



Ungani Production Facility Modification Environment Plan: Revised Chemical Disclosure Summary Document

Document number HSE-SUM-044	Revision 1	Date of Revision 30/08/2017
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1. INTRODUCTION

Buru Energy Limited (Company) is an Australian ASX listed company engaged in oil and gas exploration and production in the Kimberley region of Western Australia, in an area known in geological terms as the Canning Basin.

The Company is planning to recommence oil production at the Ungani Oilfield production facility, after the field has been shut-in since January 2016. Routine modifications designed to streamline production will be undertaken at the Ungani Facility (Activity) prior to recommencing production. Further modifications may also be undertaken at a later date, depending on production results.

The Company has developed the *Ungani Production Facility Modification Environment Plan* (HSE-PLN-042) (Environment Plan) to identify potential environmental risks associated with the Activity, and has set out in that plan the mitigation and management measures to ensure that environmental impacts are As Low As Reasonably Practicable (ALARP).

The *Ungani 1ST1 and Ungani 2 Workovers Chemical Disclosure Bridging Document* (L3196) has been developed to replace the disclosed chemicals for use in the suspension fluid.

This summary document provides an overview of the Activity and summarises the mitigation and management measures in the Environment Plan and provides the updated chemical disclosure.

1.1. Contact Details

Regulatory and Community Manager
Buru Energy Limited
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Email: info@buruenergy.com

2. OVERVIEW OF THE ACTIVITY

The Activity will be undertaken at the existing Ungani Central and Ungani Far West 1 well sites (collectively with the Ungani 3 well site, the Ungani Facility). The Ungani Central site includes the Ungani 1ST1 and Ungani 2 petroleum wells. No operations will be undertaken at the Ungani 3 well site.

The Ungani Facility is located within petroleum production licences L 20 and L 21 as shown on Figure 1. The Ungani Facility is located approximately 100 km east of Broome and 86 km southwest of Derby on Yakka Munga Pastoral Station.

2.1. Scope and Timing

The Activity will commence in the 2017 dry season and be undertaken in stages. The scopes to be undertaken prior to restart are:

- installation of equipment to allow reinjection of produced water at Ungani Far West 1; and
- replacement of the crude oil road tanker load out system.

The Activity scopes that may then be undertaken at a later date (depending on field performance) include:

- installation of additional stock tanks;
- installation of an additional or replacement separator; and
- installation of pumps in either or both of the production wells, together with associated power and control systems.

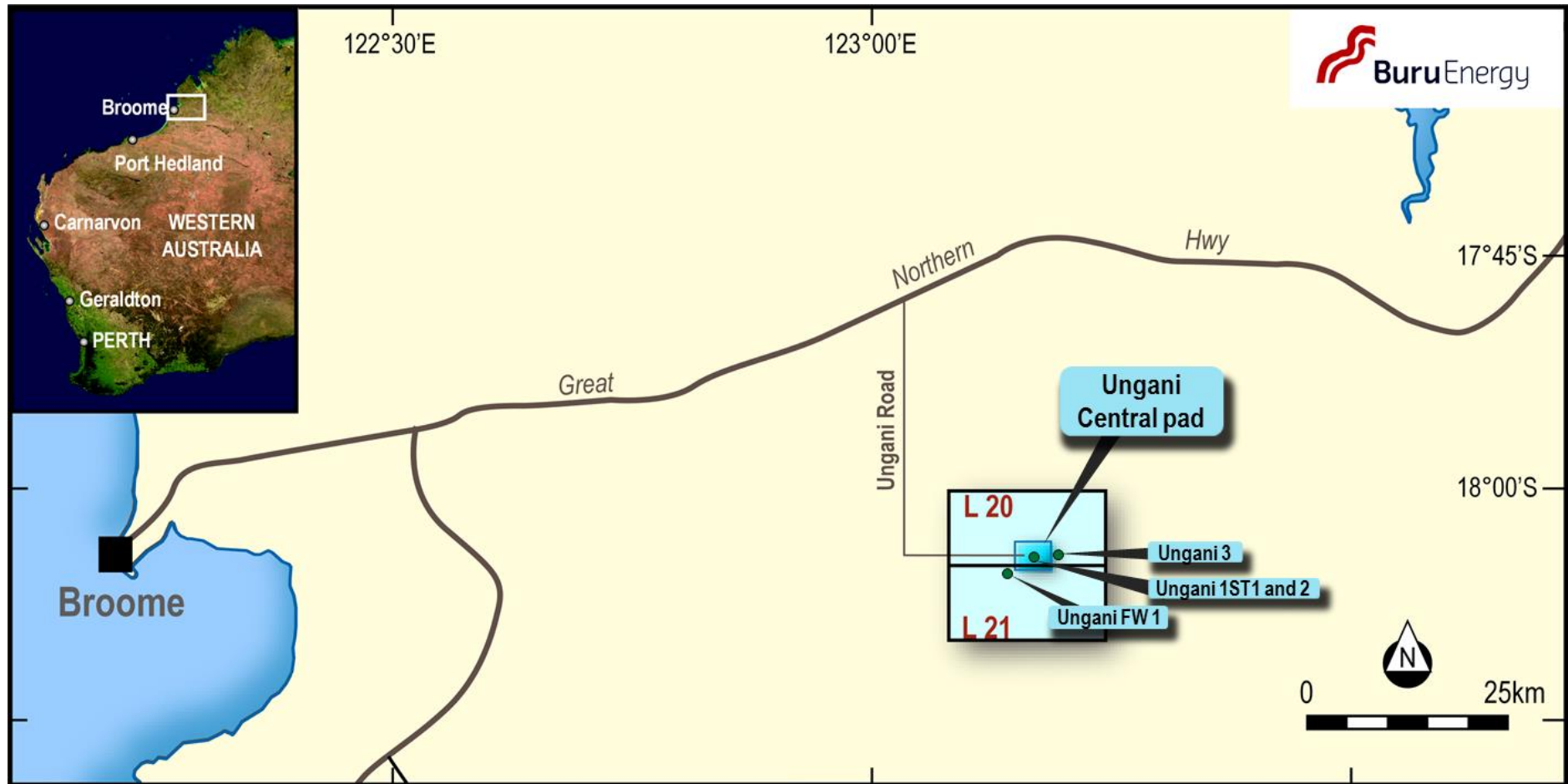


Figure 1: Location of the Ungani Facility.

2.2. Mobilisation

Mobilisation will be staged, that is not all machinery and equipment will mobilise to the Activity area at once. During mobilisation, equipment, personnel and supplies required for the Activity will be mobilised to the Activity area using dedicated vehicles. All travel on public roads will be in accordance with State road legislation and the Company's *Travel Management Procedure* (HSE-PRO-002).

Equipment and vehicles mobilised to the Activity area may include earthmoving equipment, trucks, cranes and light vehicles.

2.3. Removal of Existing Infrastructure

As described below, some infrastructure at the Ungani Facility will be replaced as part of the Activity. The Company will likely retain the replaced piping for use in future testing operations at other wells; this will be stored at the laydown area or offsite at another Company storage facility. The remainder of removed infrastructure will be disposed of in accordance with regulatory requirements.

2.4. Surface Modification Works

2.4.1. Initial Modification

2.4.1.1. Produced Water Reinjection

The lower zone in the Ungani Far West 1 well is located deeper than, and separated by impermeable barriers from, the oil accumulation in the upper dolomite zone. This lower zone is water bearing and is in geological and pressure communication with the Ungani reservoir, providing the ideal location for reinjection of produced water from the field. The oil in the upper zone will be produced at a later date.

Reinjection into the Ungani Far West 1 well will require the installation of a flowline between Ungani Central and Ungani Far West 1.

To minimise ground disturbance, the flowline will be laid on the ground beside the access track in the existing Right of Way, in a similar manner to the produced water flowline from Ungani Central to the Ungani 3 well. The distance between Ungani Central and Ungani Far West 1 is 4.4 km. The multistage pump currently in use at Ungani Central will be used for water transfer to Ungani Far West 1.

2.4.1.2. Loadout System

The loadout skid will be replaced with a purpose built pre-fabricated load out skid.

2.4.2. Potential Future Modification

2.4.2.1. Production System and Storage

The Company may undertake the following modifications of the existing production system at Ungani Central:

- installation of a larger separator to replace, or in addition to, the existing separator;
- Installation of additional separation and storage tanks;
- installation of additional steel piping to tie in pumps, additional tanks and separator; and
- installation of additional piping supports, as required.

2.4.2.2. Produced Water Reinjection

At Ungani Far West 1, a produced water storage tank, water injection pump and associated equipment may be installed as required in the future. Initial water injection will be directly into the wellhead from the flowline.

2.4.2.3. Pump Installation

It is expected that artificial lift will be required to be installed to ensure production rates from the Ungani 1ST1 and Ungani 2 wells can be sustained. Installation of downhole pumps may require workovers of the production wells.

2.4.2.4. Downhole Fluids

If well workovers are required for pump installation, suspension fluid may be used downhole. All chemicals and other substances that would be used downhole during workovers have been fully disclosed in accordance with Regulation 15(9) of the *Petroleum and Geothermal Energy Resources (Environment) Regulations 2012 (WA)* and *Chemical Disclosure Guideline (DMP 2013)*. Full chemical disclosure is provided in Appendix A, with all Material Safety Data Sheets (MSDSs) provided in Appendix B.

2.4.2.5. Bunding

Additional bunding will be required to be installed to accommodate any additional tanks or separator. The new bunding will be same construction as the current bunding at Ungani Central, being earthen bunds covered with an impervious HDPE liner and concrete canvas matting. Bunding will be constructed to meet Australian Standards.

2.4.2.6. Instrumentation and Electrical

Depending on the scope of modifications undertaken, the following upgrades to instrumentation and electrical systems may be necessary:

- installation of additional generators;
- replacement of instrument air dryer; and
- modification of surface electrical system to tie in pumps, additional tanks, produced water transfer and reinjection system and associated infrastructure.

