Buru Energy

Ungani Production Facility Commissioning and Operations Environment Plan

Summary Document

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HSE

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1 Introduction

Buru Energy (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, production, care and maintenance, decommissioning and rehabilitation operations at the Ungani Facility (the Activity).

This Summary Document summarises the operations and mitigation and management measures in the Environment Plan.

1.1 Contact Details

Development Manager
Buru Energy Limited
Phone: +61 8 9215 1800
Email: info@buruenergy.com

2 Overview of Activity

The characteristics of the wells are provided in Table 1. The Ungani Central, Ungani 4 and Ungani East well sites host multiple wells.

Table 1 Characteristics of the Ungani Facility wells

		Location (m)			
Well	**Date Drilled**	**Easting**	**Northing**	**Depth**	**Well Site Dimensions**
Ungani 1ST1	Aug. – Sep. 2011	517,375	8,010,864	2,324 m	Ungani Central Approx. 250 x 150 m
Ungani 2	Nov. – Jan. 2012	517,365	8,010,848	2,800 m	
Ungani 6H	Mar. – Sep. 2019	517,373	8,011,024	2,362 m	
Ungani 3	Jan. – Mar. 2014	518,470	8,011,035	2,284 m	Ungani East Approx. 150 x 160 m
Ungani 5	Dec. 2017	518,495	8,011,035	2,239 m	
Ungani 4ST1	Oct. – Nov. 2017 Sep. – Dec. 2018	517,096	8,010,450	2,249 m	Ungani 4 Approx. 175 x 120 m
Ungani 7H	Apr. – Sept 2019	517,057	8,010,453	2,527 m	
Ungani 8H	Dec. 2021 – Feb. 2022	517,090	8,011,512	2,500 m	Approx. 140 x 140 m
Ungani Far West 1	Nov. 2015 – Feb. 2016	514,225	8,008,842	2,400 m	Approx. 130 x 170 m
Ungani North 1	July – Aug. 2012 Oct. – Dec. 2012	517,415	8,017,229	3,701 m	Approx. 100 x 140 m
Ungani West 1	Oct. – Nov. 2018	515,937	8,010,322	2,400 m	Approx. 110 x 140 m

