



Ungani Production Facility Commissioning and Operations Environment Plan: Summary Document

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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 has developed the *Ungani Production Facility Commissioning and Operations Environment Plan* (HSE-PLN-037) (Environment Plan) for the management of environmental aspects associated with the Company's commissioning and production operations at the Ungani Facility (the Activity). This Summary Document summarises the operations and mitigation and management measures in the approved Environment Plan.

1.1. Contact Details

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2. OVERVIEW OF THE ACTIVITY

The characteristics of the wells are provided in Table 1. The Ungani 1 ST1 and Ungani 2 petroleum wells are both located on the Ungani Central well site.

Table 1: Characteristics of the Ungani 1 ST1, Ungani 2 and Ungani 3 wells.

Well	Date Drilled	Location		Depth
		Easting	Northing	
Ungani 1 ST1	August – September 2011	517,375 mE	8,010,864 mN	3,593 m
Ungani 2	November – January 2012	517,365 mE	8,010,848 mN	2,800 m
Ungani 3	January – March 2014	518,470 mE	8,011,035 mN	2,284 m
Ungani Far West 1	November 2015 – February 2016	514,225 mE	8,008,842 mN	2,400 m

The Activity will be undertaken within petroleum production licence areas L 20 and L 21, located approximately 100 km east of Broome and 86 km southwest of Derby on Yakka Munga pastoral station.

2.1. Existing Infrastructure

In addition to the wells, the existing infrastructure at the Ungani Facility includes:

- banded three phase (oil, produced water and gas) production separator;
- various storage tanks;
- impermeable lined turkeys nest;
- road tanker load out facility;
- plant processing and well control systems;
- produced water injection equipment;
- other equipment including generators, lighting towers, reverse osmosis plant and office; and
- camp site including accommodation and kitchen.

2.2. Stages and Timing

The Activity is planned to commence around June/July 2017. Commissioning is expected to take approximately five days. Production operations will then commence, and are anticipated to continue for approximately ten years. Accordingly, this Environment Plan will be revised at a minimum of every five years. The Activity will occur year-round, but may be suspended for short periods (e.g. during maintenance or during weather events such as cyclones).

2.3. Mobilisation

During mobilisation, equipment, personnel and supplies required for the Activity will be mobilised to the Activity area using dedicated vehicles. All travel will be in accordance with State road legislation and the Company *Travel Management Procedure* (HSE-PRO-002).

2.4. Commissioning Process

The general steps of commissioning are:

- Pre-commissioning checks: safety and process checks to ensure operational components are ready for commissioning.
- Leak testing: use of water to test for leaks prior to introduction of hydrocarbons.
- Commissioning: the two production wells (Ungani 1ST1, Ungani 2) are flowed individually and the system inspected for leaks and function.

If production does not commence immediately following commissioning, the Facility will be shut-in and subject to ongoing inspections and maintenance.

2.5. Production Process

The oil-water mix will flow from the Ungani 1ST1 and Ungani 2 wells through the production separator. Depending on reservoir status, reservoir fluids may flow freely to surface, or downhole pumps will be used as artificial lift. The separated oil then flows to stock tanks. Produced water flows to the segregation tank and then water storage tanks, or straight to the water storage tanks. The limited gas given off during the separation process is released via the cold vent system.

The storage of the oil in the stock tanks allows further water separation which is transferred to the water storage tanks. Guided Wave Radar is used to determine the oil-water levels in the tanks. Also any remaining gas in the crude oil is vented from each tank. The oil is then pumped to the load out facility.

2.5.1. Produced Water Management

Produced water will consist of up to approximately 30% of the oil-water mix produced from the Ungani wells. The primary method for disposal of produced water will be via reinjection into the Ungani Far West 1 well. The Ungani Central turkeys nest may also be used for storage of produced water.

All chemicals within the produced water reinjected have been fully disclosed in accordance with Regulation 15(9) of the *Petroleum and Geothermal Energy Resources (Environment) Regulations 2012* and Chemical Disclosure Guideline published by DMP, in Appendix A.

2.6. Inspection and Maintenance

The Ungani Facility is manned during production and daily inspections will be undertaken. This includes collecting process data, monitoring tank and turkeys nest levels and system integrity checks.

Maintenance operations include, but are not limited to, routine operations such as water injection filter changes, and greasing and topping up oil on rotating equipment (pumps). Maintenance of the Ungani access track will be through a scheduled proactive program dependant on traffic loads. Similar maintenance may be required on the well sites.

Wellhead maintenance operations may be undertaken which include wellhead maintenance, safety valve leak testing and well monitoring. The Company may also undertake wireline, slickline or e-line operations.

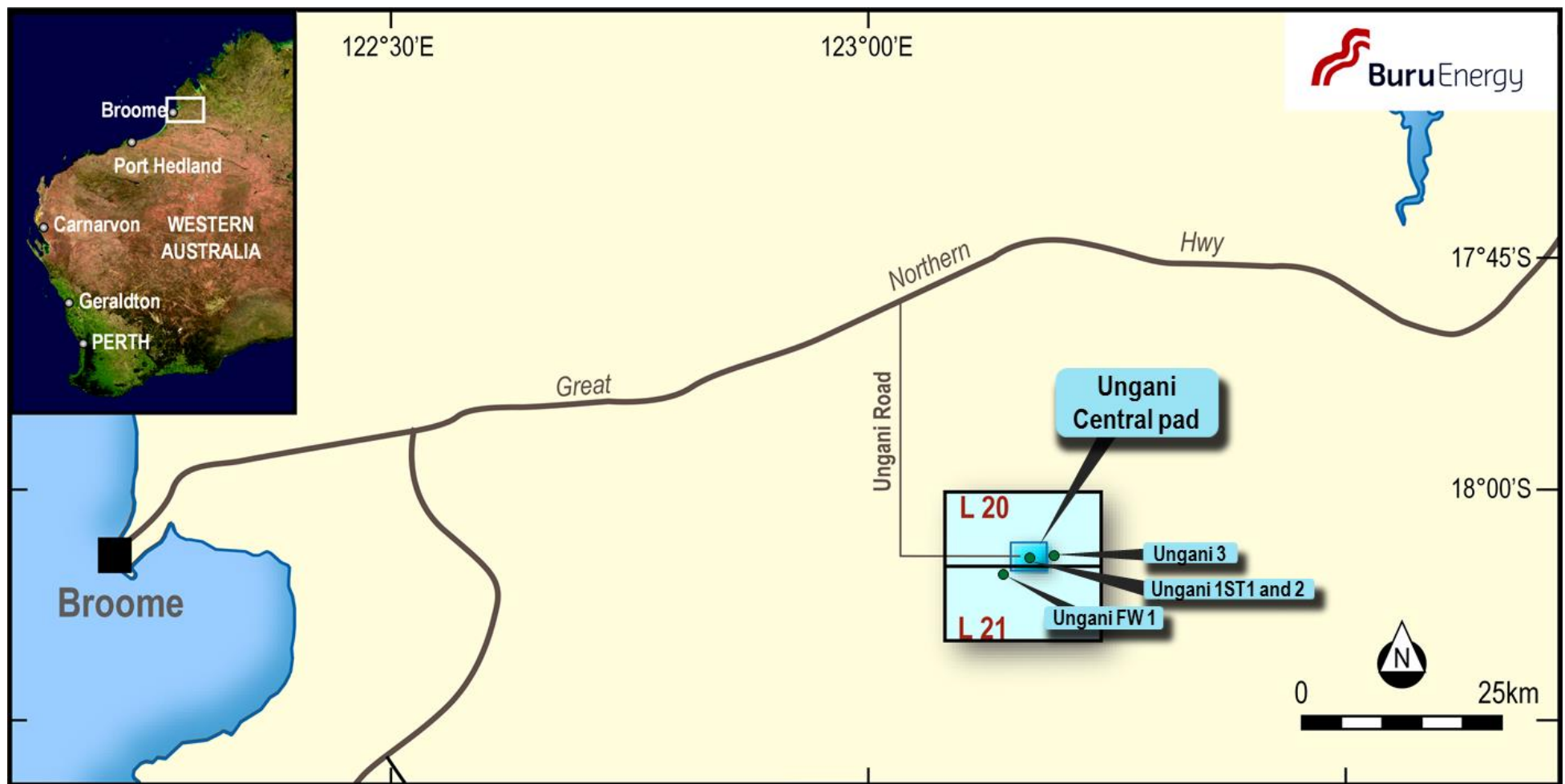


Figure 1: Location of the Ungani Facility.

2.7. Waste

All putrescible wastes will be stored in lidded skips/bins which 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 for disposal in accordance with regulatory requirements.

Sewage and grey water will be treated by an Aerated Wastewater Treatment System. Following treatment, effluent will be discharged into a fenced area.

Waste oil that has been contaminated with solids and is unsuitable for recovery or other hydrocarbon contaminated materials will be stored in bins prior to disposal in accordance with regulatory requirements.

2.8. Demobilisation and Rehabilitation

Following completion of the commissioning phase, all Activity specific machinery and equipment will be removed from the Activity area. No demobilisation of production equipment is planned as a part of the Activity.

If some of the infrastructure at the Ungani Facility is no longer required then progressive decommissioning and remediation will be implemented. Alternatively, if the Company determines that production from the Ungani Facility will be permanently ceased, a decommissioning and rehabilitation plan will be developed for DMP's approval and in consultation with all relevant stakeholders.

3. ENVIRONMENTAL IMPACTS AND MANAGEMENT MEASURES

The Activity will be confined to the existing Ungani Facility. A summary of the existing environmental characteristics of surrounding the Activity area, potential impacts that could result from the Activity and the risk of these potential impacts occurring is provided in Table 2. Included in this table are also the management and mitigation measures that form part of the implementation strategy to minimise environmental risk.

Table 2: 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 Fitzroy River, located 53 km from the Ungani Facility, is the largest water course in the vicinity of the Activity area. The closest drainage area to the Activity area is a small drainage depression about 9 km north. No permanent water bodies are located in the close 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 and surrounds.	<ul style="list-style-type: none"> Contamination of surface water. 	<ul style="list-style-type: none"> Hydrotesting will be undertaken on clean (free of crude) components only. Hydrotest water will be contained and pumped to Ungani Far West 1. Vehicles limited to the Activity area, travel in accordance with the <i>Travel Management Procedure</i> (HSE-PRO-002). Operations with spill risks will be undertaken in bunded areas or over drip trays. The Facility will be shut in if maximum capacity of oil and water storage is reached. Implementation of the <i>Waste Management Procedure</i> (HSE-PRO-005). 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. Inspections of the Activity area and equipment (including daily and weekly inspections). Containment, clean-up and remediation if required of a spill in accordance with the <i>Canning Basin Spill Response Plan</i> (HSE-ER-015). 500 mm freeboard will be maintained in turkeys nest. Guided Wave Radar installed on storage tanks to meter water levels. Following high rainfall events, bunds will be inspected for the presence of contaminated water and then (if appropriate) discharged. Any will be managed to prevent erosion. Periodic well integrity testing and inspection and appropriate maintenance/rectification procedures (Leak Off Testing, Formation Integrity Testing etc.). Bureau of Meteorology forecasts and warnings monitored. 	Given the mitigation and management measures that will be implemented, contamination of 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 wastes are appropriately stored prior to disposal. PIC to complete weekly operational checklist. PIC to ensure all physical containment measures are well maintained. PIC to ensure well maintained machinery, vehicles and equipment. Supervision of relevant operations by personnel with well control certification. Quarterly groundwater sampling. Internal environmental audit. Flowlines inspected daily when operational for leaks.
Geology, Landforms and Soil	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.	<ul style="list-style-type: none"> Soil erosion, sedimentation or compaction. Contamination of soil. 	<ul style="list-style-type: none"> No clearing of vegetation is required. Vehicle and personnel access will be limited to the Activity area. Earthmoving machinery and equipment will be inspected and cleaned. Externally sourced gravel will be weed free. Vehicles and machinery will be regularly maintained and undergo a pre-start check. Inspections of the Activity area and equipment (including daily and weekly inspections). Fire detection equipment and lightning detection system installed. Firebreak will be inspected and maintained. Smoking restricted to designated smoking areas. Firefighting equipment located at camp site and operational personnel trained in its use. The Company will notify DMP of any decommissioning planned and develop a decommissioning and rehabilitation plan. 	Given the mitigation and management measures that will be implemented, soil contamination and erosion is unlikely.	<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 access outside of the Activity area. PIC to ensure all earthmoving machinery/ equipment is checked prior to entering the Activity area. PIC to ensure gravel is weed free. Weekly inspection of the Activity area.
Groundwater	The major aquifer used in the vicinity of the Activity area is the Wallal Sandstone which is located between 130 m and 200 m below ground level. The bore at the Ungani Facility extracts groundwater from this aquifer at 140 m BGL. The nearest water bore operated by a third party is approximately 11 km west.	<ul style="list-style-type: none"> Contamination of groundwater. 	<ul style="list-style-type: none"> No clearing of vegetation is required. Vehicle and personnel access will be limited to the Activity area. Earthmoving machinery and equipment will be inspected and cleaned. Externally sourced gravel will be weed free. Vehicles and machinery will be regularly maintained and undergo a pre-start check. Inspections of the Activity area and equipment (including daily and weekly inspections). Fire detection equipment and lightning detection system installed. Firebreak will be inspected and maintained. Smoking restricted to designated smoking areas. Firefighting equipment located at camp site and operational personnel trained in its use. The Company will notify DMP of any decommissioning planned and develop a decommissioning and rehabilitation plan. 	Given the mitigation and management measures that will be implemented, groundwater contamination is considered unlikely.	<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 access outside of the Activity area. PIC to ensure all earthmoving machinery/ equipment is checked prior to entering the Activity area. PIC to ensure gravel is weed free. Weekly inspection of the Activity area.
Vegetation and Flora	Surrounding the Activity area, the vegetation has been described as pindan on sand plains. Pindan is "grassland wooded by a sparse upper layer of trees and a dense, thicket-forming middle layer of unarmed, phyllodal <i>Acacia</i> ". Two priority three flora species have been recorded in the vicinity of the Activity area, <i>Goodenia byrnesii</i> and <i>G. crenata</i> .	<ul style="list-style-type: none"> Loss of a local population of a conservation significant flora species. Loss of native flora. Invasive weed species competing with native flora. Loss of conservation significant fauna habitat 	<ul style="list-style-type: none"> No clearing of vegetation is required. Vehicle and personnel access will be limited to the Activity area. Earthmoving machinery and equipment will be inspected and cleaned. Externally sourced gravel will be weed free. Vehicles and machinery will be regularly maintained and undergo a pre-start check. Inspections of the Activity area and equipment (including daily and weekly inspections). Fire detection equipment and lightning detection system installed. Firebreak will be inspected and maintained. Smoking restricted to designated smoking areas. Firefighting equipment located at camp site and operational personnel trained in its use. The Company will notify DMP of any decommissioning planned and develop a decommissioning and rehabilitation plan. 	Given that no clearing is required and through the implementation of management measures, it is unlikely that the Activity will have a significant impact on flora and vegetation.	<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 access outside of the Activity area. PIC to ensure all earthmoving machinery/ equipment is checked prior to entering the Activity area. PIC to ensure gravel is weed free. Weekly inspection of the Activity area.
Environmentally Sensitive Areas (ESAs)	The nearest ESA is Taylors Lagoon, approximately 30 km to the northwest of the Ungani Facility. Ungani Far West 1 is located within the Edgar Range Red Book area.	<ul style="list-style-type: none"> Loss of environmental values associated with ESA. 	<ul style="list-style-type: none"> No clearing of vegetation is required. Vehicle and personnel access will be limited to the Activity area. Earthmoving machinery and equipment will be inspected and cleaned. Externally sourced gravel will be weed free. Vehicles and machinery will be regularly maintained and undergo a pre-start check. Inspections of the Activity area and equipment (including daily and weekly inspections). Fire detection equipment and lightning detection system installed. Firebreak will be inspected and maintained. Smoking restricted to designated smoking areas. Firefighting equipment located at camp site and operational personnel trained in its use. The Company will notify DMP of any decommissioning planned and develop a decommissioning and rehabilitation plan. 	Given the distance to the closest ESA and scope of the planned Activities, it is unlikely ESAs will be impacted.	<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 access outside of the Activity area. PIC to ensure all earthmoving machinery/ equipment is checked prior to entering the Activity area. PIC to ensure gravel is weed free. Weekly inspection of the Activity area.
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>) and Grey Falcon (<i>Falco hypoleucos</i>).	<ul style="list-style-type: none"> Loss of a local population of a conservation significant fauna species. Death or injury of fauna. 	<ul style="list-style-type: none"> Vehicles comply with the <i>Travel Management Procedure</i> (HSE-PRO-002). Lighting kept to a minimum required for safe operations with lighting faces inwards. Well maintained and muffled equipment and machinery. Egress path in the turkeys nest visually inspected and repaired as required. 	Given the mitigation and management measures that will be implemented, it is unlikely that the Activity will have a significant impact on fauna species.	<ul style="list-style-type: none"> PIC to ensure lighting is minimum required for safe operation. Weekly inspection of fauna egress paths and fencing. Weekly inspections for impacts outside of the Activity area.
Social	Land use surrounding the Activity area is dominated by open range pasture grazing of beef stock. The townships of Derby 90 km 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 Yakka Munga approximately 30 km east of the Activity area.	<ul style="list-style-type: none"> Disturbance of livestock. Disturbance of local landholders. Impact on local air quality. 	<ul style="list-style-type: none"> On-going consultation with stakeholders. Vehicles will comply with the <i>Travel Management Procedure</i> (HSE-PRO-002). Bore water sourced from existing water bores or turkeys nest for dust suppression. Experience and modelling have determined that any reduction in air quality will be restricted to the immediate vicinity (approx. 2 m) of the gas vents. The Company will review gas management methods (e.g. venting vs. flaring) as part of any upgrade to the Facility capacity. Night time operations limited to inspection and tanker loading (i.e. majority of operations are during daylight hours). Any demobilisation will be undertaken in accordance with the <i>Demobilisation Procedure</i> (HSE-PRO-021). 	Through the implementation of management measures, it is unlikely that the Activity will have an impact on local amenity including land owners.	<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	The Activity will be confined to the existing heritage cleared Ungani Facility. The nearest known culturally important area is Blue Hills, approximately 2 km to the east of the Activity area, and the nearest listed Department of Aboriginal Affairs listed site is approximately 30 km northwest of the Activity area.	<ul style="list-style-type: none"> Damage to cultural heritage site/s or object/s. 	<ul style="list-style-type: none"> Vehicle and personnel activity will be limited to the Activity area. No clearing as part of the Activity. Land access agreements have been signed with relevant Traditional Owner groups for the Ungani Production Facility. Given the large number of exploration activities undertaken in the Ungani area, numerous heritage surveys have been completed. 	Given that no clearing is required and through the management measures, it is unlikely that the Activity will impact 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 Environment Regulation;
- Yakka Munga Station;
- Roebuck Plains Station;
- Yawuru Traditional Owners;
- Nyikina Mangala Traditional Owners;
- Karajarri Yanja Traditional Owners;
- Department of Fire and Emergency Services;
- Department of Water; and
- Broome and Derby Police.

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
Chemical Disclosure and Relevant MSDS

CHEMICAL DISCLOSURE FOR BURU ENERGY

A. SYSTEM DETAILS:

OPERATOR:	Buru Energy
PROJECT / WELL:	Ungani
SYSTEM:	Produced Water Disposal
TOTAL VOLUME OF SYSTEM:	98,000 L/day

B. PRODUCT LIST:

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached?
CRW24006	BHI	Corrosion Inhibitor	<p>This product contains organic components.</p> <p>AQUATIC TOXICOLOGY</p> <ul style="list-style-type: none"> • COMPONENT 1 (30 – 60% concentration) Natural product – exempt under the Chemical Disclosure Guidelines • COMPONENT 2 (10 – 30% concentration) <ul style="list-style-type: none"> ○ <i>Skeletonema costatum</i> (Marine algae) EC50 72 hrs: 0.08 mg/L ○ <i>Acartia tonsa</i> (Marine invertebrate) LC50 48 hrs: 5.00 mg/L ○ Sheepshead Minnow (Marine fish) LC50 96 hrs: 2.30 mg/L • COMPONENT 3 (10 – 30% concentration) <ul style="list-style-type: none"> ○ <i>Desmodesmus subspicatus</i> (Freshwater algae) EC50 96 hrs > 100 mg/L ○ <i>Daphnia magna</i> (Freshwater invertebrate) EC50, 48 hrs: > 100 mg/L ○ Bluegill Sunfish (Freshwater fish) LC50 96 hrs: 2.30 mg/L • COMPONENT 4 (5 – 10% concentration) <ul style="list-style-type: none"> ○ <i>Chlorococcales</i> (Freshwater algae) EC50: 105 mg/L ○ <i>Daphnia magna</i> (Freshwater invertebrate) EC50: 65.0 mg/L ○ <i>Oncorhynchus mykiss</i> (Freshwater fish) LC50 96 hrs: > 300.82 mg/L • COMPONENT 5 (1 – 5% concentration) No data available for this component. Data presented for comparable product. <ul style="list-style-type: none"> ○ <i>Skeletonema costatum</i> (Marine algae) EC50 72 hrs: 0.20 mg/L ○ <i>Acartia tonsa</i> (Marine invertebrate) LC50 48 hrs: 0.30 mg/L ○ Sheepshead Minnow (Marine fish) LC50 96 hrs: 1.30 mg/L • COMPONENT 6 (1 – 5% concentration) <ul style="list-style-type: none"> ○ <i>Pseudokirchnerella subcapitata</i> (Freshwater algae) EC50 72hrs: 27.0 mg/L ○ <i>Daphnia magna</i> (Freshwater invertebrate) EC50 48 hrs: 38.0 mg/L 	~ 0.0031	Yes

Chemical Disclosure

DMP approved format

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached?
			<ul style="list-style-type: none"> ○ <i>Oncorhynchus mykiss</i> (Freshwater fish) LC50 96 hrs: > 100 mg/L ● COMPONENT 7 (0.1 – 1% concentration) <ul style="list-style-type: none"> ○ <i>Scenedesmus quadricauda</i> (Freshwater algae) Toxicity threshold, 7 days: 1,800 mg/L ○ <i>Daphnia magna</i> (Freshwater invertebrate) LC50 24 hrs: >10,000 mg/L ○ <i>Pimephales promelas</i> (Freshwater fish) LC50 96 hrs: 9,640 mg/L ● COMPONENT 8 (0.1 – 1% concentration) <ul style="list-style-type: none"> ○ <i>Pseudokirchnerella subcapitata</i> (freshwater algae) EC50 72 hrs: 1,164 mg/L ○ <i>Daphnia magna</i> (freshwater invertebrate) EC50 48 hrs: 64.6 mg/L ○ <i>Poecilia reticulata</i> (freshwater fish) LC50 96 hrs: 430 mg/L <p>CHEMICAL FATE</p> <p>Octanol/Water Partition Coefficient</p> <ul style="list-style-type: none"> ● COMPONENT 1 (30 – 60% concentration) Natural product – exempt under the Chemical Disclosure Guidelines ● COMPONENT 2 (10 – 30% concentration) Log Pow 1.87 – 4.47 ● COMPONENT 3 (10 – 30% concentration) Log Pow 1.0 ● COMPONENT 4 (5 – 10% concentration) Log Pow -0.17 ● COMPONENT 5 (1 – 5% concentration) No data available for this component. Data presented for comparable product. Log Pow -0.85 – 1.35 ● COMPONENT 6 (1 – 5% concentration) Log Pow -2.99 ● COMPONENT 7 (0.1 – 1% concentration) Log Pow < 1.0 ● COMPONENT 8 (0.1 – 1% concentration) Log Pow -1.58 at pH > 12, -5.58 at pH 7 <p>ENVIRONMENTAL FATE</p> <p>Ready Biodegradability</p> <ul style="list-style-type: none"> ● COMPONENT 1 (30 – 60% concentration) Natural product – exempt under the Chemical Disclosure Guidelines 		