2.5. Waste

All putrescible wastes will be stored at the well site or camp site in lidded skips/bins that remain closed to prevent fauna access and litter generation. Inert recyclable and industrial waste will be stored in skips. All waste types (putrescible, inert, recyclable and industrial) will be removed from the Ungani Facility and disposed offsite in accordance with regulatory requirements. Any hydrocarbon contaminated materials will be contained (e.g. in bins or bunded area). Waste will be transported in accordance with the *Environmental Protection (Controlled Waste) Regulations 2004* where required.

Sewage and grey water at the Ungani Facility is treated by an onsite Aerated Wastewater Treatment System.

2.6. Demobilisation and Rehabilitation

Following completion of the Activity, all Activity specific machinery and equipment will be removed from the Activity area. As for mobilisation, demobilisation will be staged.

No rehabilitation is planned as part of the Activity.

3. ENVIRONMENTAL IMPACTS AND MANAGEMENT MEASURES

The Activity will be confined to the existing Activity area. A summary of the existing environmental characteristics of the Activity area, potential impacts that could result from the Activity and the risk of these potential impacts occurring is provided in Table 1. Included in this table are also the management and mitigation measures that form part of the implementation strategy to minimise environmental risk.

Table 1: Summary of the existing environment, potential impacts and management approach associated with the Activity.

Environmental characteristic	Description	Potential Impact	Key Management Measures	Risk	Implementation Strategy
Surface water	The access track to the Ungani Facility is within the Cape Leveque Coast Basin while the Ungani Facility is located in the Fitzroy River Catchment. The Fitzroy River, 53 km from the Ungani Facility, is the largest water course in the vicinity of the Activity area. No permanent water bodies are located in the vicinity of the Activity area and drainage lines are internally draining, only flowing to the Fitzroy River under flood conditions. During the wet season, sheet flow can occur due to the low lying topography of the Activity area.	Contamination of surface water.	<ul style="list-style-type: none"> Vehicles limited to the Activity area, travel in accordance with the <i>Travel Management Procedure</i> (HSE-PRO-002). Operations with spill risks undertaken in bunded areas or over drip trays. Waste will be managed and monitored in accordance with the <i>Waste Monitoring and Management Procedure</i> (HSE-PR-005). 	Given the mitigation and management measures that will be implemented, major alteration to surface water is unlikely.	<ul style="list-style-type: none"> Person In Charge (PIC) to ensure no personnel or vehicle access outside of the Activity area. PIC to ensure well site is fenced and gate closed. PIC to ensure wastes are appropriately stored prior to disposal.
Geology, Landforms and Soil	The Activity area is located in the Fitzroy Trough, a major subdivision of the Canning Basin, and the Dampierland Interim Biogeographic Regionalisation of Australia bioregion. The geology and soils characteristic of the Dampierland bioregion are comprised of extensive riverine plains with grey and brown cracking clays; extensive sandplains or red earthy sands, low uplands of sandstone and limestone with shallow stony soils. The area around the existing Activity area is comprised of a series of sand sheets intersected by alluvial flood plains that are either no longer active or not frequently inundated.	Soil erosion, sedimentation or compaction. Potential contamination of soil.	<ul style="list-style-type: none"> Dangerous and hazardous goods will be stored within bunded areas. Dangerous goods labelled in accordance with regulations and MSDS. Refuelling of vehicles in accordance with the <i>Refuelling Procedure</i> (HSE-PRO-011). Well maintained machinery, vehicles and equipment. Containment, clean-up and remediation if required of a spill in accordance with the <i>Canning Basin Spill Response Plan</i> (HSE-ER-015). 	Given the mitigation and management measures that will be implemented, soil contamination and erosion is unlikely.	<ul style="list-style-type: none"> PIC to complete weekly operational checklist. PIC to ensure all dangerous goods or hazardous substances are transported, stored and handled to prevent spills. PIC to ensure all physical containment measures are well maintained. PIC to ensure well maintained machinery, vehicles and equipment.
Groundwater	The major aquifer used by pastoral stations in the vicinity of the Activity is the Wallal Sandstone. The Wallal Sandstone is intersected at depths of between 130 m and 200 m below ground level (BGL) in the Activity area. The groundwater bore at the Ungani Facility accesses this aquifer at 140 m BGL. The nearest water bore operated by a third party is approximately 11 km to the west. The closest drainage area to the Activity is a small drainage depression about 9 km north.	Potential contamination of groundwater.		Given the mitigation and management measures that will be implemented, groundwater contamination is considered unlikely.	
Vegetation and Flora	Within Dampierland the vegetation is characterised by the pindan formation which occurs on sand plains. Pindan is described by as a “grassland wooded by a sparse upper layer of trees and a dense, thicket-forming middle layer of unarmed, phyllodal <i>Acacia</i> ”. Two taxa recorded during an on-ground survey in the vicinity of the Activity area, <i>Goodenia byrnesii</i> and <i>G. crenata</i> , are ranked by DPAW as priority three.	Potential loss of a local population of a conservation significant flora species. Loss of native flora.	<ul style="list-style-type: none"> Minimal clearing of vegetation is required. Vehicle and personnel access limited to the Activity area. Earthmoving machinery and equipment will be inspected and cleaned. Externally sourced gravel will be weed free. Vehicles comply with the <i>Travel Management Procedure</i> (HSE-PRO-002). Vehicles and machinery will be well maintained and undergo a pre-start check. Firebreak will be inspected and maintained. Smoking restricted to designated smoking areas. Firefighting equipment available and operational personnel trained in its use. Operations mostly limited to daylight hours. Welding and cutting operations subject to Permit to Work system. Broome Veterinary Hospital or Department of Parks and Wildlife Wildcare Helpline will be contacted if any fauna becomes injured. 	Given that minimal clearing is required, the Activity will not have a significant impact on flora and vegetation, ESAs or fauna.	<ul style="list-style-type: none"> PIC to ensure well maintained firebreaks and firefighting equipment, regular servicing of machinery and equipment, and limiting smoking to designated areas. PIC to ensure no personnel or vehicle access outside of the Activity area. PIC to ensure all earthmoving machinery/ equipment is checked prior to entering the Activity area. Weekly inspection of the Activity area. PIC to ensure lighting is minimum for safe operations. Weekly inspection of fauna egress paths and fencing.
Environmentally Sensitive Areas (ESAs)	The nearest ESA is Taylors Lagoon, approximately 30 km to the northwest of the Ungani Facility. Ungani Far West 1 overlaps the Edgar Range Red Book area.	Potential loss of environmental values associated with ESA.			
Fauna	The only of fauna of conservation significance sighted during surveys in the vicinity of the Activity area were the Australian bustard (<i>Ardeotis australis</i>), grey falcon (<i>Falco hypoleucos</i>) and rainbow bee-eater (<i>Merops ornatus</i>). No feral fauna was identified, nor were any signs (tracks, scats, diggings) noted.	Death or injury of fauna. Loss of conservation significant fauna habitat.			
Social	The Activity is located within a sparsely populated region with limited settlement, transport or communications infrastructure. Land use is dominated by open range pasture grazing of beef stock. The townships of Derby to the northeast and Broome 100 km to the west are the largest population centres in the vicinity of the Activity. The nearest Homestead is Yakkamunga approximately 30 km east of the Activity.	Disturbance of livestock. Disturbance of local landholders.	<ul style="list-style-type: none"> On-going consultation with local landholders and other stakeholders including regular notice/updates until completion of the Activity. Vehicles will comply with the <i>Travel Management Procedure</i> (HSE-PRO-002). All wastes removed from the Activity area for disposal at a licenced facility. 	Through the implementation of management measures, it is unlikely the Activity will have an impact on Social values.	<ul style="list-style-type: none"> PIC to ensure no disturbance outside of Activity area. Weekly inspection for impacts outside of the Activity area.
Cultural	Heritage surveys and clearances for the Ungani Facility have been undertaken by representatives of the native title claimants and an anthropologist engaged by the Traditional Owners.	Damage to cultural heritage site/s or object/s.	<ul style="list-style-type: none"> Vehicle and personnel activity limited to the Activity area. Minimal clearing as part of the Activity. Land access agreements have been signed with relevant Traditional Owner groups for the Ungani Production Facility. 	Given that minimal clearing is required, it is unlikely that the Activity will have an impact on cultural heritage site/s or object/s.	<ul style="list-style-type: none"> PIC to ensure no disturbance outside of Activity area. Weekly inspection of the Activity area for impacts outside of the Activity area.

4. COMMUNICATION

The Company has engaged in communication and consultation with relevant stakeholders as summarised in the Environment Plan. As the Activity area is located within a sparsely populated region with limited settlement, transport or communications infrastructure, relevant stakeholders are limited to government departments, traditional owners and pastoralists. The stakeholders consulted with to date include:

- Department of Water;
- Department of Environment Regulation;
- Yakka Munga Pastoral Station; and
- Yawuru Traditional Owners;
- Nyikina Mangala Traditional Owners; and
- Karajarri Yanja Traditional Owners.

These stakeholders have been consulted via phone, written notices and face-to-face meetings.

No issues have been raised in relation to the Activity through the consultation process. The Company will continue to communicate with stakeholders and consult during all phases of the Activity, on a formal and informal basis, and by email, letter, face-to-face and telephone.

