANSPORT (ICAO/IATA) :

Proper Shipping Name :	FLAMMABLE LIQUID, N.O.S.
Technical Name(s) :	ISOPROPANOL
UN/ID No :	UN 1993
Hazard Class - Primary :	3
Packing Group :	III

MARINE TRANSPORT (IMDG/IMO) :

Proper Shipping Name :	FLAMMABLE LIQUID, N.O.S.
Technical Name(s) :	ISOPROPANOL
UN/ID No :	UN 1993
Hazard Class - Primary :	3
Packing Group :	III



15. REGULATORY INFORMATION

This section contains additional information that may have relevance to regulatory compliance. The information in this section is for reference only. It is not exhaustive, and should not be relied upon to take the place of an individualized compliance or hazard assessment. Condor Energy accepts no liability for the use of this information.

AUSTRALIA

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

EUROPE

The substance(s) in this preparation are included in or exempted from the EINECS or ELINCS inventories

16. OTHER INFORMATION

Due to our commitment to Product Stewardship, we have evaluated the human and environmental hazards and exposures of this product. Based on our recommended use of this product, we have characterized the product's general risk. This information should provide assistance for your own risk management practices. We have evaluated our product's risk as follows:

* The human risk is: Moderate

* The environmental risk is: Low

Any use inconsistent with our recommendations may affect the risk characterization. Our sales representative will assist you to determine if your product application is consistent with our recommendations. Together we can implement an appropriate risk management process.

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to insure safe workplace operations. Please consult your local sales representative for any further information.

REFERENCES

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Condor Energy Services – Safety Data Sheet

CF 100FSE



Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH, (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Prepared By: Condor Energy HSEQ Department
Date issued: 27 March 2014
Version Number: 1.0



CF 110GS

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : **CF110GS**

APPLICATION **Gel Stabiliser**

IMPORTER: Condor Energy Services Ltd
Level 4, 15 Ogilvie Road
Applecross WA 6153
Australia
+61 8 9315 5986

EMERGENCY TELEPHONE NUMBER: +61 430 138 290 (24 Hours)
+65 6542 9595

NFPA 704M/HMIS RATING
HEALTH: 0/1 FLAMMABILITY: 0/0 INSTABILITY: 0/0 OTHER :
0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme * = Chronic Health Hazard

2. COMPOSITION/INFORMATION ON INGREDIENTS

Our hazard evaluation has found that this product is not hazardous under 29 CFR 1910.1200.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

CAUTION

May cause irritation with prolonged contact.
Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of water. Use a mild soap if available.
Wear suitable protective clothing.
Not flammable or combustible.

PRIMARY ROUTES OF EXPOSURE :
Eye, Skin

HUMAN HEALTH HAZARDS - ACUTE :

EYE CONTACT :
May cause irritation with prolonged contact.

SKIN CONTACT :
May cause irritation with prolonged contact.



CF 110GS

INGESTION :

Not a likely route of exposure. There may be irritation to the gastro-intestinal tract with nausea and vomiting.

INHALATION :

Not a likely route of exposure. Repeated or prolonged exposure may irritate the respiratory tract

HUMAN HEALTH HAZARDS - CHRONIC :

No adverse effects expected other than those mentioned above.

4. FIRST AID MEASURES

EYE CONTACT :

Immediately flush with plenty of water for at least 15 minutes. If symptoms develop, seek medical advice.

SKIN CONTACT :

Flush with large amounts of water. Use soap if available. If symptoms develop, seek medical advice.

INGESTION :

Get medical attention. Do not induce vomiting without medical advice. If conscious, washout mouth and give water to drink.

INHALATION :

Remove to fresh air, treat symptomatically. If symptoms develop, seek medical advice.

NOTE TO PHYSICIAN :

Based on the individual reactions of the patient, the physician's judgement should be used to control symptoms and clinical condition.

5. FIRE FIGHTING MEASURES

FLASH POINT : Not applicable

EXTINGUISHING MEDIA :

Not expected to burn. Use extinguishing media appropriate for surrounding fire.

FIRE AND EXPLOSION HAZARD :

Not flammable or combustible.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :

In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.



CF 110GS

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS :

Restrict access to area as appropriate until clean-up operations are complete. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection). Stop or reduce any leaks if it is safe to do so. Ventilate spill area if possible.

METHODS FOR CLEANING UP :

SMALL SPILLS: Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area. **LARGE SPILLS:** Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Clean contaminated surfaces with water or aqueous cleaning agents. Contact an approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

ENVIRONMENTAL PRECAUTIONS :

Do not contaminate surface water.

7. HANDLING AND STORAGE

HANDLING :

Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. Do not breathe vapors/gases/dust. Keep the containers closed when not in use. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Ensure all containers are labeled.

STORAGE CONDITIONS :

Store in suitable labeled containers. Store the containers tightly closed.

SUITABLE CONSTRUCTION MATERIAL :

Shipping and long term storage compatibility with construction materials can vary; we therefore recommend that compatibility is tested prior to use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS :

This product does not contain any substance that has an established exposure limit.

ENGINEERING MEASURES :

General ventilation is recommended. Use local exhaust ventilation if necessary to control airborne mist and vapor.

RESPIRATORY PROTECTION :

Where concentrations in air may exceed the limits given in this section or when significant mists, vapors, aerosols, or dusts are generated, an approved air purifying respirator equipped with suitable filter cartridges is recommended. Consult the respirator / cartridge manufacturer data to verify the suitability of specific devices. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.



CF 110GS

HAND PROTECTION :

When handling this product, the use of chemical gloves is recommended. The choice of work glove depends on work conditions and what chemicals are handled. Please contact the PPE manufacturer for advice on what type of glove material may be suitable. Gloves should be replaced immediately if signs of degradation are observed.

SKIN PROTECTION :

Wear standard protective clothing.

EYE PROTECTION :

Wear safety glasses with side-shields.

HYGIENE RECOMMENDATIONS :

Use good work and personal hygiene practices to avoid exposure. Consider the provision in the work area of a safety shower and eyewash. Always wash thoroughly after handling chemicals. When handling this product never eat, drink or smoke.

HUMAN EXPOSURE CHARACTERIZATION :

Based on our recommended product application and personal protective equipment, the potential human exposure is: Low

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Liquid
APPEARANCE	Colorless Clear
ODOR	None
SPECIFIC GRAVITY	1.2615 - 1.2915 @ 70.0 °F / 21.1 °C
DENSITY	10.53 - 10.78 lb/gal
SOLUBILITY IN WATER	Complete

Note: These physical properties are typical values for this product and are subject to change.

10. STABILITY AND REACTIVITY

STABILITY :

Stable under normal conditions.

HAZARDOUS POLYMERIZATION :

Hazardous polymerization will not occur.

CONDITIONS TO AVOID :

Avoid extremes of temperature.

MATERIALS TO AVOID :

None known



CF 110GS

HAZARDOUS DECOMPOSITION PRODUCTS :
Under fire conditions: None known

11. TOXICOLOGICAL INFORMATION

No toxicity studies have been conducted on this product.

SENSITIZATION :
This product is not expected to be a sensitizer.

CARCINOGENICITY :
None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Hygienists (ACGIH).

HUMAN HAZARD CHARACTERIZATION :
Based on our hazard characterization, the potential human hazard is: Low

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL EFFECTS :

No toxicity studies have been conducted on this product.

MOBILITY :
The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.

If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	Water	Soil/Sediment
<5%	10 - 30%	30 - 50%

The portion in water is expected to be soluble or dispersible.

BIOACCUMULATION POTENTIAL
This preparation or material is not expected to bioaccumulate.

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION
Based on our hazard characterization, the potential environmental hazard is: Low
Based on our recommended product application and the product's characteristics, the potential environmental



CF 110GS

exposure is: Low

If released into the environment, see CERCLA/SUPERFUND in Section 15.

13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it is not a hazardous.

Consult state or local regulation for any additional handling, treatment or disposal requirements. For disposal, contact a properly licensed waste treatment, storage, disposal or recycling facility.

14. TRANSPORT INFORMATION

The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation. Typical Proper Shipping Names for this product are as follows.

LAND TRANSPORT :

Proper Shipping Name : PRODUCT IS NOT REGULATED DURING TRANSPORTATION

AIR TRANSPORT (ICAO/IATA) :

Proper Shipping Name : PRODUCT IS NOT REGULATED DURING TRANSPORTATION

MARINE TRANSPORT (IMDG/IMO) :

Proper Shipping Name : PRODUCT IS NOT REGULATED DURING TRANSPORTATION

15. REGULATORY INFORMATION

This section contains additional information that may have relevance to regulatory compliance. The information in this section is for reference only. It is not exhaustive, and should not be relied upon to take the place of an individualized compliance or hazard assessment. Condor Energy accepts no liability for the use of this information.

AUSTRALIA

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).



CF 110GS

16. OTHER INFORMATION

Due to our commitment to Product Stewardship, we have evaluated the human and environmental hazards and exposures of this product. Based on our recommended use of this product, we have characterized the product's general risk. This information should provide assistance for your own risk management practices. We have evaluated our product's risk as follows:

* The human risk is: Low

* The environmental risk is: Low

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to insure safe workplace operations. Please consult your local sales representative for any further information.

REFERENCES

Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists, OH., (Ariel Insight™ CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Title 29 Code of Federal Regulations, Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA), (Ariel Insight™ CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH, (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Ariel Insight™ (An integrated guide to industrial chemicals covered under major regulatory and advisory programs), North American Module, Western European Module, Chemical Inventories Module and the Generics Module (Ariel Insight™ CD-ROM Version), Ariel Research Corp., Bethesda, MD.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Condor Energy Services – Safety Data Sheet

CF 110GS



Prepared By: Condor Energy HSEQ Department
Date issued: 27 March 2014
Version Number: 1.0

CF 110GS





Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : CF 110HT

Application : Clay Stabiliser

IMPORTER: Condor Energy Services Ltd
Level 4, 15 Ogilvie Road
Applecross WA 6153
Australia
+61 8 9315 5986

EMERGENCY TELEPHONE NUMBER: +61 430 138 290 (24 Hours)
+65 6542 9595

Section: 2. HAZARDS IDENTIFICATION

Hazard classification

Not classified as hazardous according to Safe Work Australia. This product is not classified as a dangerous good according to national or international regulations.

Safety-phrase(s)

Avoid contact with skin and eyes.

Other hazards which do not result in classification

None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Concentration: (%)
Ethylene Glycol	107-21-1	0.1 - 1

Section: 4. FIRST AID MEASURES

In case of eye contact : Rinse with plenty of water. Get medical attention if symptoms occur.

In case of skin contact : Wash off with soap and plenty of water. Get medical attention if symptoms occur.

If swallowed : Rinse mouth. Get medical attention if symptoms occur.

Contact the Poison's Information Centre (eg Australia 13 1126; New

If inhaled : Get medical attention if symptoms occur.

Protection of first-aiders : In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.

Notes to physician : Treat symptomatically.

See toxicological information (Section 11)



Section: 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : None known.
- Specific hazards during firefighting. : Not flammable or combustible.
- Hazardous combustion products : Carbon oxides
- Special protective equipment for firefighters : Use personal protective equipment
- Specific extinguishing methods : Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. In the event of fire and/or explosion do not breathe fumes.



Section: 6. ACCIDENTAL RELEASE MEASURES

Personal precaution protective equipment and emergency procedures	Refer to protective measures listed in sections 7 and 8.
Environmental precautions	Do not allow contact with soil, surface or ground water
Methods and materials for containment and cleaning up	Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Flush away traces with water. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway

Section: 7. HANDLING AND STORAGE

Advice on safe handling	: Wash hands thoroughly after handling. Use only with adequate ventilation.
Conditions for safe storage	: Keep out of reach of children. Keep container tightly closed. Store in suitable labeled containers.
Packaging material	: Suitable material: Keep in properly labelled containers. Unsuitable material: not determined

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Form of exposure	Permissible concentration	Basis
Ethylene Glycol	107-21-1	TWA (Vapour.)	20 ppm 52 mg/m3	AU OEL
		VLE (Vapour.)	40 ppm 104 mg/m3	AU OEL
Ethylene Glycol	107-21-1	WES-Ceiling	50 ppm 127 mg/m3	NZ OEL
Ethylene Glycol	107-21-1	Ceiling	100 mg/m3	ACGIH



Engineering measures : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protective equipment

Eye protection : Safety glasses

Hand protection : Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Skin protection : Wear suitable protective clothing.

Respiratory protection : No personal respiratory protective equipment normally required.

Hygiene measures : Remove and wash contaminated clothing before re-use. Wash hands before breaks and immediately after handling the product. Wash face, hands and any exposed skin thoroughly after handling.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Liquid

Colour : Clear Colorless

Odour : Amine

Flash point : 104.4 °C

pH : 7.0, 100 %

Odour Threshold : no data available

Melting point/freezing point : no data available

Initial boiling point and boiling range : 98.9 °C estimated

Evaporation rate : no data available

Flammability (solid, gas) : no data available

Upper explosion limit : no data available

Lower explosion limit : no data available

Vapour pressure : 0.00666 kPa (25 °C) similar to water



CF 110HT

Relative vapour density	: no data available
Relative density	: 1.10 (15.6 °C)
Density	: no data available
Water solubility	: completely soluble
Solubility in other solvents	: no data available
Partition coefficient: n-octanol/water	: no data available
Auto-ignition temperature	: no data available
Thermal decomposition	: Carbon oxides
Viscosity, dynamic	: no data available
Viscosity, kinematic	: no data available
VOC	: 0.5 %

Section: 10. STABILITY AND REACTIVITY

Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: No dangerous reaction known under conditions of normal use.
Conditions to avoid	: None known.
Incompatible materials	: Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors.
Hazardous decomposition products	: Carbon oxides

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure: Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes	: Health injuries are not known or expected under normal use.
Skin	: Health injuries are not known or expected under normal use.
Ingestion	: Health injuries are not known or expected under normal use.
Inhalation	: Health injuries are not known or expected under normal use.
Chronic Exposure	: Health injuries are not known or expected under normal use.



Experience with human exposure

Eye contact : No symptoms known or expected

Skin contact : No symptoms known or expected

Ingestion : No symptoms known or expected

Inhalation : No symptoms known or expected

Toxicity

Acute oral toxicity : no data available

Acute inhalation toxicity : no data available

Acute dermal toxicity : no data available

Skin corrosion/irritation : no data available

Serious eye damage/eye irritation : no data available

Respiratory or skin sensitization : no data available



- Carcinogenicity : No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
- Reproductive effects : no data available
- Germ cell mutagenicity : no data available
- Teratogenicity : no data available
- STOT - single exposure : no data available
- STOT - repeated exposure : no data available
- Aspiration toxicity : No aspiration toxicity classification

Components

- Acute inhalation toxicity : Ethylene Glycol LC50
rat: 2.725 mg/l
Exposure time: 4 h

Components

- Acute dermal toxicity : Ethylene Glycol
LD50 rabbit: 10,600 mg/kg

HUMAN HAZARD CHARACTERIZATION

Based on our hazard characterization, the potential human hazard is: Low

Section: 12. ECOLOGICAL INFORMATION

Ecotoxicity

- Toxicity to fish : no data available
- Toxicity to daphnia and other aquatic invertebrates. no data available
- Toxicity to algae : no data available

Persistence and degradability

no data available

Mobility

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.