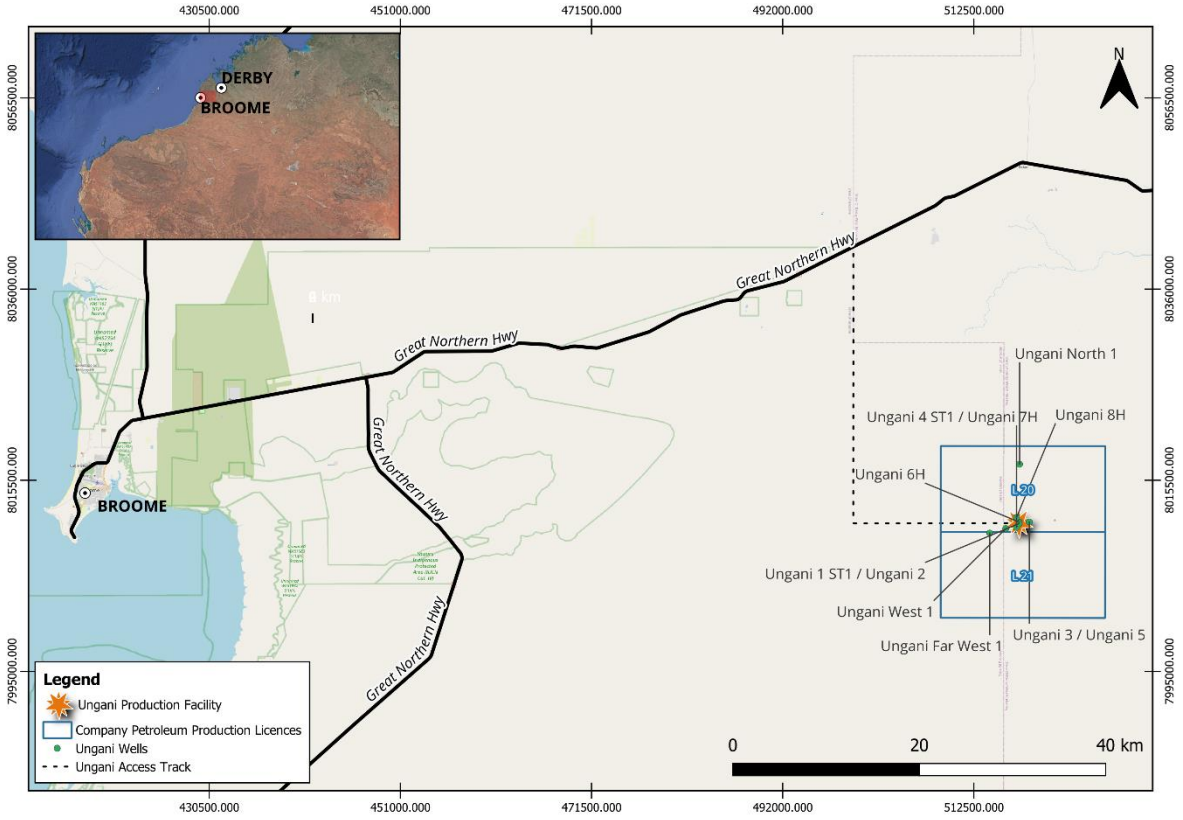


Figure 1 Location of the Ungani Facility.

2.1 Timing

Production from the Facility under licence has been occurring since July 2015 when the L 20 and L 21 production licences were granted. Production operations are anticipated to continue for approximately five years from restart.

The Activity will occur year-round however may be suspended for periods (e.g. during maintenance or during weather events such as cyclones).

2.2 Mobilisation

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

2.3 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: production wells are flowed 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.

2.4 Production Process

Depending on reservoir status, reservoir fluids may flow freely to surface or pumps are used as artificial lift into separation tanks. 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. Any remaining gas in the crude oil is vented from each tank. The oil is then pumped to the load-out facility.

2.4.1 Produced Water Management

Produced water from the Ungani Facility is physically separated from the oil stream by the separation process. Oil that may be recovered by this process is returned via a flowline to the stock tanks. The primary method for disposal of produced water will be via reinjection into the Ungani 3 or Ungani West 1 wells. The Ungani Central turkeys nest may also be used for temporary storage of produced fluid.

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.

2.5 Inspection and Maintenance

Inspection and maintenance operations will be ongoing throughout all phases of the Activity.

Maintenance operations include, but are not limited to, routine operations such as generator maintenance, and greasing and topping up oil on rotating equipment.

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.

2.6 Waste Management

All putrescible wastes will be stored at the Ungani Facility camp site 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, recyclable and industrial) will be removed from the Ungani Production Facility and disposed offsite by an approved waste disposal contractor.

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

2.7 Decommissioning and Rehabilitation

Following the completion of commissioning or maintenance operations, all Activity specific machinery and equipment will be removed from the Activity area. Progressive decommissioning will be ongoing as necessary.

The Company's base case for decommissioning is the complete removal of all infrastructure. The Company will continue with progressing decommissioning and rehabilitation operations, and proceed to full decommissioning of the Facility once the end of field life has been reached. Decommissioning and rehabilitation will be undertaken in accordance with the Environment Plan and the Company *Rehabilitation Management Procedure* (HSE-PRO-035). To meet the Company's environmental objective for rehabilitation, completion criteria to measure longer term success of rehabilitation have been described in the Environment Plan.

3 Environmental Impacts and Management Measures

The Activity will be undertaken at the existing Ungani Production Facility and its associated satellite well sites as presented in Table 1. A summary of the existing environmental characteristics of the surrounding 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 the environmental risks.

Table 2 Summary of the existing environment, potential impacts and management approach with the Activity.