Chemical Disclosure

DMP approved format

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached?
			<ul style="list-style-type: none"> • COMPONENT 2 (10 – 30% concentration) Biodegradability, 28 days: 45% • COMPONENT 3 (10 – 30% concentration) Biodegradability, 28 days: 85% • COMPONENT 4 (5 – 10% concentration) Biodegradability, 28 days: 72% • COMPONENT 5 (1 – 5% concentration) No data available for this component. Data presented for comparable product. Biodegradability, 14 days: 100% • COMPONENT 6 (1 – 5% concentration) Biodegradability, 28 days: 67% • COMPONENT 7 (0.1 – 1% concentration) Biodegradability, 28 days: 76% • COMPONENT 8 (0.1 – 1% concentration) Biodegradability, 21 days: 87% <p><u>ACUTE MAMMALIAN TOXICITY</u></p> <ul style="list-style-type: none"> • COMPONENT 1 (30 – 60% concentration) Natural product – exempt under the Chemical Disclosure Guidelines • COMPONENT 2 (10 – 30% concentration) Rat LD50 (oral): > 4,000 mg/kg • COMPONENT 3 (10 – 30% concentration) Mouse (fasted animals) LD50 (oral): 2,410 mg/kg • COMPONENT 4 (5 – 10% concentration) Rat LD50 (oral): 3,310 mg/kg • COMPONENT 5 (1 – 5% concentration) Mouse LD50 (oral): 150 – 340 mg/kg • COMPONENT 6 (1 – 5% concentration) Rat LD50 (oral): 73 mg/kg • COMPONENT 7 (0.1 – 1% concentration) Rat LD50 (oral): 5,840 mg/kg • COMPONENT 8 (0.1 – 1% concentration) Rat LD50 (oral): 1,553 mg/kg <p><u>CHRONIC TOXICITY</u> No known carcinogenic, chronic, mutagenic or reproductive effects.</p>		

Chemical Disclosure
DMP approved format

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached?
TRETOLITE™ DMO24900	BHI	Demulsifier	<p>This product contains organic components.</p> <p>AQUATIC TOXICOLOGY</p> <ul style="list-style-type: none"> • COMPONENT 1 (30 – 60% concentration) No data available for this component. Data presented for comparable product. <ul style="list-style-type: none"> ○ <i>Skeletonema costatum</i> (Marine algae) EC50 72 hrs: 67.1 mg/L ○ <i>Acartia tonsa</i> (Marine invertebrate) LC50 48 hrs: 161 mg/L ○ <i>Pimephales promelas</i> (Freshwater fish) LC50 96 hrs: < 10 mg/L • COMPONENT 2 (10 – 30% concentration) <ul style="list-style-type: none"> ○ <i>Skeletonema costatum</i> (Marine algae) EC50 72 hrs: 6.30 mg/L ○ <i>Acartia tonsa</i> (Marine invertebrate) LC50 48 hrs: 23.5 mg/L ○ <i>Cyprinodon variegatus</i> (Marine fish) LC50 96 hrs: 1,024 mg/L • COMPONENT 3 (10 – 30% concentration) <ul style="list-style-type: none"> ○ <i>Skeletonema costatum</i> (Marine algae) EC50 72 hrs: 19.8 mg/L ○ <i>Acartia tonsa</i> (Marine invertebrate) LC50 48 hrs: 35.4 mg/L ○ <i>Cyprinodon variegatus</i> (Marine fish) LC50 96 hrs: 324 mg/L • COMPONENT 4 (5 – 10% concentration) <ul style="list-style-type: none"> ○ <i>Desmodesmus subspicatus</i> (Freshwater algae) EC50 72 hrs: 16.6 mg/L ○ <i>Daphnia magna</i> (Freshwater invertebrate) LC50 48 hrs: 39.0 mg/L ○ <i>Pimephales promelas</i> (Freshwater fish) LC50 96 hrs: 28.2 mg/L • COMPONENT 5 (1 – 5% concentration) <ul style="list-style-type: none"> ○ <i>Skeletonema costatum</i> (Marine algae) EC50 72 hrs: 3.40 mg/L ○ <i>Acartia tonsa</i> (Marine invertebrate) LC50 48 hrs: 9.00 mg/L ○ <i>Cyprinodon variegatus</i> (Marine fish) LC50 96 hrs: > 1,000 mg/L • COMPONENT 6 (1 – 5% concentration) <ul style="list-style-type: none"> ○ <i>Chlorococcales</i> (Freshwater algae) EC50 24 hrs: 100 mg/L ○ <i>Daphnia magna</i> (Freshwater invertebrate) LC50 24 hrs: 150 mg/L ○ <i>Pimephales promelas</i> (Freshwater fish) LC50 96 hrs: 42.0 mg/L • COMPONENT 7 (1 – 5% concentration) <ul style="list-style-type: none"> ○ <i>Skeletonema costatum</i> (Marine algae) EC50 72 hrs: 0.85 mg/L ○ <i>Chironomus riparius</i> (Freshwater invertebrate) LC50 96 hrs: 6.50 mg/L ○ <i>Lepomis macrochirus</i> (Freshwater fish) LC50 96 hrs: 1.67 mg/L <p>CHEMICAL FATE</p> <p>Octanol/Water Partition Coefficient</p> <ul style="list-style-type: none"> • COMPONENT 1 (30 – 60% concentration) 	~ 0.0071	Yes

Chemical Disclosure
DMP approved format

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached?
			<p>No data available for this component. Data presented for comparable product. Log Pow 2.66 – 4.90</p> <ul style="list-style-type: none"> • COMPONENT 2 (10 – 30% concentration) Not applicable to surfactants • COMPONENT 3 (10 – 30% concentration) Not applicable to surfactants • COMPONENT 4 (5 – 10% concentration) Log Pow 2.8 • COMPONENT 5 (1 – 5% concentration) Not applicable to surfactants • COMPONENT 6 (1 – 5% concentration) Log Pow 3.2 – 3.5 • COMPONENT 7 (1 – 5% concentration) Log Pow 2.28 <p>ENVIRONMENTAL FATE</p> <p>Ready Biodegradability</p> <ul style="list-style-type: none"> • COMPONENT 1 (30 – 60% concentration) No data available for this component. Data presented for comparable product. Biodegradability 28 days: 62% • COMPONENT 2 (10 – 30% concentration) Biodegradability 28 days: 17% • COMPONENT 3 (10 – 30% concentration) Biodegradability 28 days: 27% • COMPONENT 4 (5 – 10% concentration) Biodegradability 28 days: 99% • COMPONENT 5 (1 – 5% concentration) Biodegradability 28 days: 5% • COMPONENT 6 (1 – 5% concentration) Biodegradability 28 days: 73% • COMPONENT 7 (1 – 5% concentration) Biodegradability 28 days: 100% <p>ACUTE MAMMALIAN TOXICITY</p> <ul style="list-style-type: none"> • COMPONENT 1 (30 – 60% concentration) No data available for this component. Data presented for comparable product. 		

Chemical Disclosure

DMP approved format

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached?
			<p>Rat LD50 (oral): 7,050 mg/kg</p> <ul style="list-style-type: none"> • COMPONENT 2 (10 – 30% concentration) No data available for this component. Data presented for comparable product. Rat LD50 (inhalation): 147 mg/m³ • COMPONENT 3 (10 – 30% concentration) No scientific data or research is available for this component. • COMPONENT 4 (5 – 10% concentration) Rat LD50 (oral): 2,047 mg/kg • COMPONENT 5 (1 – 5% concentration) No data available for this component. Data presented for comparable product. Mouse LD50 (oral): 1,600 mg/kg • COMPONENT 6 (1 – 5% concentration) Rat LD50 (oral): 4,300 mg/kg • COMPONENT 7 (1 – 5% concentration) Rat LD50 (oral): 1,470 mg/kg <p>CHRONIC TOXICITY</p> <ul style="list-style-type: none"> • This product carries the following classification: <ul style="list-style-type: none"> ○ R40 – Limited evidence of a carcinogenic effect • No other known carcinogenic, chronic, mutagenic or reproductive effects. 		
TRETOLITE™ DMO86318	BHI	Demulsifier	<p>This product is organic.</p> <p>AQUATIC TOXICOLOGY</p> <ul style="list-style-type: none"> • COMPONENT 1 (60 – 100% concentration) Static Acute Toxicity <ul style="list-style-type: none"> ○ <i>Skeletonema costatum</i> (marine algae) EC50 72 hrs: 71 mg/L ○ <i>Acartia tonsa</i> (marine invertebrate) LC50 48 hrs: 20 mg/L ○ <i>Scolophthalmus maximus</i> (marine fish) LC50 96 hrs: > 21.4 mg/L • COMPONENT 2 (10 – 30% concentration) Static Acute Toxicity <ul style="list-style-type: none"> ○ <i>Skeletonema costatum</i> (marine algae) EC50 72 hrs: 67.1 mg/L ○ <i>Acartia tonsa</i> (marine invertebrate) LC50 48 hrs: 161 mg/L ○ <i>Scolophthalmus maximus</i> (marine fish) LC50 96 hrs: > 67.1 mg/L • COMPONENT 3 (10 – 30% concentration) Static Acute Toxicity <ul style="list-style-type: none"> ○ <i>Skeletonema costatum</i> (marine algae) EC50 72 hrs: 32.1 mg/L 	~ 0.0071 (Contingency)	Yes

Chemical Disclosure
DMP approved format

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached?
			<ul style="list-style-type: none"> ○ <i>Acartia tonsa</i> (marine invertebrate) LC50 48 hrs: 159 mg/L ○ <i>Cyprinodon variegatus</i> (marine fish) LC50 96 hrs: 20 mg/L ● COMPONENT 4 (5 – 10% concentration) No data available for this component. Data are presented for a similar compound. Static Acute Toxicity <ul style="list-style-type: none"> ○ <i>Skeletonema costatum</i> (marine algae) EC50 72 hrs: 31 mg/L ○ <i>Acartia tonsa</i> (marine invertebrate) LC50 48 hrs: 44 mg/L ○ <i>Cyprinodon variegatus</i> (marine fish) LC50 96 hrs: 15 mg/L ● COMPONENT 5 (0.1 – 1.0% concentration) Static Acute Toxicity <ul style="list-style-type: none"> ○ <i>Skeletonema costatum</i> (marine algae) EC50 72 hrs: 0.85 mg/L ○ <i>Acartia tonsa</i> (marine invertebrate) LC50 48 hrs: 2.70 mg/L ○ <i>Lepomis macrochirus</i> (freshwater fish) LC50 96 hrs: 1.67 mg/L <p>CHEMICAL FATE</p> <p>Octanol/Water Partition Coefficient</p> <ul style="list-style-type: none"> ● COMPONENT 1 (60 – 100% concentration) Log (Pow) 3.56 – 5.23 (weighted average: 4.73) ● COMPONENT 2 (10 – 30% concentration) Log (Pow) 3.43 - 4.78 (weighted average: 4.31) ● COMPONENT 3 (10 – 30% concentration) No scientific data or research is available for this component. ● COMPONENT 4 (5 – 10% concentration) No scientific data or research is available for this component. ● COMPONENT 5 (0.1 – 1.0% concentration) Not applicable to surfactants <p>ENVIRONMENTAL FATE</p> <p>Ready Biodegradability</p> <ul style="list-style-type: none"> ● COMPONENT 1 (60 – 100% concentration) Biodegradability 28 days: 29% ● COMPONENT 2 (10 – 30% concentration) Biodegradability 28 days: 62% ● COMPONENT 3 (10 – 30% concentration) Biodegradability 28 days: 31% 		

Chemical Disclosure

DMP approved format

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached?
			<ul style="list-style-type: none"> • COMPONENT 4 (5 – 10% concentration) Biodegradability 28 days: 14% • COMPONENT 5 (0.1 – 1.0% concentration) Biodegradability 28 days: 85% <p><u>ACUTE MAMMALIAN TOXICITY</u></p> <ul style="list-style-type: none"> • COMPONENT 1 (60 – 10% concentration) No scientific data or research is available for this component. • COMPONENT 2 (10 – 30% concentration) No scientific data or research is available for this component. • COMPONENT 3 (10 – 30% concentration) No scientific data or research is available for this component. • COMPONENT 4 (5 – 10% concentration) No scientific data or research is available for this component. • COMPONENT 5 (0.1 – 1.0% concentration) Rat LD50 (oral): 1,470 mg/kg <p><u>CHRONIC TOXICITY</u></p> <p>A component of this product has shown “Limited evidence of carcinogenic effect”. No other known carcinogenic, chronic, mutagenic or other reproductive effects.</p>		
OSW24514	BHI	Oxygen Scavenger	<p><u>AQUATIC TOXICOLOGY</u></p> <p>Static Acute Freshwater Toxicity</p> <ul style="list-style-type: none"> ○ <i>Ceriodaphnia dubia</i> EC50 24 hrs: 234 mg/L EC50 48 hrs: 170 mg/L LC50 24 hrs: 259 mg/L LC50 48 hrs: 165 mg/L NOEC 48 hrs: < 117 mg/L ○ <i>Daphnia magna</i> EC50 24 hrs: 210 mg/L EC50 48 hrs: 125 mg/L LC50 24 hrs: 288 mg/L LC50 48 hrs: 151 mg/L NOEC 48 hrs: < 117 mg/L <p>Static Acute Renewal Freshwater Toxicity</p> <ul style="list-style-type: none"> ○ Fathead Minnow (<i>Pimephales promelas</i>) EC50 48 hrs: 298 mg/L EC50 96 hrs: 259 mg/L LC50 48 hrs: 639 mg/L 	~ 0.0031	

Chemical Disclosure
DMP approved format

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached?
			<p>LC50 96 hrs: 639 mg/L NOEC 96 hrs: 117 mg/L</p> <p>Static Acute Saltwater Toxicity</p> <ul style="list-style-type: none"> ○ Threespine stickleback (<i>Gasterosteus aculeatus</i>) LC50 96 hr: 206 mg/L ● Comment: Algal toxicity data are not available for this product. <p>ENVIRONMENTAL FATE Not applicable to inorganic compounds.</p> <p>ACUTE MAMMALIAN TOXICITY Not applicable to inorganic compounds.</p> <p>ACUTE MAMMALIAN TOXICITY Rat LD50 (oral) 14 days: ~ 2,610 mg/kg No data available for this active. Data are presented for a similar chemistry.</p> <p>CHRONIC TOXICITY No known carcinogenic, chronic, mutagenic or reproductive effects.</p>		
TRETOLITE™ RBW24136	BHI	Water Clarifier	<p>This product contains organic components.</p> <p>AQUATIC TOXICOLOGY</p> <p>Static Acute Saltwater Toxicity</p> <ul style="list-style-type: none"> ○ <i>Acartia tonsa</i> LC10 48 hrs: 2.16 mg/L LC50, 48 hrs: 3.40 mg/L LC90, 48 hrs: 11.2 mg/L NOEC, 48 hrs: 0.80 mg/L ○ <i>Skeletonema costatum</i> EC50 Biomass 48 hrs: 2.00 mg/L EC50, Growth Rate, 48 hrs: 2.20 mg/L EC50, Biomass, 72 hrs: 2.00 mg/L EC50, Growth Rate, 72 hrs: 3.20 mg/L ○ <i>Corophium volutator</i> LC50 10 days: 1,150 mg/L ○ <i>Photobacterium phosphoreum</i> EC50 15 minutes: 1,176 mg/L EC50 5 minutes: 916 mg/L ○ <i>Scophthalmus maximus</i> LC50 24 hrs: 776 mg/L LC50, 48 hrs: 776 mg/L LC50, 72 hrs: 716 mg/L 	~ 0.001	Yes

Chemical Disclosure
DMP approved format

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached?
			<p>LC50 96 hrs: 716 mg/L NOEC 96 hrs: 632 mg/L</p> <p>CHEMICAL FATE Log Pow Calculated: 2.6 Log Pow Range: 0 to 3.9 Log Pow < 0 95.0% 3 < Log Pow < 4 5.00%</p> <p>ENVIRONMENTAL FATE</p> <ul style="list-style-type: none"> ○ Test Concentration: 5 mg/L Reference: Sodium Acetate Reference Concentration: 2 mg/L Biodegradability 5 days: 0% (reference = 64%) Biodegradability 13 days: 14% (reference = 71%) Biodegradability 20 days: 21% (reference = 83%) Biodegradability 28 days: 14% (reference = 83%) ○ Test Concentration: 9.8 mg/L Reference: Sodium Benzoate Reference Concentration: 2.5 mg/L Biodegradability 5 days: 31% (reference=68%, inhibitory action=44%) Biodegradability 15 days: 20% (reference=81%, inhibitory action=44%) Biodegradability 28 days: 29% (reference=82%, inhibitory action=51%) <p>ACUTE MAMMALIAN TOXICITY Rat LD50 (oral): 273 mg/kg Acute oral toxicity of a component of this product. Acute mammalian toxicity studies on this product have not been conducted.</p> <p>CHRONIC TOXICITY No known carcinogenic, chronic, mutagenic or reproductive effects.</p>		
SCW24457	BHI	Scale Inhibitor	<p>This product contains organic components.</p> <p>AQUATIC TOXICOLOGY Static Acute Renewal Saltwater Toxicity</p> <ul style="list-style-type: none"> ○ <i>Scophthalmus maximus</i> LC50 96 hrs: 8,667 mg/L 	~ 0.002	Yes

Chemical Disclosure

DMP approved format

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached?
			<p>NOEC 96 hrs: 3,889 mg/L</p> <p>Static Acute Saltwater Toxicity</p> <ul style="list-style-type: none"> ○ <i>Acartia tonsa</i> LC50 48 hrs: 2,800 mg/L ○ NOEC 48 hrs: 1,556 mg/L ○ <i>Skeletonema costatum</i> EC50 Biomass 72 hrs: 400 mg/L ○ NOEC Biomass 72 hrs: 111 mg/L <p>CHEMICAL FATE</p> <p>Log Pow: -2.84</p> <p>Comment: Determined by calculation using the method of Hansch & Leo, based on the fragment method of Rekker.</p> <p>ENVIRONMENTAL FATE</p> <p>Test Concentration: 5 mg/L</p> <p>Reference: Sodium Acetate</p> <p>Reference Concentration: 2 mg/L</p> <p>Biodegradability 5 days: 0% (reference = 64%)</p> <p>Biodegradability 13 days: 8% (reference = 71%)</p> <p>Biodegradability 20 days: 32% (reference = 83%)</p> <p>Biodegradability 28 days: 24% (reference = 83%)</p> <p>ACUTE MAMMALIAN TOXICITY</p> <p>Rat LD50 (oral) 14 days: > 5,838 mg/kg</p> <p>Comment: LD50 > 5,838 as active salt</p> <p>CHRONIC TOXICITY</p> <p>No known carcinogenic, chronic, mutagenic or reproductive effects.</p>		
XC24380	BHI	Biocide	<p>This product contains organic components.</p> <p>AQUATIC TOXICOLOGY</p> <p>Static Acute Freshwater Toxicity</p> <ul style="list-style-type: none"> ○ <i>Daphnia magna</i> LC50 48 hrs: 19.4 mg/L ○ Bluegill Sunfish (<i>Lepomis macrochirus</i>) LC50 96 hrs: 93.0 mg/L ○ Rainbow trout (<i>Oncorhynchus mykiss</i>) LC50 96 hrs: 119 mg/L <p>Static Acute Renewal Freshwater Toxicity</p> <ul style="list-style-type: none"> ○ Fathead Minnow (<i>Pimephales promelas</i>) LC50 24 hrs: > 26.6 mg/L 	~ 0.0031	Yes

Chemical Disclosure

DMP approved format

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached?
			<p>LC50 48 hrs: 15.1 mg/L LC50 72 hrs: 4.90 mg/L LC50 96 hrs: 2.90 mg/L NOEC 96 hrs: 0.80 mg/L</p> <p>Static Acute Renewal Saltwater Toxicity</p> <ul style="list-style-type: none"> ○ Mysid shrimp (<i>Americamysis bahia</i>) LC50 48 hrs: 2.82 mg/L LC50 96 hrs: 1.06 mg/L LOEC (7day survival): 1.25 mg/L LOEC (7day growth): > 0.63 mg/L LOEC 48 hrs: 2.50 mg/L LOEC 96 hrs: 1.25 mg/L NOEC (7day survival): 0.63 mg/L NOEC (7day growth): 0.63 mg/L NOEC 48 hrs: 1.25 mg/L NOEC 96 hrs: 0.63 mg/L ○ <i>Scophthalmus maximus</i> LC50 96 hrs: 72.5 mg/L NOEC 96 hrs: 41.0 mg/L <p>Static Acute Saltwater Toxicity</p> <ul style="list-style-type: none"> ○ Mysid shrimp (<i>Americamysis bahia</i>) LC50 48 hrs: 16.0 mg/L NOAEC, 48 hrs: 5.80 mg/L ○ Inland Silverside (<i>Menidia beryllina</i>) LC50 48 hrs: 97.5 mg/L NOAEC 48 hrs: 29.2 mg/L ○ <i>Skeletonema costatum</i> EC50 72 hrs: 0.16 mg/L ○ <i>Acartia tonsa</i> LC50 48 hrs: 0.60 mg/L LC100 48 hrs: 0.85 mg/L NOEC 48 hrs: 0.20 mg/L ○ <i>Corophium volutator</i> LC50 10 days: 2,174 mg/L <p>CHEMICAL FATE Log Pow < 0 100%</p> <p>ENVIRONMENTAL FATE Biodegradability 7 days: 60% Comment: Study evaluated the aerobic metabolism of ¹⁴C labelled THPS. Test results are expressed as DT (Disappearance Time) i.e. 60% of THPS had disappeared in 7 days.</p>		

Chemical Disclosure

DMP approved format

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached?
			<p><u>ACUTE MAMMALIAN TOXICITY</u></p> <ul style="list-style-type: none"> ○ Rat LC50 (inhalation) 14 days: 0.59 mg/L ○ Rat LD50 (oral) 14 days: 248 mg/kg <p><u>CHRONIC TOXICITY</u></p> <p>No known carcinogenic, chronic or mutagenic phrases. This product does carry an R61 "May cause harm to the unborn child" warning.</p>		
TRETOLITE™ RBW24122	BHI	Water Clarifier	<p>This product contains organic components.</p> <p><u>AQUATIC TOXICOLOGY</u></p> <ul style="list-style-type: none"> ● COMPONENT 1 (60 – 100% concentration) Natural product – exempted under the Chemical Disclosure Guidelines. ● COMPONENT 2 (30 – 60% concentration) Static Acute Saltwater Toxicity <ul style="list-style-type: none"> ○ <i>Acartia tonsa</i> (Crustacean) LC50 48 hrs: 3,420 mg/L ○ <i>Skeletonema costatum</i> (Algae) EC50 96 hour: 1,813 mg/L ○ <i>Cyprinodon variegatus</i> (Fish) LC50 96 hour: 13,230 mg/L <p><u>CHEMICAL FATE</u></p> <p>Octanol/Water Partition Coefficient</p> <ul style="list-style-type: none"> ● COMPONENT 1 (60 – 100% concentration) Natural product – exempted under the Chemical Disclosure Guidelines. ● COMPONENT 2 (30 – 60% concentration) Log Pow < 0 <p><u>ENVIRONMENTAL FATE</u></p> <p>Ready Biodegradability</p> <ul style="list-style-type: none"> ● COMPONENT 1 (60 – 100% concentration) Natural product – exempted under the Chemical Disclosure Guidelines. ● COMPONENT 2 (30 – 60% concentration) Biodegradability 28 days: 3% <p><u>ACUTE MAMMALIAN TOXICITY</u></p> <ul style="list-style-type: none"> ● COMPONENT 1 (60 – 100% concentration) Natural product – exempted under the Chemical Disclosure Guidelines. 	~ 0.0051 (Contingency)	Yes