Appendix A

Full Chemical Disclosure

A. System Details

Operator	Buru Energy
Project/Well	Ungani Wells Suspension
System	Suspension Fluid
Total Volume of System	Approximately 45,000 L per well

B. Product List

Product Name	Supplier	Purpose	Product in System Fluid (%)	Toxicity and Ecotoxicity Information	MSDS attached
ALDACIDE G	Halliburton Baroid	Biocide	0.065	<p><u>Component 1 (10-30% as an ingredient)</u></p> <p>Acute Toxicity Algae – EC50 (72h) 0.61 mg/L Fish – NOEC (97d) 1.6 mg/L, LC50 (96h) 3.5 mg/L Microorganisms – EC50 (17h) 6.65 mg/L Invertebrates – EC50 (48h) 0.35 mg/L, NOEC (21d) 0.13 mg/L</p> <p>Chronic Toxicity Can cause skin, eye etc. irritation.</p> <p>Biodegradation/Bioaccumulation Ready biodegradable (75% @ 28d) Log Pow -0.36</p> <p><u>Component 2 (<1% as an ingredient)</u></p> <p>Acute Toxicity Algae – EC50 (96h) 22,000 mg/L, NOEC (8d) 8,000 mg/L Fish – LC50 (96h) 15,400 mg/L, EC50 (200h) 14,536 mg/L Microorganisms – IC50 (3h) >1,000 mg/L Invertebrates – EC50 (96h) 18,260 mg/L, NOEC (21d) 208 mg/L</p> <p>Chronic Toxicity No information on chronic toxicity available for this ingredient.</p> <p>Biodegradation/Bioaccumulation Readily biodegradable (95-97% @ 28d) Log Pow -0.77</p> <p><u>Component 3 (≥70% as an ingredient)</u> Water</p>	Yes
Potassium Chloride	Halliburton Baroid	Clay & Shale Stabilizer / Weighting	1.6	<p>Acute Toxicity: Oral – LD50: 2,600 mg/kg (Rat). Fish – LC50 (48 hr): 720 mg/L (<i>Lctalurus punctulus</i>). Crustacean – LC50 (48 hr): 177 mg/L (<i>Daphnia magna</i>). Algae – EC50 (120 hr): 1,337 mg/L (<i>Nitzschia linearis</i>).</p> <p>Chronic Toxicity: Prolonged or repeated skin contact may cause drying with irritation etc. A</p>	Yes

Product Name	Supplier	Purpose	Product in System Fluid (%)	Toxicity and Ecotoxicity Information	MSDS attached
				chronic reproductive test with invertebrate (<i>D. magna</i>) gave LOEC of 101 mg/L. Biodegradation/bioaccumulation: Potassium Chloride is an inorganic salt, naturally occurring. KCl is fully soluble and highly mobile in soil. The product is not known to be bioaccumulative.	
BARACOR 100	Halliburton Baroid	Corrosion Inhibitor	2	<p><u>Component 1 (10-30% as an ingredient)</u> Acute Toxicity Algae – EC50 (72h) >120 mg/L, NOEC (72h) >120 mg/L Fish – LC50 (96h) >100 mg/L Microorganisms – EC50 (3h) >1,000 mg/L Invertebrates – LC50 (48h) 287.2 mg/L, EC50 (48h) >120 mg/L Chronic Toxicity Can cause skin, eye etc. irritation. Biodegradation/Bioaccumulation No information available on biodegradation Low Pow <1</p> <p><u>Component 2 (10-30% as an ingredient)</u> Acute Toxicity Algae – EC50 (96h) 22,000 mg/L, NOEC (8d) 8,000 mg/L Fish – LC50 (96h) 15,400 mg/L, EC50 (200h) 14,536 mg/L Microorganisms – IC50 (3h) >1,000 mg/L Invertebrates – EC50 (96h) 18,260 mg/L, NOEC (21d) 208 mg/L Chronic Toxicity No information on chronic toxicity available for this ingredient. Biodegradation/Bioaccumulation Readily biodegradable (95-97% @ 28d) Log Pow -0.77</p> <p><u>Component 3 (1-5% as an ingredient)</u> Acute Toxicity Algae – EC50 (72h) >91.5 mg/L Fish – TL50 (96h) 103 mg/L, NOEC (229d) >54 mg/L Microorganisms – NOEC (90d) >200 mg/L Invertebrates – TL50 (96h) 115 mg/L, NOEC (147d) 9.3 mg/L Chronic Toxicity Suspected carcinogen Biodegradation/Bioaccumulation Readily biodegradable (100% @ 14d) Low Pow -2.62</p> <p><u>Component 4 (≥35% as an ingredient)</u> Water</p>	Yes

Product Name	Supplier	Purpose	Product in System Fluid (%)	Toxicity and Ecotoxicity Information	MSDS attached
Water	Onsite Bore	Base Fluid	96.335	Not Applicable	No
Total			100%		
Sodium Chloride	AMC	Weighing Material	Contingency, 1.6%	<p>Acute Toxicity: Oral (rat) LD50: 3,000 mg/kg</p> <p>Chronic Toxicity: No data available to indicate product or components present at greater than 1% are chronic health hazards.</p> <p>Biodegradation/bioaccumulation: Sodium Chloride is an inorganic, naturally occurring salt and Biodegradation does not apply due to being inorganic (does not contain any Carbon or Hydrogen). Sodium Chloride is fully water soluble, abundant in nature and highly mobile in soil. The product is not known to be Bioaccumulative.</p>	Yes
Hydrochloric Acid	Coogee Chemicals	pH Control	Contingency, 0.07%	<p><i>Constituent 1 as an ingredient 32%</i></p> <p>Acute Toxicity: EC50 (72 h) 0.73 mg/L (non-neutralized) <i>Chlorella vulgaris</i> (freshwater algae). LC50 (48 h) 0.44 mg/L (non-neutralized) <i>Daphnia magna</i> (freshwater invertebrate). LC50 (96 h) 20.5 mg/L (non-neutralized) <i>Lepomis macrochirus</i> (freshwater fish) LD50 (oral) 238 – 277 mg/kg (Non-neutralized) Rat</p> <p>Chronic Toxicity: No known carcinogenic, chronic, mutagenic or reproductive effects for this product.</p> <p>Biodegradation/bioaccumulation: Not applicable to inorganic compounds <i>Constituent 2 as an ingredient 68%</i> Water</p>	Yes

C. Chemical List

Chemicals	CAS number	Mass fraction (%)
Gluteraldehyde	111-30-8	0.0195
Methanol	67-56-1	0.60065
Potassium Chloride	7447-40-7	1.6
Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues	68909-77-3	0.6
Nitrilotriacetic acid, trisodium salt monohydrate	5064-31-3	0.6
Water	7732-18-5	96.58
Total		100%
Sodium Chloride	7647-14-5	Contingency, ~1.6
Hydrochloric acid	7647-01-0	Contingency, ~0.02

Appendix B MSDS

SAFETY DATA SHEET

ALDACIDE® G ANTIMICROBIAL

Revision Date: 09-May-2016

Revision Number: 35

1. Product Identifier & Identity for the Chemical

Statement of Hazardous Nature Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Dangerous Goods according to the criteria of ADG.

1.1. Product Identifier

Product Name ALDACIDE® G ANTIMICROBIAL

Other means of Identification

Synonyms None
Hazardous Material Number: HM003462

Recommended use of the chemical and restrictions on use

Recommended Use Biocide
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 1 800 686 951
Fax Number: 61 (08) 9455 5300
E-mail Address fdunexchem@halliburton.com

Emergency phone number

+ 61 1 800 686 951

Australian Poisons Information Centre

24 Hour Service: - 13 11 26
Police or Fire Brigade: - 000 (exchange): - 1100

2. Hazard Identification

Statement of Hazardous Nature Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Dangerous Goods according to the criteria of ADG.

Classification of the hazardous chemical

Acute Oral Toxicity	Category 4 - H302
Acute inhalation toxicity - vapor	Category 3 - H331
Skin Corrosion/Irritation	Category 1 - H314
Serious Eye Damage/Irritation	Category 1 - H318
Respiratory Sensitization	Category 1 - H334
Skin Sensitization	Category 1 - H317
Reproductive Toxicity	Category 1B - H360
Specific Target Organ Toxicity - (Single Exposure)	Category 3 - H335

Acute Aquatic Toxicity	Category 1 - H400
Chronic Aquatic Toxicity	Category 3 - H412

Label elements, including precautionary statements**Hazard pictograms****Signal Word**

Danger

Hazard Statements:

H302 - Harmful if swallowed
 H314 - Causes severe skin burns and eye damage
 H317 - May cause an allergic skin reaction
 H318 - Causes serious eye damage
 H331 - Toxic if inhaled
 H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled
 H335 - May cause respiratory irritation
 H360 - May damage fertility or the unborn child
 H400 - Very toxic to aquatic life
 H412 - Harmful to aquatic life with long lasting effects

Precautionary Statements**Prevention**

P201 - Obtain special instructions before use
 P202 - Do not handle until all safety precautions have been read and understood
 P260 - Do not breathe dust/fume/gas/mist/vapors/spray
 P264 - Wash face, hands and any exposed skin thoroughly after handling
 P270 - Do not eat, drink or smoke when using this product
 P271 - Use only outdoors or in a well-ventilated area
 P272 - Contaminated work clothing should not be allowed out of the workplace
 P273 - Avoid release to the environment
 P280 - Wear protective gloves/protective clothing/eye protection/face protection
 P281 - Use personal protective equipment as required
 P285 - In case of inadequate ventilation wear respiratory protection

Response

P301+ P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
 P330 - Rinse mouth
 P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
 P363 - Wash contaminated clothing before reuse
 P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
 P310 - Immediately call a POISON CENTER or doctor/physician
 P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
 P391 - Collect spillage

Storage

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

Disposal

P501 - Dispose of contents/container in accordance with local/regional/national/international regulations

Contains

Substances
 Glutaraldehyde
 Methanol

CAS Number
 111-30-8
 67-56-1

Other hazards which do not result in classification

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).
This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

For the full text of the H-phrases mentioned in this Section, see Section 16

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - Australia
Glutaraldehyde	111-30-8	10 - 30%	Acute Tox. 3 (H301) Acute Tox. 2 (H330) Skin Corr. 1B (H314) Eye Corr. 1 (H318) Resp. Sens. 1 (H334) Skin Sens. 1 (H317) STOT SE 3 (H335) Aquatic Acute 1 (H400) Aquatic Chronic 2 (H411)
Methanol	67-56-1	0.1 - 1%	Acute Tox. 3 (H301) Acute Tox. 3 (H311) Acute Tox. 3 (H331) Repr. 1B (H360) STOT SE 1 (H370) Flam. Liq. 2 (H225)

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	Immediately flush eyes with large amounts of water for at least 30 minutes. Seek prompt medical attention.
Skin	In case of contact, immediately flush skin with plenty of soap and water for at least 30 minutes and remove contaminated clothing, shoes and leather goods immediately. Get medical attention immediately.
Ingestion	Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

Symptoms caused by exposure

Causes severe eye irritation which may damage tissue. Causes severe skin irritation with tissue destruction. May cause allergic skin reaction. May cause allergic respiratory reaction. May cause respiratory irritation. Harmful if swallowed. Toxic if inhaled. Potential reproductive hazard. May cause birth defects.