Environmental Characteristic	Description	Potential Impacts	Key Management Measures	Risk	Implementation Strategy
Surface and groundwater	The Fitzroy River itself is located 53 km from the Ungani Facility. There is an area subject to inundation during the wet season around 800 m east of the Activity area. The surface potable aquifer in the region of the Ungani oilfield is the Wallal Sandstone. Depth to groundwater is approximately 35 m.	Disturbance of groundwater dependant ecosystems. Local groundwater drawdown caused by extraction above licensed allocation. Contamination of surface and/or ground water.	• Vehicles limited to the Activity area, travel in accordance with the *Travel Management Procedure* (HSE-PRO-002). • Weekly inspection of the Activity area for signs of erosion and sedimentation. • Fencing of the designated sewage disposal area and inspection of area. • Sedimentation or erosion will be addressed if it is severe and at risk of impacting on adjacent vegetation. • Use of the pre-existing 'Ring Road' for vehicle access at a section of the Ungani access track prone to flooding to minimise damage to track. • Operations with spill risks undertaken in bunded areas or over drip trays. • Waste will be managed in accordance with the *Waste Management Procedure* (HSE-PR-005). • 500 mm freeboard maintained on excavations to prevent overtopping. • Dangerous and hazardous goods will be stored within bunded areas. • Dangerous goods labelled in accordance with regulations and SDS. • Non-hazardous chemicals and bulk dry products will be stored in dedicated areas, with cover from rain as required. • Refuelling of vehicles in accordance with the *Refuelling Procedure* (HSE-PRO-011). • Hydrocarbon load-out operations will be within the designated bunded area. • All well activities will be managed in accordance with approved Well Management Plans (WMPs). • Periodic well integrity testing and inspection and appropriate maintenance/rectification procedures in accordance with the approved WMPs. • Wells have at least two barriers between the formation and potential aquifers. • All chemicals fully disclosed in accordance with regulation 15(9) of the *Petroleum and Geothermal Energy Resources (Environment) Regulations 2012*. • Well maintained machinery, vehicles and equipment. • Testing and inspections undertaken on tanks and steel flowlines in accordance with relevant asset management plans. • Emergency shutdown measures.	Given the mitigation and management measures that will be implemented, surface and ground water contamination is considered unlikely. Changes to groundwater hydrology is also considered unlikely.	• Person In Charge (PIC) to ensure no personnel or vehicle access outside of the Activity area. • PIC to ensure fences are maintained and gates closed. • PIC to ensure wastes are appropriately stored prior to disposal. • PIC to complete weekly operational checklist. • PIC to ensure all dangerous goods or hazardous substances are transported, stored and handled appropriately to prevent spills. • PIC to ensure all physical containment measures are well maintained. • PIC to ensure well maintained machinery, vehicles and equipment.
Landforms and soil	The geology and soils characteristic of the Dampierland bioregion are comprised of extensive riverine plains with grey and brown cracking clays; extensive sandplains or red earthy sands, low uplands of sandstone and limestone with shallow stony soils. Specifically, the Activity area is located within areas of red deep sands. Landscape elements (landforms) surrounding the Activity area consist of alluvial flood plains, sandy sheets, and hills with rocky outcrop, amongst others.	Severe soil erosion or sedimentation. Contamination of soil.		Through the implementation of management measures, it is unlikely that the Activity will have a significant impact on landforms or soil.	