Chemical Disclosure
DMP approved format

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached?
			<ul style="list-style-type: none"> COMPONENT 2 (30 – 60% concentration) Rat LD50 (oral): > 5,000 mg/kg <p>CHRONIC TOXICITY No known carcinogenic, chronic and mutagenic effects for any components.</p>		
TRETOLITE™ RBW24365	BHI	Water Clarifier	<p>This product contains organic components</p> <p>AQUATIC TOXICOLOGY</p> <ul style="list-style-type: none"> COMPONENT 1 (60 - 100% concentration) Natural product - exempted under the Chemical Disclosure Guidelines. COMPONENT 2 (10 - 30% concentration) Static Acute Freshwater Toxicity <ul style="list-style-type: none"> <i>Daphnia magna</i> (Crustacean) LC50 48 hrs: 38 mg/L <i>Pseudokirchnerella subcapitata</i> (Algae) EC50 96 hrs: 14 mg/L <i>Danio rerio</i> (Fish) LC50 96 hrs: > 1,000 mg/L COMPONENT 3 (5 – 10% concentration) Static Acute Toxicity <ul style="list-style-type: none"> <i>Daphnia magna</i> (Crustacean) LC50 48 hrs: 0.14 mg/L <i>Skeletonema costatum</i> (Marine Algae) EC50 96 hrs: 0.6 mg/L <i>Pimephales promelas</i> (Fish) LC50 96 hrs: 0.4 mg/L COMPONENT 4 (<0.1% concentration) Static Acute Freshwater Toxicity <ul style="list-style-type: none"> <i>Daphnia magna</i> (Crustacean) LC50 48 hrs: 41,100 mg/L <i>Pseudokirchnerella subcapitata</i>(Algae) EC50 96 hr >6,500-13,000 mg/L <i>Pimephales promelas</i> (Fish) LC50 96 hrs: 72,860 mg/L COMPONENT 5 (<0.1% concentration) Static Acute Toxicity <ul style="list-style-type: none"> <i>Daphnia magna</i> (Crustacean) LC50 48 hrs: 0.33 mg/L <i>Skeletonema costatum</i> (Marine Algae) EC50 96 hrs: 0.15 mg/L <i>Pimephales promelas</i> (Fish) LC50 96 hrs: 0.1 mg/L COMPONENT 6 (<0.1% concentration) No data available for this component. Data presented for a similar ingredient. Static Acute Freshwater Toxicity <ul style="list-style-type: none"> <i>Daphnia magna</i> (Crustacean) EC50 48 hrs: 230 mg/L <i>Pseudokirchnerella subcapitata</i> (Algae) EC50% 72 hrs: > 100 mg/L <i>Oncorhynchus mykiss</i> (Fish) LC50 96 hrs: 770 mg/L 	~ 0.00306 (Contingency)	Yes

Chemical Disclosure

DMP approved format

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached?
			<ul style="list-style-type: none"> • COMPONENT 7 (<0.1% concentration) Static Acute Freshwater Toxicity <ul style="list-style-type: none"> ○ <i>Daphnia magna</i> (Crustacean) LC50 48 hrs: 0.08 mg/L ○ <i>Skeletonema costatum</i> (Marine Algae) EC50 72 hrs: 0.08 mg/L ○ <i>Pimephales promelas</i> (Fish) LC50 96 hrs: 0.35 mg/L • COMPONENT 8 (<0.1% concentration) Static Acute Saltwater Toxicity <ul style="list-style-type: none"> ○ <i>Acartia tonsa</i> (Crustacean) LC50 48 hrs: 27 mg/L ○ <i>Skeletonema costatum</i> (Algae) EC50 72 hrs: 62 mg/L ○ <i>Cyprinodon variegatus</i> (Fish) LC50 96 hrs: 45 mg/L • COMPONENT 9 (<0.1% concentration) Static Acute Freshwater Toxicity <ul style="list-style-type: none"> ○ <i>Daphnia magna</i> (Crustacean) LC50 48 hrs: >1,000 mg/L ○ <i>Scenedesmus quadricauda</i> (Algae) EC50 7days: 1,800 mg/L ○ <i>Pimephales promelas</i> (Fish) LC50 96 hrs: 9,640 mg/L • COMPONENT 10 (<0.1% concentration) Static Acute Freshwater Toxicity <ul style="list-style-type: none"> ○ <i>Ceriodaphnia dubia</i> (Crustacean) LC50 48 hrs: 5,012 mg/L ○ <i>Chlorella vulgaris</i> (Algae) EC50 4 days: 675 mg/L ○ <i>Pimephales promelas</i> (Fish) LC50 96 hrs: 14,200 mg/L <p>CHEMICAL FATE</p> <ul style="list-style-type: none"> • COMPONENT 1 (60 - 100% concentration) Natural product - exempted under the Chemical Disclosure Guidelines. • COMPONENT 2 (10 – 30% concentration) Not Applicable to inorganic compounds. • COMPONENT 3 (5 – 10% concentration) Not Applicable to surfactants. Molecular weight > 700 • COMPONENT 4 (< 0.1% concentration) Log Pow < 0 • COMPONENT 5 (< 0.1% concentration) Not Applicable to surfactants. Molecular weight > 700 • COMPONENT 6 (< 0.1% concentration) Not Applicable to inorganic compounds. • COMPONENT 7 (< 0.1% concentration) Not Applicable to surfactants. 		

Chemical Disclosure

DMP approved format

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached?
			<ul style="list-style-type: none"> • COMPONENT 8 (< 0.1% concentration) Not Applicable. Molecular weight > 700 • COMPONENT 9 (< 0.1% concentration) Log Pow <1.0 • COMPONENT 10 (< 0.1% concentration) Log Pow -0.35 <p><u>ENVIRONMENTAL FATE</u></p> <ul style="list-style-type: none"> • COMPONENT 1 (60 - 100% concentration) Natural product - exempted under the Chemical Disclosure Guidelines • COMPONENT 2 (10 - 30% concentration) Not Applicable to inorganic compounds. • COMPONENT 3 (5 - 10% concentration) Biodegradability 28 days: 13% • COMPONENT 4 (< 0.1% concentration) Biodegradability 10 days: 90 - 100% • COMPONENT 5 (< 0.1% concentration) Biodegradability 28 days: 39% • COMPONENT 6 (< 0.1% concentration) Not Applicable to inorganic compounds. • COMPONENT 7 (< 0.1% concentration) Biodegradability 28 days: 96% • COMPONENT 8 (< 0.1% concentration) Biodegradability 28 days: 74% • COMPONENT 9 (< 0.1% concentration) Biodegradability 28 days: 76% • COMPONENT 10 (< 0.1% concentration) Biodegradability 20 days: 84% <p><u>ACUTE MAMMALIAN TOXICITY*</u></p> <ul style="list-style-type: none"> • COMPONENT 1 (60 - 100% concentration) Natural product - exempted under the Chemical Disclosure Guidelines • COMPONENT 2 (10 - 30% concentration) Rat LD50 (oral): >2,000 mg/kg bw • COMPONENT 3 (5 - 10% concentration) Rat LD50 (oral): >2,000 mg/kg bw 		

Chemical Disclosure
DMP approved format

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached?
			<ul style="list-style-type: none"> • COMPONENT 4 (< 0.1% concentration) Rat LD 50% (oral): 5,500 mg/kg bw • COMPONENT 5 (< 0.1% concentration) Rat LD50 (oral): 1,970 mg/kg bw • COMPONENT 6 (< 0.1% concentration) Rat LD50 (oral): > 5,000 mg/kg bw • COMPONENT 7 (< 0.1% concentration) Rat LD50 (oral): 426 mg/kg bw • COMPONENT 8 (< 0.1% concentration) Rat LD50 (oral): >6,400 mg/kg bw • COMPONENT 9 (< 0.1% concentration) Rat LD50 (oral): 5,840 mg/kg bw • COMPONENT 10 (< 0.1% concentration) Rat LD50 (oral): 10,470 mg/kg bw <p>* All mammalian toxicity values are based upon 100% active material</p> <p>CHRONIC TOXICITY No known carcinogenic, chronic, mutagenic or reproductive effects.</p>		
XC24102	BHI	Biocide	<p>This product contains organic components.</p> <p>AQUATIC TOXICOLOGY</p> <ul style="list-style-type: none"> • COMPONENT 1 (60 - 100% concentration) Natural product - exempted under the Chemical Disclosure Guidelines. • COMPONENT 2 (10 – 30% concentration) Static Acute Freshwater Toxicity <ul style="list-style-type: none"> ○ <i>Daphnia magna</i> (Crustacean) LC50 48 hrs: 29.7 mg/L ○ <i>Scenedesmus subspicatus</i> (Algae) EC50 96 hrs: 1.2 mg/L ○ <i>Lepomis macrochirus</i> (Fish) LC50 96 hrs: 13 mg/L • COMPONENT 3 (0.1– 1% concentration) Static Acute Freshwater Toxicity <ul style="list-style-type: none"> ○ <i>Daphnia magna</i> (Crustacean) LC50 96 hrs: 18,260 mg/L ○ <i>Selenastrum capricornutum</i> (Algae) EC50 96 hrs: 22,000 mg/L ○ <i>Lepomis macrochirus</i> (Fish) LC50 96 hrs: 15,400 mg/L <p>CHEMICAL FATE Octanol/Water Partition Coefficient</p>	~ 0.00204 (Contingency)	Yes

Chemical Disclosure
DMP approved format

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached?
			<ul style="list-style-type: none"> COMPONENT 1 (60 - 100% concentration) Natural product - exempted under the Chemical Disclosure Guidelines. COMPONENT 2 (10 – 30% concentration) Log Pow < 0 COMPONENT 3 (0.1– 1 % concentration) Log Pow -0.77 <p>ENVIRONMENTAL FATE</p> <p>Ready Biodegradability</p> <ul style="list-style-type: none"> COMPONENT 1 (60 - 100% concentration) Natural product - exempted under the Chemical Disclosure Guidelines. COMPONENT 2 (10- 30% concentration) Biodegradability 28 days: 73% COMPONENT 3 (0.1– 1% concentration) Biodegradability 20 days: 95% <p>ACUTE MAMMALIAN TOXICITY *</p> <ul style="list-style-type: none"> COMPONENT 1 (60 - 100% concentration) Natural product - exempted under the Chemical Disclosure Guidelines. COMPONENT 2 (10 - 30% concentration) Mouse Oral LD50 14 days: 158 mg/kg bw. COMPONENT 3 (0.1 - 1% concentration) Rat Oral LD50 14 days: > 2,528mg/kg bw. <p>CHRONIC TOXICITY No known carcinogenic, chronic, mutagenic or reproductive effects.</p>		
Water	-	Water	-	~ 99.98	N/A
TOTAL				100%	
Hydrochloric acid	Coogee Chemicals	pH Control	<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</p>	Contingency, <0.1%	Yes

Chemical Disclosure

DMP approved format

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached?
			product. Biodegradation/bioaccumulation: Not applicable to inorganic compounds <i>Constituent 2 as an ingredient 68%</i> Water		
Acetic acid	Halliburton	Chelating agent	Acute Toxicity: EC50 (72h) 55.22 mg/L <i>Anabaena</i> (algae) LC50 (96h) 75 mg/L <i>Lepomis macrochirus</i> (fish) LC50 (96h) 251 mg/L <i>Gambusia affinis</i> (fish) EC50 (48h) 65 mg/L <i>Daphnia magna</i> (freshwater invertebrate) Chronic Toxicity: No known carcinogenic, chronic, mutagenic or reproductive effects for this product. Biodegradation/bioaccumulation: Readily biodegradable (99% @ 7d). Log Kow -0.17 The product is not known to be Bioaccumulative.	Contingency, ~0.003%	Yes
Citric acid	Halliburton	Chelating agent	Acute Toxicity: Acute Fish Toxicity 96h LC50: >440-760 mg/L (<i>Leuciscus idus</i>) Acute Crustacean Toxicity 72h EC50: 120 mg/L (<i>Daphnia magna</i>) Acute Toxicity 7d EC3: 640 mg/L (<i>Scenedesmus quadricauda</i>) Source: IUCLID 2000 Chronic Toxicity: No known carcinogenic, chronic, mutagenic or reproductive effects for this product. Biodegradation/bioaccumulation: Citric Acid is extract of Citrus and rapidly biodegradable. BOD30/COD = 90%. Rapidly biodegradable in water and soil. The product is not known to be Bioaccumulative.	Contingency, ~0.0006%	Yes
Soda Ash	Halliburton	pH control	Toxicology Data: LD50 Oral: 4090 mg/kg (Rat); 2800 mg/kg (Rat) LD50 Dermal: 2210 mg/kg (Mouse); >2000 mg/kg (Rabbit) LC50 Inhalation: 2.3 mg/L (Rat) 2h Substance Ecotoxicity Data Toxicity to Algae - EC50 242 mg/L (<i>Nitzschia</i>) Toxicity to Fish – TLM24 385 mg/L (<i>Lepomis macrochirus</i>); LC50 310-1220 mg/L (<i>Pimephales promelas</i>); LC50 (96h) 300 mg/L (<i>Lepomis macrochirus</i>) Toxicity to Microorganisms - No information available Toxicity to Invertebrates – EC50 265 mg/L (<i>Daphnia magna</i>); EC50 (48h)	Contingency, <0.1%	Yes

Chemical Disclosure

DMP approved format

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached?
			<p>200 – 227 mg/L (Ceriodaphnia sp.)</p> <p>Biodegradation/bioaccumulation: Soda Ash is an inorganic (Sodium Carbonate), naturally occurring salt and partially biodegradable. Soda Ash is fully water soluble and highly mobile in soil. Biodegradability does not pertain to inorganic substances. Does not bioaccumulate. Dissociates into ions.</p>		
Rodine 85	Henkel	Acid inhibitor	<p>Toxicology Data:</p> <p>Component 1 (<10%) LC50 (96h) 4.6 mg/L <i>Leuciscus idus</i> (fish) EC50 (24h) 11 mg/L <i>Daphnia magna</i> (freshwater invertebrate) EC50 (8d) >18 mg/L <i>Scenedesmus quadricauda</i> (algae)</p> <p>Component 2 (<5%) EC50 (48h) 56 mg/L <i>Daphnia magna</i> (freshwater invertebrate)</p> <p>Component 3 (<30%) No data available. Data presented for a similar compound LC50 (96h) <i>P. promelas</i> 24 mg/L (fish) LC50 (96h) <i>B. rerio</i> 41 mg/L (fish) EC50 (48h) <i>Daphnia magna</i> ~2 mg/L (freshwater invertebrate)</p> <p>Component 4 (60%) Water</p> <p>Biodegradation/bioaccumulation: Degradability: Component 1 37%, Component 2 3%, Component 3 97% Bioaccumulative potential: Comp. 1 Log Kow -0.35, Comp. 2 LogKow 0.57, Comp. 3 LogPow <1</p>	Contingency, <0.0005%	Yes

** With reference to biodegradation, where a Product is organic than Contractor must state as such in this column

Chemical Disclosure

DMP approved format

C. CHEMICAL LIST**Chemical List (Chemicals within fluid system identified in the table above)**

Chemicals Name	CAS Number	Mass Fraction (%)
WATER	7732-18-5	99.976 %
ALKYL (C3-5) BENZENES	64742-94-5	0.00673 %
TETRAKIS(HYDROXYMETHYL)PHOSPHONIUM SULPHATE	55566-30-8	0.00323 %
AMMONIUM BISULPHITE	10192-30-0	0.00219 %
FORMALDEHYDE, POLYMER WITH 4-(1,1-DIMETHYLETHYL)PHENOL, 4-NONYLPHENOL AND OXIRANE	68171-44-8	0.00206 %
2-PROPENOIC ACID, HOMOPOLYMER, SODIUM SALT	9003-04-7	0.00155 %
OXIRANE/METHYLOXIRANE COPOLYMER	9003-11-6	0.00143 %
FORMALDEHYDE, POLYMER WITH METHYLOXIRANE, 4-NONYLPHENOL AND OXIRANE	63428-92-2	0.00101 %
POLYALUMINIUM CHLORIDE	1327-41-9	0.00078 %
FATTY ACIDS, TALL OIL, REACTION PRODUCTS WITH DIETHYLENTRIAMINE	61790-69-0	0.00061 %
GLUTARALDEHYDE	111-30-8	0.00054 %
2-(2-BUTOXYETHOXY)ETHANOL	112-34-5	0.00039 %
ETHYL HEXANOL	104-76-7	0.00038 %
FORMALDEHYDE, POLYMER WITH 4-(1,1-DIMETHYLPROPYL)PHENOL AND OXIRANE	63428-93-3	0.00038 %
OXYALKYLATED AMINES	67939-72-4	0.00033 %
DITHIOCARBAMATE	204079-86-7	0.00022 %
CATIONIC RESIN	42751-79-1	0.00019 %
PHOSPHONIC ACID, SODIUM SALT	22042-96-2	0.00019 %
ACETIC ACID	64-19-7	0.00018 %
XYLENE	1330-20-7	0.00017 %
QUATERNARY AMMONIUM COMPOUND	68391-01-5	0.00012 %
BENZENESULFONIC ACID, 4-C10-13-SEC-ALKYL DERIVATIVES	85536-14-7	0.00010 %
THIOGLYCOLIC ACID	68-11-1	0.00008 %
MESITYLENE	108-67-8	0.00003 %
POTASSIUM HYDROXIDE	1310-58-3	0.00003 %
ISOPROPANOL	67-63-0	0.00003 %
BENZENESULFONIC ACID, MONO-C10-16-ALKYL DERIVATIVES, SODIUM SALTS	68081-81-2	< 0.00001 %
DIETHYLENTRIAMINE	111-40-0	< 0.00001 %
ETHANEDIOL	107-21-1	< 0.00001 %
AMINES, N-TALLOW ALKYLTRIMETHYLENEDI-, ETHOXYLATED	61790-85-0	< 0.00001 %
SODIUM THIOSULPHATE	10102-17-7	< 0.00001 %
ETHYLBENZENE	100-41-4	< 0.00001 %

Chemical Disclosure

DMP approved format

Chemicals Name	CAS Number	Mass Fraction (%)
C12-16 ALKYL BENZYL DIMETHYLAMMONIUM CHLORIDE	68424-85-1	< 0.00001 %
SODIUM HYDROXIDE	1310-73-2	< 0.00001 %
ETHOXYLATED TALL OIL	61791-00-2	< 0.00001 %
ETHANOL	64-17-5	< 0.00001 %
TOTAL	-	100%
HYDROCHLORIC ACID	7647-01-0	Contingency, <0.1%
ACETIC ACID	64-19-7	Contingency, ~0.003%
CITRIC ACID	77-92-9	Contingency, ~0.0006%
SODIUM CARBONATE	497-19-8	Contingency, <0.1%
PROP-2-YN-1-OL	107-19-7	Contingency, <0.00005%
1,3-DIETHYL-2-THIOUREA	105-55-5	Contingency, <0.000025%
FORMALDEHYDE REACTION PRODUCTS WITH O-TOLUIDINE	68411-63-2	Contingency, <0.00015%

CRW24006

1. Identification of the material and supplier

Names

Product name : CRW24006
Product code : CRW24006
Supplier : Baker Hughes, Australia
5 Walker Street,
Braeside,
Victoria 3195,
Australia

Tel: +613 9580 9004
Fax: +613 9580 6004

Emergency telephone number : CHEMTREC Emergency Telephone Numbers (Australasia Geomarket):
- Australia: (02) 9037 2994
- New Zealand: 9801 0034
- PNG: +(61) 2 9037 2994

- UK: +(44) 870-820-0418
- USA: +(1) 703-527-3887 (CHEMTREC International 24 hour)

Uses

Material uses : Corrosion inhibitor

2. Hazards identification

Classification : C; R34
R43
R52/53

Risk phrases : R34- Causes burns.
R43- May cause sensitisation by skin contact.
R52/53- Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety phrases : S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39- Wear suitable protective clothing, gloves and eye/face protection.
S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Statement of hazardous/dangerous nature : HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

3. Composition/information on ingredients

Ingredient name	CAS number	Concentration
Amine compound		10 - 30
2-(2-butoxyethoxy)ethanol	112-34-5	10 - 30
acetic acid	64-19-7	5 - 10
Thioglycolic acid	68-11-1	1 - 5
2,2'-iminodiethylamine	111-40-0	0.1 - 1

Other ingredients, determined not to be hazardous according to Safe Work Australia criteria, and not dangerous according to the ADG Code, make up the product concentration to 100%.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4 . First-aid measures

- Inhalation** : Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Ingestion** : Get medical attention immediately. Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.
- Skin contact** : Get medical attention immediately. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 15 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Eye contact** : Get medical attention immediately. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 15 minutes. Chemical burns must be treated promptly by a physician.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
- Advice to doctor** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

5 . Fire-fighting measures

- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. This material is harmful to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
sulfur oxides
metal oxide/oxides
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 . Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
- Environmental precautions** : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material.
- Small spill** : Stop leak if without risk. Move containers from spill area. Dispose of via a licensed waste disposal contractor. Absorb with an inert dry material and place in an appropriate waste disposal container.

6 . Accidental release measures

- Large spill** : Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7 . Handling and storage

- Storage** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

8 . Exposure controls/personal protection

Occupational exposure limits

Ingredient name

2-(2-butoxyethoxy)ethanol

Exposure limits

EH40/2005 WELs (United Kingdom (UK), 8/2007).

TWA: 10 ppm 8 hour(s).

STEL: 15 ppm 15 minute(s).

STEL: 15 mg/m³ 15 minute(s).

TWA: 10 mg/m³ 8 hour(s).

acetic acid

Safe Work Australia (Australia, 8/2005).

STEL: 37 mg/m³ 15 minute(s).

STEL: 15 ppm 15 minute(s).

TWA: 25 mg/m³ 8 hour(s).

TWA: 10 ppm 8 hour(s).

Thioglycolic acid

Safe Work Australia (Australia, 8/2005). Absorbed through skin.

TWA: 3.8 mg/m³ 8 hour(s).

TWA: 1 ppm 8 hour(s).

2,2'-iminodiethylamine

Safe Work Australia (Australia, 8/2005). Absorbed through skin.

TWA: 4.2 mg/m³ 8 hour(s).

TWA: 1 ppm 8 hour(s).

Recommended monitoring procedures

- : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures

- : If user operations generate dust, fumes, gas, vapour or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Hygiene measures

- : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eyes

- : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Hands

- : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Respiratory

- : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Skin

- : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

8 . Exposure controls/personal protection

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9 . Physical and chemical properties

Physical state : Liquid.
Colour : Amber. [Dark]
Odour : Characteristic.
Relative density : 0.99 to 1.01 (20°C)
Flash point : Closed cup: Not applicable.
pH : 4.1 to 4.9
Solubility : Soluble in water

10 . Stability and reactivity

Chemical stability : The product is stable.
Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid : No specific data.
Materials to avoid : No specific data.
Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11 . Toxicological information

Potential acute health effects

Inhalation : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
Ingestion : May cause burns to mouth, throat and stomach.
Skin contact : Corrosive to the skin. Causes burns. May cause sensitisation by skin contact.
Eye contact : Corrosive to eyes. Causes burns.

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
2-(2-butoxyethoxy)ethanol	LD50 Dermal	Rabbit	2700 mg/kg	-
	LD50 Oral	Rat	4500 mg/kg	-
acetic acid	LC50 Inhalation Gas.	Mouse	5620 ppm	1 hours
	LD50 Oral	Mouse	4960 mg/kg	-
	LD50 Oral	Rat	3310 mg/kg	-
Thioglycolic acid	LC50 Inhalation Vapour	Rat	210 mg/m3	4 hours
	LD50 Oral	Rat	114 mg/kg	-
2,2'-iminodiethylamine	LD50 Dermal	Rabbit	1090 mg/kg	-
	LD50 Oral	Rat	1080 mg/kg	-

Conclusion/Summary : Not available.

Potential chronic health effects

Chronic toxicity

Conclusion/Summary : Not available.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
2-(2-butoxyethoxy)ethanol	Eyes - Moderate irritant	Rabbit	-	-	-
	Eyes - Severe irritant	Rabbit	-	-	-
acetic acid	Eyes - Mild irritant	Rabbit	-	-	-
	Skin - Mild irritant	Human	-	-	-
	Skin - Mild irritant	Rabbit	-	-	-
	Skin - Severe irritant	Rabbit	-	-	-

11 . Toxicological information

2,2'-iminodiethylamine

Skin - Moderate
irritant

Rabbit

-

-

-

Conclusion/Summary : Not available.

Sensitiser

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Mutagenicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Chronic effects

: Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity

: No known significant effects or critical hazards.

Mutagenicity

: No known significant effects or critical hazards.

Teratogenicity

: No known significant effects or critical hazards.