If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

- Air : <5%



Water : 30 - 50%
Soil : 50 - 70%

The portion in water is expected to be soluble or dispersible.

Bioaccumulative potential

This preparation or material is not expected to bioaccumulate.

Other information

no data available

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION

Based on our hazard characterization, the potential environmental hazard is: Low

Section: 13. DISPOSAL CONSIDERATIONS

Disposal methods : Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.

Disposal considerations : Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport

Proper shipping name : PRODUCT IS NOT REGULATED DURING TRANSPORTATION

Air transport (IATA)

Proper shipping name : PRODUCT IS NOT REGULATED DURING TRANSPORTATION

Sea Transport (IMDG/IMO)

Proper shipping name : PRODUCT IS NOT REGULATED DURING TRANSPORTATION



Section: 15. REGULATORY INFORMATION

Standard for the Uniform : Schedule 6
Scheduling of Medicines and
Poisons

INTERNATIONAL CHEMICAL CONTROL LAWS :

TOXIC SUBSTANCES CONTROL ACT (TSCA)

The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)

The substance(s) in this preparation are included in or exempted from the Domestic Substance List (DSL).

AUSTRALIA

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

CHINA

All substances in this product comply with the Provisions on the Environmental Administration of New Chemical Substances and are listed on or exempt from the Inventory of Existing Chemical Substances China (IECSC).

EUROPE

This product contains substance(s) which are not in compliance with the European Commission Directive 67/548/EEC and may require additional review.

JAPAN

All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Existing and New Chemical Substances list (ENCS).

KOREA

All substances in this product comply with the Toxic Chemical Control Law (TCCL) and are listed on the Existing Chemicals List (ECL)

PHILIPPINES

All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).

Section: 16. OTHER INFORMATION

REFERENCES

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Condor Energy Services – Safety Data Sheet

CF 110HT



Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH, (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Prepared By: Condor Energy HSEQ Department
Date issued: 27 March 2014
Version Number: 1.0

Condor Energy Services – Safety Data Sheet

CF 120HT



1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: CF 120HT
APPLICATION: BIOCIDES
IMPORTER IDENTIFICATION: Condor Energy Services Ltd
Level 4, 15 Ogilvie Road
Applecross WA 6153
Australia
+61 8 9315 5986

EMERGENCY TELEPHONE NUMBER(S): +65 6542 9595
+ 61 430 138 290

2. HAZARDS IDENTIFICATION

HAZARD CLASSIFICATION : TOXIC, CORROSIVE

This product is classified as hazardous according to the Safe Work Australia. This product is classified as a dangerous good only when transported by air (IATA regulations).

RISK PHRASES

R22 - Harmful if swallowed.
R23 - Toxic by inhalation.
R34 - Causes burns.
R42/43 - May cause sensitization by inhalation and skin contact.

SAFETY PHRASES

S23 - Do not breathe vapor.
S24/25 - Avoid contact with skin and eyes.
S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection.
S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

3. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS NO	% (w/w)
Glutaraldehyde	111-30-8	10 - 30
The balance of the substances in this product are not classified as hazardous or are present below hazard cut-off limits		



4. FIRST AID MEASURES

EYE CONTACT :

PROMPT ACTION IS ESSENTIAL IN CASE OF CONTACT. Immediately flush eye with water for at least 15 minutes while holding eyelids open. If only one eye is affected be sure to use care not to contaminate the other eye with the run-off. Get immediate medical attention.

SKIN CONTACT :

Immediately flush with plenty of water for at least 15 minutes. For a large splash, flood body under a shower. Remove contaminated clothing. Wash off affected area immediately with plenty of water. Get immediate medical attention. Contaminated leather articles such as shoes or belts must be discarded.

INGESTION :

Get immediate medical attention. DO NOT INDUCE VOMITING. If conscious, washout mouth and give water to drink.

DO NOT INDUCE VOMITING. Do not give anything to drink. Get immediate medical attention. Contact the Poison's Information Centre (eg Australia 13 1126; New Zealand 0800 764 766).

INHALATION :

Get immediate medical attention. Remove to fresh air. If breathing is difficult, administer oxygen.

NOTE TO PHYSICIAN :

As mucosal damage may occur following oral exposure to glutaraldehyde solutions, dilution with limited amounts of fluid is usually appropriate, as long as there are no contraindications. If there are no contraindications, rinse mouth several times with cool water, then have the patient sip cool water to a maximum of 250 mL (for adults).

Contraindications include respiratory distress, altered mental status, severe abdominal pain, nausea or vomiting, inability to swallow (or a refusal to drink) or the patient not protecting their own airway.

5. FIRE FIGHTING MEASURES

FLASH POINT : Not flammable

HAZCHEM CODE : 3Z

EXTINGUISHING MEDIA :

This product would not be expected to burn unless all the water is boiled away. The remaining organics may be ignitable. Use extinguishing media appropriate for surrounding fire.

FIRE AND EXPLOSION HAZARD :

May evolve oxides of carbon (COx) under fire conditions. Not flammable or combustible.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :

In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.

SENSITIVITY TO STATIC DISCHARGE :

Not expected to be sensitive to static discharge.



6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS :

Restrict access to area as appropriate until clean-up operations are complete. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection). Stop or reduce any leaks if it is safe to do so. Ventilate spill area if possible. Ensure clean-up is conducted by trained personnel only. Do not touch spilled material. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Notify appropriate government, occupational health and safety and environmental authorities.

METHODS FOR CLEANING UP :

SMALL SPILLS: Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area. **LARGE SPILLS:** Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Wash site of spillage thoroughly with water. Dilute the glutaraldehyde to 5% or less with water. Add sodium bisulfite (2-3 parts by weight per part glutaraldehyde). This will typically reduce the glutaraldehyde concentration to 2 ppm or less in 5 minutes at room temperature. The remaining solution can be disposed of via appropriate means. Contact an approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

ENVIRONMENTAL PRECAUTIONS :

Very toxic to aquatic organisms., Prevent material from entering sewers or waterways., If drains, streams, soil or sewers become contaminated, notify local authority.

7. HANDLING AND STORAGE

HANDLING :

Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. Do not breathe vapors/gases/dust. Keep the containers closed when not in use. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Ensure all containers are labeled. Discard contaminated shoes, belts and other articles made of leather.

STORAGE CONDITIONS :

Store in suitable labeled containers. Store the containers tightly closed.

SUITABLE CONSTRUCTION MATERIAL :

PVC, Plexiglass, Perfluoroelastomer, Polytetrafluoroethylene/polypropylene copolymer, HDPE (high density polyethylene), Ethylene propylene, Polypropylene, Polyethylene, Stainless Steel 304, Stainless Steel 316L, Hastelloy C-276, Aluminum, Brass

UNSUITABLE CONSTRUCTION MATERIAL :

Copper, Mild steel, EPDM, Nylon, Natural rubber, Polyurethane, Chlorosulfonated polyethylene rubber, Fluoroelastomer, Neoprene, PTFE



8.	EXPOSURE CONTROLS/PERSONAL PROTECTION
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OCCUPATIONAL EXPOSURE LIMITS

The following component(s) have been assigned an exposure standard by Safe Work Australia (Australia) and/or other Agencies:

Country/Source	Substance(s)	Basis	ppm	mg/m ³
AUSTRALIA	Glutaraldehyde	Peak limit	0.1	0.41
USA	Glutaraldehyde	NIOSH REL/Ceiling	0.2	0.8
		Skin * ACGIH/Ceiling	0.05	

* A skin notation refers to the potential significant contribution to overall exposure by the cutaneous route, including mucous membranes and the eyes.

MONITORING MEASURES :

A small volume of air is drawn through an absorbant or barrier to trap the substance(s) which can then be desorbed or removed and analyzed as referenced below:

Substance(s)	Method	Analysis	Absorbant
Glutaraldehyde	UK MDHS: 93	High pressure liquid chromatography	

Glass fibre filter treated with Dinitrophenyl hydrazine

ENGINEERING MEASURES :

The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fumehood. Provide mechanical ventilation of confined spaces.

PERSONAL PROTECTION RESPIRATORY PROTECTION:

If the occupational exposure limit is likely to be exceeded, an approved respirator must be selected and used in accordance with AS/NZS 1715 and AS/NZS 1716. An organic vapor cartridge with dust/mist prefilter may be used. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

HAND PROTECTION :

Impervious gloves Neoprene gloves Nitrile gloves PVC gloves Viton# gloves

SKIN PROTECTION :

When handling this product, the use of a chemical resistant suit and rubber boots is recommended. A full slicker suit is recommended if gross exposure is possible.

EYE PROTECTION :

Wear a face shield with chemical splash goggles.



HYGIENE RECOMMENDATIONS :

Use good work and personal hygiene practices to avoid exposure. Eye wash station and safety shower are necessary. If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse. Always wash thoroughly after handling chemicals. When handling this product never eat, drink or smoke.

9.	PHYSICAL AND CHEMICAL PROPERTIES
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PHYSICAL STATE	Liquid
APPEARANCE	Light yellow
ODOR	Pungent
pH (100 %)	3.1 - 4.5 ASTM E-70
VAPOR PRESSURE	2.13 kPa (20 °C)
VAPOR DENSITY	No data available.
SPECIFIC GRAVITY	1.0605 - 1.0725 (20 °C)
DENSITY	No data available.
SOLUBILITY IN WATER	Complete
VISCOSITY	3.4 cps (20.6 °C) ASTM D-2983
VISCOSITY	2.71 cst (20 °C)
VISCOSITY	1.4 cst (40 °C) ASTM D-445
MELTING POINT	-4 °C
BOILING POINT	101 °C
FLASH POINT	Not flammable
LOWER EXPLOSION LIMIT	No data available.
UPPER EXPLOSION LIMIT	No data available.
AUTOIGNITION TEMPERATURE	No data available.

Note: These physical properties are typical values for this product and are subject to change.

10.	STABILITY AND REACTIVITY
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STABILITY :

Stable under normal conditions.

CONDITIONS TO AVOID

: Extremes of temperature

INCOMPATIBLE MATERIALS :

Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors. Strong Bases Strong acids Contact with these may cause a heat-generating reaction which is not expected to be violent.

HAZARDOUS DECOMPOSITION PRODUCTS :

Under fire conditions: Oxides of carbon

HAZARDOUS REACTIONS :

Hazardous polymerization will not occur.



11.	TOXICOLOGICAL INFORMATION
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OVERVIEW OF HEALTH HAZARDS

ACUTE HAZARDS - EYE CONTACT

Corrosive. Will cause eye burns and permanent tissue damage. Vapors can cause watering of the eyes.

ACUTE HAZARDS - SKIN CONTACT

May cause severe irritation or tissue damage depending on the length of exposure and the type of first aid administered. Prolonged or widespread contact may result in the absorption of potentially harmful amounts of material. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Contact may cause staining.

ACUTE HAZARDS - INGESTION

Not a likely route of exposure. Harmful if swallowed. Corrosive; causes chemical burns to the mouth, throat and stomach. Small amounts of this liquid drawn into the lungs from swallowing or vomiting may cause severe health effects (e.g. bronchopneumonia or pulmonary edema).

ACUTE HAZARDS - INHALATION

Toxic by inhalation. Irritating to the eyes, nose, throat and lungs. Inhalation of product mist or vapors may cause respiratory allergy.

CHRONIC HAZARDS :

No adverse effects expected other than those mentioned above.

SUMMARY OF TOXICITY INFORMATION

ACUTE TOXICITY DATA :

The following results are for the active components.

ACUTE ORAL TOXICITY :

Species:	Rat
LD50:	1.87 mg/kg
Test Descriptor:	25% Active Ingredient Glutaraldehyde
Species:	Rat
LD50:	1.07 - 1.62 ml/kg
Test Descriptor:	10% Active Ingredient

ACUTE DERMAL TOXICITY :

Species:	Rabbit
LD50:	8.0-12.8 ml/kg
Test Descriptor:	25% Active Ingredient Glutaraldehyde

ACUTE INHALATION TOXICITY :

Species:	Rat
LC50:	20.4 mg/L (4 hrs)
Test Descriptor:	Glutaraldehyde



SENSITIZATION :

Levels of greater than 0.2% of glutaraldehyde produced allergic contact dermatitis in human studies. May cause sensitization by inhalation and skin contact.

CARCINOGENICITY :

None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Hygienists (ACGIH).

TERATOGENICITY AND EMBRYOTOXICITY :

Doses of 25 and 50 mg/kg given by gavage to pregnant rats produced decreases in maternal body weight. There were no other indications of maternal toxicity nor was there evidence of fetotoxicity or external, visceral or skeletal abnormalities. Mice (CD-1 strain) given 100 mg/kg by gavage showed fetotoxicity as evidenced by decreased body weight. At lower doses, there was no evidence of fetotoxicity or skeletal abnormalities. No evidence of teratogenic effects were noted in either species.

MUTAGENICITY :

Mutagenicity in vitro tests of Chinese hamster ovary, sister chromatid exchange and unscheduled DNA synthesis did not produce dose-related responses. Oral doses of 30 and 60 mg/kg to mice showed no effect in the dominant lethal assay. In all five strains of Salmonella, with and without metabolic activation by S9 liver homogenate, no mutagenic response was noted.

For additional information on the hazard of the preparation, please consult section 2 and 12.

HUMAN HAZARD CHARACTERIZATION

Based on our hazard characterization, the potential human hazard is: High

12	ECOLOGICAL INFORMATION
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ECOTOXICOLOGICAL EFFECTS :

The following results are for the active

components. Acute Fish Results :

Species	Exposure	Test Type	Value	Test Descriptor
Rainbow Trout	96 hrs	LC50	42.1 mg/l	25% Active Ingredient (Glutaraldehyde)
Bluegill Sunfish	96 hrs	LC50	37.6 mg/l	25% Active Ingredient (Glutaraldehyde)

ACUTE INVERTEBRATE RESULTS :

Species	Exposure	Test Type	Value	Test Descriptor
Daphnia magna	48 hrs	LC50	16.9 mg/l	25% Active Ingredient (Glutaraldehyde)



AQUATIC MICROORGANISM RESULTS :

Species	Exposure	Test Type	Value	Test Descriptor
Sewage Microorganisms	96 hrs	LC50	17 mg/l	25% Active Ingredient (Glutaraldehyde)
Sewage Microorganisms	96 hrs	NOEC	5 mg/l	25% Active Ingredient (Glutaraldehyde)

AVIAN RESULTS :

Species	Exposure	Test Type	Value	Test Descriptor
Mallard Duck		LD50	1,631 mg/kg	25% Active Ingredient
Mallard Duck		LD50	933 mg/kg	50% Active Ingredient

MOBILITY AND BIOACCUMULATION POTENTIAL :

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.