Environmental Characteristic	Description	Potential Impacts	Key Management Measures	Risk	Implementation Strategy
			• Supervision of well operations by personnel with well control certification. • Containment, clean-up and remediation if required of a spill in accordance with the *Ungani Production Facility Spill Response Plan*. • Monitoring of groundwater. • Bore water for the Activities extracted in accordance with the Company's groundwater licences as administered by DWER. • Meter installed on the Ungani extraction bore. • Volume of water extracted for the Activities will be recorded and reported to DWER.		
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 Acacia". The vegetation system associations present around the Activity area are not analogous to Threatened Ecological Communities or Priority Ecological Communities. Two Priority 3 flora species have been recorded in the vicinity of the Activity area: *Goodenia byrnesii*, *Goodenia Crenata*, and *Pterocaulon intermedium* (now de-listed)	Introduction / spread of weed species, including Declared Pests and WoNS. Unintentional clearing of native vegetation outside of Activity area. Disturbance / loss of vegetation, conservation significant flora species or fauna habitat. Inadequate rehabilitation of Activity area.	• Earthmoving machinery and equipment inspected and cleaned prior to arrival at the Activity area. • Externally sourced gravel/fill will be weed free from an external supplier. • Prior to excavating gravel from a borrow pit, vegetation and topsoil will be removed and stockpiled separately. • Clearing will be restricted to re-clearing of previously disturbed areas e.g. firebreaks. • Vehicles and personnel access limited to the Activity area. • HSE induction for all operational personnel. • Vehicles comply with the *Travel Management Procedure* (HSE-PRO-002). • Vehicles and machinery will be well maintained. • Any weeds identified duringinspections will be removed by hand or sprayed. • Excavated soil for flowline trenching at track crossings will be stockpiled adjacent to the trench and used to re-fill the trench once the flowline has been laid. • Waste managed in accordance with the *Waste Management Procedure* (HSE-PRO-005). • Firebreaks will be inspected and maintained. • Smoking restricted to designated smoking areas. • Drivers being alert for cattle when driving. • Cellars will be fenced and covered with grating or similar to prevent fauna ingress. • Fauna egress paths and fencing surrounding open and lined excavations will be visually inspected	Through the implementation of management measures, it is unlikely that the Activity will have a significant impact on vegetation, flora or conservation significant fauna species. The Company commits to rehabilitating the Activity areas upon completion of decommissioning operations.	• PIC to ensure well maintained firebreaks and firefighting equipment, regular servicing of machinery and equipment, and limiting smoking to designated areas. • PIC to ensure no personnel or vehicle access outside of the Activity area. • PIC to ensure all earthmoving machinery / equipment is checked prior to entering the Activity area. • Weekly inspection of the Activity area. • PIC to ensure lighting is minimum for safe operations. • Weekly inspection of fauna egress paths and fencing.
Fauna	The only of fauna of conservation significance sighted during surveys in the vicinity of the Activity area were the Australian Bustard (*Ardeotis australis*, P4 now de-listed species), Black Bittern (*Ixobrychus flavicollis*, P3 now de-listed species), Grey Falcon (*Falco hypoleucos*, Vulnerable), and the Rainbow bee-eater (*Merops ornatus*, Migratory). No significant fauna habitat is present around the Activity area.	Attraction or injury of fauna from waste generation. Death or injury of conservation significant fauna. Death or injury of other fauna including cattle. Light, noise or dust generation impacting sensitive fauna.			

Environmental Characteristic	Description	Potential Impacts	Key Management Measures	Risk	Implementation Strategy
			and maintained to prevent macro fauna entering. • Lighting at the Facility and camp will be kept to a minimum required for safe operations and will face inwards to minimise light spill. • Night-time operations will be limited. • All work programs will include demobilisation requirements. • Firefighting equipment available. • Flame detection equipment installed and linked to the emergency shutdown system. • Permit to Work system.		
Cultural heritage and local community	The Activity is located within a sparsely populated region with limited settlement, transport or communications infrastructure. Land use is dominated by open range pasture grazing of beef stock. The townships of Derby to the northeast and Broome to the west are the largest population centres in the vicinity of the Activity area. The nearest Homestead is Yakka Munga approximately 30 km east of the Activity area. Heritage surveys and clearances for the Ungani Facility and associated satellite well sies have been undertaken by representatives of the Native Title parties.	Light, noise or dust generation impacting landholders. Death or injury of other fauna including cattle. Damage to culturally significant site / object.	• Clearing will be restricted to re-clearing of previously disturbed areas. • HSE Induction for all operational personnel includes restriction of no vehicle or personnel access outside of the cleared Activity area. • Indigenous Land Use Agreements (ILUAs) signed with relevant Traditional Owner groups for the Ungani Facility. • In the event a potential heritage artefact is discovered during the activities, operations in the immediate area will be stopped and Traditional Owners will be contacted. • Ongoing consultation with local landholders and other stakeholders including regular notice/updates until completion of the Activity. • Consultation with relevant landholders regarding livestock management and mustering. • Station gates are left as found (open or closed) to minimise disturbance on pastoral operations. • Vehicles will comply with the *Travel Management Procedure* (HSE-PRO-002). • Dust suppression measures, such as water spraying will be implemented, as required. • All Company emissions reported in accordance with relevant legislation. • All wastes removed from the Activity area for disposal at a licensed facility. • Vehicle and personnel activity limited to the Activity area.	Given the implementation of the management measures, impacts on cultural heritage and the community are unlikely.	• PIC to ensure no disturbance outside of Activity area. • Weekly inspection for impacts outside of the Activity area.