Developmental effects

: No known significant effects or critical hazards.

Fertility effects

: No known significant effects or critical hazards.

Inhalation

: No specific data.

Ingestion

: Adverse symptoms may include the following: stomach pains Irritation to digestive system

Skin

: Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Eyes

: Adverse symptoms may include the following:
pain
watering
redness

Target organs

: Contains material which may cause damage to the following organs: mucous membranes, upper respiratory tract, skin, eye, lens or cornea, teeth.

12 . Ecological information

Ecotoxicity

: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Aquatic ecotoxicity

<u>Product/ingredient name</u>	<u>Result</u>	<u>Species</u>	<u>Exposure</u>
2-(2-butoxyethoxy)ethanol	Acute LC50 1300000 ug/L Fresh water	Fish - Lepomis macrochirus - 33 to 75 mm	96 hours
acetic acid	Acute EC50 300.82 mg/l Marine water	Algae	72 hours
	Acute EC50 300.82 mg/l Fresh water	Daphnia	48 hours
	Acute LC50 300.82 mg/l Marine water	Fish	96 hours
Thioglycolic acid	Acute LC50 30000 ug/L Fresh water	Fish - Pimephales promelas	96 hours
2,2'-iminodiethylamine	Acute LC50 53500 ug/L Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 1014000 ug/L Fresh water	Fish - Poecilia reticulata	96 hours

Conclusion/Summary : Not available.

Other ecological information

Persistence/degradability

Conclusion/Summary : Not available.

Other adverse effects

: No known significant effects or critical hazards.

13 . Disposal considerations

Methods of disposal : This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

14 . Transport information

Regulation	UN number	Proper shipping name	Classes	PG*	Label	Additional information
ADG	Not regulated.		-	-		-
ADR	Not regulated.		-	-		-
IMDG	Not regulated.		-	-		-
IATA	Not regulated.		-	-		-

PG* : Packing group

15 . Regulatory information

Standard for the Uniform Scheduling of Drugs and Poisons

5

Control of Scheduled Carcinogenic Substances

Ingredient name

No listed substance

Schedule

Australia inventory (AICS) : All components are listed or exempted.

EU Classification : C; R34
R43
R52/53

Risk phrases : R34- Causes burns.
R43- May cause sensitisation by skin contact.
R52/53- Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety phrases : S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39- Wear suitable protective clothing, gloves and eye/face protection.
S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

National regulations : **National Code of Practice for the Control of Workplace Hazardous Substances. National Code of Practice for the Labelling of Workplace Substances. National Code of Practice for the Preparation of Material Safety Data Sheets. Approved Criteria for Classifying Hazardous Substances.**

16 . Other information

Date of printing : 21 January 2013.

Date of issue/ Date of revision : 21 January 2013

Date of previous issue : No previous validation

Version : 1

☑ Indicates information that has changed from previously issued version.

Disclaimer

16 . Other information

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

TRETOLITE* DMO24900

1. Identification of the material and supplier

Names

Product name : TRETOLITE* DMO24900
Product code : DMO24900
ADG : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(contains aromatic naphtha)
Supplier : Baker Hughes, Australia
5 Walker Street,
Braeside,
Victoria 3195,
Australia

Tel: +613 9580 9004
Fax: +613 9580 6004

Emergency telephone number : CHEMTREC Emergency Telephone Numbers (Australasia Geomarket):
- Australia: (02) 9037 2994
- New Zealand: 9801 0034
- PNG: +(61) 2 9037 2994

- UK: +(44) 870-820-0418
- USA: +(1) 703-527-3887 (CHEMTREC International 24 hour)

Uses

Material uses : Demulsifier

2. Hazards identification

Classification : Carc. Cat. 3; R40
Xn; R65
R66, R67
N; R51/53

Risk phrases : R40- Limited evidence of a carcinogenic effect.
R65- Harmful: may cause lung damage if swallowed.
R66- Repeated exposure may cause skin dryness or cracking.
R67- Vapours may cause drowsiness and dizziness.
R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety phrases : S36/37- Wear suitable protective clothing and gloves.
S61- Avoid release to the environment. Refer to special instructions/safety data sheet.

Statement of hazardous/dangerous nature : HAZARDOUS SUBSTANCE. DANGEROUS GOODS.

3. Composition/information on ingredients

Ingredient name	CAS number	Concentration
Solvent naphtha (petroleum), heavy arom.	64742-94-5	30 - 60
2-ethylhexan-1-ol	104-76-7	1 - 5
naphthalene	91-20-3	1 - 5
1,2,4-trimethylbenzene	95-63-6	1 - 5
xylene	1330-20-7	1 - 5

Other ingredients, determined not to be hazardous according to Safe Work Australia criteria, and not dangerous according to the ADG Code, make up the product concentration to 100%.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4 . First-aid measures

- Inhalation** : Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Ingestion** : Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.
- Skin contact** : Wash skin thoroughly with soap and water or use recognised skin cleanser. Remove contaminated clothing and shoes. Continue to rinse for at least 15 minutes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 15 minutes. Get medical attention.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
- Advice to doctor** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

5 . Fire-fighting measures

- Suitable** : Use dry chemical, CO₂, water spray (fog) or alcohol resistant foam
- Not suitable** : Do not use water jet.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. This material is toxic to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
- Hazchem code** : 3Z

6 . Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
- Environmental precautions** : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.
- Small spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Absorb with an inert dry material and place in an appropriate waste disposal container.

6 . Accidental release measures

- Large spill** : Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7 . Handling and storage

- Storage** : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

8 . Exposure controls/personal protection

Occupational exposure limits

Ingredient name

2-ethylhexan-1-ol

Exposure limits

TRGS900 AGW (Germany, 2/2010).

TWA: 110 mg/m³ 8 hour(s).

PEAK: 110 mg/m³ 15 minute(s).

TWA: 20 ppm 8 hour(s).

PEAK: 20 ppm 15 minute(s).

naphthalene

Safe Work Australia (Australia, 8/2005).

STEL: 79 mg/m³, 0 times per shift, 15 minute(s).

STEL: 15 ppm, 0 times per shift, 15 minute(s).

TWA: 52 mg/m³, 0 times per shift, 8 hour(s).

TWA: 10 ppm, 0 times per shift, 8 hour(s).

1,2,4-trimethylbenzene

Safe Work Australia (Australia, 8/2005).

TWA: 123 mg/m³, 0 times per shift, 8 hour(s).

TWA: 25 ppm, 0 times per shift, 8 hour(s).

xylene

Safe Work Australia (Australia, 8/2005).

STEL: 655 mg/m³, 0 times per shift, 15 minute(s).

STEL: 150 ppm, 0 times per shift, 15 minute(s).

TWA: 350 mg/m³, 0 times per shift, 8 hour(s).

TWA: 80 ppm, 0 times per shift, 8 hour(s).

Recommended monitoring procedures

- : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures

- : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Hygiene measures

- : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eyes

- : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Hands

- : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

8 . Exposure controls/personal protection

- Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9 . Physical and chemical properties

- Physical state** : Liquid.
- Colour** : Brown.
- Odour** : Aromatic. Hydrocarbon.
- Relative density** : 0.935 to 0.955 (20°C)
- Flash point** : Closed cup: 63°C (145.4°F) [Pensky-Martens.]
- pH** : 6 to 8 [Conc. (% w/w): 5%]
- Viscosity** : Kinematic (40°C (104°F)): 0.01 to 0.1 cm²/s (1 to 10 cSt)
- Solubility** : Insoluble in the following materials: cold water.

10 . Stability and reactivity

- Chemical stability** : The product is stable.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- Conditions to avoid** : Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Avoid release to the environment. Refer to special instructions/safety data sheet.
- Materials to avoid** : Reactive or incompatible with the following materials:
oxidizing materials
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11 . Toxicological information

Potential acute health effects

- Inhalation** : Vapours may cause drowsiness and dizziness. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Ingestion** : Aspiration hazard if swallowed. Can enter lungs and cause damage.
- Skin contact** : Defatting to the skin. May cause skin dryness and irritation.
- Eye contact** : May cause eye irritation.

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Solvent naphtha (petroleum), heavy arom.	LD50 Oral	Rat	>2000 mg/kg	-
2-ethylhexan-1-ol	LD50 Oral	Rat	3200 mg/kg	-
	LD50 Dermal	Rabbit	1970 mg/kg	-
	LD50 Dermal	Rat	>3000 mg/kg	-
1,2,4-trimethylbenzene xylene	LD50 Oral	Rat	3730 mg/kg	-
	LC50 Inhalation Vapour	Rat	18000 mg/m ³	4 hours
	LD50 Dermal	Rabbit	>1700 mg/kg	-

Conclusion/Summary : Not available.

Potential chronic health effects

Chronic toxicity

Conclusion/Summary : Not available.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
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11 . Toxicological information

Solvent naphtha (petroleum), heavy arom. 2-ethylhexan-1-ol	Skin - Mild irritant	Rabbit	-	-	-
	Eyes - Moderate irritant	Rabbit	-	-	-
	Eyes - Severe irritant	Rabbit	-	-	-
	Skin - Mild irritant	Rabbit	-	-	-
	Skin - Moderate irritant	Rabbit	-	-	-
	Skin - Severe irritant	Rabbit	-	-	-
	naphthalene	Skin - Mild irritant	Rabbit	-	-
	Skin - Severe irritant	Rabbit	-	-	-
xylene	Eyes - Mild irritant	Rabbit	-	-	-
	Eyes - Severe irritant	Rabbit	-	-	-
	Skin - Mild irritant	Rat	-	-	-
	Skin - Moderate irritant	Rabbit	-	-	-

Conclusion/Summary : Not available.

Sensitiser

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Mutagenicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Product name	Carcinogenic effects	Mutagenic effects	Developmental effects	Fertility effects
naphthalene	Carc. Cat. 3; R40	-	-	-

Chronic effects : Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

Carcinogenicity : May cause cancer, based on animal data. Limited evidence of a carcinogenic effect. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Inhalation : Adverse symptoms may include the following:
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo

Ingestion : Adverse symptoms may include the following: nausea or vomiting

Skin : Adverse symptoms may include the following:
irritation
dryness
cracking

Eyes : No specific data.

Target organs : Contains material which may cause damage to the following organs: blood, kidneys, the nervous system, liver, gastrointestinal tract, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

12 . Ecological information

Ecotoxicity : Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Water polluting material. Do not allow any potentially contaminated water, including rain water, runoff from fire fighting or spills, to enter any waterway, sewer or drain.

Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
Solvent naphtha (petroleum), heavy arom.	Acute LC50 1 to 10 mg/l	Fish	96 hours
2-ethylhexan-1-ol	Acute LC50 10 to 33 mg/L Fresh water	Fish - Lepomis macrochirus - 0.1 g	96 hours
naphthalene	Acute EC50 1.96 mg/L Fresh water	Daphnia - Daphnia magna - <24 hours	48 hours
	Acute LC50 315 ug/L Fresh water	Fish - Melanotaenia fluviatilis - LARVAE - 1 days	96 hours
	Chronic NOEC 600 ug/L Fresh water	Daphnia - Daphnia magna - <=24 hours	48 hours

Conclusion/Summary : Not available.

Other ecological information

Persistence/degradability

Conclusion/Summary : Not available.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Solvent naphtha (petroleum), heavy arom.	-	-	Not readily
naphthalene	-	-	Not readily
1,2,4-trimethylbenzene	-	-	Not readily

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
naphthalene	3.01	-	high
xylene	3.12 to 3.2	-	high

Other adverse effects : No known significant effects or critical hazards.





13 . Disposal considerations

Methods of disposal : This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

14 . Transport information

Regulation	UN number	Proper shipping name	Classes	PG*	Label	Additional information
ADG	UN3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(contains aromatic naphtha)	9	III	 A diamond-shaped hazard label with a black and white striped background and the number 9, and a diamond-shaped environment label with a tree and a dead tree.	Hazchem code 3Z
ADR	UN3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(contains aromatic naphtha)	9	III	 A diamond-shaped hazard label with a black and white striped background and the number 9, and a diamond-shaped environment label with a tree and a dead tree.	UK Hazchem: 3Z

14 . Transport information

IMDG	UN3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(contains aromatic naphtha)	9	III	 	-
IATA	UN3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(contains aromatic naphtha)	9	III	 	-

PG* : Packing group

15 . Regulatory information

Standard for the Uniform Scheduling of Drugs and Poisons

5

Control of Scheduled Carcinogenic Substances

Ingredient name

No listed substance

Schedule

Australia inventory (AICS) : All components are listed or exempted.

EU Classification : Carc. Cat. 3; R40
Xn; R65
N; R51/53

Risk phrases : R40- Limited evidence of a carcinogenic effect.
R65- Harmful: may cause lung damage if swallowed.
R66- Repeated exposure may cause skin dryness or cracking.
R67- Vapours may cause drowsiness and dizziness.
R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety phrases : S36/37- Wear suitable protective clothing and gloves.
S61- Avoid release to the environment. Refer to special instructions/safety data sheet.

National regulations : **National Code of Practice for the Control of Workplace Hazardous Substances. National Code of Practice for the Labelling of Workplace Substances. National Code of Practice for the Preparation of Material Safety Data Sheets. Approved Criteria for Classifying Hazardous Substances.**

16 . Other information

Date of printing : 2 November 2012.

Date of issue/ Date of revision : 2 November 2012

Date of previous issue : No previous validation

Version : 1

 Indicates information that has changed from previously issued version.

Disclaimer

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

TRETOLITE* DMO86318

1. Identification of the material and supplier

Names

Product name : TRETOLITE* DMO86318
Product code : DMO86318
ADG : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (aromatic naphtha)
Supplier : Baker Hughes, Australia
5 Walker Street,
Braeside,
Victoria 3195,
Australia

Tel: +613 9580 9004
Fax: +613 9580 6004

Emergency telephone number : CHEMTREC Emergency Telephone Numbers (Australasia Geomarket):
- Australia: (02) 9037 2994
- New Zealand: 9801 0034
- PNG: +(61) 2 9037 2994

- UK: +(44) 870-820-0418
- USA: +(1) 703-527-3887 (CHEMTREC International 24 hour)

Uses

Material uses : Demulsifier.

2. Hazards identification

Classification : Carc. Cat. 3; R40
R66, R67
N; R51/53

Risk phrases : R40- Limited evidence of a carcinogenic effect.
R66- Repeated exposure may cause skin dryness or cracking.
R67- Vapours may cause drowsiness and dizziness.
R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety phrases : S36/37- Wear suitable protective clothing and gloves.
S61- Avoid release to the environment. Refer to special instructions/safety data sheet.

Statement of hazardous/dangerous nature : HAZARDOUS SUBSTANCE. DANGEROUS GOODS.

GHS Classification

Classification of the substance or mixture : CARCINOGENICITY - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Narcotic effects] - Category 3
ACUTE AQUATIC HAZARD - Category 1
LONG-TERM AQUATIC HAZARD - Category 2

Hazard pictograms



Signal word : Warning

2. Hazards identification

Hazard statements	: Suspected of causing cancer. May cause drowsiness or dizziness. Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.
Precautionary statements	
General	: Not applicable.
Prevention	: Obtain special instructions before use. Avoid release to the environment. Avoid breathing vapour.
Response	: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell.
Storage	: Store locked up.
Disposal	: Dispose of contents and container in accordance with all local, regional, national and international regulations.
Other hazards which do not result in classification	: None known.

3. Composition/information on ingredients

Ingredient name	CAS number	Concentration
Hydrocarbons, C10, aromatics, >1% naphthalene	.64742-94-5 (outside EU)	30 - 60
Hydrocarbons, C10, aromatics, <1% naphthalene	.64742-94-5 (outside EU)	10 - 30
naphthalene	91-20-3	1 - 5

Other ingredients, determined not to be hazardous according to Safe Work Australia criteria, and not dangerous according to the ADG Code, make up the product concentration to 100%.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First-aid measures

Inhalation	: Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.
Ingestion	: Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.
Skin contact	: Wash skin thoroughly with soap and water or use recognised skin cleanser. Remove contaminated clothing and shoes. Continue to rinse for at least 15 minutes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Eye contact	: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 15 minutes. Get medical attention.
Protection of first-aiders	: No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
Advice to doctor	: No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5 . Fire-fighting measures

- Suitable** : Use dry chemical, CO₂, water spray (fog) or alcohol resistant foam
- Not suitable** : Do not use water jet.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. This material is toxic to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
- Hazchem code** : 3Z

6 . Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
- Environmental precautions** : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.
- Small spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Absorb with an inert dry material and place in an appropriate waste disposal container.
- Large spill** : Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

7 . Handling and storage

- Storage** : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

8 . Exposure controls/personal protection

Occupational exposure limits

Ingredient name

Hydrocarbons, C10, aromatics, >1% naphthalene

Hydrocarbons, C10, aromatics, <1% naphthalene

naphthalene

Exposure limits

EH40/2005 WELs (United Kingdom (UK)).

TWA: 500 mg/m³, (Total hydrocarbon vapour) 8 hours.
Form: Vapour

EH40/2005 WELs (United Kingdom (UK)).

TWA: 500 mg/m³, (Total hydrocarbon vapour) 8 hours.
Form: Vapour

Safe Work Australia (Australia, 1/2014).

STEL: 79 mg/m³, 0 times per shift, 15 minutes.

STEL: 15 ppm, 0 times per shift, 15 minutes.

TWA: 52 mg/m³, 0 times per shift, 8 hours.

TWA: 10 ppm, 0 times per shift, 8 hours.

- Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.
- Engineering measures** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9 . Physical and chemical properties

- Physical state** : Liquid.
- Colour** : Brown.
- Odour** : Aromatic.
- Melting point** : <-27°C (<-16.6°F)
- Relative density** : 0.941 to 1.011 (16°C)
- Flash point** : Closed cup: >62°C (>143.6°F)
- Viscosity** : Kinematic (40°C (104°F)): 0.5 cm²/s (50 cSt)
- Solubility** : Immiscible with water, Soluble in, Aromatic solvents

10 . Stability and reactivity

- Chemical stability** : The product is stable.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- Conditions to avoid** : Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Avoid release to the environment. Refer to special instructions/safety data sheet.
- Materials to avoid** : Not available.
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11 . Toxicological information

Potential acute health effects

- Inhalation** : Vapours may cause drowsiness and dizziness.
- Ingestion** : No known significant effects or critical hazards.
- Skin contact** : Defatting to the skin. May cause skin dryness and irritation.
- Eye contact** : May cause eye irritation.

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Hydrocarbons, C10, aromatics, >1% naphthalene	LD50 Oral	Rat	3200 mg/kg	-
Naphthalene	LD50 Oral	Rat	>2000 mg/kg	-
	LD50 Oral	Rat	490 mg/kg	-

Conclusion/Summary : Not available.

Potential chronic health effects

Chronic toxicity

Conclusion/Summary : Not available.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Hydrocarbons, C10, aromatics, >1% naphthalene	Skin - Mild irritant	Rabbit	-	24 hours 500 microliters	-
Hydrocarbons, C10, aromatics, <1% naphthalene	Skin - Mild irritant	Rabbit	-	24 hours 500 microliters	-
Naphthalene	Skin - Mild irritant	Rabbit	-	495 milligrams	-
	Skin - Severe irritant	Rabbit	-	24 hours 0.05 Milliliters	-

Conclusion/Summary : Not available.

Sensitiser

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Mutagenicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Product name	Carcinogenic effects	Mutagenic effects	Developmental effects	Fertility effects
Naphthalene	Carc. Cat. 3; R40	-	-	-

11 . Toxicological information

Chronic effects	: Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/ or dermatitis.
Carcinogenicity	: May cause cancer, based on animal data. Limited evidence of a carcinogenic effect. Risk of cancer depends on duration and level of exposure.
Mutagenicity	: No known significant effects or critical hazards.
Teratogenicity	: No known significant effects or critical hazards.
Developmental effects	: No known significant effects or critical hazards.
Fertility effects	: No known significant effects or critical hazards.
Inhalation	: Adverse symptoms may include the following: nausea or vomiting headache drowsiness/fatigue dizziness/vertigo
Ingestion	: No specific data.
Skin	: Adverse symptoms may include the following: irritation dryness cracking
Eyes	: No specific data.
Target organs	: Contains material which may cause damage to the following organs: blood, kidneys, the nervous system, liver, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

12 . Ecological information

Ecotoxicity	: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Water polluting material. Do not allow any potentially contaminated water, including rain water, runoff from fire fighting or spills, to enter any waterway, sewer or drain.
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Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
Hydrocarbons, C10, aromatics, >1% naphthalene	Acute LC50 2 to 5 mg/l	Fish	96 hours
Naphthalene	Acute EC50 1.96 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute EC50 1.6 ppm Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 2800 µg/l Marine water	Crustaceans - Elasmopus pecteniscrus - Adult	48 hours
	Acute LC50 315 µg/l Fresh water	Fish - Melanotaenia fluviatilis - Larvae	96 hours
	Chronic NOEC 0.67 ppm Fresh water	Fish - Oncorhynchus kisutch	40 days
Conclusion/Summary	: Not available.		

Other ecological information

Persistence/degradability

Conclusion/Summary : Not available.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Hydrocarbons, C10, aromatics, >1% naphthalene	-	-	Not readily
Naphthalene	-	-	Not readily

Bioaccumulative potential

Product/ingredient name	LogP_{ow}	BCF	Potential
Hydrocarbons, C10, aromatics, >1% naphthalene	2.8 to 6.5	99 to 5780	high
Hydrocarbons, C10, aromatics, <1% naphthalene	2.8 to 6.5	99 to 5780	high
Naphthalene	3.4	36.5 to 168	low

Other adverse effects : No known significant effects or critical hazards.

13 . Disposal considerations

Methods of disposal : This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

14 . Transport information

Regulation	UN number	Proper shipping name	Classes	PG*	Label	Additional information
ADG	UN3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N. O.S. (aromatic naphtha)	9	III		Hazchem code 3Z
ADR	UN3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N. O.S. (aromatic naphtha solution)	9	III		UK Hazchem: 3Z
IMDG	UN3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N. O.S. (aromatic naphtha solution)	9	III		-
IATA	UN3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N. O.S. (aromatic naphtha solution)	9	III		-

PG* : Packing group

15 . Regulatory information

Standard Uniform Schedule of Medicine and Poisons

6

Control of Scheduled Carcinogenic Substances

Ingredient name

No listed substance

Schedule

Australia inventory (AICS) : All components are listed or exempted.

EU Classification : Carc. Cat. 3; R40
R66, R67
N; R51/53

Risk phrases : R40- Limited evidence of a carcinogenic effect.
R66- Repeated exposure may cause skin dryness or cracking.
R67- Vapours may cause drowsiness and dizziness.
R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

15 . Regulatory information

- Safety phrases** : S36/37- Wear suitable protective clothing and gloves.
S61- Avoid release to the environment. Refer to special instructions/safety data sheet.
- National regulations** : **National Code of Practice for the Control of Workplace Hazardous Substances. National Code of Practice for the Labelling of Workplace Substances. National Code of Practice for the Preparation of Material Safety Data Sheets. Approved Criteria for Classifying Hazardous Substances.**

16 . Other information

- Date of printing** : 22 July 2015.
- Date of issue/ Date of revision** : 22 July 2015
- Date of previous issue** : 4 August 2013
- Version** : 2

Indicates information that has changed from previously issued version.

Disclaimer

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

OSW24514

1. Identification of the material and supplier

Names

Product name : OSW24514
Product code : OSW24514
ADG : NOT REGULATED
Supplier : Baker Hughes, Australia
5 Walker Street,
Braeside,
Victoria 3195,
Australia

Tel: +613 9580 9004
Fax: +613 9580 6004

Emergency telephone number : CHEMTREC Emergency Telephone Numbers (Australasia Geomarket):
- Australia: (02) 9037 2994
- New Zealand: 9801 0034
- PNG: +(61) 2 9037 2994

- UK: +(44) 870-820-0418
- USA: +(1) 703-527-3887 (CHEMTREC International 24 hour)

Uses

Material uses : Oxygen scavenger

2. Hazards identification

Classification : Xi; R36/37
R31

Risk phrases : R36/37- Irritating to eyes and respiratory system.
R31- Contact with acids liberates toxic gas.