If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	Water	Soil/Sediment
<5%	30 - 50%	50 - 70%

The portion in water is expected to be soluble or dispersible. This preparation or material is not expected to bioaccumulate.

PERSISTENCY AND DEGRADATION :

The organic portion of this preparation is expected to be readily biodegradable.

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION

Based on our hazard characterization, the potential environmental hazard is: High

13. DISPOSAL CONSIDERATIONS

Hazardous wastes must be transported by a licensed hazardous waste transporter and disposed of or treated in a properly licensed hazardous waste treatment, storage, disposal or recycling facility. Consult local, state, and federal regulations for specific requirements.

Empty drums should be taken for recycling, recovery, or disposal through a suitably qualified or licensed contractor.

SPECIAL PRECAUTIONS FOR LANDFILL OR INCINERATION :
No additional special precautions have been identified.

14.	TRANSPORT INFORMATION
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The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation. Typical Proper Shipping Names for this product are as follows.

LAND TRANSPORT

Proper Shipping Name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

Technical Name(s) : Glutaraldehyde
UN/ID No : UN 3082
Hazard Class - Primary : 9
Packing Group : III
HAZCHEM CODE : 3Z
SPECIAL PRECAUTIONS FOR USER : Dangerous goods of Class 9 (Miscellaneous - not fire risk substance, not combustible liquid) are incompatible in a placard load with any of the following:
Class 1 Explosives

AIR TRANSPORT (ICAO/IATA)

Proper Shipping Name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

Technical Name(s) : Glutaraldehyde
UN/ID No : UN 3082
Hazard Class - Primary : 9
Packing Group : III

MARINE TRANSPORT (IMDG/IMO)

Proper Shipping Name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

Technical Name(s) : Glutaraldehyde
UN/ID No : UN 3082
Hazard Class - Primary : 9
Packing Group : III
EmS-Nr. : F-A, S-F
*Marine Pollutant : Glutaraldehyde



15. REGULATORY INFORMATION

AUSTRALIA :

NICNAS

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

SUSDP SCHEDULE :

S6

16. OTHER INFORMATION

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to insure safe workplace operations. Please consult your local sales representative for any further information.

REFERENCES

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH, (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Prepared By: Condor Energy HSEQ Department
Date issued: 27 March 2014
Version Number: 1.0

Condor Energy Services – Safety Data Sheet

CF 200



1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **CF 200**

APPLICATION: Friction Reducer

IMPORTER IDENTIFICATION: Condor Energy Services Ltd
Level 4, 15 Ogilvie Road
Applecross WA 6153
Australia
+61 8 9315 5986

EMERGENCY TELEPHONE NUMBER(S): +61 430 138 290 (24 Hours)
+65 6542 9595

2. HAZARDS IDENTIFICATION

HAZARD CLASSIFICATION :

Not classified as hazardous according to Safe Work Australia. This product is not classified as a dangerous good according to national or international regulations.

SAFETY PHRASES

S24/25 - Avoid contact with skin and eyes.

S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection.

3. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS NO	% (w/w)
Ingredients determined not to be hazardous		100



4. FIRST AID MEASURES

EYE CONTACT :

Flush affected area with water. If symptoms develop, seek medical advice.

SKIN CONTACT :

Flush affected area with water. If symptoms develop, seek medical advice.

INGESTION :

DO NOT INDUCE VOMITING. If conscious, washout mouth and give water to drink. If symptoms develop, seek medical advice.

INHALATION :

Remove to fresh air, treat symptomatically. If symptoms develop, seek medical advice.

NOTE TO PHYSICIAN :

Based on the individual reactions of the patient, the physician's judgement should be used to control symptoms and clinical condition.

5. FIRE FIGHTING MEASURES

FLASH POINT : Not flammable

EXTINGUISHING MEDIA :

This product would not be expected to burn unless all the water is boiled away. The remaining organics may be ignitable. Use extinguishing media appropriate for surrounding fire.

FIRE AND EXPLOSION HAZARD :

May evolve oxides of carbon (COx) under fire conditions. May evolve oxides of nitrogen (NOx) and sulfur (SOx) under fire conditions.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :

In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.

SENSITIVITY TO STATIC DISCHARGE :

Not expected to be sensitive to static discharge.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS :

Restrict access to area as appropriate until clean-up operations are complete. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection). Stop or reduce any leaks if it is safe to do so. Ventilate spill area if possible. Notify appropriate government, occupational health and safety and environmental authorities.

METHODS FOR CLEANING UP :

SMALL SPILLS: Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area. **LARGE SPILLS:** Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Clean contaminated surfaces with water or aqueous cleaning agents. Contact an approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).



CF 200

ENVIRONMENTAL PRECAUTIONS :

Do not contaminate surface water.

7. HANDLING AND STORAGE

HANDLING :

Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. Keep the containers closed when not in use. Ensure all containers are labeled.

STORAGE CONDITIONS :

Store in suitable labeled containers. Store the containers tightly closed. Store separately from oxidizers.

SUITABLE CONSTRUCTION MATERIAL :

Stainless Steel 304, Neoprene, Viton, Buna-N, Polypropylene, Polyethylene, Polyurethane, EPDM, Epoxy phenolic resin, HDPE (high density polyethylene), PVC

UNSUITABLE CONSTRUCTION MATERIAL :

Brass, Hypalon, Mild steel

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS

None of the components have been assigned an exposure standard by Safe Work Australia (Australia) or EPA (New Zealand).

ENGINEERING MEASURES :

General ventilation is recommended.

PERSONAL PROTECTION

RESPIRATORY PROTECTION :

Respiratory protection is not normally needed.

HAND PROTECTION :

NEOPRENE, NITRILE, OR PVC GLOVES Breakthrough time not determined as preparation, consult PPE manufacturers.

SKIN PROTECTION :

Wear standard protective clothing.

EYE PROTECTION :

Wear safety glasses with side-shields.

HYGIENE RECOMMENDATIONS :

Use good work and personal hygiene practices to avoid exposure. Keep an eye wash fountain available. Keep a safety shower available. If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse. Always wash thoroughly after handling chemicals. When handling this product never eat, drink or smoke.

ENVIRONMENTAL EXPOSURE CONTROL PRECAUTIONS :

Consider the provision of containment around storage vessels.

CF 200

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Liquid
APPEARANCE	Milky White
ODOR	Mild
pH	No data available.
VAPOR PRESSURE	No data available.
VAPOR DENSITY	No data available.
SPECIFIC GRAVITY	1.198 - 1.225 (23.88 °C)
DENSITY	No data available.
SOLUBILITY IN WATER	Complete
OCTANOL/WATER COEFFICIENT (log Kow)	-0.9 Product (estimated) OECD 117
MELTING POINT	No data available.
BOILING POINT	No data available.
FLASH POINT	Not flammable
LOWER EXPLOSION LIMIT	No data available.
UPPER EXPLOSION LIMIT	No data available.
AUTOIGNITION TEMPERATURE	No data available.

Note: These physical properties are typical values for this product and are subject to change.

10. STABILITY AND REACTIVITY

STABILITY :

Stable under normal conditions.

CONDITIONS TO AVOID

: Extremes of temperature

INCOMPATIBLE MATERIALS :

Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors. SO₂ may react with vapors from neutralizing amines and may produce a visible cloud of amine salt particles.

HAZARDOUS DECOMPOSITION PRODUCTS :

Under fire conditions: Oxides of carbon, Oxides of nitrogen, Oxides of sulfur

HAZARDOUS REACTIONS :

Hazardous polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

OVERVIEW OF HEALTH HAZARDS

ACUTE HAZARDS - EYE CONTACT

May cause irritation with prolonged contact.

ACUTE HAZARDS - SKIN CONTACT

May cause irritation with prolonged contact.

Condor Energy Services – Safety Data Sheet



CF 200

ACUTE HAZARDS - INGESTION

Not a likely route of exposure. No adverse effects expected.

ACUTE HAZARDS - INHALATION

Not a likely route of exposure. No adverse effects expected.

CHRONIC HAZARDS :

No adverse effects expected other than those mentioned above.

SUMMARY OF TOXICITY INFORMATION

ACUTE TOXICITY DATA :

No toxicity studies have been conducted on this product.

SENSITIZATION :

This product is not expected to be a sensitizer.

CARCINOGENICITY :

None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Hygienists (ACGIH).

For additional information on the hazard of the preparation, please consult section 2 and 12.

HUMAN HAZARD CHARACTERIZATION

Based on our hazard characterization, the potential human hazard is: Low

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL EFFECTS:

The following results are for the product.

AQUATIC PLANT RESULTS :

Species	Exposure	Test Type	Value	Test Descriptor
Marine Algae (Skeletonema costatum)	72 hrs	LC50	165.54 mg/l	Product
Marine Algae (Skeletonema costatum)	72 hrs	NOEC	10 mg/l	Product

MOBILITY AND BIOACCUMULATION POTENTIAL :

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.

Condor Energy Services – Safety Data Sheet



CF 200

If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	Water	Soil/Sediment
<5%	10 - 30%	70 - 90%

The portion in water is expected to be soluble or dispersible.

This preparation or material is not expected to bioaccumulate.

PERSISTENCY AND DEGRADATION :

The organic portion of this preparation is expected to be inherently biodegradable.

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION

Based on our hazard characterization, the potential environmental hazard is: Moderate

13. DISPOSAL CONSIDERATIONS

Dispose of wastes in an approved waste treatment / disposal site, in accordance with all applicable regulations. Do not dispose of wastes in local sewer or with normal garbage.

Triple rinse (or equivalent) all containers and offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

14. TRANSPORT INFORMATION

The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation. Typical Proper Shipping Names for this product are as follows.

LAND TRANSPORT

Proper Shipping Name :

PRODUCT IS NOT REGULATED DURING TRANSPORTATION

AIR TRANSPORT (ICAO/IATA)

Proper Shipping Name :

PRODUCT IS NOT REGULATED DURING TRANSPORTATION

MARINE TRANSPORT (IMDG/IMO)

Proper Shipping Name :

PRODUCT IS NOT REGULATED DURING TRANSPORTATION

15. REGULATORY INFORMATION

AUSTRALIA :

NICNAS

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

SUSDP SCHEDULE :

Not Listed

Ver 1.0

27 March 2014



16. OTHER INFORMATION

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to insure safe workplace operations. Please consult your local sales representative for any further information.

REFERENCES

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH, (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Prepared By: Condor Energy HSEQ Department
Date issued: 27 March 2014
Version Number: 1.0



1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: CF200PH
APPLICATION: Buffer
IMPORTER: Condor Energy Services Ltd
 Level 4, 15 Ogilvie Road
 Applecross WA 6153
 Australia
 +61 8 9315 5986
EMERGENCY TELEPHONE NUMBER: +61 430 138 290 (24 Hours)
 +65 6542 9595

NFPA 704M/HMIS RATING
HEALTH: 3/3 **FLAMMABILITY:** 0/0 **INSTABILITY:** 0/0 **OTHER:**
 0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme * = Chronic Health Hazard

2. COMPOSITION/INFORMATION ON INGREDIENTS

Our hazard evaluation has identified the following chemical substance(s) as hazardous. Consult Section 15 for the nature of the hazard(s).

Hazardous Substance(s)	CAS NO	% (w/w)
Potassium Hydroxide	1310-58-3	10.0 - 30.0
Inorganic salt	Proprietary	10.0 - 30.0

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER

Corrosive. May cause tissue damage. Harmful if swallowed.
 Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of water. Use a mild soap if available.
 Wear a face shield. Wear chemical resistant apron, chemical splash goggles, impervious gloves and boots.
 Not flammable or combustible.



CF 200PH

PRIMARY ROUTES OF EXPOSURE:

Eye, Skin

HUMAN HEALTH HAZARDS - ACUTE:

EYE CONTACT:

Corrosive. Will cause eye burns and permanent tissue damage.

SKIN CONTACT :

Corrosive; causes permanent skin damage.

INGESTION :

Not a likely route of exposure. Corrosive; causes chemical burns to the mouth, throat and stomach. Harmful if swallowed.

INHALATION :

Not a likely route of exposure. Elevated temperatures or mechanical action may form vapors, mists or fumes which may be irritating to the eyes, nose, throat and lungs.

4. FIRST AID MEASURES

EYE CONTACT :

Get immediate medical attention. PROMPT ACTION IS ESSENTIAL IN CASE OF CONTACT. Immediately flush eye with water for at least 15 minutes while holding eyelids open.

SKIN CONTACT :

Immediately flush with plenty of water for at least 15 minutes. Use a mild soap if available. For a large splash, flood body under a shower. Get immediate medical attention. Contaminated clothing, shoes, and leather goods must be discarded or cleaned before re-use.

INGESTION :

Get immediate medical attention. DO NOT INDUCE VOMITING. If conscious, washout mouth and give water to drink.

INHALATION :

Remove to fresh air, treat symptomatically. Get immediate medical attention.

NOTE TO PHYSICIAN :

Probable mucosal damage may contraindicate the use of gastric lavage. Based on the individual reactions of the patient, the physician's judgement should be used to control symptoms and clinical condition.

5. FIRE FIGHTING MEASURES

FLASH POINT : Not applicable

EXTINGUISHING MEDIA :

Not expected to burn. Use extinguishing media appropriate for surrounding fire.

FIRE AND EXPLOSION HAZARD :

Not flammable or combustible.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :

In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.



CF 200PH

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS :

Restrict access to area as appropriate until clean-up operations are complete. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection). Stop or reduce any leaks if it is safe to do so. Keep people away from and upwind of spill/leak. Ventilate spill area if possible. Ensure clean-up is conducted by trained personnel only. Do not touch spilled material. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Notify appropriate government, occupational health and safety and environmental authorities.

METHODS FOR CLEANING UP :

SMALL SPILLS: Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area. **LARGE SPILLS:** Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Clean contaminated surfaces with water or aqueous cleaning agents. Contact an approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

ENVIRONMENTAL PRECAUTIONS :

Do not contaminate surface water.

7. HANDLING AND STORAGE

HANDLING :

Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. Do not breathe vapors/gases/dust. Keep the containers closed when not in use. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Ensure all containers are labeled. Do not mix with acids.

STORAGE CONDITIONS :

Store in suitable labeled containers. Store the containers tightly closed. Store separately from acids.

SUITABLE CONSTRUCTION MATERIAL :

Shipping and long term storage compatibility with construction materials can vary; we therefore recommend that compatibility is tested prior to use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS :

Exposure guidelines have not been established for this product. Available exposure limits for the substance(s) are shown below.