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 in a fire**

Decomposition in fire may produce harmful gases.

Special protective equipment and precautions for fire fighters**Special protective equipment for firefighters**

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. Ensure adequate ventilation. Avoid breathing vapors. Avoid contact with skin, eyes and clothing. Evacuate all persons from the area. Use only competent persons for cleanup.

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

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**

Use appropriate protective equipment. Ensure adequate ventilation. Avoid breathing vapors. Avoid breathing mist. Avoid contact with eyes, skin, or clothing. Wash hands after use. Launder contaminated clothing before reuse.

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 acids. Store away from alkalis. Store in a well ventilated area. Keep container closed when not in use. Store locked up. Product has a shelf life of 36 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
Glutaraldehyde	111-30-8	0.1 ppm	0.05 ppm
Methanol	67-56-1	TWA: 200 ppm TWA: 262 mg/m ³ STEL: 250 ppm STEL: 328 mg/m ³	TWA: 200 ppm STEL: 250 ppm

Appropriate engineering controls**Engineering Controls**

Use in a well ventilated area. Local exhaust ventilation should be used in areas without good cross ventilation. If vapors are strong enough to be irritating to the nose or eyes, the TLV is probably being exceeded and special ventilation or respiratory protection maybe required.

Personal protective equipment (PPE)**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

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, AS/NZS 1715:2009, 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.

Hand Protection	Use gloves which are suitable for the chemicals present in this product as well as other environmental factors in the workplace.
Skin Protection	Wear impervious protective clothing, including boots, gloves, lab coat, apron, rain jacket, pants or coverall, as appropriate, to prevent skin contact.
Eye Protection	Chemical goggles; also wear a face shield if splashing hazard exists.
Other Precautions	Eyewash fountains and safety showers must be easily accessible.
Environmental Exposure Controls	Do not allow material to contaminate ground water system

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State:	Liquid	Color	Clear light yellow
Odor:	Sharp	Odor Threshold:	No information available

<u>Property</u>	<u>Values</u>
<u>Remarks/ - Method</u>	
pH:	3.1-4.5
Freezing Point / Range	(-5) - (-10) °C
Melting Point / Range	No data available
Boiling Point / Range	100.5 °C / 213 °F
Flash Point	No data available
Evaporation rate	0.9
Vapor Pressure	0.2 mmHg
Vapor Density	0.8
Specific Gravity	1.064
Water Solubility	Soluble in water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	-0.333
Autoignition Temperature	> 275 °C / > 527 °F
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
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10. Stability and Reactivity

10.1. Reactivity

Not expected to be reactive.

10.2. Chemical stability

Stable

10.3. Possibility of hazardous reactions

Will Not Occur

10.4. Conditions to avoid

Keep away from heat, sparks and flame.

10.5. Incompatible materials

Strong acids. Strong alkalis.

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; Ingestion.

Symptoms related to exposure

Most Important Symptoms/Effects

Causes severe eye irritation which may damage tissue. Causes severe skin irritation with tissue destruction. May

cause allergic skin reaction. May cause allergic respiratory reaction. May cause respiratory irritation. Harmful if swallowed. Toxic if inhaled. Potential reproductive hazard. May cause birth defects.

Numerical measures of toxicity

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Glutaraldehyde	111-30-8	50 mg/kg (Guinea Pig)	560 µL/kg (Rabbit)	0.28-0.5 mg/L (Rat) 4h
Methanol	67-56-1	300 mg/kg-bw (human) < 790 to 13,000 mg/kg (rat)	1000 mg/kg-bw (human) 17,100 mg/kg (rabbit)	10 mg/L (human, vapor, 4h)

Immediate, delayed and chronic health effects from exposure

Inhalation	Toxic if inhaled. May cause allergic respiratory reaction. Causes severe respiratory irritation. Inhalation of vapors may result in skin sensitization.
Eye Contact	Causes serious eye damage.
Skin Contact	Causes severe burns. May cause an allergic skin reaction.
Ingestion	Causes burns of the mouth, throat and stomach. Harmful if swallowed.

Exposure Levels

No data available

Interactive effects

Skin disorders. Lung disorders. Liver disorders.

Data limitations

No data available

Substances	CAS Number	Skin corrosion/irritation
Glutaraldehyde	111-30-8	Causes severe skin irritation with tissue destruction. (Rabbit)
Methanol	67-56-1	Non-irritating to the skin (Rabbit)

Substances	CAS Number	Serious eye damage/irritation
Glutaraldehyde	111-30-8	Causes severe eye irritation which may damage tissue. (Rabbit)
Methanol	67-56-1	Non-irritating to the eye (Rabbit)

Substances	CAS Number	Skin Sensitization
Glutaraldehyde	111-30-8	Skin sensitizer in guinea pig.
Methanol	67-56-1	Did not cause sensitization on laboratory animals (guinea pig)

Substances	CAS Number	Respiratory Sensitization
Glutaraldehyde	111-30-8	May cause sensitization by inhalation
Methanol	67-56-1	No information available

Substances	CAS Number	Mutagenic Effects
Glutaraldehyde	111-30-8	In vivo tests did not show mutagenic effects.
Methanol	67-56-1	The weight of evidence from available in vitro and in vivo studies indicates that this substance is not expected to be mutagenic.

Substances	CAS Number	Carcinogenic Effects
Glutaraldehyde	111-30-8	Did not show carcinogenic effects in animal experiments
Methanol	67-56-1	No data of sufficient quality are available.

Substances	CAS Number	Reproductive toxicity
Glutaraldehyde	111-30-8	Not a confirmed teratogen or embryotoxin.
Methanol	67-56-1	Experiments have shown reproductive toxicity effects on laboratory animals

Substances	CAS Number	STOT - single exposure
Glutaraldehyde	111-30-8	No information available
Methanol	67-56-1	May cause disorder and damage to the Central Nervous System (CNS)

Substances	CAS Number	STOT - repeated exposure
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Glutaraldehyde	111-30-8	May cause disorder and damage to the (Kidney)
Methanol	67-56-1	No data of sufficient quality are available.

Substances	CAS Number	Aspiration hazard
Glutaraldehyde	111-30-8	Not applicable
Methanol	67-56-1	Not applicable

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
Glutaraldehyde	111-30-8	EC50 (72h) 0.61 mg/L (Desmodesmus subspicatus)	LC50 (96h) 10 mg/L (Lepomis macrochirus) NOEC (97d) 1.6 mg/L (Oncorhynchus mykiss) LC50 (96h) 3.5 mg/L (Oncorhynchus mykiss)	EC50 (17h) 6.65 mg/L (Pseudomonas putida)	EC50 (48h) 0.35 mg/L (Daphnia magna) EC50 (48h) 0.7 mg/L (Acartia tonsa) NOEC (21d) 0.13 mg/L (Daphnia magna)
Methanol	67-56-1	EC50 (96 h) =22000 mg/L (Pseudokirchnerella subcapitata) NOEC (8 d) =8000 mg/L (Scenedesmus quadricauda)	LC50 (96 h) =15400 mg/L (Lepomis macrochirus) EC50 (200 h) =14536 mg/L (Oryzias latipes)	IC50 (3h) > 1000 mg/L (activated sludge)	EC50 (96 h) =18260 mg/L (Daphnia magna) NOEC (21 d) =208 mg/L (Daphnia magna)

12.2. Persistence and degradability

Readily biodegradable

Substances	CAS Number	Persistence and Degradability
Glutaraldehyde	111-30-8	Readily biodegradable (75% @ 28d)
Methanol	67-56-1	(95-97% @ 20d)

12.3. Bioaccumulative potential

Does not bioaccumulate.

Substances	CAS Number	Log Pow
Glutaraldehyde	111-30-8	-0.36
Methanol	67-56-1	-0.77 BCF = 1.0 – 4.5 (Cyprinus carpio) BCF < 10 (Leuciscus idus melanotus)

12.4. Mobility in soil

Substances	CAS Number	Mobility
Glutaraldehyde	111-30-8	Potential for mobility in soil is high (Koc between 50 and 150). Given its very low Henry's constant (3.3E-08 atm*m3/mole; 25 °C Measured), volatilization from natural bodies of water or moist soil is not expected to be an important fate process.
Methanol	67-56-1	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.

Disposal of any contaminated packaging

Follow all applicable national or local regulations.

Environmental regulations

Not applicable

14. Transport Information

Transportation Information

UN Number	UN3265
UN proper shipping name:	Corrosive Liquid, Acidic, Organic, N.O.S. (Contains Glutaraldehyde)
Transport Hazard Class(es):	8
Packing Group:	III
Environmental Hazards:	Marine Pollutant

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 are listed on the AICS or are subject to a relevant exemption, permit, or assessment certificate.
New Zealand Inventory of Chemicals	All components are listed on the NZIoC or are subject to a relevant exemption, permit, or assessment certificate.
EINECS (European Inventory of Existing Chemical Substances)	This product, and all its components, complies with EINECS
US TSCA Inventory	All components listed on inventory or are exempt.
Canadian Domestic Substances List (DSL)	All components listed on inventory or are exempt.