Safety phrases : S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S28- After contact with skin, wash immediately with plenty of soap and water.
S39- Wear eye/face protection.
S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Statement of hazardous/dangerous nature : HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

3. Composition/information on ingredients

Ingredient name	CAS number	Concentration
ammonium hydrogensulphite	10192-30-0	30 - 60

Other ingredients, determined not to be hazardous according to Safe Work Australia criteria, and not dangerous according to the ADG Code, make up the product concentration to 100%.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4 . First-aid measures

- Inhalation** : Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Ingestion** : Get medical attention immediately. Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 15 minutes. Get medical attention.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
- Advice to doctor** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

5 . Fire-fighting measures

- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
nitrogen oxides
sulfur oxides
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
- Hazchem code** : -

6 . Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
- Environmental precautions** : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Small spill** : Stop leak if without risk. Move containers from spill area. Dispose of via a licensed waste disposal contractor. Absorb with an inert dry material and place in an appropriate waste disposal container.
- Large spill** : Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

7 . Handling and storage

- Storage** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Separate from acids. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

8 . Exposure controls/personal protection

- Occupational exposure limits** : **No exposure standard allocated.**
- Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.
- Engineering measures** : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapour or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. Engineering controls may be required to control the primary or secondary risks associated with this product.
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9 . Physical and chemical properties

- Physical state** : Liquid.
- Colour** : Clear. / Yellow.
- Odour** : sulfur oxides
- Relative density** : 1.35 (20°C)
- Flash point** : Closed cup: Not applicable.
- pH** : 4.7 to 5.4
- Solubility** : Easily soluble in the following materials: cold water.

10 . Stability and reactivity

Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Hazardous reactions or instability may occur under certain conditions of storage or use. Conditions may include the following: contact with acids Reactions may include the following: liberation of toxic gas
Conditions to avoid	: No specific data.
Materials to avoid	: Reactive or incompatible with the following materials: acids
Hazardous decomposition products	: Contact with acids liberates toxic gas.

11 . Toxicological information

Potential acute health effects

Inhalation	: Irritating to respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
Ingestion	: No known significant effects or critical hazards.
Skin contact	: No known significant effects or critical hazards.
Eye contact	: Irritating to eyes.

Acute toxicity

Conclusion/Summary : Not available.

Potential chronic health effects

Chronic toxicity

Conclusion/Summary : Not available.

Irritation/Corrosion

Conclusion/Summary : Not available.

Sensitiser

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Mutagenicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Chronic effects : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing

Ingestion : No specific data.

Skin : No specific data.

11 . Toxicological information

Eyes : Adverse symptoms may include the following:
irritation
watering
redness

12 . Ecological information

Ecotoxicity : No known significant effects or critical hazards.

Aquatic ecotoxicity

Conclusion/Summary : Not available.

Other ecological information

Persistence/degradability

Conclusion/Summary : Not available.

Other adverse effects : No known significant effects or critical hazards.

13 . Disposal considerations

Methods of disposal : This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

14 . Transport information

Regulation	UN number	Proper shipping name	Classes	PG*	Label	Additional information
ADG	Not regulated.	NOT REGULATED	-	-		Hazchem code -
ADR	Not regulated.	NOT REGULATED	-	-		UK Hazchem: -
IMDG	Not regulated.	NOT REGULATED BY IMO	-	-		-
IATA	Not regulated.	NOT REGULATED BY IATA	-	-		-

PG* : Packing group

15 . Regulatory information

Standard Uniform Schedule of Medicine and Poisons

Not regulated.

Sector of Use : Industrial
Professional

Control of Scheduled Carcinogenic Substances

Ingredient name

No listed substance

Schedule

Australia inventory (AICS) : All components are listed or exempted.

EU Classification : Xi; R36

Risk phrases : R36/37- Irritating to eyes and respiratory system.
R31- Contact with acids liberates toxic gas.

15 . Regulatory information

- Safety phrases** : S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S28- After contact with skin, wash immediately with plenty of soap and water.
S39- Wear eye/face protection.
S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
- National regulations** : **National Code of Practice for the Control of Workplace Hazardous Substances. National Code of Practice for the Labelling of Workplace Substances. National Code of Practice for the Preparation of Material Safety Data Sheets. Approved Criteria for Classifying Hazardous Substances.**

16 . Other information

- Date of printing** : 27 June 2014.
Date of issue/ Date of revision : 27 June 2014
Date of previous issue : 29 January 2013
Version : 2.01

Indicates information that has changed from previously issued version.

Disclaimer

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

TRETOLITE* RBW24136

1. Identification of the material and supplier

Names

Product name : TRETOLITE* RBW24136
Product code : RBW24136
ADG : CORROSIVE LIQUID, N.O.S. (contains potassium hydroxide)
Supplier : Baker Hughes, Australia
5 Walker Street,
Braeside,
Victoria 3195,
Australia

Tel: +613 9580 9004
Fax: +613 9580 6004

Emergency telephone number : CHEMTREC Emergency Telephone Numbers (Australasia Geomarket):
- Australia: (02) 9037 2994
- New Zealand: 9801 0034
- PNG: +(61) 2 9037 2994

- UK: +(44) 870-820-0418
- USA: +(1) 703-527-3887 (CHEMTREC International 24 hour)

Uses

Material uses : Water clarifier.

Chemical Product Category

Chemical family : Alkali.

2. Hazards identification

Classification : C; R34
Risk phrases : R34- Causes burns.
Safety phrases : S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39- 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).

Statement of hazardous/ dangerous nature : HAZARDOUS SUBSTANCE. DANGEROUS GOODS.

GHS Classification

Classification of the substance or mixture : SKIN CORROSION/IRRITATION - Category 1B
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2

Hazard pictograms :



Signal word : Danger

Hazard statements : Causes severe skin burns and eye damage.

Precautionary statements

General : Not applicable.

Prevention : Wear protective gloves. Wear eye or face protection. Wear protective clothing.

2. Hazards identification

- Response** : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Immediately call a POISON CENTER or physician. IF IN EYES: Immediately call a POISON CENTER or physician.
- Storage** : Store locked up.
- Disposal** : Dispose of contents and container in accordance with all local, regional, national and international regulations.
- Other hazards which do not result in classification** : None known.

3. Composition/information on ingredients

Ingredient name	CAS number	Concentration
Potassium hydroxide	1310-58-3	1 - 5

Other ingredients, determined not to be hazardous according to Safe Work Australia criteria, and not dangerous according to the ADG Code, make up the product concentration to 100%.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First-aid measures

- Inhalation** : Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.
- Ingestion** : Get medical attention immediately. Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.
- Skin contact** : Get medical attention immediately. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 15 minutes. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Eye contact** : Obtain immediate medical attention after the following First Aid measures have been administered. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 15 minutes. Chemical burns must be treated promptly by a physician.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
- Advice to doctor** : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5 . Fire-fighting measures

- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
metal oxide/oxides
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
- Hazchem code** : 2X

6 . Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
- Environmental precautions** : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Small spill** : Stop leak if without risk. Move containers from spill area. Dispose of via a licensed waste disposal contractor. Absorb with an inert dry material and place in an appropriate waste disposal container.
- Large spill** : Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

7 . Handling and storage

- Storage** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

8 . Exposure controls/personal protection

Occupational exposure limits

- | <u>Ingredient name</u> | <u>Exposure limits</u> |
|------------------------|--|
| Potassium hydroxide | Safe Work Australia (Australia, 1/2014).
TWA: 2 mg/m ³ 8 hours. |
- Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.
- Engineering measures** : If user operations generate dust, fumes, gas, vapour or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

8 . Exposure controls/personal protection

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9 . Physical and chemical properties

- Physical state** : Liquid.
- Colour** : Amber. to Red.
- Odour** : Rotten eggs.
- Relative density** : 1.08 (20°C)
- Flash point** : Closed cup: Not applicable.
- pH** : 10.5 to 12
- Viscosity** : Kinematic (room temperature): <0.2 cm²/s (<20 cSt)
- Solubility** : Soluble in water

10 . Stability and reactivity

- Chemical stability** : The product is stable.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- Conditions to avoid** : No specific data.
- Materials to avoid** : Highly reactive or incompatible with the following materials: acids.
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11 . Toxicological information

Potential acute health effects

- Inhalation** : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system.
- Ingestion** : May cause burns to mouth, throat and stomach.
- Skin contact** : Corrosive to the skin. Causes burns.
- Eye contact** : Corrosive to eyes. Causes burns.

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Potassium hydroxide	LD50 Oral	Rat	273 mg/kg	-
Conclusion/Summary	: Not available.			

11 . Toxicological information

Potential chronic health effects

Chronic toxicity

Conclusion/Summary : Not available.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Potassium hydroxide	Eyes - Moderate irritant	Rabbit	-	24 hours 1 milligrams	-
	Skin - Severe irritant	Guinea pig	-	24 hours 50 milligrams	-
	Skin - Severe irritant	Human	-	24 hours 50 milligrams	-
	Skin - Severe irritant	Rabbit	-	24 hours 50 milligrams	-

Conclusion/Summary : Not available.

Sensitiser

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Mutagenicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Chronic effects : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Inhalation : No specific data.

Ingestion : Adverse symptoms may include the following: stomach pains Irritation to digestive system

Skin : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Eyes : Adverse symptoms may include the following:
pain
watering
redness

Target organs : Contains material which may cause damage to the following organs: upper respiratory tract, skin, eye, lens or cornea.

12 . Ecological information

Ecotoxicity : No known significant effects or critical hazards.

Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
Potassium hydroxide	Acute LC50 80 ppm Fresh water	Fish - Gambusia affinis - Adult	96 hours

Conclusion/Summary : Not available.

Other ecological information

12 . Ecological information

Persistence/degradability





Conclusion/Summary : Not available.

Other adverse effects : No known significant effects or critical hazards.

13 . Disposal considerations

Methods of disposal : This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

14 . Transport information

Regulation	UN number	Proper shipping name	Classes	PG*	Label	Additional information
ADG	UN1760	CORROSIVE LIQUID, N. O.S. (contains potassium hydroxide)	8	III		Hazchem code 2X
ADR	UN1760	CORROSIVE LIQUID, N. O.S. (contains potassium hydroxide)	8	III		UK Hazchem: 2X
IMDG	UN1760	CORROSIVE LIQUID, N. O.S. (contains potassium hydroxide)	8	III		-
IATA	UN1760	CORROSIVE LIQUID, N. O.S. (contains potassium hydroxide)	8	III		-

PG* : Packing group

15 . Regulatory information

Standard Uniform Schedule of Medicine and Poisons

5

Control of Scheduled Carcinogenic Substances

Ingredient name

No listed substance

Schedule

Australia inventory (AICS) : All components are listed or exempted.

EU Classification : C; R34

Risk phrases : R34- Causes burns.

Safety phrases : S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39- 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).

National regulations : **National Code of Practice for the Control of Workplace Hazardous Substances. National Code of Practice for the Labelling of Workplace Substances. National Code of Practice for the Preparation of Material Safety Data Sheets. Approved Criteria for Classifying Hazardous Substances.**

16 . Other information

Date of printing : 18 December 2014.
Date of issue/ Date of revision : 18 December 2014
Date of previous issue : 21 January 2013
Version : 2

Indicates information that has changed from previously issued version.

Disclaimer

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

SCW24457

1. Identification of the material and supplier

Names

Product name : SCW24457
Product code : SCW24457
Supplier : Baker Hughes, Australia
5 Walker Street,
Braeside,
Victoria 3195,
Australia

Tel: +613 9580 9004
Fax: +613 9580 6004

Emergency telephone number : CHEMTREC Emergency Telephone Numbers (Australasia Geomarket):
- Australia: (02) 9037 2994
- New Zealand: 9801 0034
- PNG: +(61) 2 9037 2994

- UK: +(44) 870-820-0418
- USA: +(1) 703-527-3887 (CHEMTREC International 24 hour)

Uses

Material uses : Scale inhibitor

2. Hazards identification

Classification : Not regulated.
Risk phrases : Not classified.
Statement of hazardous/dangerous nature : NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

3. Composition/information on ingredients

Other ingredients, determined not to be hazardous according to Safe Work Australia criteria, and not dangerous according to the ADG Code, make up the product concentration to 100%.

There are no ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First-aid measures

Inhalation : Get medical attention immediately. Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Ingestion : Get medical attention immediately. Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Chemical burns must be treated promptly by a physician.

Skin contact : Get medical attention immediately. Wash contaminated skin with soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 15 minutes. Chemical burns must be treated promptly by a physician.

Eye contact : Get medical attention immediately. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 15 minutes. Chemical burns must be treated promptly by a physician.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

4 . First-aid measures

- Advice to doctor** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

5 . Fire-fighting measures

- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
phosphorus oxides
metal oxide/oxides
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 . Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment (see Section 8).
- Environmental precautions** : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Small spill** : Stop leak if without risk. Move containers from spill area. Dispose of via a licensed waste disposal contractor. Absorb with an inert dry material and place in an appropriate waste disposal container.
- Large spill** : Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7 . Handling and storage

- Storage** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Separate from alkalis. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

8 . Exposure controls/personal protection

- Occupational exposure limits** : **No exposure standard allocated.**
- Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.
- Engineering measures** : If user operations generate dust, fumes, gas, vapour or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

8 . Exposure controls/personal protection

- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9 . Physical and chemical properties

- Physical state** : Liquid.
- Colour** : Straw.
- Odour** : Characteristic.
- Relative density** : 1.065 to 1.085 (20°C)
- Flash point** : Closed cup: Not applicable.
- pH** : 1.3 to 1.9
- Solubility** : Completely soluble in water

10 . Stability and reactivity

- Chemical stability** : The product is stable.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- Conditions to avoid** : No specific data.
- Materials to avoid** : Reactive or incompatible with the following materials:
alkalis
metals
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11 . Toxicological information

Potential acute health effects

- Inhalation** : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Ingestion** : May cause burns to mouth, throat and stomach.
- Skin contact** : Severely corrosive to the skin. Causes burns.
- Eye contact** : Severely corrosive to the eyes. Causes severe burns.

Acute toxicity

- Conclusion/Summary** : Not available.

Potential chronic health effects

Chronic toxicity

- Conclusion/Summary** : Not available.

Irritation/Corrosion

- Conclusion/Summary** : Not available.

Sensitiser

- Conclusion/Summary** : Not available.

11 . Toxicological information

Carcinogenicity

Conclusion/Summary : Not available.

Mutagenicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Chronic effects

: No known significant effects or critical hazards.

Carcinogenicity

: No known significant effects or critical hazards.

Mutagenicity

: No known significant effects or critical hazards.

Teratogenicity

: No known significant effects or critical hazards.

Developmental effects

: No known significant effects or critical hazards.

Fertility effects

: No known significant effects or critical hazards.

Inhalation

: No specific data.

Ingestion

: Adverse symptoms may include the following: stomach pains Irritation to digestive system

Skin

: Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Eyes

: Adverse symptoms may include the following:
pain
watering
redness

12 . Ecological information

Ecotoxicity

: No known significant effects or critical hazards.

Aquatic ecotoxicity

Conclusion/Summary : Not available.

Other ecological information

Persistence/degradability

Conclusion/Summary : Not available.

Other adverse effects

: No known significant effects or critical hazards.

13 . Disposal considerations

Methods of disposal

: This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

14 . Transport information

Regulation	UN number	Proper shipping name	Classes	PG*	Label	Additional information
ADG	Not regulated.		-	-		-
ADR	Not regulated.		-	-		-
IMDG	Not regulated.		-	-		-
IATA	Not regulated.		-	-		-

PG* : Packing group

15 . Regulatory information

Standard for the Uniform Scheduling of Drugs and Poisons

Not regulated.

Sector of Use : Industrial
Professional

Control of Scheduled Carcinogenic Substances

Ingredient name

No listed substance

Schedule

Australia inventory (AICS) : All components are listed or exempted.

EU Classification : Not classified.

Risk phrases : Not classified.

National regulations : **National Code of Practice for the Control of Workplace Hazardous Substances. National Code of Practice for the Labelling of Workplace Substances. National Code of Practice for the Preparation of Material Safety Data Sheets. Approved Criteria for Classifying Hazardous Substances.**

16 . Other information

Date of printing : 22 October 2012.

Date of issue/ Date of revision : 22 October 2012

Date of previous issue : No previous validation

Version : 1.01

▣ Indicates information that has changed from previously issued version.

Disclaimer

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Material Safety Data Sheet



XC24380

1. Identification of the material and supplier

Names

Product name : XC24380
Product code : XC24380
ADG : Toxic liquid, organic, n.o.s. (tetrakis(hydroxymethyl)phosphonium sulphate)
Supplier : Baker Hughes, Australia
5 Walker Street,
Braeside,
Victoria 3195,
Australia

Tel: +613 9580 9004
Fax: +613 9580 6004

Emergency telephone number : CHEMTREC Emergency Telephone Numbers (Australasia Geomarket):
- Australia: (02) 9037 2994
- New Zealand: 9801 0034
- PNG: +(61) 2 9037 2994

- UK: +(44) 870-820-0418
- USA: +(1) 703-527-3887 (CHEMTREC International 24 hour)

Uses

Material uses : Biocide

2. Hazards identification

Classification : Repr. Cat. 2; R61
T; R23
Xn; R22
Xi; R41
R43
N; R50

Risk phrases : R61- May cause harm to the unborn child.
R23- Also toxic by inhalation.
R22- Also harmful if swallowed.
R41- Risk of serious damage to eyes.
R43- May cause sensitisation by skin contact.
R50- Very toxic to aquatic organisms.

Safety phrases : S53- Avoid exposure - obtain special instructions before use.
S24- Avoid contact with skin.
S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37/39- Wear suitable gloves and eye/face protection.
S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S61- Avoid release to the environment. Refer to special instructions/safety data sheet.

Statement of hazardous/dangerous nature : HAZARDOUS SUBSTANCE. DANGEROUS GOODS.

3. Composition/information on ingredients

Ingredient name	CAS number	Concentration
tetrakis(hydroxymethyl)phosphonium sulphate(2:1)	55566-30-8	60 - 100

Other ingredients, determined not to be hazardous according to Safe Work Australia criteria, and not dangerous according to the ADG Code, make up the product concentration to 100%.

3 . Composition/information on ingredients

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4 . First-aid measures

- Inhalation** : Get medical attention immediately. Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.
- Ingestion** : Get medical attention immediately. Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.
- Skin contact** : Obtain immediate medical attention after the following First Aid measures have been administered. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 15 minutes. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Eye contact** : Obtain immediate medical attention after the following First Aid measures have been administered. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 15 minutes. Chemical burns must be treated promptly by a physician.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
- Advice to doctor** : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5 . Fire-fighting measures

- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. This material is very toxic to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
sulfur oxides
phosphorus oxides
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
- Hazchem code** : 2X

6 . Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).

6 . Accidental release measures

- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.
- Small spill** : Stop leak if without risk. Move containers from spill area. Dispose of via a licensed waste disposal contractor. Absorb with an inert dry material and place in an appropriate waste disposal container.
- Large spill** : Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7 . Handling and storage

- Storage** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

8 . Exposure controls/personal protection

Occupational exposure limits

Ingredient name

tetrakis(hydroxymethyl)phosphonium sulphate(2:1)

Exposure limits

ACGIH TLV (United States, 1/2011). Skin sensitizer.

TWA: 2 mg/m³ 8 hour(s).

- Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.
- Engineering measures** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9 . Physical and chemical properties

Physical state	: Liquid.
Colour	: Colourless.
Odour	: Pungent.
Melting point	: -43°C (-45.4°F)
Relative density	: 1.39 (20°C)
pH	: 3 to 6
Viscosity	: Kinematic: 0.3 cm ² /s (30 cSt)
Solubility	: Soluble in water

10 . Stability and reactivity

Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: Avoid exposure - obtain special instructions before use. Avoid release to the environment. Refer to special instructions/safety data sheet.
Materials to avoid	: No specific data.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11 . Toxicological information

Potential acute health effects

Inhalation	: Toxic by inhalation.
Ingestion	: Harmful if swallowed.
Skin contact	: May cause sensitisation by skin contact.
Eye contact	: Severely irritating to eyes. Risk of serious damage to eyes.

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
tetrakis(hydroxymethyl)phosphonium sulphate(2:1)	LC50 Inhalation Dusts and mists	Rat	0.591 mg/l	4 hours
	LD50 Oral	Rat	248 mg/kg	-

Conclusion/Summary : Not available.

Potential chronic health effects

Chronic toxicity

Conclusion/Summary : Not available.

Irritation/Corrosion

Conclusion/Summary : Not available.

Sensitiser

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Mutagenicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Product name	Carcinogenic effects	Mutagenic effects	Developmental effects	Fertility effects
tetrakis(hydroxymethyl)phosphonium sulphate(2:1)	-	-	Repr. Cat. 2; R61	-

11 . Toxicological information

Chronic effects	: Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
Carcinogenicity	: No known significant effects or critical hazards.
Mutagenicity	: No known significant effects or critical hazards.
Teratogenicity	: May cause birth defects.
Developmental effects	: No known significant effects or critical hazards.
Fertility effects	: No known significant effects or critical hazards.
Inhalation	: No specific data.
Ingestion	: No specific data.
Skin	: Adverse symptoms may include the following: irritation redness
Eyes	: Adverse symptoms may include the following: pain or irritation watering redness
Target organs	: Contains material which may cause damage to the following organs: skin.

12 . Ecological information

Ecotoxicity : Very toxic to aquatic organisms.

Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
tetrakis(hydroxymethyl)phosphonium sulphate(2:1)	Acute EC50 0.2 mg/l	Algae	96 hours
	Acute EC50 19.4 mg/l	Daphnia	48 hours
	Acute LC50 93 mg/l	Fish	96 hours

Conclusion/Summary : Not available.

Other ecological information

Persistence/degradability

Product/ingredient name	Test	Result	Dose	Inoculum
tetrakis(hydroxymethyl)phosphonium sulphate(2:1)	-	70 % - Readily - 21 days	-	-

Conclusion/Summary : Not available.



Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
tetrakis(hydroxymethyl)phosphonium sulphate(2:1)	-	-	Readily

Other adverse effects : No known significant effects or critical hazards.







13 . Disposal considerations

Methods of disposal : This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

14 . Transport information

Regulation	UN number	Proper shipping name	Classes	PG*	Label	Additional information
ADG	UN2810	Toxic liquid, organic, n.o.s. (tetrakis(hydroxymethyl)phosphonium sulphate)	6.1	III	 	Hazchem code 2X

14 . Transport information

ADR	UN2810	Toxic liquid, organic, n.o.s. (tetrakis(hydroxymethyl)phosphonium sulphate)	6.1	III	 	UK Hazchem: 2X
IMDG	UN2810	Toxic liquid, organic, n.o.s. (tetrakis(hydroxymethyl)phosphonium sulphate)	6.1	III	 	-
IATA	UN2810	Toxic liquid, organic, n.o.s. (tetrakis(hydroxymethyl)phosphonium sulphate)	6.1	III	 	-

PG* : Packing group

15 . Regulatory information

Standard for the Uniform Scheduling of Drugs and Poisons

Not regulated.

Control of Scheduled Carcinogenic Substances

Ingredient name

No listed substance

Schedule

Australia inventory (AICS) : All components are listed or exempted.

EU Classification : Repr. Cat. 2; R61

T; R23

Xn; R22

Xi; R41

R43

N; R50

Risk phrases : R61- May cause harm to the unborn child.
R23- Also toxic by inhalation.
R22- Also harmful if swallowed.
R41- Risk of serious damage to eyes.
R43- May cause sensitisation by skin contact.
R50- Very toxic to aquatic organisms.

Safety phrases : S53- Avoid exposure - obtain special instructions before use.
S24- Avoid contact with skin.
S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37/39- Wear suitable gloves and eye/face protection.
S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S61- Avoid release to the environment. Refer to special instructions/safety data sheet.

National regulations : **National Code of Practice for the Control of Workplace Hazardous Substances. National Code of Practice for the Labelling of Workplace Substances. National Code of Practice for the Preparation of Material Safety Data Sheets. Approved Criteria for Classifying Hazardous Substances.**

16 . Other information

Date of printing : 25 February 2013.

Date of issue/ Date of revision : 25 February 2013

Date of previous issue : 12 April 2012

Version : 2

☑ Indicates information that has changed from previously issued version.