Substance(s)	Category:	ppm	mg/m3	Non-Standard Unit
Potassium Hydroxide	ACGIH/Ceiling		2	

ENGINEERING MEASURES :

General ventilation is recommended. Use local exhaust ventilation if necessary to control airborne mist and vapor.



CF 200PH

RESPIRATORY PROTECTION :

Where concentrations in air may exceed the limits given in this section or when significant mists, vapors, aerosols, or dusts are generated, an approved air purifying respirator equipped with suitable filter cartridges is recommended. Consult the respirator / cartridge manufacturer data to verify the suitability of specific devices. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

HAND PROTECTION :

When handling this product, the use of chemical gauntlets is recommended. The choice of work glove depends on work conditions and what chemicals are handled. Please contact the PPE manufacturer for advice on what type of glove material may be suitable. Gloves should be replaced immediately if signs of degradation are observed.

SKIN PROTECTION :

Wear chemical resistant apron, chemical splash goggles, impervious gloves and boots. A full slicker suit is recommended if gross exposure is possible.

EYE PROTECTION :

Wear a face shield with chemical splash goggles.

HYGIENE RECOMMENDATIONS :

Use good work and personal hygiene practices to avoid exposure. Eye wash station and safety shower are necessary. If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse. Always wash thoroughly after handling chemicals. When handling this product never eat, drink or smoke.

HUMAN EXPOSURE CHARACTERIZATION :

Based on our recommended product application and personal protective equipment, the potential human exposure is: Low

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Liquid
APPEARANCE	Colorless Clear
ODOR	None
SPECIFIC GRAVITY	1.37 @ 70.0 °F / 21.1 °C
DENSITY	11.4 lb/gal
SOLUBILITY IN WATER	Complete
pH (100.0 %)	> 13.0
INITIAL BOILING POINT	212.0 °F / 100.0 °C
VAPOR PRESSURE	< 5.1 mm Hg @ 100.0 °F / 37.7 °C

Note: These physical properties are typical values for this product and are subject to change.



CF 200PH

10. STABILITY AND REACTIVITY

STABILITY :

Stable under normal conditions.

HAZARDOUS POLYMERIZATION :

Hazardous polymerization will not occur.

CONDITIONS TO AVOID :

Avoid extremes of temperature.

MATERIALS TO AVOID :

Acids Contact with strong acids (e.g. sulfuric, phosphoric, nitric, hydrochloric, chromic, sulfonic) may generate heat, splattering or boiling and toxic vapors.

HAZARDOUS DECOMPOSITION PRODUCTS :

Under fire conditions: None known

11. TOXICOLOGICAL INFORMATION

No toxicity studies have been conducted on this product.

SENSITIZATION :

This product is not expected to be a sensitizer.

CARCINOGENICITY :

None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Hygienists (ACGIH).

HUMAN HAZARD CHARACTERIZATION :

Based on our hazard characterization, the potential human hazard is: High



12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL EFFECTS :

No toxicity studies have been conducted on this product.

MOBILITY :

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.

If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	Water	Soil/Sediment
<5%	30 - 50%	50 - 70%

The portion in water is expected to be soluble or dispersible.

BIOACCUMULATION POTENTIAL

This preparation or material is not expected to bioaccumulate.

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION

Based on our hazard characterization, the potential environmental hazard is: Low

Based on our recommended product application and the product's characteristics, the potential environmental exposure is: Low

If released into the environment, see CERCLA/SUPERFUND in Section 15.

13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it could meet the criteria of a hazardous waste.

Hazardous wastes must be transported by a licensed hazardous waste transporter and disposed of or treated in a properly licensed hazardous waste treatment, storage, disposal or recycling facility. Consult local, state, and federal regulations for specific requirements.

14. TRANSPORT INFORMATION

The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation. Typical Proper Shipping Names for this product are as follows.



CF 200PH

LAND TRANSPORT :

Proper Shipping Name :	POTASSIUM HYDROXIDE SOLUTION
Technical Name(s) :	Potassium Hydroxide
UN/ID No :	UN 1814
Hazard Class - Primary :	8
Packing Group :	II
Flash Point :	Not applicable
Reportable Quantity (per package) :	8,890 lbs
RQ Component :	POTASSIUM HYDROXIDE

AIR TRANSPORT (ICAO/IATA) :

The presence of an RQ component (Reportable Quantity for U.S. EPA and DOT) in this product causes it to be regulated with an additional description of RQ for road, or as a class 9 for road and air, ONLY when the net weight in the package exceeds the calculated RQ for the product.

Proper Shipping Name :	POTASSIUM HYDROXIDE SOLUTION
Technical Name(s) :	Potassium Hydroxide
UN/ID No :	UN 1814
Hazard Class - Primary :	8
Packing Group :	II
Reportable Quantity (per package) :	8,890 lbs
RQ Component :	POTASSIUM HYDROXIDE

MARINE TRANSPORT (IMDG/IMO) :

Proper Shipping Name :	POTASSIUM HYDROXIDE SOLUTION
Technical Name(s) :	Potassium Hydroxide
UN/ID No :	UN 1814
Hazard Class - Primary :	8
Packing Group :	II

15. REGULATORY INFORMATION

This section contains additional information that may have relevance to regulatory compliance. The information in this section is for reference only. It is not exhaustive, and should not be relied upon to take the place of an individualized compliance or hazard assessment. Condor Energy Services accepts no liability for the use of this information.



16. OTHER INFORMATION

Due to our commitment to Product Stewardship, we have evaluated the human and environmental hazards and exposures of this product. Based on our recommended use of this product, we have characterized the product's general risk. This information should provide assistance for your own risk management practices. We have evaluated our product's risk as follows:

* The human risk is: Low

* The environmental risk is: Low

Any use inconsistent with our recommendations may affect the risk characterization. Our sales representative will assist you to determine if your product application is consistent with our recommendations. Together we can implement an appropriate risk management process.

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to insure safe workplace operations. Please consult your local sales representative for any further information.

REFERENCES

Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists, OH., (Ariel Insight™ CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Title 29 Code of Federal Regulations, Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA), (Ariel Insight™ CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH, (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Ariel Insight™ (An integrated guide to industrial chemicals covered under major regulatory and advisory programs), North American Module, Western European Module, Chemical Inventories Module and the Generics Module (Ariel Insight™ CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Condor Energy Services – Safety Data Sheet

CF 200PH



The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version),
Micromedex, Inc., Englewood, CO.

Prepared By: Condor Energy HSEQ Department
Date issued: 27 March 2014
Version Number: 1.0



CF 305DXL

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **CF 305DXL**

APPLICATION: **FRACTURING ADDITIVE**

IMPORTER: **Condor Energy Services Ltd
Level 4, 15 Ogilvie Road
Applecross WA 6153
Australia
+61 8 9315 5986**

EMERGENCY TELEPHONE NUMBER: **+61 430 138 290 (24 Hours)

+65 6542 9595**

NFPA 704M/HMIS RATING

HEALTH: 2/2* FLAMMABILITY: 1/1 INSTABILITY: 0/0 OTHER: 0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme * = Chronic Health Hazard

2. COMPOSITION/INFORMATION ON INGREDIENTS

Our hazard evaluation has identified the following chemical substance(s) as hazardous. Consult Section 15 for the nature of the hazard(s).

Hazardous Substance(s)	CAS NO	% (w/w)
Ulexite	1319-33-1	30.0 - 60.0
Alkyl Alcohol	Proprietary	5.0 - 10.0
Sulfur compound	Proprietary	1.0 - 5.0

3. HAZARDS IDENTIFICATION

****EMERGENCY OVERVIEW****

DANGER

Irritating to eyes, respiratory system and skin. May impair fertility. May cause harm to the unborn child. Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of water. Use a mild soap if available. Wear suitable protective clothing and gloves. Wear chemical splash goggles. May evolve oxides of carbon (COx) under fire conditions. May evolve oxides of nitrogen (NOx) under fire conditions.

PRIMARY ROUTES OF EXPOSURE :
Eye, Skin



CF 305DXL

HUMAN HEALTH HAZARDS - ACUTE :

EYE CONTACT :

Can cause moderate to severe irritation.

SKIN CONTACT :

Can cause moderate irritation.

INGESTION :

Not a likely route of exposure. Can cause mild irritation. There may be irritation to the gastro-intestinal tract with nausea and vomiting.

INHALATION :

Not a likely route of exposure. Irritating to the eyes, nose, throat and lungs.

HUMAN HEALTH HAZARDS - CHRONIC :

May impair fertility. May cause harm to the unborn child.

4. FIRST AID MEASURES

EYE CONTACT :

Immediately flush eye with water for at least 15 minutes while holding eyelids open. Get medical attention.

SKIN CONTACT :

Immediately flush with plenty of water for at least 15 minutes. Use a mild soap if available. If symptoms develop, seek medical advice.

INGESTION :

Get medical attention. Do not induce vomiting without medical advice. If conscious, washout mouth and give water to drink.

INHALATION :

Remove to fresh air, treat symptomatically. If symptoms develop, seek medical advice.

NOTE TO PHYSICIAN :

Based on the individual reactions of the patient, the physician's judgement should be used to control symptoms and clinical condition.

5. FIRE FIGHTING MEASURES

FLASH POINT : > 200 F/ > 93.3 °C

EXTINGUISHING MEDIA :

This product would not be expected to burn unless all the water is boiled away. The remaining organics may be ignitable. Use extinguishing media appropriate for surrounding fire.

FIRE AND EXPLOSION HAZARD :

May evolve oxides of carbon (COx) under fire conditions. May evolve oxides of nitrogen (NOx) under fire conditions.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :

In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.



CF 305DXL

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS :

Restrict access to area as appropriate until clean-up operations are complete. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection). Stop or reduce any leaks if it is safe to do so. Keep people away from and upwind of spill/leak. Ventilate spill area if possible. Ensure clean-up is conducted by trained personnel only. Do not touch spilled material. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Notify appropriate government, occupational health and safety and environmental authorities.

METHODS FOR CLEANING UP :

SMALL SPILLS: Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area. **LARGE SPILLS:** Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Clean contaminated surfaces with water or aqueous cleaning agents. Contact an approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

ENVIRONMENTAL PRECAUTIONS :

Prevent material from entering sewers or waterways.

7. HANDLING AND STORAGE

HANDLING :

Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. Do not breathe vapors/gases/dust. Keep the containers closed when not in use. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Ensure all containers are labeled.

STORAGE CONDITIONS :

Store in suitable labeled containers. Store the containers tightly closed. Store separately from oxidizers.

SUITABLE CONSTRUCTION MATERIAL :

Shipping and long term storage compatibility with construction materials can vary; we therefore recommend that compatibility is tested prior to use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS :

Exposure guidelines have not been established for this product. Available exposure limits for the substance(s) are shown below.

Substance(s)	Basis	ppm	mg/m3	Non-Standard
Alkyl Alcohol	ACGIH/TWA		10	Unit



CF 305DXL

* A skin notation refers to the potential significant contribution to overall exposure by the cutaneous route, including mucous membranes and the eyes.

ENGINEERING MEASURES :

General ventilation is recommended. Use local exhaust ventilation if necessary to control airborne mist and vapor.

RESPIRATORY PROTECTION :

Where concentrations in air may exceed the limits given in this section or when significant mists, vapors, aerosols, or dusts are generated, an approved air purifying respirator equipped with suitable filter cartridges is recommended. Consult the respirator / cartridge manufacturer data to verify the suitability of specific devices. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

HAND PROTECTION :

When handling this product, the use of chemical gloves is recommended. The choice of work glove depends on work conditions and what chemicals are handled. Please contact the PPE manufacturer for advice on what type of glove material may be suitable. Gloves should be replaced immediately if signs of degradation are observed.

SKIN PROTECTION :

Wear standard protective clothing.

EYE PROTECTION :

Wear chemical splash goggles.

HYGIENE RECOMMENDATIONS :

Use good work and personal hygiene practices to avoid exposure. Keep an eye wash fountain available. Keep a safety shower available. If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse. Always wash thoroughly after handling chemicals. When handling this product never eat, drink or smoke.

HUMAN EXPOSURE CHARACTERIZATION :

Based on our recommended product application and personal protective equipment, the potential human exposure is: Low

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Slurry
APPEARANCE	Milky Off-white Light grey
ODOR	None
SPECIFIC GRAVITY	1.45 @ 60.0 °F / 15.5 °C
DENSITY	12.0 lb/gal
SOLUBILITY IN WATER	Dispersible
pH (100.0 %)	7.0
VISCOSITY	450.0 cps @ 75.0 °F / 23.8 °C
POUR POINT	-40.0 °F / -40.0 °C
INITIAL BOILING POINT	212.0 °F / 100.0 °C

Note: These physical properties are typical values for this product and are subject to change.



CF 305DXL

10. STABILITY AND REACTIVITY

STABILITY :

Stable under normal conditions.

HAZARDOUS POLYMERIZATION :

Hazardous polymerization will not occur.

CONDITIONS TO AVOID :

Avoid extremes of temperature.

MATERIALS TO AVOID :

Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors.

HAZARDOUS DECOMPOSITION PRODUCTS :

Under fire conditions: Oxides of carbon, Oxides of nitrogen

11. TOXICOLOGICAL INFORMATION

No toxicity studies have been conducted on this product.

SENSITIZATION :

This product is not expected to be a sensitizer.

CARCINOGENICITY :

None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Hygienists (ACGIH).

TERATOGENICITY AND EMBRYOTOXICITY :

A component of this product may impair fertility and/or may cause harm to the unborn child.

HUMAN HAZARD CHARACTERIZATION :

Based on our hazard characterization, the potential human hazard is: High



CF 305DXL

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL EFFECTS :

No toxicity studies have been conducted on this product.

MOBILITY :

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.

If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	Water	Soil/Sediment
<5%	10 - 30%	30 - 50%

The portion in water is expected to be soluble or dispersible.

BIOACCUMULATION POTENTIAL

This preparation or material is not expected to bioaccumulate.

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION

Based on our hazard characterization, the potential environmental hazard is: Low

Based on our recommended product application and the product's characteristics, the potential environmental exposure is: High

If released into the environment, see CERCLA/SUPERFUND in Section 15.

13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it is not a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261, since it does not have the characteristics of Subpart C, nor is it listed under Subpart D.

As a non-hazardous waste, it is not subject to federal regulation. Consult state or local regulation for any additional handling, treatment or disposal requirements. For disposal, contact a properly licensed waste treatment, storage, disposal or recycling facility.

14. TRANSPORT INFORMATION

The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation. Typical Proper Shipping Names for this product are as follows.