Poisons Schedule number

S6

International Agreements

Montreal Protocol - Ozone Depleting Substances:	Does not apply
Stolkhom Convention - Persistent Organic Pollutants:	Does not apply
Rotterdam Convention - Prior Informed Consent:	Does not apply
Basel Convention - Hazardous Waste:	Does not apply

16. Other information

Date of preparation or review

Revision Date: 09-May-2016

Revision Note**Full text of H-Statements referred to under sections 2 and 3**

H301 - Toxic if swallowed
 H302 - Harmful if swallowed
 H314 - Causes severe skin burns and eye damage
 H317 - May cause an allergic skin reaction
 H318 - Causes serious eye damage
 H330 - Fatal if inhaled
 H331 - Toxic if inhaled

H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled

H335 - May cause respiratory irritation

H400 - Very toxic to aquatic life

H411 - Toxic to aquatic life with long lasting effects

H412 - Harmful to aquatic life with long lasting effects

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

bw – body weight

CAS – Chemical Abstracts Service

EC50 – Effective Concentration 50%

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL50 – Lethal Loading 50%

mg/kg – milligram/kilogram

mg/L – milligram/liter

NOEC – No Observed Effect Concentration

OEL – Occupational Exposure Limit

PBT – Persistent Bioaccumulative and Toxic

ppm – parts per million

STEL – Short Term Exposure Limit

TWA – Time-Weighted Average

vPvB – very Persistent and very Bioaccumulative

h - hour

mg/m³ - milligram/cubic meter

mm - millimeter

mmHg - millimeter mercury

w/w - weight/weight

d - day

Key literature references and sources for data

www.ChemADVISOR.com/

NZ CCID

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End of Safety Data Sheet

SAFETY DATA SHEET

POTASSIUM CHLORIDE

Revision Date: 04-Sep-2015

Revision Number: 22

1. Product Identifier & Identity for the Chemical

Statement of Hazardous Nature Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

1.1. Product Identifier

Product Name POTASSIUM CHLORIDE

Other means of Identification

Synonyms: None
Product Code: HM001200

Recommended use of the chemical and restrictions on use

Recommended Use Brine
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 1 800 686 951
Fax Number: 61 (08) 9455 5300
E-Mail address: fdunexchem@halliburton.com

Emergency phone number

+ 61 1 800 686 951

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 the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), 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

Contains no hazardous substances in concentrations above cut-off values according to the competent authority

CAS Number

NA

Other hazards which do not result in classification

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).
This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

Australia Classification

For the full text of the 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
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	60 - 100%	Not Applicable

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, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.

Skin Wash with soap and water. Get medical attention if irritation persists.

Ingestion Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

Symptoms caused by exposure

No significant hazards expected.

Medical Attention and Special Treatment

Notes to Physician Treat symptomatically

5. Fire Fighting Measures

Suitable extinguishing equipment

Suitable Extinguishing Media

All standard fire fighting media

Extinguishing media which must not be used for safety reasons

None known.

Specific hazards arising from the chemical

Special Exposure Hazards

Not applicable.

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. Avoid creating and breathing dust. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up

Scoop up and remove.

7. Handling and storage

7.1. Precautions for Safe Handling

Handling Precautions

Avoid contact with eyes, skin, or clothing. Avoid creating or inhaling dust. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Information

Store in a cool, dry location. Product has a shelf life of 60 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
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable	Not applicable

Appropriate engineering controls

Engineering Controls

Use in a well ventilated area.

Personal protective equipment (PPE)

Respiratory Protection

Dust/mist respirator. (N95, P2/P3)

Hand Protection

Normal work gloves.

Skin Protection

Normal work coveralls.

Eye Protection

Dust proof goggles.

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: Solid **Color:** White to gray
Odor: Odorless **Odor Threshold:** No information available

<u>Property</u>	<u>Values</u>
Remarks/ - Method	
pH:	~7
Freezing Point/Range	771 °C
Melting Point/Range	No data available
Boiling Point/Range	No data available
Flash Point	No data available
Evaporation rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	1.99
Water Solubility	Soluble 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

Molecular Weight 74.55
VOC Content (%) No data available

10. Stability and Reactivity

10.1. Reactivity

Not expected to be reactive.

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

None known.

10.6. Hazardous Decomposition Products

None known.

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

No significant hazards expected.

Numerical measures of toxicity

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Contains no hazardous substances in concentrations above cut-off values according	NA	No data available	No data available	No data available

to the competent authority				
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Immediate, delayed and chronic health effects from exposure

Inhalation May cause mild respiratory irritation.
Eye Contact May cause mild eye irritation.
Skin Contact May cause mild skin irritation.
Ingestion May cause abdominal pain, vomiting, nausea, and diarrhea. Irritation of the mouth, throat, and stomach.

Chronic Effects/Carcinogenicity No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

Exposure Levels

No data available

Interactive effects

Skin disorders.

Data limitations

No data available

Substances	CAS Number	Skin corrosion/irritation
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable.

Substances	CAS Number	Eye damage/irritation
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable.

Substances	CAS Number	Skin Sensitization
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable

Substances	CAS Number	Respiratory Sensitization
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable

Substances	CAS Number	Mutagenic Effects
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable

Substances	CAS Number	Carcinogenic Effects
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable

Substances	CAS Number	Reproductive toxicity

Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable
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Substances	CAS Number	STOT - single exposure
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable

Substances	CAS Number	STOT - repeated exposure
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable

Substances	CAS Number	Aspiration hazard
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable

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
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available	No information available	No information available	No information available

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available

12.4. Mobility in soil

Substances	CAS Number	Mobility
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	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**

Bury in a licensed landfill according to federal, state, and local regulations. Substance should NOT be deposited into a sewage facility.

Disposal of any 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.

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: 04-Sep-2015

Revision Note

SDS sections updated: 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

bw – body weight CAS – Chemical Abstracts Service EC50 – Effective Concentration 50% LC50 – Lethal Concentration 50% LD50 – Lethal Dose 50% LL50 – Lethal Loading 50% mg/kg – milligram/kilogram mg/L – milligram/liter NOEC – No Observed Effect Concentration OEL – Occupational Exposure Limit PBT – Persistent Bioaccumulative and Toxic ppm – parts per million STEL – Short Term Exposure Limit TWA – Time-Weighted Average vPvB – very Persistent and very Bioaccumulative h - hour mg/m³ - milligram/cubic meter mm - millimeter mmHg - millimeter mercury w/w - weight/weight d - day

Key literature references and sources for data

www.ChemADVISOR.com/

NZ CCID

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End of Safety Data Sheet

SAFETY DATA SHEET

BARACOR® 100

Revision Date: 14-Jul-2016

Revision Number: 53

1. Product Identifier & Identity for the Chemical

Statement of Hazardous Nature Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Dangerous Goods according to the criteria of ADG.

1.1. Product Identifier

Product Name BARACOR® 100

Other means of Identification

Synonyms None
Hazardous Material Number: HM003391

Recommended use of the chemical and restrictions on use

Recommended Use Corrosion Inhibitor
Uses advised against No information available

Supplier's name, address and phone number

Manufacturer/Supplier Halliburton/Baroid Australia Pty. Ltd.
15 Marriott Road, Jandakot, WA 6164
Australia
ACN Number: 009 000 775
Telephone Number: + 61 1 800 686 951
Fax Number: 61 (08) 9455 5300
E-mail Address fdunexchem@halliburton.com

Emergency phone number

+ 61 1 800 686 951
Global Incident Response Access Code: 334305
Contract Number: 14012

Australian Poisons Information Centre

24 Hour Service: - 13 11 26
Police or Fire Brigade: - 000 (exchange): - 1100

2. Hazard Identification

Statement of Hazardous Nature Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Dangerous Goods according to the criteria of ADG.

Classification of the hazardous chemical

Acute Oral Toxicity	Category 4 - H302
Skin Corrosion/Irritation	Category 2 - H315
Serious Eye Damage/Irritation	Category 1 - H318
Skin Sensitization	Category 1 - H317
Carcinogenicity	Category 2 - H351
Reproductive Toxicity	Category 1B - H360
Specific Target Organ Toxicity - (Single Exposure)	Category 1 - H370
Flammable liquids.	Category 3 - H226

Label elements, including precautionary statements**Hazard Pictograms****Signal Word**

DANGER

Hazard Statements:

H226 - Flammable liquid and vapor
 H302 - Harmful if swallowed
 H315 - Causes skin irritation
 H317 - May cause an allergic skin reaction
 H318 - Causes serious eye damage
 H351 - Suspected of causing cancer
 H360 - May damage fertility or the unborn child
 H370 - Causes damage to organs

Precautionary Statements**Prevention**

P201 - Obtain special instructions before use
 P202 - Do not handle until all safety precautions have been read and understood
 P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking
 P233 - Keep container tightly closed
 P240 - Ground/Bond container and receiving equipment
 P241 - Use explosion-proof electrical/ventilating/lighting/equipment
 P242 - Use only non-sparking tools
 P243 - Take precautionary measures against static discharge
 P260 - Do not breathe dust/fume/gas/mist/vapors/spray
 P264 - Wash face, hands and any exposed skin thoroughly after handling
 P270 - Do not eat, drink or smoke when using this product
 P272 - Contaminated work clothing should not be allowed out of the workplace
 P280 - Wear protective gloves/eye protection/face protection
 P281 - Use personal protective equipment as required

Response

P301+ P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
 P330 - Rinse mouth
 P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
 P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention
 P363 - Wash contaminated clothing before reuse
 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
 P307 + P311 - IF exposed: Call a POISON CENTER or doctor/physician
 P370 + P378 - In case of fire: Use water spray for extinction
 P403 + P235 - Store in a well-ventilated place. Keep cool
 P405 - Store locked up
 P501 - Dispose of contents/container in accordance with local/regional/national/international regulations

Storage**Disposal****Contains Substances****CAS Number**

Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues	68909-77-3
Methanol	67-56-1
Nitilotriacetic acid, trisodium salt monohydrate	5064-31-3

Other hazards which do not result in classification

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).