Disclaimer

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

TRETOLITE* RBW24122

1. Identification of the material and supplier

Names

Product name : TRETOLITE* RBW24122
Product code : RBW24122
ADG : -
Supplier : Baker Hughes, Australia
5 Walker Street,
Braeside,
Victoria 3195,
Australia

Tel: +613 9580 9004
Fax: +613 9580 6004

Emergency telephone number : CHEMTREC Emergency Telephone Numbers (Australasia Geomarket):
- Australia: (02) 9037 2994
- New Zealand: 9801 0034
- PNG: +(61) 2 9037 2994

- UK: +(44) 870-820-0418
- USA: +(1) 703-527-3887 (CHEMTREC International 24 hour)

Uses

Material uses : Water clarifier.

2. Hazards identification

Classification : Not regulated.
Risk phrases : Not classified.
Statement of hazardous/dangerous nature : NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.
GHS Classification
Classification of the substance or mixture : Not classified.
Hazard pictograms :
Signal word : No signal word.
Hazard statements : No known significant effects or critical hazards.
Precautionary statements
General : Not applicable.
Prevention : Not applicable.
Response : Not applicable.
Storage : Not applicable.
Disposal : Not applicable.
Other hazards which do not result in classification : None known.

3. Composition/information on ingredients

There are no ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4 . First-aid measures

- Inhalation** : Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention if symptoms occur.
- Ingestion** : Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Get medical attention if symptoms occur.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if irritation occurs.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training.
- Advice to doctor** : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5 . Fire-fighting measures

- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
metal oxide/oxides
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
- Hazchem code** : -

6 . Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment (see Section 8).
- Environmental precautions** : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Small spill** : Stop leak if without risk. Move containers from spill area. Dispose of via a licensed waste disposal contractor. Absorb with an inert dry material and place in an appropriate waste disposal container.
- Large spill** : Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

7 . Handling and storage

- Storage** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

8 . Exposure controls/personal protection

- Occupational exposure limits** : No exposure standard allocated.
- Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.
- Engineering measures** : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9 . Physical and chemical properties

- Physical state** : Liquid.
- Colour** : White.
- Relative density** : 1 to 1.02 (20°C)
- Flash point** : Closed cup: Not applicable.
- pH** : 2 to 4
- Viscosity** : Kinematic (room temperature): <1 cm²/s (<100 cSt)
- Solubility** : Easily soluble in the following materials: cold water.

10 . Stability and reactivity

Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: No specific data.
Materials to avoid	: No specific data.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11 . Toxicological information

Potential acute health effects

Inhalation	: No known significant effects or critical hazards.
Ingestion	: No known significant effects or critical hazards.
Skin contact	: No known significant effects or critical hazards.
Eye contact	: No known significant effects or critical hazards.

Acute toxicity

Conclusion/Summary	: Not available.
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Potential chronic health effects

Chronic toxicity

Conclusion/Summary	: Not available.
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Irritation/Corrosion

Conclusion/Summary	: Not available.
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Sensitiser

Conclusion/Summary	: Not available.
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Carcinogenicity

Conclusion/Summary	: Not available.
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Mutagenicity

Conclusion/Summary	: Not available.
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Teratogenicity

Conclusion/Summary	: Not available.
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Reproductive toxicity

Conclusion/Summary	: Not available.
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Chronic effects	: No known significant effects or critical hazards.
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Carcinogenicity	: No known significant effects or critical hazards.
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Mutagenicity	: No known significant effects or critical hazards.
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Teratogenicity	: No known significant effects or critical hazards.
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Developmental effects	: No known significant effects or critical hazards.
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Fertility effects	: No known significant effects or critical hazards.
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Inhalation	: No specific data.
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Ingestion	: No specific data.
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Skin	: No specific data.
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Eyes	: No specific data.
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12 . Ecological information

Ecotoxicity : No known significant effects or critical hazards.

Aquatic ecotoxicity

Conclusion/Summary : Not available.

Other ecological information

Persistence/degradability

Conclusion/Summary : Not available.

Other adverse effects : No known significant effects or critical hazards.

13 . Disposal considerations

Methods of disposal : This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

14 . Transport information

Regulation	UN number	Proper shipping name	Classes	PG*	Label	Additional information
ADG	Not regulated.	-	-	-		<u>Hazchem code</u> -
ADR	Not regulated.	-	-	-		UK Hazchem: -
IMDG	Not regulated.	-	-	-		-
IATA	Not regulated.	-	-	-		-

PG* : Packing group

15 . Regulatory information

Standard Uniform Schedule of Medicine and Poisons

Not regulated.

Control of Scheduled Carcinogenic Substances

Ingredient name

No listed substance

Schedule

Australia inventory (AICS) : All components are listed or exempted.

EU Classification : Not classified.

Risk phrases : Not classified.

National regulations : **National Code of Practice for the Control of Workplace Hazardous Substances. National Code of Practice for the Labelling of Workplace Substances. National Code of Practice for the Preparation of Material Safety Data Sheets. Approved Criteria for Classifying Hazardous Substances.**

16 . Other information

Date of printing : 13 November 2014.
Date of issue/ Date of revision : 13 November 2014
Date of previous issue : 21 January 2013
Version : 2

Indicates information that has changed from previously issued version.

Disclaimer

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

TRETOLITE* RBW24365

1. Identification of the material and supplier

Names

Product name : TRETOLITE* RBW24365
Product code : RBW24365
Supplier : Baker Hughes, Australia
5 Walker Street,
Braeside,
Victoria 3195,
Australia

Tel: +613 9580 9004
Fax: +613 9580 6004

Emergency telephone number : CHEMTREC Emergency Telephone Numbers (Australasia Geomarket):
- Australia: (02) 9037 2994
- New Zealand: 9801 0034
- PNG: +(61) 2 9037 2994

- UK: +(44) 870-820-0418
- USA: +(1) 703-527-3887 (CHEMTREC International 24 hour)

Uses

Material uses : Water Clarifier

2. Hazards identification

Classification : Xi; R36/38
Risk phrases : R36/38- Irritating to eyes and skin.
Safety phrases : S24/25- Avoid contact with skin and eyes.
S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37- Wear suitable gloves.
S60- This material and its container must be disposed of as hazardous waste.
Statement of hazardous/dangerous nature : HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

3. Composition/information on ingredients

Ingredient name	CAS number	Concentration
Polyaluminium Chloride		10 - 30

Other ingredients, determined not to be hazardous according to Safe Work Australia criteria, and not dangerous according to the ADG Code, make up the product concentration to 100%.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First-aid measures

Inhalation : Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

Ingestion : Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 15 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

4 . First-aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 15 minutes. Get medical attention.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
- Advice to doctor** : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5 . Fire-fighting measures

- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
- Hazardous thermal decomposition products** : No specific data.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 . Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
- Environmental precautions** : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Small spill** : Stop leak if without risk. Move containers from spill area. Dispose of via a licensed waste disposal contractor. Absorb with an inert dry material and place in an appropriate waste disposal container.
- Large spill** : Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7 . Handling and storage

- Storage** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

8 . Exposure controls/personal protection

Occupational exposure limits

Ingredient name

Polyaluminium Chloride

Exposure limits

Safe Work Australia (Australia, 8/2005). Notes: as Al
TWA: 2 mg/m³, (as Al) 8 hour(s).

- Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

8 . Exposure controls/personal protection

- Engineering measures** : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9 . Physical and chemical properties

- Physical state** : Liquid.
- Colour** : Yellow. [Light]
- Relative density** : 1.12 to 1.14 (20°C)
- Flash point** : Closed cup: Not applicable.
- pH** : 3.6 to 4.6 [Conc. (% w/w): 1%]
- Solubility** : Soluble in water

10 . Stability and reactivity

- Chemical stability** : The product is stable.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- Conditions to avoid** : No specific data.
- Materials to avoid** : No specific data.
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11 . Toxicological information

Potential acute health effects

- Inhalation** : No known significant effects or critical hazards.
- Ingestion** : Irritating to mouth, throat and stomach.
- Skin contact** : Irritating to skin.
- Eye contact** : Irritating to eyes.

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Polyaluminium Chloride	LD50 Oral	Rat	681 mg/kg	-

Conclusion/Summary : Not available.

Potential chronic health effects

Chronic toxicity

11 . Toxicological information

Conclusion/Summary	: Not available.
<u>Irritation/Corrosion</u>	
Conclusion/Summary	: Not available.
<u>Sensitiser</u>	
Conclusion/Summary	: Not available.
<u>Carcinogenicity</u>	
Conclusion/Summary	: Not available.
<u>Mutagenicity</u>	
Conclusion/Summary	: Not available.
<u>Teratogenicity</u>	
Conclusion/Summary	: Not available.
<u>Reproductive toxicity</u>	
Conclusion/Summary	: Not available.
Chronic effects	: No known significant effects or critical hazards.
Carcinogenicity	: No known significant effects or critical hazards.
Mutagenicity	: No known significant effects or critical hazards.
Teratogenicity	: No known significant effects or critical hazards.
Developmental effects	: No known significant effects or critical hazards.
Fertility effects	: No known significant effects or critical hazards.
Inhalation	: No specific data.
Ingestion	: No specific data.
Skin	: Adverse symptoms may include the following: irritation redness
Eyes	: Adverse symptoms may include the following: irritation watering redness

12 . Ecological information

Ecotoxicity	: No known significant effects or critical hazards.
<u>Aquatic ecotoxicity</u>	
Conclusion/Summary	: Not available.
<u>Other ecological information</u>	
<u>Persistence/degradability</u>	
Conclusion/Summary	: Not available.
Other adverse effects	: No known significant effects or critical hazards.

13 . Disposal considerations

Methods of disposal	: This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.
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14 . Transport information

Regulation	UN number	Proper shipping name	Classes	PG*	Label	Additional information
ADG	Not regulated.		-	-		-
ADR	Not regulated.		-	-		-
IMDG	Not regulated.		-	-		-

14 . Transport information

IATA	Not regulated.		-	-		-
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PG* : Packing group

15 . Regulatory information

Standard for the Uniform Scheduling of Drugs and Poisons

Not regulated.

Control of Scheduled Carcinogenic Substances

Ingredient name

No listed substance

Schedule

Australia inventory (AICS) : All components are listed or exempted.**EU Classification** : Xi; R36/38**Risk phrases** : R36/38- Irritating to eyes and skin.

Safety phrases : S24/25- Avoid contact with skin and eyes.
 S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
 S37- Wear suitable gloves.
 S60- This material and its container must be disposed of as hazardous waste.

National regulations : **National Code of Practice for the Control of Workplace Hazardous Substances. National Code of Practice for the Labelling of Workplace Substances. National Code of Practice for the Preparation of Material Safety Data Sheets. Approved Criteria for Classifying Hazardous Substances.**

16 . Other information

Date of printing : 21 January 2013.**Date of issue/ Date of revision** : 21 January 2013**Date of previous issue** : No previous validation**Version** : 1

 Indicates information that has changed from previously issued version.

Disclaimer

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

XC24102

1. Identification of the material and supplier

Names

Product name : XC24102
Product code : XC24102
ADG : CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.(contains glutaraldehyde)
Supplier : Baker Hughes, Australia
5 Walker Street,
Braeside,
Victoria 3195,
Australia

Tel: +613 9580 9004
Fax: +613 9580 6004

Emergency telephone number : CHEMTREC Emergency Telephone Numbers (Australasia Geomarket):
- Australia: (02) 9037 2994
- New Zealand: 9801 0034
- PNG: +(61) 2 9037 2994

- UK: +(44) 870-820-0418
- USA: +(1) 703-527-3887 (CHEMTREC International 24 hour)

Uses

Material uses : Biocide

2. Hazards identification

Classification : T; R23
Xn; R22
C; R34
R42/43
N; R50

Risk phrases : R23- Toxic by inhalation.
R22- Harmful if swallowed.
R34- Causes burns.
R42/43- May cause sensitisation by inhalation and skin contact.
R50- Very toxic to aquatic organisms.

Safety phrases : S23- Do not breathe vapour or spray.
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).
S61- Avoid release to the environment. Refer to special instructions/safety data sheet.

Statement of hazardous/dangerous nature : HAZARDOUS SUBSTANCE. DANGEROUS GOODS.

3. Composition/information on ingredients

Ingredient name	CAS number	Concentration
glutaral	111-30-8	10 - 30

Other ingredients, determined not to be hazardous according to Safe Work Australia criteria, and not dangerous according to the ADG Code, make up the product concentration to 100%.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4 . First-aid measures

- Inhalation** : Get medical attention immediately. Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. In the event of any complaints or symptoms, avoid further exposure.
- Ingestion** : Get medical attention immediately. Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.
- Skin contact** : Get medical attention immediately. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 15 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Eye contact** : Get medical attention immediately. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 15 minutes. Chemical burns must be treated promptly by a physician.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
- Advice to doctor** : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5 . Fire-fighting measures

- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. This material is very toxic to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
- Hazchem code** : 2X

6 . Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
- Environmental precautions** : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.
- Small spill** : Stop leak if without risk. Move containers from spill area. Dispose of via a licensed waste disposal contractor. Absorb with an inert dry material and place in an appropriate waste disposal container.

6 . Accidental release measures

- Large spill** : Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7 . Handling and storage

- Storage** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

8 . Exposure controls/personal protection

Occupational exposure limits

Ingredient name

glutaral

Exposure limits

Safe Work Australia (Australia, 8/2005). Skin sensitiser.

PEAK: 0.1 ppm 15 minute(s).

PEAK: 0.41 mg/m³ 15 minute(s).

- Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.
- Engineering measures** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. >8 hours (breakthrough time): Butyl rubber gloves. nitrile rubber
- Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9 . Physical and chemical properties

- Physical state** : Liquid.
- Colour** : Colourless.
- Odour** : Odourless.
- Relative density** : 1.05 to 1.07 (20°C)
- Flash point** : Closed cup: Not applicable.
- pH** : 3.1 to 5

9 . Physical and chemical properties

Solubility : Easily soluble in the following materials: cold water.

10 . Stability and reactivity

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid release to the environment. Refer to special instructions/safety data sheet.

Materials to avoid : No specific data.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11 . Toxicological information

Potential acute health effects

Inhalation : Toxic by inhalation. May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. May cause sensitisation by inhalation.

Ingestion : Harmful if swallowed. May cause burns to mouth, throat and stomach.

Skin contact : Corrosive to the skin. Causes burns. May cause sensitisation by skin contact.

Eye contact : Corrosive to eyes. Causes burns.

Acute toxicity

Conclusion/Summary : Not available.

Potential chronic health effects

Chronic toxicity

Conclusion/Summary : Not available.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
glutaral	Eyes - Severe irritant	Rabbit	-	-	-
	Skin - Severe irritant	Human	-	-	-
	Skin - Mild irritant	Rabbit	-	-	-
	Skin - Severe irritant	Rabbit	-	-	-

Conclusion/Summary : Not available.

Sensitiser

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Mutagenicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Chronic effects

: Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Inhalation : Adverse symptoms may include the following:
wheezing and breathing difficulties
asthma

Ingestion : Adverse symptoms may include the following: stomach pains Irritation to digestive system

11 . Toxicological information

- Skin** : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
- Eyes** : Adverse symptoms may include the following:
pain
watering
redness
- Target organs** : Contains material which may cause damage to the following organs: upper respiratory tract, skin, eye, lens or cornea.

12 . Ecological information

- Ecotoxicity** : Very toxic to aquatic organisms. Water polluting material. Do not allow any potentially contaminated water, including rain water, runoff from fire fighting or spills, to enter any waterway, sewer or drain.

Aquatic ecotoxicity

- Conclusion/Summary** : Not available.

Other ecological information

Persistence/degradability







- Conclusion/Summary** : Not available.

- Other adverse effects** : No known significant effects or critical hazards.



13 . Disposal considerations

- Methods of disposal** : This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

14 . Transport information

Regulation	UN number	Proper shipping name	Classes	PG*	Label	Additional information
ADG	UN3265	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.(contains glutaraldehyde)	8	III	 	Hazchem code 2X
ADR	UN3265	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.(contains glutaraldehyde)	8	III	 	UK Hazchem: 2X
IMDG	UN3265	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.(contains glutaraldehyde)	8	III	 	-

14 . Transport information

IATA	UN3265	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.(contains glutaraldehyde)	8	III	 	-
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PG* : Packing group

15 . Regulatory information

Standard for the Uniform Scheduling of Drugs and Poisons

6

Sector of Use : Industrial
Professional

Control of Scheduled Carcinogenic Substances

Ingredient name

No listed substance

Schedule

Australia inventory (AICS) : All components are listed or exempted.

EU Classification : T; R23
Xn; R22
C; R34
R42/43
N; R50

Risk phrases : R23- Toxic by inhalation.
R22- Harmful if swallowed.
R34- Causes burns.
R42/43- May cause sensitisation by inhalation and skin contact.
R50- Very toxic to aquatic organisms.

Safety phrases : S23- Do not breathe vapour or spray.
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).
S61- Avoid release to the environment. Refer to special instructions/safety data sheet.

National regulations : **National Code of Practice for the Control of Workplace Hazardous Substances. National Code of Practice for the Labelling of Workplace Substances. National Code of Practice for the Preparation of Material Safety Data Sheets. Approved Criteria for Classifying Hazardous Substances.**

16 . Other information

Date of printing : 2 October 2012.
Date of issue/ Date of revision : 2 October 2012
Date of previous issue : No previous validation
Version : 3

☑ Indicates information that has changed from previously issued version.

Disclaimer

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

SAFETY DATA SHEET

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

Identification of the substance or mixture

Product name : TRACERCO™ 140b
Product type : Liquid.
Product use : Industrial applications.
Specific uses : Diagnostic agents.

Supplier : TRACERCO,
 Pavilion 11, Coxwold Way,
 Belasis Hall Technology Park,
 Billingham, Stockton-on-Tees,
 UNITED KINGDOM, TS23 4EA

e-mail address of person responsible for this SDS : florence.cowan@matthey.com

Emergency telephone number (with hours of operation) : TRACERCO (24 hours)
 +44 (0) 1642 375500

2. HAZARDS IDENTIFICATION

The product is classified as dangerous according to Directive 1999/45/EC and its amendments.

Classification : C; R34

Human health hazards : Causes burns.

Additional warning phrases : Warning - this preparation contains a substance not yet tested completely.

The toxicological characteristics of this material have not been fully determined.

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

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance/preparation : Mixture

Ingredient name	CAS number	%	Number	Classification
20-25				C; R34
See section 16 for the full text of the R-phrases declared above				

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

[1] Substance classified with a health or environmental hazard

[2] Substance with a workplace exposure limit

[3] PBT-substance

[4] vPvB-substance

Occupational exposure limits, if available, are listed in section 8.

4. FIRST AID MEASURES

First-aid measures

- Inhalation** : Get medical attention immediately. Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Ingestion** : Get medical attention immediately. Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if symptoms occur.
- Eye contact** : Get medical attention immediately. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
- Notes to physician** : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

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

5. FIRE-FIGHTING MEASURES

- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : In a fire or if heated, a pressure increase will occur and the container may burst. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
- Hazardous thermal decomposition products** : No specific data.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. ACCIDENTAL RELEASE MEASURES

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).
- Environmental precautions** : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods for cleaning up

Date of issue/Date of revision : 16/04/2010.

6. ACCIDENTAL RELEASE MEASURES

- Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7. HANDLING AND STORAGE

- Handling** : Do not breathe vapour or mist. Do not ingest. Do not get in eyes or on skin or clothing. Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Storage** : Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. Store in accordance with local regulations.
- Packaging materials**
- Recommended** : Use original container.
- Specific uses** : Diagnostic agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit values

<u>Ingredient name</u>	<u>Occupational exposure limits</u>
No exposure limit value known.	

- Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to European Standard EN 689 for methods for the assessment of exposure by inhalation to chemical agents and national guidance documents for methods for the determination of hazardous substances.

Exposure controls

- Occupational exposure controls** : If user operations generate dust, fumes, gas, vapour or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

- Respiratory protection** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Gloves should be changed regularly to avoid permeation problems.
- Eye protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.
- Skin protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. PHYSICAL AND CHEMICAL PROPERTIES

General information

Appearance

- Physical state** : Liquid.
- Colour** : White.
- Odour** : Not available.

Important health, safety and environmental information

- pH** : 11.3
- Boiling point** : Not determined.
- Pour point** : Not determined.
- Flash point** : Not determined.
- Explosive properties** : Not available.
- Flammability (solid, gas)** : Not applicable.
- Oxidising properties** : Not available.
- Vapour pressure (mm Hg)** : Not determined.
- Relative density** : 1.112
- Solubility** : Partially soluble in the following materials: acetone, isopropanol
- Solubility - Water** : Miscible in water.
- Octanol/water partition coefficient** : Not determined.
- Viscosity (m.Pa.s)** : Not determined.
- Vapour density** : Not determined.
- Evaporation rate (butyl acetate = 1)** : Not determined.

10. STABILITY AND REACTIVITY

- Chemical stability** : The product is stable.
- Materials to avoid** : No specific data.
- Conditions to avoid** : No specific data.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- Under normal conditions of storage and use, hazardous decomposition products should not be produced.

10. STABILITY AND REACTIVITY

11. TOXICOLOGICAL INFORMATION

Toxicokinetics

Absorption	: Not available.
Distribution	: Not available.
Metabolism	: Not available.
Elimination	: Not available.

Potential acute health effects

Inhalation	: May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system.
Ingestion	: May cause burns to mouth, throat and stomach. Ingestion may cause irritation of the gastrointestinal tract. Ingestion may cause nausea, weakness and central nervous system effects.
Skin contact	: Corrosive to the skin. Causes burns. Repeated or prolonged skin contact may cause irritation.
Eye contact	: Corrosive to eyes. Causes burns.

Acute toxicity

Conclusion/Summary	: Not available.
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Potential chronic health effects

Chronic toxicity

Conclusion/Summary	: Not available.
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Irritation/Corrosion

Conclusion/Summary	: Not available.
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Sensitiser

Conclusion/Summary	: Not available.
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Carcinogenicity

Conclusion/Summary	: Not available.
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Mutagenicity

Conclusion/Summary	: Not available.
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Teratogenicity

Conclusion/Summary	: Not available.
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Reproductive toxicity

Conclusion/Summary	: Not available.
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Chronic effects : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Inhalation : No specific data.

Ingestion : Adverse symptoms may include the following:
stomach pains

Skin : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Eyes : Adverse symptoms may include the following:
pain
watering
redness

12. ECOLOGICAL INFORMATION

Environmental effects : Not readily biodegradable.

Aquatic ecotoxicity

Product/ingredient name	Test	Result	Species	Exposure
TRACERCO 140b	-	Acute LC50 298 mg/l Marine water	Daphnia	48 hours

Conclusion/Summary : Not available.

Other ecological information

Biodegradability

Product/ingredient name	Test	Result	Dose	Inoculum
TRACERCO 140b	OECD 306	0 % - Not readily - 28 days	-	-

Conclusion/Summary : Not available.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
TRACERCO 140b	-	-	Not readily

Other adverse effects : No known significant effects or critical hazards.

PBT : Not applicable.

vPvB : Not applicable.

13. DISPOSAL CONSIDERATIONS

Used material may have different hazards or properties from the new material. This safety data sheet does not apply to the used material.

In all cases where a EWC code is given, this applies to the material under normal conditions of use and may not be appropriate for used material where the properties may have changed. It is the responsibility of the user to check that any waste code recommendation is appropriate to their material in accordance with the recommendation of the European Waste Catalogue.

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Container information: : Since the emptied container retains product residue, follow label warnings even after it has been emptied.

Hazardous waste : The classification of the product may meet the criteria for a hazardous waste.

European waste catalogue (EWC) : The user should assign a waste code to the material in accordance with the recommendations of the European Waste Catalogue.

14. TRANSPORT INFORMATION

International transport regulations

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
ADR/RID Class	Not regulated.	-	-	-		-
ADN/ADNR Class	Not regulated.	-	-	-		-
IMDG Class	Not regulated.	-	-	-		-

Date of issue/Date of revision : 16/04/2010.

14. TRANSPORT INFORMATION

IATA Class	Not regulated.	-	-	-	-
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PG* : Packing group

15. REGULATORY INFORMATION

Chemical Safety Assessment : This product contains substances for which Chemical Safety Assessments are still required.