CF 305DXL

LAND TRANSPORT :

Proper Shipping Name : PRODUCT IS NOT REGULATED DURING TRANSPORTATION

AIR TRANSPORT (ICAO/IATA) :

Proper Shipping Name : PRODUCT IS NOT REGULATED DURING TRANSPORTATION

MARINE TRANSPORT (IMDG/IMO) :

Proper Shipping Name : PRODUCT IS NOT REGULATED DURING TRANSPORTATION

15. REGULATORY INFORMATION

This section contains additional information that may have relevance to regulatory compliance. The information in this section is for reference only. It is not exhaustive, and should not be relied upon to take the place of an individualized compliance or hazard assessment. Condor Energy Services accepts no liability for the use of this information.

16. OTHER INFORMATION

Due to our commitment to Product Stewardship, we have evaluated the human and environmental hazards and exposures of this product. Based on our recommended use of this product, we have characterized the product's general risk. This information should provide assistance for your own risk management practices. We have evaluated our product's risk as follows:

* The human risk is: Low

* The environmental risk is: Low

Any use inconsistent with our recommendations may affect the risk characterization. Our sales representative will assist you to determine if your product application is consistent with our recommendations. Together we can implement an appropriate risk management process.

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to insure safe workplace operations. Please consult your local sales representative for any further information.

REFERENCES

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Condor Energy Services – Safety Data Sheet



CF 305DXL

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version),
Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH,
(TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version),
Micromedex, Inc., Englewood, CO

Prepared By: Condor Energy HSEQ Department
Date issued: 27 March 2014
Version Number: 1.0



CF 110SC

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **CF 110 SC**

APPLICATION **SCALE INHIBITOR**

IMPORTER: Condor Energy Services Ltd
Level 4, 15 Ogilvie Road
Applecross WA 6153
Australia
+61 8 9315 5986

EMERGENCY TELEPHONE NUMBER: +61 430 138 290 (24 Hours)
+65 6542 9595

NFPA 704M/HMIS RATING

HEALTH: 0/0 FLAMMABILITY: 1/1 INSTABILITY: 0/0 OTHER: *
0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme * = Chronic Health Hazard

2. COMPOSITION/INFORMATION ON INGREDIENTS

Based on our hazard evaluation, none of the substances in this product are hazardous

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

CAUTION

May cause irritation with prolonged contact.

Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of water.

Wear suitable protective clothing.

May evolve oxides of carbon (COx) under fire conditions. May evolve oxides of sulfur (SOx) under fire conditions.

Not flammable or combustible.



CF 110SC

PRIMARY ROUTES OF EXPOSURE:

Eye, Skin

HUMAN HEALTH HAZARDS – ACUTE:

EYE CONTACT:

No adverse effects expected

SKIN CONTACT:

No adverse effects expected

INGESTION:

Not a likely route of exposure. No adverse effects expected.

INHALATION:

Not a likely route of exposure. No adverse effects expected.

SYMPTOMS OF EXPOSURE:

Acute:

A review of available data does not identify any symptoms from exposure not previously mentioned.

Chronic:

A review of available data does not identify any symptoms from exposure not previously mentioned

HUMAN HEALTH HAZARDS - CHRONIC:

No adverse effects expected other than those mentioned above

4. FIRST AID MEASURES

EYE CONTACT:

Flush affected area with water. If symptoms develop, seek medical advice.

SKIN CONTACT:

Flush affected area with water. If symptoms develop, seek medical advice.

INGESTION:

Do not induce vomiting without medical advice. If conscious, washout mouth and give water to drink. If vomiting occurs, rinse mouth and repeat administration of water.

INHALATION:

Remove to fresh air, treat symptomatically. If symptoms develop, seek medical advice.

NOTE TO PHYSICIAN:

Based on the individual reactions of the patient, the physician's judgement should be used to control symptoms and clinical condition.



CF 110SC

5. FIRE FIGHTING MEASURES

FLASH POINT: 105 °C (PMCC)

LEL No data available

UEL No data available

AUTOIGNITION Temperature No data available

EXTINGUISHING MEDIA:

This product would not be expected to burn unless all the water is boiled away. The remaining organics may be ignitable. Use extinguishing media appropriate for surrounding fire.

FIRE AND EXPLOSION HAZARD:

May evolve oxides of carbon (CO_x) under fire conditions. May evolve oxides of sulfur (SO_x) under fire conditions. Not flammable or combustible.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING:

In case of fire, wear a full face positive-pressure self-contained breathing apparatus and protective suit.

SENSITIVITY TO MECHANICAL IMPACT:

Not expected to be sensitive to mechanical impact

SENSITIVITY TO STATIC DISCHARGE:

Not expected to be sensitive to static discharge.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:

Restrict access to area as appropriate until clean-up operations are complete. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection). Stop or reduce any leaks if it is safe to do so. Ventilate spill area if possible.

METHODS FOR CLEANING UP:

SMALL SPILLS: Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area. **LARGE SPILLS:** Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Clean contaminated surfaces with water or aqueous cleaning agents. Contact an approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

ENVIRONMENTAL PRECAUTIONS:

Do not contaminate surface water



7. HANDLING AND STORAGE

HANDLING:

Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. Do not breathe vapors/gases/dust. Keep the containers closed when not in use. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Ensure all containers are labeled.

STORAGE CONDITIONS:

Store in suitable labeled containers. Store the containers tightly closed.

SUITABLE CONSTRUCTION MATERIAL:

HDPE (high density polyethylene), Natural rubber, Viton, Polypropylene, Stainless Steel 304, Stainless Steel 316L, PTFE, Epoxyresin coating, Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS:

This product does not contain any substance that has an established exposure limit.

ENGINEERING MEASURES:

General ventilation is recommended. The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fume hood. Provide mechanical ventilation of confined spaces.

RESPIRATORY PROTECTION:

Respiratory protection is not normally needed

HAND PROTECTION:

See general advice

SKIN PROTECTION:

See general advice.

EYE PROTECTION:

Wear safety glasses with side-shields.

HYGIENE RECOMMENDATIONS:

Use good work and personal hygiene practices to avoid exposure. Consider the provision in the work area of a safety shower and eyewash. Always wash thoroughly after handling chemicals. When handling this product never eat, drink or smoke.

HUMAN EXPOSURE CHARACTERISATION:

Based on our recommended product application and personal protective equipment, the potential human exposure is:
Low



CF 110SC

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Liquid
APPEARANCE	Light Yellow
ODOR	No data available
SPECIFIC GRAVITY	1.245 @ 20 °C
SOLUBILITY IN WATER	Complete
pH (100.0 %)	5.3
VISCOSITY	7 cst @ 40 °C
BOILING POINT	212.0 °F / 100.0 °C
VAPOR PRESSURE	no data available
EVAPORATION RATE	no data available
VAPOR DENSITY	no data available
COEFFICIENT OF WATER/OIL DISTRIBUTION	no data available

Note: These physical properties are typical values for this product and are subject to change.

10. STABILITY AND REACTIVITY

STABILITY:

Stable under normal conditions.

HAZARDOUS POLYMERIZATION:

Hazardous polymerization will not occur.

CONDITIONS TO AVOID:

Heat and sources of ignition including static discharges.

MATERIALS TO AVOID:

Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors.

HAZARDOUS DECOMPOSITION PRODUCTS:

Under fire conditions: Oxides of carbon, Oxides of sulfur

11. TOXICOLOGICAL INFORMATION

No toxicity studies have been conducted on this product.

SENSITIZATION:

This product is not expected to be a sensitizer.

CARCINOGENICITY:

None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Hygienists (ACGIH).



CF 110SC

REPRODUCTIVE EFFECTS:
No quantitative data available.

TERATOGENICITY AND EMBRYOTOXICITY:
No quantitative data available.

MUTAGENICITY:
No quantitative data available

OTHER TOXICITY INFORMATION:
Toxicologically Synergistic Products: None known

HUMAN HAZARD CHARACTERIZATION:
Based on our hazard characterization, the potential human hazard is: Low

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL EFFECTS:
No toxicity studies have been conducted on this

MOBILITY:
The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.
If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	Water	Soil/Sediment
<5%	30-50%	50-70%

The portion in water is expected to be soluble or dispersible.

BIOACCUMULATION POTENTIAL
This preparation or material is not expected to bio-accumulate.

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION
Based on our hazard characterization, the potential environmental hazard is: Low

Based on our recommended product application and the product's characteristics, the potential environmental exposure is: Low



13. DISPOSAL CONSIDERATIONS

Dispose of wastes in an approved incinerator or waste treatment/disposal site, in accordance with all applicable regulations.

Do not dispose of wastes in local sewer or with normal garbage.

14. TRANSPORT INFORMATION

Product is not regulated during transportation.

15. REGULATORY INFORMATION

No data available.

16. OTHER INFORMATION

Due to our commitment to Product Stewardship, we have evaluated the human and environmental hazards and exposures of this product. Based on our recommended use of this product, we have characterized the product's general risk. This information should provide assistance for your own risk management practices. We have evaluated our product's risk as follows:

- The human risk is: Low
- The environmental risk is: Low

Any use inconsistent with our recommendations may affect the risk characterization. Our sales representative will assist you to determine if your product application is consistent with our recommendations. Together we can implement an appropriate risk management process.

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to insure safe workplace operations. Please consult your local sales representative for any further information

Prepared By: Condor Energy HSEQ Department
Date issued: 18 June 2014
Version Number: 1.0

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : NALCO® CF10GGC

Other means of identification : Not applicable.

Recommended use : FRACTURING ADDITIVE

Restrictions on use : Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.

Company : Nalco Australia
2 Drake Avenue
Macquarie Park NSW 2113
Australia
A.B.N. 59 000 449 990
TEL: +61 2 8870 8100
FAX: +61 2 8870 8680

Emergency telephone number : 1800 205 506
International: +65 6542 9595 Free call: +800 2537 8747

Issuing date : 03.08.2014

SECTION 2. HAZARDS IDENTIFICATION

Hazard classification

Not classified as hazardous according to Safe Work Australia. This product is not classified as a dangerous good according to national or international regulations.

S-phrase(s)

This material and/or its container must be disposed of as hazardous waste.

Other hazards which do not result in classification

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Concentration: (%)
Hydrotreated Light Distillate	64742-47-8	30 - 60
Hexamethylene Glycol	629-11-8	0.1 - 1

The balance of the substances in this product are not classified as hazardous or are present below hazard cut-off limits

SECTION 4. FIRST AID MEASURES

In case of eye contact : Rinse with plenty of water. Get medical attention if symptoms occur.

In case of skin contact : Wash off with soap and plenty of water. Get medical attention if symptoms occur.

SAFETY DATA SHEET

NALCO® CF10GGC

- If swallowed : Rinse mouth. Get medical attention if symptoms occur.
Contact the Poison's Information Centre (eg Australia 13 1126; New Zealand 0800 764 766).
- If inhaled : Get medical attention if symptoms occur.
- Protection of first-aiders : In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.
- Notes to physician : Treat symptomatically.

See toxicological information (Section 11)

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : None known.
- Specific hazards during firefighting : Not flammable
- Hazardous combustion products : Carbon oxides
- Special protective equipment for firefighters : Use personal protective equipment.
- Specific extinguishing methods : Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Refer to protective measures listed in sections 7 and 8.
- Environmental precautions : Do not allow contact with soil, surface or ground water.
- Methods and materials for containment and cleaning up : Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Flush away traces with water. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway.

SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : For personal protection see section 8. Wash hands after handling.
- Conditions for safe storage : Keep out of reach of children. Keep container tightly closed. Store in suitable labeled containers.

SAFETY DATA SHEET

NALCO® CF10GGC

Suitable material : Keep in properly labelled containers.

Unsuitable material : not determined

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Form of exposure	Permissible concentration	Basis
Hydrotreated Light Distillate	64742-47-8	TWA	500 ppm 2,000 mg/m ³	OSHA Z1
		TWA	200 mg/m ³	ACGIH
Hexamethylene Glycol	629-11-8	TWA	10 mg/m ³	WEEL

Engineering measures : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protective equipment

Eye protection : Safety glasses

Hand protection : Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Skin protection : Wear suitable protective clothing.

Respiratory protection : No personal respiratory protective equipment normally required.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : slurry

Colour : Opaque

Odour : Hydrocarbon

Flash point : 76.7 °C
Method: Pensky-Martens closed cup
Estimated

pH : no data available

Odour Threshold : no data available

Melting point/freezing point : no data available

Initial boiling point and boiling range : 246.1 °C

Evaporation rate : no data available

Flammability (solid, gas) : no data available

Upper explosion limit : no data available

Lower explosion limit : no data available

SAFETY DATA SHEET

NALCO® CF10GGC

Vapour pressure	: 0.23 hPa (20 °C)
Relative vapour density	: no data available
Relative density	: 1.020 - 1.090
Density	: no data available
Water solubility	: Emulsifiable
Solubility in other solvents	: no data available
Partition coefficient: n-octanol/water	: no data available
Auto-ignition temperature	: no data available
Thermal decomposition	: Carbon oxides
Viscosity, dynamic	: 350 mPa.s (22 °C)
Viscosity, kinematic	: 350 mm ² /s
VOC	: no data available

SECTION 10. STABILITY AND REACTIVITY

Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: No dangerous reaction known under conditions of normal use.
Conditions to avoid	: None known.
Incompatible materials	: None known
Hazardous decomposition products	: Carbon oxides

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes	: Health injuries are not known or expected under normal use.
Skin	: Health injuries are not known or expected under normal use.
Ingestion	: Health injuries are not known or expected under normal use.
Inhalation	: Health injuries are not known or expected under normal use.
Chronic Exposure	: Health injuries are not known or expected under normal use.

Experience with human exposure

Eye contact	: No symptoms known or expected.
Skin contact	: No symptoms known or expected.
Ingestion	: No symptoms known or expected.
Inhalation	: No symptoms known or expected.

SAFETY DATA SHEET

NALCO® CF10GGC

Toxicity

Product

Acute oral toxicity : no data available

Acute inhalation toxicity : no data available

Acute dermal toxicity : no data available

Skin corrosion/irritation : no data available

Serious eye damage/eye irritation : no data available

Respiratory or skin sensitization : no data available

Carcinogenicity : no data available

Reproductive effects : no data available

Germ cell mutagenicity : no data available

Teratogenicity : no data available

STOT - single exposure : no data available

STOT - repeated exposure : no data available

Aspiration toxicity : no data available

Components

Acute oral toxicity : Hydrotreated Light Distillate
LD50 rat: > 5,000 mg/kg

HUMAN HAZARD CHARACTERIZATION

Based on our hazard characterization, the potential human hazard is: Low

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Environmental Effects : Harmful to aquatic life with long lasting effects.

Product

Toxicity to fish : no data available

Toxicity to daphnia and other aquatic invertebrates : no data available

Toxicity to algae : no data available

Components

Toxicity to fish : Hydrotreated Light Distillate

SAFETY DATA SHEET

NALCO® CF10GGC

LC50 : > 1,000 mg/l
Exposure time: 96 h

Components

Toxicity to daphnia and other aquatic invertebrates : Hydrotreated Light Distillate
EC50 : > 1,000 mg/l
Exposure time: 72 h

Components

Toxicity to algae : Hydrotreated Light Distillate
EC50 : > 1,000 mg/l
Exposure time: 48 h

Components

Toxicity to bacteria : Hydrotreated Light Distillate
> 1,000 mg/l

Persistence and degradability

no data available

Mobility

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.