This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

For the full text of the H-phrases mentioned in this Section, see Section 16

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - Australia
Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues	68909-77-3	10 - 30%	Skin Irrit. 2 (H315) Eye Corr. 1 (H318) Skin Sens. 1 (H317)
Methanol	67-56-1	10 - 30%	Acute Tox. 3 (H301) Acute Tox. 3 (H311) Acute Tox. 3 (H331) Repr. 1B (H360) STOT SE 1 (H370) Flam. Liq. 2 (H225)
Nitilotriacetic acid, trisodium salt monohydrate	5064-31-3	1 - 5%	Acute Tox. 4 (H302) Eye Irrit. 2A (H319) Carc. 2 (H351)

4. First aid measures

Description of necessary first aid measures

Inhalation	If inhaled, move victim to fresh air and seek medical attention.
Eyes	Immediately flush eyes with large amounts of water for at least 30 minutes. Seek prompt medical attention.
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 laundry before reuse.
Ingestion	Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

Symptoms caused by exposure

Causes severe eye irritation which may damage tissue. Causes skin irritation. May cause allergic skin reaction. Harmful if swallowed. Potential carcinogen. Potential reproductive hazard. May cause birth defects. May cause damage to internal organs.

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 in a fire

May be ignited by heat, sparks or flames Use water spray to cool fire exposed surfaces. Closed containers may explode in fire. Decomposition in fire may produce harmful gases. Runoff to sewer may cause fire or explosion hazard.

Special protective equipment and precautions for fire fighters

Special protective equipment for firefighters

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

Remove sources of ignition. Use appropriate protective equipment. Wear self-contained breathing apparatus in enclosed areas. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing. Avoid breathing vapors. Evacuate all persons from the area.

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas. Consult local authorities.

6.3. Methods and material for containment and cleaning up

Isolate spill and stop leak where safe. Remove ignition sources and work with non-sparking tools. Contain spill with sand or other inert materials. Scoop up and remove.

7. Handling and storage

7.1. Precautions for safe handling

Handling Precautions

Remove sources of ignition. Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Ground and bond containers when transferring from one container to another. Use appropriate protective equipment.

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 from heat, sparks, and open flames. 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
Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues	68909-77-3	Not applicable	Not applicable
Methanol	67-56-1	TWA: 200 ppm TWA: 262 mg/m ³ STEL: 250 ppm STEL: 328 mg/m ³	TWA: 200 ppm STEL: 250 ppm
Nitilotriacetic acid, trisodium salt monohydrate	5064-31-3	Not applicable	Not applicable

Appropriate engineering controls

Engineering Controls

Use in a well ventilated area. Local exhaust ventilation should be used in areas without good cross ventilation.

Personal protective equipment (PPE)

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

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, AS/NZS 1715:2009, 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.
Positive pressure self-contained breathing apparatus if methanol is released.

Hand Protection

Chemical-resistant protective gloves (EN 374) Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374): Neoprene gloves. Nitrile gloves. Butyl rubber gloves. (>= .? mm thickness)
This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced. Manufacturer's directions for use should be observed because of great diversity of types.

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.

Environmental Exposure Controls

Do not allow material to contaminate ground water system

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Liquid
Odor: Alcohol

Color: Brown

Odor Threshold: No information available

PropertyValues

Remarks/ - Method

pH:

9-11

Freezing Point / Range

-23 °C

Melting Point / Range

No data available

Boiling Point / Range

100 °C / 212 °F

Flash Point

33 °C / 92 °F PMCC

Upper flammability limit

36%

Lower flammability limit

6%

Evaporation rate

1.6

Vapor Pressure

No data available

Vapor Density

> 1

Specific Gravity

1.01

Water Solubility

Soluble in water

Solubility in other solvents

No data available

Partition coefficient: n-octanol/water

-0.84

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 expected to be reactive.

10.2. Chemical stability

Stable

10.3. Possibility of hazardous reactions

Will Not Occur

10.4. Conditions to avoid

Keep away from heat, sparks and flame.

10.5. Incompatible materials

Strong oxidizers.

10.6. Hazardous decomposition products

Ammonia. Oxides of nitrogen. 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**

Causes severe eye irritation which may damage tissue. Causes skin irritation. May cause allergic skin reaction. Harmful if swallowed. Potential carcinogen. Potential reproductive hazard. May cause birth defects. May cause damage to internal organs.

Numerical measures of toxicity**Toxicology data for the components**

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues	68909-77-3	3816 mg/kg-bw (rat)	> 2000 mg/kg (Rat)	No toxicity at saturation (rat, 8 h, vapour)
Methanol	67-56-1	300 mg/kg-bw (human) < 790 to 13,000 mg/kg (rat)	1000 mg/kg-bw (human) 17,100 mg/kg (rabbit)	10 mg/L (human, vapor, 4h)
Nitrilotriacetic acid, trisodium salt monohydrate	5064-31-3	1740 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 5 mg/L (Rat, Aerosol, 4h)

Immediate, delayed and chronic health effects from exposure

Inhalation May cause respiratory irritation. May cause central nervous system depression including headache, dizziness, drowsiness, incoordination, slowed reaction time, slurred speech, giddiness and unconsciousness.

Eye Contact Causes severe eye irritation which may damage tissue.

Skin Contact Causes skin irritation. May cause an allergic skin reaction. May be absorbed through the skin.

Ingestion Harmful if swallowed.

Chronic Effects/Carcinogenicity Prolonged or repeated exposure may cause eye, blood, lung, liver, kidney, heart, central nervous system and spleen damage. Contains nitrilotriacetic acid or its salts, which is NTP Classification 2 (Reasonably Anticipated to be a Human Carcinogen) and IARC Classification 2B (a Possible Human Carcinogen) Prolonged or repeated exposure may cause embryo and fetus toxicity.

Exposure Levels

No data available

Interactive effects

Skin disorders. Eye ailments.

Data limitations

No data available

Substances	CAS Number	Skin corrosion/irritation
Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues	68909-77-3	Causes moderate skin irritation. (Rabbit) Skin, rabbit:

Methanol	67-56-1	Non-irritating to the skin (Rabbit)
Nitritotriacetic acid, trisodium salt monohydrate	5064-31-3	Non-irritating to the skin (Rabbit) Not irritating to skin in rabbits. Skin, rabbit:

Substances	CAS Number	Serious eye damage/irritation
Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues	68909-77-3	Causes eye burns Causes severe eye irritation. Will damage tissue.
Methanol	67-56-1	Non-irritating to the eye (Rabbit)
Nitritotriacetic acid, trisodium salt monohydrate	5064-31-3	Irritating to eyes (Rabbit) Eye, rabbit: Causes moderate eye irritation

Substances	CAS Number	Skin Sensitization
Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues	68909-77-3	May cause sensitization by skin contact (mouse)
Methanol	67-56-1	Did not cause sensitization on laboratory animals (guinea pig)
Nitritotriacetic acid, trisodium salt monohydrate	5064-31-3	Did not cause sensitization on laboratory animals (guinea pig)

Substances	CAS Number	Respiratory Sensitization
Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues	68909-77-3	No information available
Methanol	67-56-1	No information available
Nitritotriacetic acid, trisodium salt monohydrate	5064-31-3	No information available

Substances	CAS Number	Mutagenic Effects
Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues	68909-77-3	In vitro tests did not show mutagenic effects. In vivo tests did not show mutagenic effects.
Methanol	67-56-1	The weight of evidence from available in vitro and in vivo studies indicates that this substance is not expected to be mutagenic.
Nitritotriacetic acid, trisodium salt monohydrate	5064-31-3	Not regarded as mutagenic. In vivo tests did not show mutagenic effects. In vitro tests did not show mutagenic effects

Substances	CAS Number	Carcinogenic Effects
Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues	68909-77-3	No information available
Methanol	67-56-1	No data of sufficient quality are available.
Nitritotriacetic acid, trisodium salt monohydrate	5064-31-3	Contains nitritotriacetic acid or its salts, which is listed as a suspect carcinogen of the urinary tract and kidneys by NTP, based on feeding studies with laboratory animals. According to the ACGIH guidelines, NTA would "not be considered an occupational carcinogen of any significance." IARC cancer review classification: 2B (Possibly Carcinogenic to Humans) Available data indicate that this substance is a suspected carcinogen.

Substances	CAS Number	Reproductive toxicity
Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues	68909-77-3	Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments.
Methanol	67-56-1	Experiments have shown reproductive toxicity effects on laboratory animals
Nitritotriacetic acid, trisodium salt monohydrate	5064-31-3	Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments.

Substances	CAS Number	STOT - single exposure
Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues	68909-77-3	No significant toxicity observed in animal studies at concentration requiring classification.
Methanol	67-56-1	May cause disorder and damage to the Central Nervous System (CNS)

Nitrilotriacetic acid, trisodium salt monohydrate	5064-31-3	No significant toxicity observed in animal studies at concentration requiring classification.
Substances	CAS Number	STOT - repeated exposure
Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues	68909-77-3	No significant toxicity observed in animal studies at concentration requiring classification.
Methanol	67-56-1	No data of sufficient quality are available.
Nitrilotriacetic acid, trisodium salt monohydrate	5064-31-3	No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	Aspiration hazard
Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues	68909-77-3	Not applicable
Methanol	67-56-1	Not applicable
Nitrilotriacetic acid, trisodium salt monohydrate	5064-31-3	Not applicable

12. Ecological Information

Ecotoxicity

Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues	68909-77-3	EC50 (72 h) =100 mg/L (Skeletonema costatum) EC50 (72 h) >120 mg/L (Desmodesmus subspicatus) NOEC (72 h) >120 mg/L (Desmodesmus subspicatus)	LC50 (96 h) >100 mg/L (Scophthalmus maximus) LC50 (96 h) =681.1 mg/L (Leuciscus idus)	EC50 (3h) > 1000 mg/L (activated sludge)	LC50 (48 h) =287.2 mg/L (Acartia tonsa) EC50 (48 h) >120 mg/L (Daphnia Magna)
Methanol	67-56-1	EC50 (96 h) =22000 mg/L (Pseudokirchnerella subcapitata) NOEC (8 d) =8000 mg/L (Scenedesmus quadricauda)	LC50 (96 h) =15400 mg/L (Lepomis macrochirus) EC50 (200 h) =14536 mg/L (Oryzias latipes)	IC50 (3h) > 1000 mg/L (activated sludge)	EC50 (96 h) =18260 mg/L (Daphnia magna) NOEC (21 d) =208 mg/L (Daphnia magna)
Nitrilotriacetic acid, trisodium salt monohydrate	5064-31-3	EC50 (72 h) >91.5 mg/L (Desmodesmus subspicatus)	TL50 (96 h) =103 mg/L (Pimephales promelas) NOEC (229 d) >54 mg/L (Pimephales promelas)	NOEC (90d) >200 mg/L (activated sludge)	TL50 (96 h) range 115 mg/L (Gammarus pseudolimnaeus) NOEC (147 d) =9.3 mg/L (Gammarus pseudolimnaeus)

12.2. Persistence and degradability

Not readily biodegradable

Substances	CAS Number	Persistence and Degradability
Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues	68909-77-3	No information available
Methanol	67-56-1	(95-97% @ 20d)
Nitrilotriacetic acid, trisodium salt monohydrate	5064-31-3	Readily biodegradable (100% @ 14d) Marine water Persistent (6% @ 28d)

12.3. Bioaccumulative potential

Does not bioaccumulate.