EU regulations

Classification and labeling have been determined according to EU Directives 67/548/EEC and 1999/45/EC (including amendments) and take into account the intended product use.

Hazard symbol or symbols :

**Risk phrases**

: R34- Causes burns.
Warning - this preparation contains a substance not yet tested completely.

Safety phrases

: S23- Do not breathe vapour or spray.
S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S28- After contact with skin, wash immediately with plenty of water.
S37/39- Wear suitable gloves and eye/face protection.
S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S60- This material and its container must be disposed of as hazardous waste.

Contains

:

Product use

: Industrial applications.

Europe inventory

: Not determined.

Black List Chemicals

: Not listed

Priority List Chemicals

: Not listed

Integrated pollution prevention and control list (IPPC) - Air

: Not listed

Integrated pollution prevention and control list (IPPC) - Water

: Not listed

Prior Informed Consent.

:

List of chemicals subject to the international PIC procedure (Part I, II, III)**Other EU regulations**

Additional warning phrases : Warning - this preparation contains a substance not yet tested completely.

International regulations

Chemical Weapons Convention List Schedule I Chemicals : Not listed

Chemical Weapons Convention List Schedule II Chemicals : Not listed

Chemical Weapons Convention List Schedule III Chemicals : Not listed

16. OTHER INFORMATION

Full text of R-phrases referred to in sections 2 and 3 - United Kingdom (UK) : R34- Causes burns.

Full text of classifications referred to in sections 2 and 3 - United Kingdom (UK) : C - Corrosive

Uses

FOR INDUSTRIAL USE ONLY

History

Date of printing : 16/04/2010.

Date of issue/ Date of revision : 16/04/2010.

Date of previous issue : No previous validation.

Version : 1

Prepared by : Johnson Matthey Catalysts Regulatory Affairs Department

Indicates information that has changed from previously issued version.

Notice to reader

Information in this publication is believed to be accurate and is given in good faith, but it is for the Customer to satisfy itself of the suitability for its own particular purpose. Accordingly, Johnson Matthey plc gives no warranty as to the fitness of the Product for any particular purpose and any implied warranty or condition (statutory or otherwise) is excluded except to the extent that such exclusion is prevented by law. Freedom under Patent, Copyright and Designs cannot be assumed.

TRACERCO is a trademark of the Johnson Matthey group of companies.

Annex

Product Name **HYDROCHLORIC ACID 32% (COOGEE CHEMICALS)**

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Supplier Name COOGEE CHEMICALS
Address Cnr of Patterson and Kwinana Beach Roads, Kwinana, WA, AUSTRALIA, 6167
Telephone (08) 9439 8200
Fax (08) 9439 8300
Emergency 1800 800 655
Email businessrelations@coogee.com.au
Web Site http://www.coogee.com.au

Synonym(s) 9178 - PRODUCT CODE • COOGEE HYDROCHLORIC ACID 32% • HCL • HYDROCHLORIC ACID 32% • HYDROCHLORIC ACID 32% (NUFARM) (FORMERLY) • MURIATIC ACID • SPIRITS OF SALTS

Use(s) ACIDIFIER • CHEMICAL INTERMEDIATE • LABORATORY REAGENT • PICKLING AND ANODISING METALS • SCALE REMOVER

2. HAZARDS IDENTIFICATION

CLASSIFIED AS HAZARDOUS ACCORDING TO ASCC CRITERIA

RISK PHRASES

R34 Causes burns.
R37 Irritating to respiratory system.

SAFETY PHRASES

S1/2 Keep locked up and out of reach of children.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S45 In case of accident or if you feel unwell seek medical advice immediately (show the label where possible).
S9 Keep container in a well ventilated place.

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

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

3. COMPOSITION/ INFORMATION ON INGREDIENTS

Ingredient	Formula	CAS No.	Content
HYDROCHLORIC ACID	H-Cl	7647-01-0	32%
WATER	H2O	7732-18-5	remainder

4. FIRST AID MEASURES

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

Inhalation If inhaled, remove from contaminated area. To protect rescuer, use a Full-face Type B (Inorganic and acid gas) respirator or an Air-line respirator (in poorly ventilated areas). Apply artificial respiration if not breathing.

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

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

Advice to Doctor CORROSIVE POISONING TREATMENT: Immediate treatment preferably in a hospital is mandatory. It is also important to attempt to discover the chemical substances ingested. In treating corrosive poisoning, DO NOT INDUCE VOMITING; DO NOT ATTEMPT GASTRIC LAVAGE; and DO NOT ATTEMPT TO NEUTRALISE THE CORROSIVE SUBSTANCE. Vomiting will increase the severity of damage to the oesophagus as the corrosive substance will again come in contact with it. Attempting gastric lavage may result in perforating either the oesophagus or stomach.

Product Name **HYDROCHLORIC ACID 32% (COOGEE CHEMICALS)**

Immediately dilute the corrosive substance by having the patient drink milk or water. If the trachea has been damaged tracheostomy may be required. For oesophageal burns begin broad-spectrum antibiotics and corticosteroid therapy. Intravenous fluids will be required if oesophageal or gastric damage prevents ingestion of liquids. Long-range therapy will be directed toward preventing or treating oesophageal scars and strictures.

First Aid Facilities Eye wash facilities and safety shower should be available.

5. FIRE FIGHTING MEASURES

Flammability	Non flammable. May evolve toxic gases (chlorides) when heated to decomposition. May evolve flammable hydrogen gas when in contact with some metals.
Fire and Explosion	Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.
Extinguishing	Prevent contamination of drains or waterways.
Hazchem Code	2R

6. ACCIDENTAL RELEASE MEASURES

Spillage	Contact emergency services where appropriate. Use personal protective equipment. Clear area of all unprotected personnel. Ventilate area where possible. Contain spillage, then cover / absorb spill with sodium bicarbonate or 50 -50 mixture of sodium carbonate and calcium hydroxide. Collect for complete neutralisation and appropriate disposal.
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7. STORAGE AND HANDLING

Storage	Store in secured, cool, dry, well ventilated area, removed from oxidising agents, alkalis, most metals, alcohols, acids, dinitroaniline, cyanides, sulphides, heat or ignition sources and foodstuffs. Ensure containers are labelled, protected from physical damage and sealed when not in use. Check regularly for leaks or spills. Large storage areas should have appropriate ventilation systems. Also store removed from amines.
Handling	Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

Exposure Stds	Ingredient	Reference	TWA		STEL	
			ppm	mg/m3	ppm	mg/m3
	Hydrogen chloride (Hydrochloric acid)	ASCC (AUS)	5.0	7.5	--	--

Biological Limits No biological limit allocated.

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

PPE Wear splash-proof goggles, a PVC apron, rubber boots, full-length rubber or full-length PVC gloves, a faceshield and coveralls. Wear full-length PVC or full-length rubber gloves, splash-proof goggles, a PVC apron, rubber boots, full PVC coveralls (or better) and a faceshield. Where an inhalation risk exists, wear: a Full-face Type B (Inorganic and Acid gas) or an Air-line respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

Product Name **HYDROCHLORIC ACID 32% (COOGEE CHEMICALS)**

Appearance	COLOURLESS TO SLIGHTLY YELLOW LIQUID	Solubility (Water)	SOLUBLE
Odour	PUNGENT ODOUR	Specific Gravity	1.161
pH	< 1	% Volatiles	100 %
Vapour Pressure	18 mm Hg @ 20°C	Flammability	NON FLAMMABLE
Vapour Density	1.3 (Air = 1)	Flash Point	NOT RELEVANT
Boiling Point	109°C	Upper Explosion Limit	NOT RELEVANT
Melting Point	< -20°C	Lower Explosion Limit	NOT RELEVANT
Evaporation Rate	AS FOR WATER		

10. STABILITY AND REACTIVITY

Chemical Stability Stable under recommended conditions of storage.

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

Material to Avoid Incompatible with oxidising agents (eg. hypochlorites), alkalis (eg. hydroxides), most metals, acids (eg. nitric acid), alcohols, dinitroanilines, cyanides, sulphides and heat sources. Corrodes most materials when moist. Also incompatible with amines.

Decomposition May evolve toxic gases (chlorides) when heated to decomposition.

Hazardous Reactions Polymerization is not expected to occur.

11. TOXICOLOGICAL INFORMATION

Health Hazard Summary Highly corrosive. This product has the potential to cause serious adverse health effects. Use safe work practices to avoid eye or skin contact and inhalation. Over exposure may result in severe skin, eye and respiratory burns with permanent lung and tissue damage. Upon dilution, the potential for adverse health effects may be reduced.

Eye Highly corrosive. Contact may result in irritation, lacrimation, pain, redness, conjunctivitis and corneal burns with possible permanent damage.

Inhalation Toxic - corrosive. Over exposure may result in irritation of the nose and throat, coughing and bronchitis. High level exposure may result in intense thirst, ulceration, lung tissue damage, chemical pneumonitis and pulmonary oedema. Effects may be delayed.

Skin Highly corrosive. Contact may result in irritation, redness, pain, rash, dermatitis, blistering and severe burns. May cause discolouration of the skin. Effects may be delayed.

Ingestion Highly corrosive. Ingestion may result in burns to the mouth and throat, nausea, vomiting, abdominal pain and diarrhoea. Ingestion of large quantities may result in ulceration, unconsciousness, convulsions and death.

Toxicity Data HYDROCHLORIC ACID (7647-01-0)
LC50 (Inhalation): 1108ppm/1 hour (human - respiratory irritation)
LCLo (Inhalation): 1300 ppm/30 minutes (human)
LD50 (Ingestion): 900 mg/kg (rabbit)
LDLo (Ingestion): 81 mg/kg (man)
TCLo (Inhalation): 450 mg/m³/1 hour (pregnant rat - teratogenic effects)

12. ECOLOGICAL INFORMATION

Environment If hydrochloric acid is spilled on soil, it will infiltrate. During its transport through soil, the acid will dissolve some of the soil material, in particular carbonates, and will be neutralised to some degree. However, significant amounts of acid are expected to remain for transport down to groundwater. Toxic to aquatic invertebrates at low levels (LC50: 1.21 ppm/96 hours).

13. DISPOSAL CONSIDERATIONS

Waste Disposal Wearing the protective equipment detailed above, neutralise to pH 6-8 by SLOW addition to a saturated sodium bicarbonate solution or similar basic solution. Dilute with excess water and flush to drain. Waste disposal should only be undertaken in a well ventilated area.

Legislation Dispose of in accordance with relevant local legislation.

Product Name **HYDROCHLORIC ACID 32% (COOGEE CHEMICALS)****14. TRANSPORT INFORMATION**

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

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

15. REGULATORY INFORMATION

Poison Schedule Classified as a Schedule 6 (S6) Poison using the criteria in the Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).

AICS All chemicals listed on the Australian Inventory of Chemical Substances (AICS).

16. OTHER INFORMATION

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

ACIDS: When mixing acids with water (diluting), caution must be taken as heat will be generated which causes violent spattering. Always add a small volume of acid to a large volume of water, NEVER the reverse.

ABBREVIATIONS:

ADB - Air-Dry Basis.

BEI - Biological Exposure Indice(s)

CAS# - Chemical Abstract Service number - used to uniquely identify chemical compounds.

CNS - Central Nervous System.

EINECS - European INventory of Existing Commercial chemical Substances.

IARC - International Agency for Research on Cancer.

M - moles per litre, a unit of concentration.

mg/m³ - Milligrams per cubic metre.

NOS - Not Otherwise Specified.

NTP - National Toxicology Program.

OSHA - Occupational Safety and Health Administration.

pH - relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).

ppm - Parts Per Million.

RTECS - Registry of Toxic Effects of Chemical Substances.

TWA/ES - Time Weighted Average or Exposure Standard.

HEALTH EFFECTS FROM EXPOSURE:

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

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

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

COLOUR RATING SYSTEM: RMT has assigned all Chem Alert reports a colour rating of Green, Amber or Red for the sole purpose of providing users with a quick and easy means of determining the hazardous nature of a product. Safe handling recommendations are provided in all Chem Alert reports so as to clearly identify how users

Product Name **HYDROCHLORIC ACID 32% (COOGEE CHEMICALS)**

can control the hazards and thereby reduce the risk (or likelihood) of adverse effects. As a general guideline, a Green colour rating indicates a low hazard, an Amber colour rating indicates a moderate hazard and a Red colour rating indicates a high hazard.

While all due care has been taken by RMT in the preparation of the Colour Rating System, it is intended as a guide only and RMT does not provide any warranty in relation to the accuracy of the Colour Rating System. As far as is lawfully possible, RMT accepts no liability or responsibility whatsoever for the actions or omissions of any person in reliance on the Colour Rating System.

Report Status This Chem Alert report has been independently compiled by RMT's scientific department utilising the original Material Safety Data Sheet ('MSDS') for the product provided to RMT by the manufacturer. The information is based on the latest chemical and toxicological research and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue.

This Chem Alert report does not constitute the manufacturer's original MSDS and is not intended to be a replacement for same. It is provided to subscribers of Chem Alert as a reference tool only, is not all-inclusive and does not represent any guarantee as to the properties of the product. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer.

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

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Last Reviewed: 16 Jul 2010

Date Printed: 19 Jul 2010

End of Report

SAFETY DATA SHEET

ACETIC ACID

Product Trade Name:

Revision Date: 04-Oct-2016

Revision Number: 30

1. Identification

1.1. Product Identifier

Product Trade Name: ACETIC ACID
Synonyms: None
Chemical Family: Organic acid
Internal ID Code: HM001728

1.2 Recommended use and restrictions on use

Application: Acid
Uses advised against: No information available

1.3 Manufacturer's Name and Contact Details

Manufacturer/Supplier

Halliburton Energy Services Inc.
P.O. Box 1431
Duncan, Oklahoma 73536-0431
Emergency Telephone: 1-866-519-4752 (US, Canada, Mexico) or 1-760-476-3962
Halliburton Energy Services
645 - 7th Ave SW Suite 1800
Calgary, AB
T2P 4G8
Canada

Prepared By

Chemical Stewardship
Telephone: 1-281-871-6107
e-mail: fdunexchem@halliburton.com

1.4. Emergency telephone number

Emergency Telephone Number: 1-866-519-4752 or 1-760-476-3962

2. Hazard Identification

2.1 Classification of the substance or mixture

Skin Corrosion / Irritation	Category 1 - H314
Serious Eye Damage/Irritation	Category 1 - H318
Specific Target Organ Toxicity - (Single Exposure)	Category 3 - H335
Flammable liquids.	Category 3 - H226

2.2. Label Elements

Hazard Pictograms



Signal Word: Danger

Hazard Statements
 H226 - Flammable liquid and vapor
 H314 - Causes severe skin burns and eye damage
 H318 - Causes serious eye damage
 H335 - May cause respiratory irritation

Precautionary Statements

Prevention
 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
 P271 - Use only outdoors or in a well-ventilated area
 P280 - Wear protective gloves/eye protection/face protection

Response
 P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
 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
 P370 + P378 - In case of fire: Use water spray for extinction

Storage
 P403 + P233 - Store in a well-ventilated place. Keep container tightly closed
 P403 + P235 - Store in a well-ventilated place. Keep cool
 P405 - Store locked up

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

2.3 Other hazards which do not result in classification

None known

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - Canada	HMIRA Registry Number	Filing Date	Decision Granted Date
Acetic acid	64-19-7	30 - 40%	Skin Corr. 1A (H314)	Not applicable	Not	Not

			Eye Corr. 1 (H318) STOT SE 3 (H335) Flam. Liq. 3 (H226)		applicable	applicable
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4. First aid measures

4.1. Description of 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. Remove contaminated clothing and launder before reuse.
Ingestion	Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

4.2 Most important symptoms/effects, acute and delayed

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

4.3. Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. Fire-fighting measures

5.1. Extinguishing media

Suitable Extinguishing Media

Water fog, carbon dioxide, foam, dry chemical.

Extinguishing media which must not be used for safety reasons

None known.

5.2 Specific hazards arising from the substance or mixture

Special exposure hazards in a fire

Use water spray to cool fire exposed surfaces. Decomposition in fire may produce harmful gases. Do not allow runoff to enter waterways.

5.3 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. Avoid contact with skin, eyes and clothing. Avoid breathing vapors. Ensure adequate ventilation. Evacuate all persons from the area. See Section 8 for additional information

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. Neutralize with lime slurry, limestone, or soda ash. 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. 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 alkalis. Store away from oxidizers. Store in a cool well ventilated area. Keep container closed when not in use.

8. Exposure Controls/Personal Protection

8.1 Occupational Exposure Limits

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Acetic acid	64-19-7	TWA: 10 ppm	TWA: 10 ppm STEL: 15 ppm

8.2 Appropriate engineering controls

Engineering Controls

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

8.3 Individual protection measures, such as personal protective equipment

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

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): Nitrile gloves. (>= 0.35 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

Full protective chemical resistant clothing.

Eye Protection

Chemical goggles; also wear a face shield if splashing hazard exists.

Other Precautions

Eyewash fountains and safety showers must be easily accessible.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Liquid	Color	Clear
Odor: Acrid	Odor Threshold:	No information available

<u>Property</u> Remarks/ - Method	<u>Values</u>
pH:	2.9
Freezing Point / Range	16 °C / 62 °F
Melting Point / Range	No data available
Boiling Point / Range	117 °C / 244 °F
Flash Point	42 °C / 109 °F PMCC
Flammability (solid, gas)	No data available
Upper flammability limit	16%
Lower flammability limit	5.4%
Evaporation rate	No data available
Vapor Pressure	11.7 mmHg @ 20 C
Vapor Density	No data available
Specific Gravity	1.05
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	60.6 (g/mole)
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 alkalis.

10.6. Hazardous decomposition products

Toxic fumes. Carbon monoxide and carbon dioxide.

11. Toxicological Information

11.1 Information on likely routes of exposure

Principle Route of Exposure Eye or skin contact, inhalation.

11.2 Symptoms related to the physical, chemical and toxicological characteristics

Acute Toxicity

Inhalation	Causes severe respiratory irritation.
Eye Contact	Causes severe eye burns.
Skin Contact	Causes severe burns.
Ingestion	Causes burns of the mouth, throat and stomach.

Chronic Effects/Carcinogenicity Prolonged, excessive exposure may cause erosion of the teeth.

11.3 Toxicity data

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Acetic acid	64-19-7	No data available	1060 mg/kg-bw (rabbit)	11.4 mg/L (rat, 4 h, vapor)

Substances	CAS Number	Skin corrosion/irritation
Acetic acid	64-19-7	Corrosive to skin Extremely corrosive and destructive to tissue Skin, rabbit:

Substances	CAS Number	Serious eye damage/irritation
Acetic acid	64-19-7	Corrosive to eyes Eye, rabbit: Causes serious eye damage

Substances	CAS Number	Skin Sensitization
Acetic acid	64-19-7	Not regarded as a sensitizer.

Substances	CAS Number	Respiratory Sensitization
Acetic acid	64-19-7	No information available

Substances	CAS Number	Mutagenic Effects
Acetic acid	64-19-7	In vivo tests did not show mutagenic effects. In vitro tests did not show mutagenic effects.

Substances	CAS Number	Carcinogenic Effects
Acetic acid	64-19-7	Did not show carcinogenic effects in animal experiments

Substances	CAS Number	Reproductive toxicity
Acetic acid	64-19-7	Did not show teratogenic effects in animal experiments. Animal testing did not show any effects on fertility.

Substances	CAS Number	STOT - single exposure
Acetic acid	64-19-7	May cause respiratory irritation.

Substances	CAS Number	STOT - repeated exposure
Acetic acid	64-19-7	Not applicable due to corrosivity of the substance.

Substances	CAS Number	Aspiration hazard
Acetic acid	64-19-7	Not applicable

12. Ecological Information

12.1. Toxicity

Ecotoxicity effects

Product is not classified as hazardous to the environment.

Product Ecotoxicity Data

No data available

Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Acetic acid	64-19-7	EC50 (72 h) =55.22 mg/L (Anabaena) (Effect concentrations in the aquatic environment are attributable to a	LC50 (96 h) =75 mg/L (Lepomis macrochirus) LC50 (96 h) =251 mg/L (Gambusia affinis) (Effect concentrations in	NOAEC (16 h) =1150 mg/L (Pseudomonas putida)	EC50 (48 h) =65 mg/L (Daphnia magna) (Effect concentrations in the aquatic environment are attributable to a

		change in pH value.)	the aquatic environment are attributable to a change in pH value.)		change in pH value.)
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12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Acetic acid	64-19-7	Readily biodegradable (99% @ 7d)

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Acetic acid	64-19-7	Log Kow =-0.17

12.4. Mobility in soil

Substances	CAS Number	Mobility
Acetic acid	64-19-7	No information available

12.5 Other adverse effects

No information available

13. Disposal Considerations**13.1. Waste treatment methods**

Disposal methods Disposal should be made in accordance with federal, state, and local regulations.
Contaminated Packaging Follow all applicable national or local regulations.

14. Transport Information**Canadian TDG**

UN Number UN2790
UN proper shipping name: Acetic Acid Solution
Transport Hazard Class(es): 8 (3)
Packing Group: III
Environmental Hazards: Not applicable

US DOT

UN Number UN2790
UN proper shipping name: Acetic Acid Solution
Transport Hazard Class(es): 8 (3)
Packing Group: III
Environmental Hazards: Not applicable
Reportable Quantity: RQ (Acetic Acid - 5683 kg.)
NAERG: NAERG 153

IMDG/IMO

UN Number UN2790
UN proper shipping name: Acetic Acid Solution
Transport Hazard Class(es): 8 (3)
Packing Group: III
Environmental Hazards: Not applicable
Reportable Quantity: RQ (Acetic Acid - 5683 kg.)
EMS: EmS F-A, S-B

IATA/ICAO

UN Number UN2790

UN proper shipping name: Acetic Acid Solution
Transport Hazard Class(es): 8 (3)
Packing Group: III
Environmental Hazards: Not applicable
Reportable Quantity: RQ (Acetic Acid - 5683 kg.)

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable
Special Precautions for User None

15. Regulatory Information

Canadian Regulations

Canadian Domestic Substances List (DSL) All components listed on inventory or are exempt.

US Regulations

US TSCA Inventory All components listed on inventory or are exempt.

TSCA Significant New Use Rules - S5A2

Substances	CAS Number	TSCA Significant New Use Rules - S5A2
Acetic acid	64-19-7	Not applicable

EPA SARA Title III Extremely Hazardous Substances

Substances	CAS Number	EPA SARA Title III Extremely Hazardous Substances
Acetic acid	64-19-7	Not applicable

EPA SARA (311,312) Hazard Class

Acute Health Hazard
 Fire Hazard

EPA SARA (313) Chemicals

Substances	CAS Number	Toxic Release Inventory (TRI) - Group I	Toxic Release Inventory (TRI) - Group II
Acetic acid	64-19-7	Not applicable	Not applicable

EPA CERCLA/Superfund Reportable Spill Quantity

Substances	CAS Number	CERCLA RQ
Acetic acid	64-19-7	5000 lb 2270 kg

EPA RCRA Hazardous Waste Classification

If product becomes a waste, it does meet the criteria of a hazardous waste as defined by the US EPA, because of:

Ignitability D001

NFPA Ratings: Health 2, Flammability 2, Reactivity 0
HMIS Ratings: Health 2, Flammability 2, Reactivity 0

16. Other information

Preparation Information

Prepared By Chemical Stewardship
 Telephone: 1-281-871-6107
 e-mail: fdunexchem@halliburton.com

Revision Date: 04-Oct-2016

Reason for Revision SDS sections updated:
2

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 or legend to abbreviations and acronyms used in the safety data sheet

bw – body weight
CAS – Chemical Abstracts Service
EC50 – Effective Concentration 50%
ErC50 – Effective Concentration growth rate 50%
LC50 – Lethal Concentration 50%
LD50 – Lethal Dose 50%
LL50 – Lethal Loading 50%
mg/kg – milligram/kilogram
mg/L – milligram/liter
NIOSH – National Institute for Occupational Safety and Health
NTP – National Toxicology Program
OEL – Occupational Exposure Limit
PEL – Permissible Exposure Limit
ppm – parts per million
STEL – Short Term Exposure Limit
TWA – Time-Weighted Average
UN – United Nations
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/

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

SAFETY DATA SHEET

CITRIC ACID

Revision Date: 14-May-2015

Revision Number: 33

1. Product and Company Identification

Product Name

Product Trade Name: CITRIC ACID

Other Names

Synonyms: None

Product Code: HM004421

Recommended Use

Recommended Use: Scale Remover; pH Control

Uses Advised Against: No information available

Company Name, Address and Contact Details

Manufacturer/Supplier: Halliburton New Zealand
1 Paraite Rd,
Bell Block, New Plymouth
New Zealand Registration No.: 824207

E-Mail address: fdunexchem@halliburton.com

Emergency Telephone Number: +64-6-7559274

New Zealand National Poisons Centre: 0800 764 766 (24 hours)

2. Hazard(s) Identification

Statement of Hazardous Nature

Classified as hazardous according to criteria in the Hazardous Substances (Minimum Degrees of Hazard) Regulation 2001;
Not Classified as dangerous good according to NZS 5433:2012, UN, IMDG or IATA

Classification

6.1E (Inhalation) Acutely Toxic Substances

6.3B Mildly irritating to the skin

8.3A Corrosive to ocular tissue

Hazard and Precautionary Statements

Hazard Pictograms



Signal Word: Danger

Hazard Statements: H316 - Causes mild skin irritation
H318 - Causes serious eye damage
H333 - May be harmful if inhaled

Precautionary Statements

Prevention: P101 - If medical advice is needed, have product container or label at hand

P102 - Keep out of reach of children
 P103 - Read label before use
 P104 - Read Safety Data Sheet before use.
 P280 - Wear eye protection/face protection

Response P304 + P312 - IF INHALED: Call a POISON CENTER or doctor/physician if you feel unwell
 P331 - Do NOT induce vomiting
 P332 + P313 - If skin irritation occurs: Get medical advice/attention
 P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
 P310 - Immediately call a POISON CENTER or doctor/physician

Storage None

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

Contains

Substances	CAS Number	Substance HSNO Classification
Citric acid	77-92-9	6.1E (Inhalation) 6.3B 8.3A

2.3. Other Hazards

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).