If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air : 10 - 30%
Water : 50 - 70%
Soil : 10 - 30%

Bioaccumulative potential

no data available

Other information

no data available

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION

Based on our hazard characterization, the potential environmental hazard is: Moderate

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods : Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.

Disposal considerations : Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

SAFETY DATA SHEET

NALCO® CF10GGC

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport

Proper shipping name : Not Regulated for Transport except by Road in Bulk (Combustible Liquid)
Special precautions for user : This product is classified as a combustible liquid and is not regulated for transport unless transported in bulk aboard a vehicle at the same time as a Class 3 dangerous goods - in bulk or as packaged goods with an aggregate quantity exceeding 1000 litres. Refer to the Australian Code for the Transport of Dangerous Goods by Road and Rail for specific details.

Air transport (IATA)

Proper shipping name : PRODUCT IS NOT REGULATED DURING TRANSPORTATION

Sea Transport (IMDG/IMO)

Proper shipping name : PRODUCT IS NOT REGULATED DURING TRANSPORTATION

SECTION 15. REGULATORY INFORMATION

Standard for the Uniform : Schedule 5
Scheduling of Medicines and
Poisons
INTERNATIONAL CHEMICAL CONTROL LAWS :

AUSTRALIA

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

CHINA

All substances in this product comply with the Provisions on the Environmental Administration of New Chemical Substances and are listed on or exempt from the Inventory of Existing Chemical Substances China (IECSC).

JAPAN

All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Existing and New Chemical Substances list (ENCS).

KOREA

All substances in this product comply with the Toxic Chemical Control Law (TCCL) and are listed on the Existing Chemicals List (ECL)

PHILIPPINES

All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).

SECTION 16. OTHER INFORMATION

REFERENCES

SAFETY DATA SHEET

NALCO® CF10GGC

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH, (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Revision Date : 03.08.2014
Date of first issue : 04.08.2014
Version Number : 1.0
Prepared By : Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the MSDS.

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

For additional copies of an MSDS visit www.nalco.com and request access.

CF600CI**Section: 1. PRODUCT AND COMPANY IDENTIFICATION**

Product name : CF600CI

Other means of identification : Not applicable.

Recommended use : ACID CORROSION INHIBITOR

Restrictions on use : Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.

Company : Condor Energy Services Ltd
Level 4 / 15 Ogilvie Road
Mt Pleasant, 6153

Western Australia
TEL: +61 8 9315 5986
FAX: +61 8 9364 8569

Emergency telephone : 1800 205 506
number International: +65 6542 9595 Free call: +800 2537 8747

Issuing date : 11.11.2014

Section: 2. HAZARDS IDENTIFICATION**Hazard classification**

HIGHLY FLAMMABLE, CORROSIVE

This product is classified as hazardous according to Safe Work Australia. This product is classified as a dangerous good according to national and/or international regulations.

R-phrase(s)

Highly flammable.

Harmful by inhalation, in contact with skin and if swallowed.

Causes burns.

Harmful: possible risk of irreversible effects through inhalation, in contact with skin and if swallowed.

May cause sensitization by skin contact.

S-phrase(s)

Keep container in a well-ventilated place.

Keep away from sources of ignition - No smoking.

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Take precautionary measures against static discharges.

Wear suitable protective clothing, gloves and eye/face protection.

SAFETY DATA SHEET

CF600CI

In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Other hazards which do not result in classification

None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture : Mixture

Chemical Name	CAS-No.	Concentration: (%)
Formic Acid	64-18-6	30 - 60
Cinnamaldehyde	104-55-2	10 - 30
Isopropanol	67-63-0	5 - 10
2-Mercaptoethyl Alcohol	60-24-2	1 - 5
Methanol	67-56-1	1 - 5

Section: 4. FIRST AID MEASURES

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

In case of skin contact : Wash off immediately with plenty of water for at least 15 minutes. Use a mild soap if available. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

If swallowed : Contact the Poison's Information Centre (eg Australia 13 1126; New Zealand 0800 764 766).

Rinse mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately.

If inhaled : Remove to fresh air. Treat symptomatically. Get medical attention if symptoms occur.

Protection of first-aiders : In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.

Notes to physician : Treat symptomatically.

Most important symptoms and effects, both acute and delayed : See Section 11 for more detailed information on health effects and symptoms.

Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media : High volume water jet

Specific hazards during : Fire Hazard

SAFETY DATA SHEET

CF600CI

- firefighting : Keep away from heat and sources of ignition. Flash back possible over considerable distance. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
- Hazardous combustion products : Carbon oxides
- Special protective equipment for firefighters : Use personal protective equipment.
- Specific extinguishing methods : Use water spray to cool unopened containers. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
- Hazchem Code : ●3WE

Section: 6. ACCIDENTAL RELEASE MEASURES

- INITIAL EMERGENCY RESPONSE GUIDE NO : 18
- Personal precautions, protective equipment and emergency procedures : Ensure adequate ventilation. Remove all sources of ignition. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.
- Environmental precautions : Do not allow contact with soil, surface or ground water.
- Methods and materials for containment and cleaning up : Eliminate all ignition sources if safe to do so. Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Flush away traces with water. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway.

Section: 7. HANDLING AND STORAGE

- Advice on safe handling : Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Do not ingest. Keep away from fire, sparks and heated surfaces. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Use only with adequate ventilation.
- Conditions for safe storage : Keep away from heat and sources of ignition. Keep in a cool, well-ventilated place. Keep away from oxidizing agents. Keep out of reach of children. Keep container tightly closed. Store in suitable labeled containers.
- Suitable material : The following compatibility data is suggested based on similar product data and/or industry experience: HDPE (high density polyethylene), Stainless Steel 304, Stainless Steel 316L, Hastelloy C-276, PTFE, Perfluoroelastomer

SAFETY DATA SHEET

CF600CI

Unsuitable material : The following compatibility data is suggested based on similar product data and/or industry experience: Copper, Ethylene propylene, Mild steel, Polypropylene, Polyethylene, Plexiglass, EPDM, Brass, PVC, Buna-N, Polyurethane, Neoprene, Aluminum, Chlorosulfonated polyethylene rubber, Polytetrafluoroethylene/polypropylene copolymer, Fluoroelastomer

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Exposure guidelines have not been established for this product. Available exposure limits for the substance(s) are shown below.

Components	CAS-No.	Form of exposure	Permissible concentration	Basis
Formic Acid	64-18-6	TWA	5 ppm 9.4 mg/m ³	AU OEL
		VLE	10 ppm 19 mg/m ³	AU OEL
Formic Acid	64-18-6	WES-STEL	10 ppm 19 mg/m ³	NZ OEL
		WES-TWA	5 ppm 9.4 mg/m ³	NZ OEL
Formic Acid	64-18-6	TWA	5 ppm	ACGIH
		STEL	10 ppm	ACGIH
		TWA	5 ppm 9 mg/m ³	NIOSH REL
		TWA	5 ppm 9 mg/m ³	OSHA Z1
Isopropanol	67-63-0	TWA	400 ppm 983 mg/m ³	AU OEL
		VLE	500 ppm 1,230 mg/m ³	AU OEL
Isopropanol	67-63-0	WES-TWA	400 ppm 983 mg/m ³	NZ OEL
		WES-STEL	500 ppm 1,230 mg/m ³	NZ OEL
Isopropanol	67-63-0	TWA	200 ppm	ACGIH
		STEL	400 ppm	ACGIH
		TWA	400 ppm 980 mg/m ³	NIOSH REL
		STEL	500 ppm 1,225 mg/m ³	NIOSH REL
		TWA	400 ppm 980 mg/m ³	OSHA Z1
2-Mercaptoethyl Alcohol	60-24-2	TWA	0.2 ppm	WEEL
Methanol	67-56-1	TWA	200 ppm 262 mg/m ³	AU OEL
		VLE	250 ppm 328 mg/m ³	AU OEL
Methanol	67-56-1	WES-TWA	200 ppm 262 mg/m ³	NZ OEL
		WES-STEL	250 ppm 328 mg/m ³	NZ OEL
Methanol	67-56-1	TWA	200 ppm	ACGIH
		STEL	250 ppm	ACGIH

SAFETY DATA SHEET

CF600CI

		TWA	200 ppm 260 mg/m ³	NIOSH REL
		STEL	250 ppm 325 mg/m ³	NIOSH REL
		TWA	200 ppm 260 mg/m ³	OSHA Z1

Engineering measures : Effective exhaust ventilation system Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection : Face-shield

Safety goggles
Face-shield

Hand protection : Wear the following personal protective equipment:
Standard glove type.
Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Skin protection : Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing

Respiratory protection : When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling. Provide suitable facilities for quick drenching or flushing of the eyes and body in case of contact or splash hazard.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Liquid

Colour : dark brown

Odour : Sharp

Flash point : 13 °C
Method: ASTM D 93, Pensky-Martens closed cup

pH : 3.1, 5 %

Odour Threshold : no data available

Melting point/freezing point : no data available

Initial boiling point and boiling range : 64.4 °C

Evaporation rate : no data available

Flammability (solid, gas) : no data available

Upper explosion limit : no data available

Lower explosion limit : no data available

Vapour pressure : 92.5 mm Hg (15.6 °C)

SAFETY DATA SHEET

CF600CI

	118.4 mm Hg (37.7 °C)
Relative vapour density	: 1.11
Relative density	: 1.11 (15.6 °C)
Density	: 9.26 lb/gal
Water solubility	: dispersible
Solubility in other solvents	: no data available
Partition coefficient: n-octanol/water	: no data available
Auto-ignition temperature	: no data available
Thermal decomposition temperature	: no data available
Viscosity, dynamic	: no data available
Viscosity, kinematic	: 12 mm ² /s (40 °C)
VOC	: no data available

Section: 10. STABILITY AND REACTIVITY

Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: No dangerous reaction known under conditions of normal use.
Conditions to avoid	: Heat, flames and sparks.
Incompatible materials	: Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors. Strong Bases Contact with strong alkalies (e.g. ammonia and its solutions, carbonates, sodium hydroxide (caustic), potassium hydroxide, calcium hydroxide (lime), cyanide, sulfide, hypochlorites, chlorites) may generate heat, splattering or boiling and toxic vapors.

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes	: Causes serious eye damage.
Skin	: Harmful in contact with skin. Causes severe skin burns. May cause allergic skin reaction.
Ingestion	: Harmful if swallowed. Causes digestive tract burns.
Inhalation	: Harmful if inhaled. May cause nose, throat, and lung irritation.
Chronic Exposure	: Health injuries are not known or expected under normal use.

Experience with human exposure

Eye contact : Redness, Pain, Corrosion

SAFETY DATA SHEET

CF600CI

Skin contact : Redness, Pain, Irritation, Corrosion, Allergic reactions

Ingestion : Corrosion, Abdominal pain

Inhalation : Respiratory irritation, Cough

Toxicity

Product

Acute oral toxicity : no data available

Acute inhalation toxicity : no data available

Acute dermal toxicity : no data available

Skin corrosion/irritation : no data available

Serious eye damage/eye irritation : no data available

Respiratory or skin sensitization : no data available

Carcinogenicity : Contains no ingredient listed as a carcinogen

Reproductive effects : No toxicity to reproduction

Germ cell mutagenicity : Contains no ingredient listed as a mutagen

Teratogenicity : no data available

STOT - single exposure : no data available

STOT - repeated exposure : no data available

Aspiration toxicity : No aspiration toxicity classification

Components

Acute oral toxicity : Isopropanol
LD50 rat: 4,710 mg/kg

2-Mercaptoethyl Alcohol
LD50 rat: 131 mg/kg

Components

Acute inhalation toxicity : Isopropanol
LC50 rat: 30 mg/l
Exposure time: 4 h

SAFETY DATA SHEET

CF600CI

2-Mercaptoethyl Alcohol
LC50 rat: 2 mg/l
Exposure time: 4 h

Components

Acute dermal toxicity : Isopropanol
LD50 rabbit: 12,870 mg/kg

2-Mercaptoethyl Alcohol
LD50 rabbit: 168 mg/kg

HUMAN HAZARD CHARACTERIZATION

Based on our hazard characterization, the potential human hazard is: High

Section: 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product

Toxicity to fish : no data available

Toxicity to daphnia and other aquatic invertebrates : no data available

Toxicity to algae : no data available

Components

Toxicity to fish : Formic Acid
LC50 : > 100 mg/l
Exposure time: 96 h

Isopropanol
LC50 Fish: 9,640 mg/l
Exposure time: 96 h

Methanol
LC50 : 15,400 mg/l
Exposure time: 96 h

Components

Toxicity to daphnia and other aquatic invertebrates : 2-Mercaptoethyl Alcohol
EC50 : 0.89 mg/l
Exposure time: 48 h

Methanol
EC50 : > 10,000 mg/l
Exposure time: 48 h

Components

Toxicity to algae : Methanol
EC50 : 22,000 mg/l
Exposure time: 72 h

Components

SAFETY DATA SHEET

CF600CI

Toxicity to bacteria : Methanol
> 1,000 mg/l

Components

Toxicity to fish (Chronic toxicity) : Methanol
NOEC: 7,900 mg/l
Exposure time: 8.3 d

Persistence and degradability

The organic portion of this preparation is expected to be inherently biodegradable.

Mobility

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.

If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air : <5%
Water : 10 - 30%
Soil : 50 - 70%

The portion in water is expected to float on the surface.

Bioaccumulative potential

Component substances have a low potential to bioconcentrate.

Other information

no data available

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION

Based on our hazard characterization, the potential environmental hazard is: Low

Section: 13. DISPOSAL CONSIDERATIONS

Disposal methods : Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.

Disposal considerations : Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport

Proper shipping name : FLAMMABLE LIQUID, CORROSIVE, N.O.S.

SAFETY DATA SHEET

CF600CI

Technical name(s) : Isopropanol, Formic Acid
UN/ID No. : UN 2924
Transport hazard class(es) : 3, 8
Packing group : II
IERG No : 18
Hazchem Code : ●3WE

Special precautions for user : Dangerous goods of Class 3 (Flammable Liquid) Subsidiary Class 8 (Alkali) are incompatible in a placard load with any of the following:
and are incompatible with food or food packaging in any quantity.
Class 1 Explosives
Class 2.1 Flammable gases (where both are in bulk)
Class 2.3 Poisonous gases
Class 4.2 Spontaneously combustible substances
Class 4.3 Dangerous when wet substances
Class 5.1 Oxidising agents
Class 5.2 Organic peroxides
Class 7 Radioactive substances

Air transport (IATA)

UN/ID No. : UN 2924
Proper shipping name : FLAMMABLE LIQUID, CORROSIVE, N.O.S.
Technical name(s) : Isopropanol, Formic Acid
Transport hazard class(es) : 3, 8
Packing group : II

Sea transport (IMDG/IMO)

UN/ID No. : UN 2924
Proper shipping name : FLAMMABLE LIQUID, CORROSIVE, N.O.S.
Technical name(s) : Isopropanol, Formic Acid
Transport hazard class(es) : 3, 8
Packing group : II

Section: 15. REGULATORY INFORMATION

Standard for the Uniform : Schedule 6
Scheduling of Medicines and
Poisons

INTERNATIONAL CHEMICAL CONTROL LAWS :

TOXIC SUBSTANCES CONTROL ACT (TSCA)

The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)

The substance(s) in this preparation are included in or exempted from the Domestic Substance List (DSL).