Substances	CAS Number	Log Pow
Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues	68909-77-3	Log Pow <1
Methanol	67-56-1	-0.77 BCF = 1.0 – 4.5 (Cyprinus carpio) BCF < 10 (Leuciscus idus melanotus)

Nitrilotriacetic acid, trisodium salt monohydrate	5064-31-3	-2.62 (calculated)
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12.4. Mobility in soil

Substances	CAS Number	Mobility
Ethanol, 2,2'-oxybis-, reaction products with ammonia, morpholine derivatives residues	68909-77-3	No information available
Methanol	67-56-1	No information available
Nitrilotriacetic acid, trisodium salt monohydrate	5064-31-3	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.

Disposal of any contaminated packaging

Follow all applicable national or local regulations.

Environmental regulations

Not applicable

14. Transport Information

Transportation Information

Australia ADG

UN Number	UN1993
UN proper shipping name:	Flammable Liquid, N.O.S. (Contains Methanol)
Transport Hazard Class(es):	3
Packing Group:	III
Environmental Hazards:	Not applicable

IMDG/IMO

UN Number	UN1993
UN proper shipping name:	Flammable Liquid, N.O.S. (Contains Methanol)
Transport Hazard Class(es):	3
Packing Group:	III
Environmental Hazards:	Not applicable
EMS:	EmS F-E, S-E

IATA/ICAO

UN Number	UN1993
UN proper shipping name:	Flammable Liquid, N.O.S. (Contains Methanol)
Transport Hazard Class(es):	3
Packing Group:	III
Environmental Hazards:	Not applicable

Special precautions during transport

None

HazChem Code

3WE

15. Regulatory Information

Safety, health and environmental regulations specific for the product

International Inventories**Australian AICS Inventory**

All components are listed on the AICS or are subject to a relevant exemption, permit, or assessment certificate.

New Zealand Inventory of Chemicals

All components are listed on the NZIoC or are subject to a relevant exemption, permit, or assessment certificate.

EINECS (European Inventory of Existing Chemical Substances)

This product does not comply with EINECS

US TSCA Inventory

All components listed on inventory or are exempt.

Canadian Domestic Substances List (DSL)

All components listed on inventory or are exempt.

Poisons Schedule number

S6

International Agreements**Montreal Protocol - Ozone Depleting Substances:**

Does not apply

Stockholm Convention - Persistent Organic Pollutants:

Does not apply

Rotterdam Convention - Prior Informed Consent:

Does not apply

Basel Convention - Hazardous Waste:

Does not apply

16. Other information

Date of preparation or review

Revision Date: 14-Jul-2016

Revision Note

SDS sections updated: 2

Full text of H-Statements referred to under sections 2 and 3

H225 - Highly flammable liquid and vapor

H226 - Flammable liquid and vapor

H301 - Toxic if swallowed

H302 - Harmful if swallowed

H311 - Toxic in contact with skin

H315 - Causes skin irritation

H317 - May cause an allergic skin reaction

H318 - Causes serious eye damage

H319 - Causes serious eye irritation

H331 - Toxic if inhaled

H351 - Suspected of causing cancer

H360 - May damage fertility or the unborn child

H370 - Causes damage to organs

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

bw – body weight

CAS – Chemical Abstracts Service

EC50 – Effective Concentration 50%

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL50 – Lethal Loading 50%

mg/kg – milligram/kilogram

mg/L – milligram/liter

NOEC – No Observed Effect Concentration

OEL – Occupational Exposure Limit

PBT – Persistent Bioaccumulative and Toxic

ppm – parts per million
STEL – Short Term Exposure Limit
TWA – Time-Weighted Average
vPvB – very Persistent and very Bioaccumulative
h - hour
mg/m³ - milligram/cubic meter
mm - millimeter
mmHg - millimeter mercury
w/w - weight/weight
d - day

Key literature references and sources for data

www.ChemADVISOR.com/
NZ CCID

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 Safety Data Sheet

AMC SODIUM CHLORIDE

AMC

Chemwatch Hazard Alert Code: **2**

Chemwatch: **10461**

Issue Date: **24/06/2013**

Version No: **6.1.1.1**

Print Date: **25/06/2014**

Safety Data Sheet according to WHS and ADG requirements

Initial Date: **Not Available**

S.GHS.AUS.EN

SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

Product Identifier

Product name	AMC SODIUM CHLORIDE
Chemical Name	sodium chloride
Synonyms	66610, 87086, APS, AR SA046, All Purpose Purex Salt, BP SP046, Canning and Pickling Salt, Chem-Supply sodium chloride, Culinox 999 Chemical Grade Salt, Culinox 999 Food Grade Salt, Evaporated Granulated Salt, FG SP046, Fine Mixing Salt, H.G. Blending Salt, Industrial Grade Solar Salt, Kleer Fine Salt, Kleer Granulated Salt, LR SL046, Merck 10241, Mill Run Salt, NaCl, Natrii chloridum, PDV salt, Product Code: 10241-15327-26281-30123 et, Pronalys BSPSL944, Purex Salt, Purex Select Salt, Reagent Grade sodium chloride, Refined Sea Salt, Rock Pretzel Salt, Rock Salt for making Ice Cream, Safe-T-Salt, Salt water softener granular sodium ST180, Saxa table salt, Selby sodium chloride, Sevice Pack Salt, Ship n'Store Rock Salt, Sigma S9625, Sodium Chloride, Sodium Chloride (Salt), Sodium chloride, Sodium chloride (NaCl), Sodium chloride, powder and pieces, System Saver II Pellets, TG ST046, USP sodium chloride, Waterco Free Style Pool Salt, White Crystal Rock salt, White Crystal Solar Salt, White Crystals Water Softening Solar Salt
Proper shipping name	Not Applicable
Chemical formula	CINa
Other means of identification	Not Available
CAS number	7647-14-5

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	As a source of chlorine and sodium. In the curing of hides; in glazing of pottery; in metallurgy. Halite is often used both residentially and municipally for managing ice. Because brine (a solution of water and salt) has a lower freezing point than pure water, putting salt or saltwater on ice that is near 0 deg C will cause it to melt
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Details of the supplier of the safety data sheet

Registered company name	AMC	AMC
Address	PO Box 1141 6916 WA Australia	8 Pitino Court, Osborne Park 6017 WA Australia
Telephone	+ 61 8 9445 4000	61 8 9445 4000
Fax	+61 8 9445 4040	61 8 9445 4040
Website	Not Available	www.amcoilandgas.com, www.amcmud.com
Email	Not Available	amc@imdexlimited.com, amcoilandgas@imdexlimited.com

Emergency telephone number

Association / Organisation	Not Available	Not Available
Emergency telephone numbers	Not Available	+61 (0) 432 187 374, +61 (0) 419 258 730
Other emergency telephone numbers	Not Available	-

AMC SODIUM CHLORIDE

CHEMWATCH EMERGENCY RESPONSE

Primary Number	Alternative Number 1	Alternative Number 2
1800 039 008	+612 9186 1132	Not Available

Once connected and if the message is not in your preferred language then please dial 01

SECTION 2 HAZARDS IDENTIFICATION

Classification of the substance or mixture

HAZARDOUS CHEMICAL. NON-DANGEROUS GOODS. According to the Model WHS Regulations and the ADG Code.


CHEMWATCH HAZARD RATINGS

	Min	Max
Flammability	0	
Toxicity	0	
Body Contact	2	
Reactivity	0	
Chronic	0	

0 = Minimum
1 = Low
2 = Moderate
3 = High
4 = Extreme

Poisons Schedule	Not Applicable
GHS Classification ^[1]	Skin Corrosion/Irritation Category 2, Eye Irrit. 2, STOT - SE (Resp. Irr.) Category 3
Legend:	1. Classified by Chemwatch; 2. Classification drawn from HSIS ; 3. Classification drawn from EC Directive 1272/2008 - Annex VI

Label elements

GHS label elements	
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SIGNAL WORD	WARNING
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Hazard statement(s)

H315	Causes skin irritation
H319	Causes serious eye irritation
H335	May cause respiratory irritation

Precautionary statement(s): Prevention

P271	Use only outdoors or in a well-ventilated area.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.