3. Composition and Information on Ingredients

Substances	CAS Number	PERCENT (w/w)
Citric acid	77-92-9	60 - 100%

4. First-Aid Measures

Requirements for First Aid or Medical Care

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 15 minutes. Get immediate medical attention.

Skin For skin contact, wipe away excess material with dry towel. Then wash affected areas with plenty of water, and soap if available, for several minutes. Get medical attention if irritation occurs.

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

Workplace Facilities Required

None

Relation to Health Effect**Most Important Symptoms/Effects**

Causes eye irritation. Causes eye irritation

Medical Attention and Special Treatment**Notes to Physician**

Treat symptomatically

5. Fire-fighting measures

Type of Hazard**Flammability Hazard**

Combustible dust when in finely divided and highly suspended state.

5.1. Extinguishing media**Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

Extinguishing media which must not be used for safety reasons

None known.

HAZCHEM Code

Hazchem Code: None Allocated

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.

Special Exposure Hazards

Decomposition in fire may produce harmful gases. Organic dust in the presence of an ignition source can be explosive in high concentrations. Good housekeeping practices are required to minimize this potential.

6. Spillage, Accidental Release Measures**6.1. Personal precautions, protective equipment and emergency procedures**

Use appropriate protective equipment. Avoid creating and breathing dust. Avoid contact with skin, eyes and clothing. Ensure adequate ventilation.

See Section 8 for additional information

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.

6.4. Reference to other sections

See Section 8 and 13 for additional information.

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.

Handling Practices**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

Approved Handlers

This product does NOT require an approved handler.

7.2. Conditions for safe storage, including any incompatibilities

Store in a cool, dry location. Product has a shelf life of 60 months.

Store Site Requirements

No special controls required

Packaging

No special packaging required

8. Exposure Controls and Personal Protection**Workplace Exposure Standards****Exposure Limits**

Substances	CAS Number	New Zealand WES	ACGIH TLV-TWA
Citric acid	77-92-9	Not applicable	Not applicable

Engineering Controls**Engineering Controls** Use in a well ventilated area.**Personal Protective Equipment (PPE)****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

Hand Protection	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. Dust/mist respirator. (N95, P2/P3)
Skin 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): Nitrile gloves. (>= 0.35 mm thickness)
Eye Protection	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.
Other Precautions	Normal work coveralls.
Hygiene Measures	Chemical goggles; also wear a face shield if splashing hazard exists. None known. Handle in accordance with good industrial hygiene and safety practice.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Solid	Color: White
Odor: Odorless	Odor Threshold: No information available

Property	Values
Remarks/ - Method	
pH:	1.8
Freezing Point/Range	No data available
Melting Point/Range	153 °C / 307.4 °F
Boiling Point/Range	Decomposes
Flash Point	345 °C / 653 °F
upper flammability limit	65
lower flammability limit	%
Evaporation rate	No data available
Vapor Pressure	0.00000221 Pa
Vapor Density	No data available
Specific Gravity	1.66
Water Solubility	Soluble in water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	-1.61 to -1.80
Autoignition Temperature	1010 °C / 1832 °F
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	192.12
VOC Content (%)	No data available

10. Stability and Reactivity

10.2. Chemical Stability

Stable

10.4. Conditions to Avoid

None anticipated

10.5. Incompatible Materials

Strong alkalis.

10.6. Hazardous Decomposition Products

Carbon monoxide and carbon dioxide.

Hazardous Reactions

Hazardous Polymerization: Will Not Occur

11. Toxicological Information

Health Effect from Likely Routes of Exposure

Acute Toxicity

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

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

Toxicity Data

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Citric acid	77-92-9	5400 mg/kg (Rat) 5790 mg/kg (Mouse) 11,700 mg/kg (Rat)	> 2000 mg/kg	No data available

Substances	CAS Number	Skin corrosion/irritation
Citric acid	77-92-9	Not irritating to skin in rabbits.

Substances	CAS Number	Eye damage/irritation
Citric acid	77-92-9	Causes severe eye irritation.

Substances	CAS Number	Skin Sensitization
Citric acid	77-92-9	Patch test on human volunteers did not demonstrate sensitization properties

Substances	CAS Number	Respiratory Sensitization
Citric acid	77-92-9	No information available

Substances	CAS Number	Mutagenic Effects
Citric acid	77-92-9	Did not show mutagenic effects in animal experiments

Substances	CAS Number	Carcinogenic Effects
Citric acid	77-92-9	Did not show carcinogenic effects in animal experiments

Substances	CAS Number	Reproductive toxicity
Citric acid	77-92-9	Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments.

Substances	CAS Number	STOT - single exposure
Citric acid	77-92-9	No data of sufficient quality are available.

Substances	CAS Number	STOT - repeated exposure
Citric acid	77-92-9	No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	Aspiration hazard
Citric acid	77-92-9	No adverse health effects are expected from swallowing.

12. Ecological Information

12.1. Toxicity Ecotoxicity Effects

Product Ecotoxicity Data

No data available

Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Citric acid	77-92-9	NOEC (8d) 425 mg/L (cell density) (Scenedesmus quadricauda) LOEC (8d) >80 mg/L (Microcystis aeruginosa)	LC50 (96h) 1516 mg/L (Lepomis macrochirus) LC50 (48h) 440 mg/L (Leuciscus idus melanotus) LC50 (96h) >100 mg/L (Pimephales promelas)	TT (72h) 485 mg/L (Entosiphon sulcatum)	TLM96 100-330 ppm (Crangon crangon) EC50 (24h) 1535 mg/L (Daphnia magna) LC50 (48h) 160 mg/L (Daphnia magna) EC50 (48h) >50 mg/L (Daphnia magna)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Citric acid	77-92-9	Readily biodegradable (97% @ 28d)

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Citric acid	77-92-9	-1.61 to -1.80

12.4. Mobility in soil

Substances	CAS Number	Mobility
Citric acid	77-92-9	No information available

Ecotoxicity Hazard Statements

None known

12.6. Other adverse effects

Endocrine Disruptor Information

This product does not contain any known or suspected endocrine disruptors

13. Disposal Considerations

13.1. Waste treatment methods

Disposal Method

Contaminated Packaging

Bury in a licensed landfill according to federal, state, and local regulations.

Follow all applicable national or local regulations. Contaminated packaging may be disposed of by: rendering packaging incapable of containing any substance, or treating packaging to remove residual contents, or treating packaging to make sure the residual contents are no longer hazardous, or by disposing of packaging into commercial waste collection.

14. Transport Information

IMDG/IMO

UN Number:	Not restricted
UN Proper Shipping Name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

NZ 5433.1999

UN Number:	Not restricted
UN Proper Shipping Name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable

IATA/ICAO

UN Number: Not restricted
UN Proper Shipping Name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable

Special Precautions for User: None

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

15. Regulatory Information

New Zealand Inventory of Chemicals All components listed on inventory or are exempt.

Group Name Not Applicable
ERMA Register Approval Number HSR003138

HSNO Controls Refer to the NZ EPA website for more information: <http://www.epa.govt.nz>

Approved Handlers Not Applicable

Poisons Schedule: None Allocated

16. Other information

The following sections have been revised since the last issue of this SDS

Not applicable

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 literature references and sources for data

www.ChemADVISOR.com/

OSHA

ECHA C&L

NZ CCID

Revision Date: 14-May-2015

Revision Note Revision Note

SDS sections updated:

2

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

SAFETY DATA SHEET

SODA ASH F.G.

Revision Date: 27-Jun-2016

Revision Number: 23

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), Non-Dangerous Goods according to the criteria of ADG.

1.1. Product Identifier

Product Name SODA ASH F.G.

Other means of Identification

Synonyms None
Hazardous Material Number: HM003760

Recommended use of the chemical and restrictions on use

Recommended Use pH Control
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 (08) 9455 8300
Fax Number: 61 (08) 9455 5300

Product Emergency Telephone

Australia: + 61 1 800 686 951
Papua New Guinea: + 61 1 800 686 951
NewZealand: +64 800 451719

Fire, Police & Ambulance - Emergency Telephone

Australia: 000
Papua New Guinea: 000
New Zealand: 111

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), Non-Dangerous Goods according to the criteria of ADG.

Classification of the hazardous chemical

Serious Eye Damage/Irritation

Category 2 - H319

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

Warning

Hazard Statements:

H319 - Causes serious eye irritation

Precautionary Statements**Prevention**

P264 - Wash face, hands and any exposed skin thoroughly after handling

P280 - Wear eye protection/face protection

Response

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing

P337 + P313 - If eye irritation persists: Get medical advice/attention

Storage

None

Disposal

None

Contains**Substances**

Sodium carbonate

CAS Number

497-19-8

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).

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
Sodium carbonate	497-19-8	60 - 100%	Eye Irrit. 2 (H319)

4. First aid measures

Description of necessary first aid measures**Inhalation**

If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Eyes

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

Skin

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

Ingestion

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

Symptoms caused by exposure

Causes eye irritation

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. 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 away from acids. Store in a cool, dry location. 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
Sodium carbonate	497-19-8	Not applicable	Not applicable

Appropriate engineering controls

Engineering Controls

Use in a well ventilated area. Localized ventilation should be used to control dust levels.

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. 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	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:	Powder	Color	White to off white
Odor:	Odorless	Odor Threshold:	No information available

<u>Property</u> Remarks/ - Method	<u>Values</u>
pH:	11.5
Freezing Point / Range	No data available
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	2.5
Water Solubility	Partly soluble
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	105.99 g/mol
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

Strong acids.

10.6. Hazardous decomposition products

Carbon monoxide and carbon dioxide.

11. Toxicological Information

Information on routes of exposure

Principle Route of Exposure Eye or skin contact, inhalation.

Symptoms related to exposure

Most Important Symptoms/Effects

Causes eye irritation

Numerical measures of toxicity

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sodium carbonate	497-19-8	4090 mg/kg (Rat) 2800 mg/kg (Rat)	2210 mg/kg (Mouse) > 2000 mg/kg (Rabbit)	2.3 mg/L (Rat) 2h

Immediate, delayed and chronic health effects from exposure

Inhalation None known.
Eye Contact May cause eye irritation.
Skin Contact None known.
Ingestion 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

None known.

Data limitations

No data available

Substances	CAS Number	Skin corrosion/irritation
Sodium carbonate	497-19-8	Non-irritating to the skin

Substances	CAS Number	Serious eye damage/irritation
Sodium carbonate	497-19-8	Irritating to eyes

Substances	CAS Number	Skin Sensitization
Sodium carbonate	497-19-8	Not classified

Substances	CAS Number	Respiratory Sensitization
Sodium carbonate	497-19-8	No information available

Substances	CAS Number	Mutagenic Effects
Sodium carbonate	497-19-8	In vivo tests did not show mutagenic effects.

Substances	CAS Number	Carcinogenic Effects
Sodium carbonate	497-19-8	No information available

Substances	CAS Number	Reproductive toxicity
Sodium carbonate	497-19-8	Did not show teratogenic effects in animal experiments.

Substances	CAS Number	STOT - single exposure
Sodium carbonate	497-19-8	No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	STOT - repeated exposure
Sodium carbonate	497-19-8	No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	Aspiration hazard
Sodium carbonate	497-19-8	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
Sodium carbonate	497-19-8	EC50 242 mg/L (Nitzschia)	TLM24 385 mg/L (Lepomis macrochirus) LC50 310-1220 mg/L (Pimephales promelas) LC50 (96h) 300 mg/L (Lepomis macrochirus)	No information available	EC50 265 mg/L (Daphnia magna) EC50 (48h) 200 – 227 mg/L (Ceriodaphnia sp.)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Sodium carbonate	497-19-8	The methods for determining biodegradability are not applicable to inorganic substances.

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Sodium carbonate	497-19-8	No information available

12.4. Mobility in soil

Substances	CAS Number	Mobility
Sodium carbonate	497-19-8	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.

Disposal of any contaminated packaging

Follow all applicable national or local regulations.

Environmental regulations

Not applicable

14. Transport Information

Transportation Information

UN Number	Not restricted
UN proper shipping name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

Special precautions during transport

None

HazChem Code

None Allocated

15. Regulatory Information**Safety, health and environmental regulations specific for the product****International Inventories****Australian AICS Inventory**

All components 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

None Allocated

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

Does not apply

Stokholm 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:** 27-Jun-2016**Revision Note**

SDS sections updated: 2

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

H319 - Causes serious eye irritation

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



Safety Data Sheet

BONDERITE S-AD 85 ACID INHIBITOR ADDITIVE known as
RODINE 85 20LT

Page 1 of 7

MSDS-No. : 319615

V001.4

Date of issue: 07.07.2015

Section 1. Identification of the substance/preparation and of the company/undertaking

Product name: BONDERITE S-AD 85 ACID INHIBITOR ADDITIVE known as RODINE 85
20LT

Intended use: Acid inhibitor additive

Supplier:
Henkel Australia Pty Ltd
135-141 Canterbury Road
Kilsyth, Victoria, 3137
Australia

Phone: +61 (3) 9724 6444

Emergency information: 24 HOUR EMERGENCY CONTACT NUMBER: 1800 032 379

Section 2. Hazards identification

Classification of the substance or mixture

Hazardous according to the criteria of Safe Work Australia.

GHS Classification:

<u>Hazard Class</u>	<u>Hazard Category</u>	<u>Route of Exposure</u>
Acute toxicity	Category 4	Oral
Skin corrosion	Category 1	
Serious eye damage/eye irritation	Category 1	
Skin sensitizer	Category 1	
Carcinogenicity	Category 2	
Chronic hazards to the aquatic environment	Category 3	

Hazard pictogram:



Signal word:

Danger

Hazard statement(s):	H302 Harmful if swallowed. H314 Causes severe skin burns and eye damage. H317 May cause an allergic skin reaction. H351 Suspected of causing cancer. H412 Harmful to aquatic life with long lasting effects.
Precautionary Statement(s):	
Prevention:	P280 Wear eye protection/face protection. P280 Wear protective gloves. P261 Avoid breathing dust/fume/gas/mist/vapours/spray. P264 Wash hands thoroughly after handling. P272 Contaminated work clothing should not be allowed out of the workplace. P202 Do not handle until all safety precautions have been read and understood. P281 Use personal protective equipment as required. P201 Obtain special instructions before use.
Response:	P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. P305+P351+P338+P315 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to remove. Continue rinsing. Get immediate medical advice/attention. P308+P313 IF exposed or concerned: Get medical advice/attention. P333+P313 If skin irritation or rash occurs: Get medical advice/attention. P363 Wash contaminated clothing before reuse.
Storage:	P405 Store locked up.
Disposal:	P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations.

Classification of material C - Corrosive Xi - Irritant Xn - Harmful

Risk phrases:

R20/21/22 Harmful by inhalation, in contact with skin and if swallowed.
R40 Limited evidence of a carcinogenic effect.
R41 Risk of serious damage to eyes.
R34 Causes burns.
R43 May cause sensitisation by skin contact.

Safety phrases:

S23 Do not breathe vapour.
S24/25 Avoid contact with skin and eyes.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S27/28 After contact with skin, take off immediately all contaminated clothing, and wash the skin immediately with plenty of water and soap.
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).
S60 This material and its container must be disposed of as hazardous waste.
S7/9 Keep container tightly closed and in a well-ventilated place.

Dangerous Goods information:

Classified as Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Code).

Signal word:

HAZARDOUS

Section 3. Composition / information on ingredients**General chemical description:** Mixture**Identity of ingredients:**

Chemical ingredients	CAS-No.	Proportion
Prop-2-yn-1-ol	107-19-7	< 10 %
1,3-Diethyl-2-thiourea	105-55-5	< 5 %
	68411-63-2	10- <= 30 %
Remainder not hazardous including water~		60 %

Section 4. First aid measures

Ingestion: Do not induce vomiting.
Call a physician immediately.

Skin: In case of contact, immediately remove contaminated clothing and flush skin with copious amounts of water.
Seek medical advice.

Eyes: Immediately flush eyes with water for at least 15 minutes, while holding eyelids open.
Seek medical attention at once.

Inhalation: Move to fresh air, consult doctor if complaint persists.

First Aid facilities: Eye wash and safety shower

Medical attention and special treatment: Treat symptomatically.

Section 5. Fire fighting measures

Suitable extinguishing media: Water fog.
Dry chemical.
Carbon dioxide.

Decomposition products in case of fire:: In case of fire toxic gases can be released.
Chlorine.
Oxides of nitrogen.
Oxides of sulfur.

Special protective equipment for fire-fighters: Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear.

Hazchem code: 2X

Section 6. Accidental release measures

Personal precautions: See advice in section 8
Avoid skin and eye contact.

Environmental precautions: Do not empty into drains / surface water / ground water.

Clean-up methods: Remove with liquid-absorbing material (sand, peat, sawdust).
Scrape up spilled material and place in a closed container for disposal.

Dispose of contaminated material as waste according to Section 13.

Section 7. Handling and storage

Precautions for safe handling: See advice in section 8
Ensure that workrooms are adequately ventilated.
Avoid breathing vapors or mists of this product.

Conditions for safe storage: Store in a cool, dry, well-ventilated area.
Keep away from heat and direct sunlight.
Must be stored in the facility for the dangerous goods

Section 8. Exposure controls / personal protection

National exposure standards:

Ingredient [Regulated substance]	form of exposure	TWA (ppm)	TWA (mg/m3)	Peak Limit. (ppm)	Peak Limit. (mg/m3)	STEL (ppm)	STEL (mg/m3)
PROPARGYL ALCOHOL 107-19-7		1	2.3	-	-	-	-

Engineering controls: Provide local and general exhaust ventilation to effectively remove and prevent buildup of any vapors or mists generated from the handling of this product.

Eye protection: Wear chemical goggles and face shield.

Skin protection: Use of protective coveralls and long sleeves is recommended.
Recommended gloves include butyl rubber and neoprene.

Respiratory protection: If inhalation risk exists, wear a respirator or air supplied mask complying with the requirements of AS/NZS 1715 and AS/NZS 1716.

Section 9. Physical and chemical properties

Appearance: Red-brown
dark

Odor: characteristic

pH: 0.3

Density: 1.05 - 1.06 g/cm3

Solubility in water: Miscible

Section 10. Stability and reactivity

Stability: Stable under normal conditions of temperature and pressure.

Conditions to avoid: Heat, flames, sparks and other sources of ignition.

Incompatible materials:	Alkalis. Alkali metals. Fluorine. Organic materials. Oxidizing agents.
Hazardous decomposition products:	In case of fire toxic gases can be released. Chlorine. Oxides of nitrogen. Oxides of sulfur.

Section 11. Toxicological information

Health Effects:	
Ingestion:	If ingested, severe burns of the mouth and throat may occur, as well as perforation of the esophagus and the stomach. Ingestion can cause gastrointestinal irritation, nausea, vomiting and diarrhea.
Skin:	Causes burns. May cause skin sensitization.
Eyes:	Contact with the eyes can cause severe burns and permanent eye damage.
Inhalation:	May cause respiratory tract irritation. Excessive inhalation of this material causes headache, dizziness, nausea and incoordination.
Aggravated med. condition:	Pre-existing skin disorders.
Toxicity data:	No data available.

Section 12. Ecological information

General ecological information:	Do not empty into drains / surface water / ground water., Harmful to aquatic organisms., May cause long-term adverse effects in the aquatic environment.
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Toxicity:

Hazardous components CAS-No.	Value type	Value	Acute Toxicity Study	Exposure time	Species	Method
Prop-2-yn-1-ol 107-19-7	LC50	4.6 mg/l	Fish	96 h	Leuciscus idus	DIN 38412-15
Prop-2-yn-1-ol 107-19-7	EC50	11 mg/l	Daphnia	24 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Prop-2-yn-1-ol 107-19-7	EC50	> 18 mg/l	Algae	8 d	Scenedesmus quadricauda	OECD Guideline 201 (Alga, Growth Inhibition Test)
Prop-2-yn-1-ol 107-19-7	EC0	< 18 mg/l	Algae	8 d	Scenedesmus quadricauda	OECD Guideline 201 (Alga, Growth Inhibition Test)
1,3-Diethyl-2-thiourea 105-55-5	EC50	56 mg/l	Daphnia	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)

Persistence and degradability:

Hazardous components CAS-No.	Result	Route of application	Degradability	Method
Prop-2-yn-1-ol 107-19-7		aerobic	37 %	EU Method C.4-E (Determination of the "Ready" Biodegradability Closed Bottle Test)
1,3-Diethyl-2-thiourea 105-55-5		aerobic	3 %	OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)

Bioaccumulative potential / Mobility in soil:

Hazardous components CAS-No.	LogKow	Bioconcentration factor (BCF)	Exposure time	Species	Temperature	Method
Prop-2-yn-1-ol 107-19-7	-0.35				25 °C	OECD Guideline 107 (Partition Coefficient (n-octanol / water), Shake Flask Method)
1,3-Diethyl-2-thiourea 105-55-5	0.57					OECD Guideline 107 (Partition Coefficient (n-octanol / water), Shake Flask Method)

Section 13. Disposal considerations

- Waste disposal of product:** Collection and delivery to recycling enterprise or other registered elimination institution.
- Recommended cleanser:** Clean the packaging with water.
- Disposal for uncleaned package:** Packaging that cannot be cleaned are to be disposed of in the same manner as the product.

Section 14. Transport information**Road and Rail Transport:**

Dangerous Goods information: Classified as Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Code).

UN no.: 3265

Proper shipping name: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Propargyl alcohol)

Class or division: 8

Packing group: III

Hazchem code: 2X

Emergency information: Refer to the Dangerous Goods - Initial Emergency Response Guide HB 76.

Marine transport IMDG:

UN no.: 3265

Proper shipping name: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Propargyl alcohol)

Class or division: 8

Packing group: III

EmS: F-A ,S-B

Seawater pollutant: -

Air transport IATA:

UN no.:	3265
Proper shipping name:	Corrosive liquid, acidic, organic, n.o.s. (Propargyl alcohol)
Class or division:	8
Packing group:	III
Packing instructions (passenger)	852
Packing instructions (cargo)	856

Section 15. Regulatory information

SUSMP Poisons Schedule None

Section 16. Other information

Abbreviations/acronyms: ADGC - Australian Dangerous Goods Code
STEL - Short term exposure limit
TWA - Time weighted average

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