AUSTRALIA

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

CHINA

This product contains substance(s) which are not in compliance with the Provisions on the Environmental Administration of New Chemical Substances and may require additional review.

SAFETY DATA SHEET

CF600CI

EUROPE

The substances in this preparation have been reviewed for compliance with the EINECS or ELINCS inventories.

JAPAN

This product contains substance(s) which are not in compliance with the Law Regulating the Manufacture and Importation Of Chemical Substances and are not listed on the Existing and New Chemical Substances list (ENCS).

KOREA

This product contains substance(s) which are not in compliance with the Toxic Chemical Control Law (TCCL) and may require additional review.

PHILIPPINES

This product contains substance(s) which are not in compliance with the Republic Act 6969 (RA 6969) and may require additional review.

Section: 16. OTHER INFORMATION

REFERENCES

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH, (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Revision Date : 11.11.2014
Version Number : 1.1
Prepared By : Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the MSDS.

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

info@condorenergy.com.au

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : CA370FE

Other means of identification : Not applicable.

Recommended use : IRON CONTROL ADDITIVE

Restrictions on use : Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.

Company : Nalco Australia
2 Drake Avenue
Macquarie Park NSW 2113
Australia
A.B.N. 59 000 449 990
TEL: +61 2 8870 8100
FAX: +61 2 8870 8680

Emergency telephone number : 1800 205 506
International: +65 6542 9595 Free call: +800 2537 8747

Issuing date : 23.05.2014

Section: 2. HAZARDS IDENTIFICATION

Hazard classification

Not classified as hazardous according to Safe Work Australia. This product is not classified as a dangerous good according to national or international regulations.

R-phrases(s)

not hazardous

Other hazards which do not result in classification

None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Concentration: (%)
Ingredients determined not to be hazardous		100

Section: 4. FIRST AID MEASURES

In case of eye contact : Rinse with plenty of water. Get medical attention if symptoms occur.

In case of skin contact : Wash off with soap and plenty of water. Get medical attention if symptoms occur.

If swallowed : Rinse mouth. Get medical attention if symptoms occur.

Contact the Poison's Information Centre (eg Australia 13 1126; New

SAFETY DATA SHEET

CA370FE

Zealand 0800 764 766).

- If inhaled : Get medical attention if symptoms occur.
- Protection of first-aiders : In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.
- Notes to physician : Treat symptomatically.

See toxicological information (Section 11)

Section: 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : None known.
- Specific hazards during firefighting : Not flammable or combustible.
- Hazardous combustion products : Carbon oxides
- Special protective equipment for firefighters : Use personal protective equipment.
- Specific extinguishing methods : Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. In the event of fire and/or explosion do not breathe fumes.

Section: 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Refer to protective measures listed in sections 7 and 8.
- Environmental precautions : Do not allow contact with soil, surface or ground water.
- Methods and materials for containment and cleaning up : Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Flush away traces with water. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway.

Section: 7. HANDLING AND STORAGE

- Advice on safe handling : Wash hands thoroughly after handling. Use only with adequate ventilation.
- Conditions for safe storage : Keep out of reach of children. Keep container tightly closed. Store in suitable labeled containers.
- Suitable material : Keep in properly labelled containers.

SAFETY DATA SHEET

CA370FE

Unsuitable material : not determined

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

We are not aware of any national exposure limit.

Engineering measures : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protective equipment

Eye protection : Safety glasses

Hand protection : Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Skin protection : Wear suitable protective clothing.

Respiratory protection : No personal respiratory protective equipment normally required.

Hygiene measures : Remove and wash contaminated clothing before re-use. Wash hands before breaks and immediately after handling the product. Wash face, hands and any exposed skin thoroughly after handling.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : solid

Colour : no data available

Odour : no data available

Flash point : > 100 °C

pH : 5 - 8, Concentration:: 50.00 g/l
5 %

Odour Threshold : no data available

Melting point/freezing point : no data available

Initial boiling point and boiling range : no data available

Evaporation rate : no data available

Flammability (solid, gas) : no data available

Upper explosion limit : no data available

Lower explosion limit : no data available

Vapour pressure : no data available

Relative vapour density : no data available

Relative density : no data available

Density : no data available

Water solubility : 153 g/l (25 °C)

SAFETY DATA SHEET

CA370FE

Solubility in other solvents : no data available
Partition coefficient: n-octanol/water : no data available
Auto-ignition temperature : no data available
Thermal decomposition : Carbon oxides
Viscosity, dynamic : no data available
Viscosity, kinematic : no data available
VOC : no data available

Section: 10. STABILITY AND REACTIVITY

Chemical stability : Stable under normal conditions.
Possibility of hazardous reactions : No dangerous reaction known under conditions of normal use.
Conditions to avoid : None known.
Hazardous decomposition products : Carbon oxides

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : Eye contact, Skin contact

Potential Health Effects

Eyes : Health injuries are not known or expected under normal use.
Skin : Health injuries are not known or expected under normal use.
Ingestion : Health injuries are not known or expected under normal use.
Inhalation : Health injuries are not known or expected under normal use.
Chronic Exposure : Health injuries are not known or expected under normal use.

Experience with human exposure

Eye contact : No symptoms known or expected.
Skin contact : No symptoms known or expected.
Ingestion : No symptoms known or expected.
Inhalation : No symptoms known or expected.

Toxicity

Product

Acute oral toxicity : no data available
Acute inhalation toxicity : no data available
Acute dermal toxicity : no data available

SAFETY DATA SHEET

CA370FE

Skin corrosion/irritation	: no data available
Serious eye damage/eye irritation	: no data available
Respiratory or skin sensitization	: no data available
Carcinogenicity	: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
Reproductive effects	: no data available
Germ cell mutagenicity	: no data available
Teratogenicity	: no data available
STOT - single exposure	: no data available
STOT - repeated exposure	: no data available
Aspiration toxicity	: No aspiration toxicity classification

Section: 12. ECOLOGICAL INFORMATION

Ecotoxicity

Toxicity to fish	: no data available
Toxicity to daphnia and other aquatic invertebrates	: no data available
Toxicity to algae	: no data available

Persistence and degradability

no data available

Mobility

no data available

Bioaccumulative potential

no data available

Other information

no data available

Section: 13. DISPOSAL CONSIDERATIONS

Disposal methods	: Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.
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SAFETY DATA SHEET

CA370FE

Disposal considerations : Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport

Proper shipping name : PRODUCT IS NOT REGULATED DURING TRANSPORTATION

Air transport (IATA)

Proper shipping name : PRODUCT IS NOT REGULATED DURING TRANSPORTATION

Sea Transport (IMDG/IMO)

Proper shipping name : PRODUCT IS NOT REGULATED DURING TRANSPORTATION

Section: 15. REGULATORY INFORMATION

Standard for the Uniform Scheduling of Medicines and Poisons : No poison schedule number allocated
INTERNATIONAL CHEMICAL CONTROL LAWS :

TOXIC SUBSTANCES CONTROL ACT (TSCA)

The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)

The substance(s) in this preparation are included in or exempted from the Domestic Substance List (DSL).

AUSTRALIA

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

CHINA

All substances in this product comply with the Provisions on the Environmental Administration of New Chemical Substances and are listed on or exempt from the Inventory of Existing Chemical Substances China (IECSC).

EUROPE

The substances in this preparation have been reviewed for compliance with the EINECS or ELINCS inventories.

JAPAN

All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Existing and New Chemical Substances list (ENCS).

KOREA

All substances in this product comply with the Toxic Chemical Control Law (TCCL) and are listed on the Existing Chemicals List (ECL)

SAFETY DATA SHEET

CA370FE

PHILIPPINES

All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).

Section: 16. OTHER INFORMATION

REFERENCES

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH, (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Revision Date : 23.05.2014
Version Number : 1.0
Prepared By : Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the MSDS.

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

For additional copies of an MSDS visit www.nalco.com and request access.

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : CAI200

Other means of identification : Not applicable.

Recommended use : CORROSION INHIBITOR INTENSIFIER

Restrictions on use : Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.

Company : Condor Energy Services Ltd
Level 4 / 15 Ogilvie Road
Mt Pleasant, 6153

Western Australia
TEL: Ph: +61 8 9315 5986
FAX: Fax: +61 8 9364 8569

Emergency telephone number : 1800 205 506
International: +65 6542 9595 Free call: +800 2537 8747

Issuing date : 01.07.2014

SECTION 2. HAZARDS IDENTIFICATION**Hazard classification**

CORROSIVE

This product is classified as hazardous according to Safe Work Australia. This product is classified as a dangerous good according to national and/or international regulations.

R-phrase(s)

Causes burns.

S-phrase(s)

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Wear suitable protective clothing, gloves and eye/face protection.

In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

This material and/or its container must be disposed of as hazardous waste.

Other hazards which do not result in classification

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Concentration: (%)
Formic Acid	64-18-6	60 - 100

SAFETY DATA SHEET

CAI200

The balance of the substances in this product are not classified as hazardous or are present below hazard cut-off limits

SECTION 4. FIRST AID MEASURES

- In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.
- In case of skin contact : Wash off immediately with plenty of water for at least 15 minutes. Use a mild soap if available. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
- If swallowed : Contact the Poison's Information Centre (eg Australia 13 1126; New Zealand 0800 764 766).

Rinse mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately.
- If inhaled : Remove to fresh air. Treat symptomatically. Get medical attention if symptoms occur.
- Protection of first-aiders : In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.
- Notes to physician : Treat symptomatically.

See toxicological information (Section 11)

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : None known.
- Specific hazards during firefighting : Fire Hazard
Keep away from heat and sources of ignition.
Flash back possible over considerable distance.
- Hazardous combustion products : Carbon oxides
- Special protective equipment for firefighters : Use personal protective equipment.
- Specific extinguishing methods : Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
- Hazchem Code : 2X

SECTION 6. ACCIDENTAL RELEASE MEASURES

- INITIAL EMERGENCY RESPONSE GUIDE NO : 36

SAFETY DATA SHEET

CAI200

- Personal precautions, protective equipment and emergency procedures : Ensure adequate ventilation. Remove all sources of ignition. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.
- Environmental precautions : Do not allow contact with soil, surface or ground water.
- Methods and materials for containment and cleaning up : Eliminate all ignition sources if safe to do so. Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Flush away traces with water. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway.

SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Do not ingest. Keep away from fire, sparks and heated surfaces. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Use only with adequate ventilation.
- Conditions for safe storage : Keep away from heat and sources of ignition. Keep away from oxidizing agents. Keep away from strong bases. Keep out of reach of children. Keep container tightly closed. Store in suitable labeled containers.
- Suitable material : The following compatibility data is suggested based on similar product data and/or industry experience: Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use.
- Unsuitable material : not determined

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Form of exposure	Permissible concentration	Basis
Formic Acid	64-18-6	TWA	5 ppm 9.4 mg/m ³	AU OEL
		VLE	10 ppm 19 mg/m ³	AU OEL
Formic Acid	64-18-6	WES-STEL	10 ppm 19 mg/m ³	NZ OEL
		WES-TWA	5 ppm 9.4 mg/m ³	NZ OEL
Formic Acid	64-18-6	TWA	5 ppm	ACGIH
		STEL	10 ppm	ACGIH
		TWA	5 ppm 9 mg/m ³	NIOSH REL
		TWA	5 ppm	OSHA Z1

SAFETY DATA SHEET

CAI200

9 mg/m³

Engineering measures : Effective exhaust ventilation system. Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection : Safety goggles
Face-shield

Hand protection : Wear the following personal protective equipment:
Standard glove type.
Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Skin protection : Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing

Respiratory protection : When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling. Provide suitable facilities for quick drenching or flushing of the eyes and body in case of contact or splash hazard.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Liquid

Colour : Colorless

Odour : Pungent

Flash point : 66.0 °C
minimum

pH : 1.0, 100 %

Odour Threshold : no data available

Melting point/freezing point : MELTING POINT: -10.0 °C, <

Initial boiling point and boiling range : 107.0 °C Calculated

Evaporation rate : no data available

Flammability (solid, gas) : no data available

Upper explosion limit : no data available

Lower explosion limit : no data available

Vapour pressure : 33.0 mm Hg (20.0 °C)

Relative vapour density : no data available

Relative density : no data available

Density : no data available

Water solubility : completely soluble

Solubility in other solvents : no data available

SAFETY DATA SHEET

CAI200

Partition coefficient: n-octanol/water : no data available
Auto-ignition temperature : no data available
Thermal decomposition : Carbon oxides
Viscosity, dynamic : no data available
Viscosity, kinematic : no data available
VOC : 85.0 %

SECTION 10. STABILITY AND REACTIVITY

Chemical stability : Stable under normal conditions.
Possibility of hazardous reactions : No dangerous reaction known under conditions of normal use.
Conditions to avoid : Heat, flames and sparks.
Incompatible materials : Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors.
Bases
Contact with strong alkalies (e.g. ammonia and its solutions, carbonates, sodium hydroxide (caustic), potassium hydroxide, calcium hydroxide (lime), cyanide, sulfide, hypochlorites, chlorites) may generate heat, splattering or boiling and toxic vapors.
Hazardous decomposition products : Carbon oxides

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes : Causes serious eye damage.
Skin : Causes severe skin burns.
Ingestion : Causes digestive tract burns.
Inhalation : Health injuries are not known or expected under normal use.
Chronic Exposure : Health injuries are not known or expected under normal use.

Experience with human exposure

Eye contact : Redness, Pain, Corrosion
Skin contact : Redness, Pain, Corrosion
Ingestion : Corrosion, Abdominal pain
Inhalation : Respiratory irritation, Cough

Toxicity

Product

SAFETY DATA SHEET

CAI200

Acute oral toxicity	: no data available
Acute inhalation toxicity	: no data available
Acute dermal toxicity	: no data available
Skin corrosion/irritation	: no data available
Serious eye damage/eye irritation	: no data available
Respiratory or skin sensitization	: no data available
Carcinogenicity	: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
Reproductive effects	: No toxicity to reproduction
Germ cell mutagenicity	: Contains no ingredient listed as a mutagen
Teratogenicity	: no data available
STOT - single exposure	: no data available
STOT - repeated exposure	: no data available
Aspiration toxicity	: No aspiration toxicity classification

HUMAN HAZARD CHARACTERIZATION

Based on our hazard characterization, the potential human hazard is: High
High

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Toxicity to fish	: no data available
Toxicity to daphnia and other aquatic invertebrates	: no data available
Toxicity to algae	: no data available

Components

Toxicity to fish	: Formic Acid LC50 : > 100 mg/l Exposure time: 96 h
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Persistence and degradability

The organic portion of this preparation is expected to be readily biodegradable.