Precautionary statement(s): Response

P321	Specific treatment (see advice on this label).
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Precautionary statement(s): Storage

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

Precautionary statement(s): Disposal

P501	Dispose of contents/container to authorised chemical landfill or if organic to high temperature incineration
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SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Substances

CAS No	%[weight]	Name
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AMC SODIUM CHLORIDE

7647-14-5

>99

[sodium chloride](#)

Mixtures

See section above for composition of Substances

SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye Contact	<p>If this product comes in contact with the eyes:</p> <ul style="list-style-type: none"> ▶ Wash out immediately with fresh running water. ▶ Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. ▶ Seek medical attention without delay; if pain persists or recurs seek medical attention. ▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	<p>If skin contact occurs:</p> <ul style="list-style-type: none"> ▶ Immediately remove all contaminated clothing, including footwear. ▶ Flush skin and hair with running water (and soap if available). ▶ Seek medical attention in event of irritation.
Inhalation	<ul style="list-style-type: none"> ▶ If fumes or combustion products are inhaled remove from contaminated area. ▶ Lay patient down. Keep warm and rested. ▶ Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. ▶ Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. ▶ Transport to hospital, or doctor, without delay.
Ingestion	<ul style="list-style-type: none"> ▶ Immediately give a glass of water. ▶ First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor. <p>Large amounts may be emetic with spontaneous vomiting.</p>

Indication of any immediate medical attention and special treatment needed

	Treat symptomatically.
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SECTION 5 FIREFIGHTING MEASURES

Extinguishing media

	<ul style="list-style-type: none"> ▶ There is no restriction on the type of extinguisher which may be used. ▶ Use extinguishing media suitable for surrounding area.
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Special hazards arising from the substrate or mixture

Fire Incompatibility	None known.
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Advice for firefighters

Fire Fighting	<ul style="list-style-type: none"> ▶ Alert Fire Brigade and tell them location and nature of hazard. ▶ Wear breathing apparatus plus protective gloves in the event of a fire.
Fire/Explosion Hazard	<ul style="list-style-type: none"> ▶ Non combustible. ▶ Not considered a significant fire risk, however containers may burn.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Minor Spills	<ul style="list-style-type: none"> ▶ Clean up all spills immediately. ▶ Avoid breathing dust and contact with skin and eyes.
Major Spills	<p>Moderate hazard.</p> <ul style="list-style-type: none"> ▶ CAUTION: Advise personnel in area.

	Personal Protective Equipment advice is contained in Section 8 of the MSDS.
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SECTION 7 HANDLING AND STORAGE

Precautions for safe handling

AMC SODIUM CHLORIDE

Safe handling	<ul style="list-style-type: none"> ▶ Avoid all personal contact, including inhalation. ▶ Wear protective clothing when risk of exposure occurs.
Other information	<ul style="list-style-type: none"> ▶ Store in original containers. ▶ Keep containers securely sealed.

Conditions for safe storage, including any incompatibilities

Suitable container	<ul style="list-style-type: none"> ▶ Polyethylene or polypropylene container. ▶ Check all containers are clearly labelled and free from leaks.
Storage incompatibility	<ul style="list-style-type: none"> ▶ Metals and their oxides or salts may react violently with chlorine trifluoride and bromine trifluoride. ▶ These trifluorides are hypergolic oxidisers.

PACKAGE MATERIAL INCOMPATIBILITIES

Not Available

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA


Not Available

EMERGENCY LIMITS

Ingredient	TEEL-0	TEEL-1	TEEL-2	TEEL-3
sodium chloride	15 ppm	40 ppm	300 ppm	500 ppm

Ingredient	Original IDLH	Revised IDLH
sodium chloride	Not Available	Not Available

Exposure controls

Appropriate engineering controls	Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.
Personal protection	
Eye and face protection	<ul style="list-style-type: none"> ▶ Safety glasses with side shields. ▶ Chemical goggles.
Skin protection	See Hand protection below
Hands/feet protection	The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
Body protection	See Other protection below
Other protection	<ul style="list-style-type: none"> ▶ Overalls. ▶ P.V.C.
Thermal hazards	Not Available

Recommended material(s)

GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:

"Forsberg Clothing Performance Index".

The effect(s) of the following substance(s) are taken into account in the **computer-generated** selection:

AMC SODIUM CHLORIDE

Material	CPI
NATURAL RUBBER	A

Respiratory protection

Particulate. (AS/NZS 1716 & 1715, EN 143:000 & 149:001, ANSI Z88 or national equivalent)

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	P1 Air-line*	-	PAPR-P1
up to 50 x ES	Air-line**	P2	PAPR-P2

NATURAL+NEOPRENE	A
NITRILE	A

up to 100 x ES	-	P3	-
		Air-line*	-
100+ x ES	-	Air-line**	PAPR-P3

* CPI - Chemwatch Performance Index

A: Best Selection

B: Satisfactory; may degrade after 4 hours continuous immersion

C: Poor to Dangerous Choice for other than short term immersion

NOTE: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -

* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

* - Negative pressure demand ** - Continuous flow

A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO₂), G = Agricultural chemicals, K = Ammonia(NH₃), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Odourless, colourless, transparent crystals or white crystalline powder; completely soluble in water (2.165 g/cc). Available as Rocksalt (crude), Technical, Pure, Food grade, BP grades; also solar salt, vacuum salt, sea salt and common salt.		
Physical state	Divided Solid	Relative density (Water = 1)	2.165
Odour	Not Available	Partition coefficient n-octanol / water	Not Available
Odour threshold	Not Available	Auto-ignition temperature (°C)	Not Applicable
pH (as supplied)	Not Applicable	Decomposition temperature	Not Applicable
Melting point / freezing point (°C)	801	Viscosity (cSt)	Not Applicable
Initial boiling point and boiling range (°C)	1413	Molecular weight (g/mol)	58.44
Flash point (°C)	Not Applicable	Taste	Not Available
Evaporation rate	Not Applicable	Explosive properties	Not Available
Flammability	Not Applicable	Oxidising properties	Not Available
Upper Explosive Limit (%)	Not Applicable	Surface Tension (dyn/cm or mN/m)	Not Available
Lower Explosive Limit (%)	Not Applicable	Volatile Component (%vol)	Not Applicable
Vapour pressure (kPa)	Negligible @ 25	Gas group	Not Available
Solubility in water (g/L)	Miscible	pH as a solution(1%)	6.7-7.3
Vapour density (Air = 1)	Not available.	VOC g/L	Not Available

SECTION 10 STABILITY AND REACTIVITY

Reactivity	See section 7
Chemical stability	<ul style="list-style-type: none"> ▶ Unstable in the presence of incompatible materials. ▶ Product is considered stable.
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Inhaled	Evidence shows, or practical experience predicts, that the material produces irritation of the respiratory system, in a substantial number of individuals, following inhalation. In contrast to most organs, the lung is able to respond to a chemical insult by first removing or neutralising the irritant and then repairing the damage.
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AMC SODIUM CHLORIDE

Ingestion	Although ingestion is not thought to produce harmful effects (as classified under EC Directives), the material may still be damaging to the health of the individual, following ingestion, especially where pre-existing organ (e.g liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality rather than those producing morbidity (disease, ill-health). Very large doses may cause vomiting, diarrhoea and prostration.
Skin Contact	The material produces mild skin irritation; evidence exists, or practical experience predicts, that the material either <ul style="list-style-type: none"> ▶ produces mild inflammation of the skin in a substantial number of individuals following direct contact, and/or ▶ produces significant, but mild, inflammation when applied to the healthy intact skin of animals (for up to four hours), such inflammation being present twenty-four hours or more after the end of the exposure period. Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (nonallergic).
Eye	Evidence exists, or practical experience predicts, that the material may cause eye irritation in a substantial number of individuals and/or may produce significant ocular lesions which are present twenty-four hours or more after instillation into the eye(s) of experimental animals. Repeated or prolonged eye contact may cause inflammation characterised by a temporary redness (similar to windburn) of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur.
Chronic	Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems. Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.

sodium chloride	TOXICITY	IRRITATION
	Intraperitoneal (Mouse) LD50: 2602 mg/kg	Eye (rabbit): 10 mg - moderate
	Intraperitoneal (Rat) LD50: 2600 mg/kg	Eye (rabbit): 100 mg/24h - moderate
	Intravenous (Mouse) LD50: 645 mg/kg	Skin (rabbit): 500 mg/24h - mild
	Oral (rat) LD50: 3000 mg/kg	
	Not Available	Not Available

* Value obtained from manufacturer's msds
unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances

SODIUM CHLORIDE	Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound.
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Acute Toxicity	⊘	Carcinogenicity	⊘
Skin Irritation/Corrosion	✓	Reproductivity	⊘
Serious Eye Damage/Irritation	✓	STOT - Single Exposure	✓
Respiratory or Skin sensitisation	⊘	STOT - Repeated Exposure	⊘
Mutagenicity	⊘	Aspiration Hazard	⊘

CMR STATUS

Not Applicable

SECTION 12 ECOLOGICAL INFORMATION

Toxicity

Although inorganic chloride ions are not normally considered toxic they can exist in effluents at acutely toxic levels (chloride >3000 mg/l). The resulting salinity can exceed the tolerances of most freshwater organisms.
|TLm 96 > 1000 ppm

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
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AMC SODIUM CHLORIDE

Not Available

Not Available

Not Available

Bioaccumulative potential

Ingredient	Bioaccumulation
Not Available	Not Available

Mobility in soil

Ingredient	Mobility
Not Available	Not Available

SECTION 13 DISPOSAL CONSIDERATIONS

Waste treatment methods

Product / Packaging disposal	
	Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area.

SECTION 14 TRANSPORT INFORMATION

Labels Required

Marine Pollutant	NO
HAZCHEM	Not Applicable

Land transport (ADG): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

SECTION 15 REGULATORY INFORMATION

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

sodium chloride(7647-14-5) is found on the following regulatory lists	"FisherTransport Information", "WHO Model List of Essential Medicines - Adults", "OECD List of High Production Volume (HPV) Chemicals", "Australia Inventory of Chemical Substances (AICS)", "Australia - Victoria Drugs, Poisons and Controlled Substances (Precursor Chemicals) Regs 2007 - Schedule 1 - Precursor Chemicals and Quantities", "Sigma-AldrichTransport Information", "UNECE - Kiev Protocol on Pollutant Release and Transfer Registers - Annex II", "Australia High Volume Industrial Chemical List (HVICL)", "Australia National Pollutant Inventory", "Acros Transport Information", "International Fragrance Association (IFRA) Survey: Transparency List", "Australia Therapeutic Goods Administration (TGA) Substances that may be used as active ingredients in Listed medicines"
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SECTION 16 OTHER INFORMATION

Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:

www.chemwatch.net/references

The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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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.

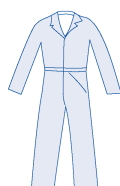
8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

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			Subsidiary Risk(s)	None Allocated
UN No.	1789	DG Class	8	EPG	8A1
Packing Group	II	Hazchem Code	2R		

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