Mobility

SAFETY DATA SHEET

CAI200

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.

If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	:	<5%
Water	:	30 - 50%
Soil	:	50 - 70%

The portion in water is expected to be soluble or dispersible.

Bioaccumulative potential

This preparation or material is not expected to bioaccumulate.

Other information

no data available

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION

Based on our hazard characterization, the potential environmental hazard is: Moderate Moderate

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods : Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.

Disposal considerations : Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport

Proper shipping name	:	FORMIC ACID SOLUTION
UN/ID No.	:	UN 1779
Transport hazard class(es)	:	8
Packing group	:	II
IERG No	:	36
Hazchem Code	:	2X

Special precautions for user : Dangerous goods of Class 8 (Acids) are incompatible in a placard load with any of the following:
Class 1 Explosives
Class 4.3 Dangerous when wet substances
Class 5.1 Oxidising agents
Class 5.2 Organic peroxides
Class 6 Cyanides only
Class 7 Radioactive substances
and are incompatible with food or food packaging in any

SAFETY DATA SHEET

CAI200

quantity.

Air transport (IATA)

UN/ID No. : UN 1779
Proper shipping name : FORMIC ACID SOLUTION
Technical name(s) :
Transport hazard class(es) : 8
Packing group : II

Sea Transport (IMDG/IMO)

UN/ID No. : UN 1779
Proper shipping name : FORMIC ACID SOLUTION
Technical name(s) :
Transport hazard class(es) : 8
Packing group : II

SECTION 15. REGULATORY INFORMATION

Standard for the Uniform : Schedule 5
Scheduling of Medicines and
Poisons
INTERNATIONAL CHEMICAL CONTROL LAWS :

TOXIC SUBSTANCES CONTROL ACT (TSCA)

The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)

The substances in this preparation are listed on the Domestic Substances List (DSL), are exempt, or have been reported in accordance with the New Substances Notification Regulations.

AUSTRALIA

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

EUROPE

The substances in this preparation have been reviewed for compliance with the EINECS or ELINCS inventories.

JAPAN

All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Existing and New Chemical Substances list (ENCS).

KOREA

All substances in this product comply with the Toxic Chemical Control Law (TCCL) and are listed on the Existing Chemicals List (ECL)

NEW ZEALAND

All substances in this product comply with the Hazardous Substances and New Organisms (HSNO) Act 1996, and are listed on or are exempt from the New Zealand Inventory of Chemicals.

PHILIPPINES

All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).

SECTION 16. OTHER INFORMATION

SAFETY DATA SHEET

CAI200

REFERENCES

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH, (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Revision Date : 01.07.2014
Date of first issue : 10.06.2014
Version Number : 1.1
Prepared By : Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the MSDS.

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Email: info@condorenergy.com.au

Product Name **HYDROCHLORIC ACID 32% (COOGEE CHEMICALS)**

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Supplier Name COOGEE CHEMICALS
Address Cnr of Patterson and Kwinana Beach Roads, Kwinana, WA, AUSTRALIA, 6167
Telephone (08) 9439 8200
Fax (08) 9439 8300
Emergency 1800 800 655
Email businessrelations@coogee.com.au
Web Site http://www.coogee.com.au

Synonym(s) 9178 - PRODUCT CODE • COOGEE HYDROCHLORIC ACID 32% • HCL • HYDROCHLORIC ACID 32% • HYDROCHLORIC ACID 32% (NUFARM) (FORMERLY) • MURIATIC ACID • SPIRITS OF SALTS

Use(s) ACIDIFIER • CHEMICAL INTERMEDIATE • LABORATORY REAGENT • PICKLING AND ANODISING METALS • SCALE REMOVER

2. HAZARDS IDENTIFICATION

CLASSIFIED AS HAZARDOUS ACCORDING TO ASCC CRITERIA

RISK PHRASES

R34 Causes burns.
R37 Irritating to respiratory system.

SAFETY PHRASES

S1/2 Keep locked up and out of reach of children.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S45 In case of accident or if you feel unwell seek medical advice immediately (show the label where possible).
S9 Keep container in a well ventilated place.

CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

UN No.	1789	DG Class	8	Subsidiary Risk(s)	None Allocated
Packing Group	II	Hazchem Code	2R	EPG	8A1

3. COMPOSITION/ INFORMATION ON INGREDIENTS

Ingredient	Formula	CAS No.	Content
HYDROCHLORIC ACID	H-Cl	7647-01-0	32%
WATER	H2O	7732-18-5	remainder

4. FIRST AID MEASURES

Eye If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

Inhalation If inhaled, remove from contaminated area. To protect rescuer, use a Full-face Type B (Inorganic and acid gas) respirator or an Air-line respirator (in poorly ventilated areas). Apply artificial respiration if not breathing.

Skin If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water.

Ingestion For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.

Advice to Doctor CORROSIVE POISONING TREATMENT: Immediate treatment preferably in a hospital is mandatory. It is also important to attempt to discover the chemical substances ingested. In treating corrosive poisoning, DO NOT INDUCE VOMITING; DO NOT ATTEMPT GASTRIC LAVAGE; and DO NOT ATTEMPT TO NEUTRALISE THE CORROSIVE SUBSTANCE. Vomiting will increase the severity of damage to the oesophagus as the corrosive substance will again come in contact with it. Attempting gastric lavage may result in perforating either the oesophagus or stomach.

Product Name **HYDROCHLORIC ACID 32% (COOGEE CHEMICALS)**

Immediately dilute the corrosive substance by having the patient drink milk or water. If the trachea has been damaged tracheostomy may be required. For oesophageal burns begin broad-spectrum antibiotics and corticosteroid therapy. Intravenous fluids will be required if oesophageal or gastric damage prevents ingestion of liquids. Long-range therapy will be directed toward preventing or treating oesophageal scars and strictures.

First Aid Facilities Eye wash facilities and safety shower should be available.

5. FIRE FIGHTING MEASURES

Flammability	Non flammable. May evolve toxic gases (chlorides) when heated to decomposition. May evolve flammable hydrogen gas when in contact with some metals.
Fire and Explosion	Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.
Extinguishing	Prevent contamination of drains or waterways.
Hazchem Code	2R

6. ACCIDENTAL RELEASE MEASURES

Spillage	Contact emergency services where appropriate. Use personal protective equipment. Clear area of all unprotected personnel. Ventilate area where possible. Contain spillage, then cover / absorb spill with sodium bicarbonate or 50 -50 mixture of sodium carbonate and calcium hydroxide. Collect for complete neutralisation and appropriate disposal.
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7. STORAGE AND HANDLING

Storage	Store in secured, cool, dry, well ventilated area, removed from oxidising agents, alkalis, most metals, alcohols, acids, dinitroaniline, cyanides, sulphides, heat or ignition sources and foodstuffs. Ensure containers are labelled, protected from physical damage and sealed when not in use. Check regularly for leaks or spills. Large storage areas should have appropriate ventilation systems. Also store removed from amines.
Handling	Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

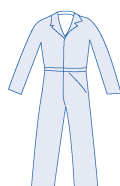
8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

Exposure Stds	Ingredient	Reference	TWA		STEL	
			ppm	mg/m3	ppm	mg/m3
	Hydrogen chloride (Hydrochloric acid)	ASCC (AUS)	5.0	7.5	--	--

Biological Limits No biological limit allocated.

Engineering Controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain vapour levels below the recommended exposure standard.

PPE Wear splash-proof goggles, a PVC apron, rubber boots, full-length rubber or full-length PVC gloves, a faceshield and coveralls. Wear full-length PVC or full-length rubber gloves, splash-proof goggles, a PVC apron, rubber boots, full PVC coveralls (or better) and a faceshield. Where an inhalation risk exists, wear: a Full-face Type B (Inorganic and Acid gas) or an Air-line respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

Product Name **HYDROCHLORIC ACID 32% (COOGEE CHEMICALS)**

Appearance	COLOURLESS TO SLIGHTLY YELLOW LIQUID	Solubility (Water)	SOLUBLE
Odour	PUNGENT ODOUR	Specific Gravity	1.161
pH	< 1	% Volatiles	100 %
Vapour Pressure	18 mm Hg @ 20°C	Flammability	NON FLAMMABLE
Vapour Density	1.3 (Air = 1)	Flash Point	NOT RELEVANT
Boiling Point	109°C	Upper Explosion Limit	NOT RELEVANT
Melting Point	< -20°C	Lower Explosion Limit	NOT RELEVANT
Evaporation Rate	AS FOR WATER		

10. STABILITY AND REACTIVITY

Chemical Stability Stable under recommended conditions of storage.

Conditions to Avoid Avoid heat, sparks, open flames and other ignition sources.

Material to Avoid Incompatible with oxidising agents (eg. hypochlorites), alkalis (eg. hydroxides), most metals, acids (eg. nitric acid), alcohols, dinitroanilines, cyanides, sulphides and heat sources. Corrodes most materials when moist. Also incompatible with amines.

Decomposition May evolve toxic gases (chlorides) when heated to decomposition.

Hazardous Reactions Polymerization is not expected to occur.

11. TOXICOLOGICAL INFORMATION

Health Hazard Summary Highly corrosive. This product has the potential to cause serious adverse health effects. Use safe work practices to avoid eye or skin contact and inhalation. Over exposure may result in severe skin, eye and respiratory burns with permanent lung and tissue damage. Upon dilution, the potential for adverse health effects may be reduced.

Eye Highly corrosive. Contact may result in irritation, lacrimation, pain, redness, conjunctivitis and corneal burns with possible permanent damage.

Inhalation Toxic - corrosive. Over exposure may result in irritation of the nose and throat, coughing and bronchitis. High level exposure may result in intense thirst, ulceration, lung tissue damage, chemical pneumonitis and pulmonary oedema. Effects may be delayed.

Skin Highly corrosive. Contact may result in irritation, redness, pain, rash, dermatitis, blistering and severe burns. May cause discolouration of the skin. Effects may be delayed.

Ingestion Highly corrosive. Ingestion may result in burns to the mouth and throat, nausea, vomiting, abdominal pain and diarrhoea. Ingestion of large quantities may result in ulceration, unconsciousness, convulsions and death.

Toxicity Data HYDROCHLORIC ACID (7647-01-0)
LC50 (Inhalation): 1108ppm/1 hour (human - respiratory irritation)
LCLo (Inhalation): 1300 ppm/30 minutes (human)
LD50 (Ingestion): 900 mg/kg (rabbit)
LDLo (Ingestion): 81 mg/kg (man)
TCLo (Inhalation): 450 mg/m³/1 hour (pregnant rat - teratogenic effects)

12. ECOLOGICAL INFORMATION

Environment If hydrochloric acid is spilled on soil, it will infiltrate. During its transport through soil, the acid will dissolve some of the soil material, in particular carbonates, and will be neutralised to some degree. However, significant amounts of acid are expected to remain for transport down to groundwater. Toxic to aquatic invertebrates at low levels (LC50: 1.21 ppm/96 hours).

13. DISPOSAL CONSIDERATIONS

Waste Disposal Wearing the protective equipment detailed above, neutralise to pH 6-8 by SLOW addition to a saturated sodium bicarbonate solution or similar basic solution. Dilute with excess water and flush to drain. Waste disposal should only be undertaken in a well ventilated area.

Legislation Dispose of in accordance with relevant local legislation.

Product Name **HYDROCHLORIC ACID 32% (COOGEE CHEMICALS)**

14. TRANSPORT INFORMATION



CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

Shipping Name	HYDROCHLORIC ACID				
UN No.	1789	DG Class	8	Subsidiary Risk(s)	None Allocated
Packing Group	II	Hazchem Code	2R	EPG	8A1

15. REGULATORY INFORMATION

Poison Schedule Classified as a Schedule 6 (S6) Poison using the criteria in the Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).

AICS All chemicals listed on the Australian Inventory of Chemical Substances (AICS).

16. OTHER INFORMATION

Additional Information RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

ACIDS: When mixing acids with water (diluting), caution must be taken as heat will be generated which causes violent spattering. Always add a small volume of acid to a large volume of water, NEVER the reverse.

ABBREVIATIONS:

ADB - Air-Dry Basis.

BEI - Biological Exposure Indice(s)

CAS# - Chemical Abstract Service number - used to uniquely identify chemical compounds.

CNS - Central Nervous System.

EINECS - European INventory of Existing Commercial chemical Substances.

IARC - International Agency for Research on Cancer.

M - moles per litre, a unit of concentration.

mg/m³ - Milligrams per cubic metre.

NOS - Not Otherwise Specified.

NTP - National Toxicology Program.

OSHA - Occupational Safety and Health Administration.

pH - relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).

ppm - Parts Per Million.

RTECS - Registry of Toxic Effects of Chemical Substances.

TWA/ES - Time Weighted Average or Exposure Standard.

HEALTH EFFECTS FROM EXPOSURE:

It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a Chem Alert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this Chem Alert report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

COLOUR RATING SYSTEM: RMT has assigned all Chem Alert reports a colour rating of Green, Amber or Red for the sole purpose of providing users with a quick and easy means of determining the hazardous nature of a product. Safe handling recommendations are provided in all Chem Alert reports so as to clearly identify how users

Product Name **HYDROCHLORIC ACID 32% (COOGEE CHEMICALS)**

can control the hazards and thereby reduce the risk (or likelihood) of adverse effects. As a general guideline, a Green colour rating indicates a low hazard, an Amber colour rating indicates a moderate hazard and a Red colour rating indicates a high hazard.

While all due care has been taken by RMT in the preparation of the Colour Rating System, it is intended as a guide only and RMT does not provide any warranty in relation to the accuracy of the Colour Rating System. As far as is lawfully possible, RMT accepts no liability or responsibility whatsoever for the actions or omissions of any person in reliance on the Colour Rating System.

Report Status This Chem Alert report has been independently compiled by RMT's scientific department utilising the original Material Safety Data Sheet ('MSDS') for the product provided to RMT by the manufacturer. The information is based on the latest chemical and toxicological research and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue.

This Chem Alert report does not constitute the manufacturer's original MSDS and is not intended to be a replacement for same. It is provided to subscribers of Chem Alert as a reference tool only, is not all-inclusive and does not represent any guarantee as to the properties of the product. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer.

While RMT has taken all due care to include accurate and up-to-date information in this Chem Alert report, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this Chem Alert report.

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End of Report