3.1 Communication and Consultation

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:

- Nyikina Mangala Traditional Owners;
- Yawuru Traditional Owners;
- Yakka Munga Station;
- Department of Water and Environmental Regulation;
- Roebuck Plains Station;
- Karajarri Yanja Traditional Owners;
- Department of Fire and Emergency Services; 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 Full Chemical Disclosure

CHEMICAL DISCLOSURE FOR BURU ENERGY

A. SYSTEM DETAILS:

OPERATOR:	**Buru Energy**
PROJECT / WELL:	**Ungani**
SYSTEM:	**Produced Water Disposal**
TOTAL VOLUME OF SYSTEM:	**Approx. 1,000 kL/day**

B. PRODUCT LIST:

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached
(SCAL16109A - Updated name from Gyptron IT-109)	Champion X	Scale Inhibitor	This product contains organic components. **AQUATIC TOXICOLOGY** • **COMPONENT 1 (60 – 100% concentration)** Natural product – exempt under the Chemical Disclosure Guidelines • **COMPONENT 2 (1 – 5% concentration)** o *Daphnia magna* (Marine invertebrate) EC50 48 hrs: 24* mg/L o *Onchorhynchus mykiss* (Marine fish) LC50 96 hrs: 0.53* mg/L • **COMPONENT 3 (5 – 10% concentration)** o *Skeletonema costatum* (Marine algae) EC50 72 hrs: 163 mg/L o *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: 258 mg/L o *Scophthalmus maximus* (Marine fish) LC50 96 hrs: 550 mg/L • **COMPONENT 4 (5 – 10% concentration)** o *Skeletonema costatum* (Marine algae) EC50 72 hrs: 163* mg/L o *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: 258* mg/L o *Scophthalmus maximus* (Marine fish) LC50 96 hrs: 550* mg/L **Estimated data based on structural analogue* • **COMPONENT 5 (1 – 5% concentration)** o *Skeletonema costatum* (Marine algae) EC50 72 hrs: 163* mg/L o *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: 258* mg/L o *Scophthalmus maximus* (Marine fish) LC50 96 hrs: 550* mg/L **Estimated data based on structural analogue* **CHEMICAL FATE** • **COMPONENT 1 (60 – 100% concentration)** Natural product – exempt under the Chemical Disclosure Guidelines • **COMPONENT 2 (1 – 5% concentration)** Log Pow <3*	0.0010%	Yes

Chemical Disclosure

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached
			*Literature data from HSNO CCID • **COMPONENT 3 (5 – 10% concentration)** Log Pow <0 • **COMPONENT 4 (5 – 10% concentration)** Log Pow <0* *Estimated data based on structural analogue • **COMPONENT 5 (1 – 5% concentration)** Log Pow <0* *Estimated data based on structural analogue **ENVIRONMENTAL FATE** • **COMPONENT 1 (60 – 100% concentration)** Natural product – exempt under the Chemical Disclosure Guidelines • **COMPONENT 2 (1 – 5% concentration)** Biodegrability, 28 days: >60%* *Literature data from HSNO CCID • **COMPONENT 3 (5 – 10% concentration)** Biodegradability, 28 days: 12% • **COMPONENT 4 (5 – 10% concentration)** Biodegradability, 28 days: 12*% *Estimated data based on structural analogue • **COMPONENT 5 (1 – 5% concentration)** Biodegradability, 28 days: 12*% *Estimated data based on structural analogue **ACUTE MAMMALIAN TOXICITY** • **COMPONENT 1 (60 – 100% concentration)** Natural product – exempt under the Chemical Disclosure Guidelines • **COMPONENT 2 (1 – 5% concentration)** Rat LD50 (oral): 350 mg/kg Rat LC50 (inhalation) 4h: 1.4 mg/L • **COMPONENT 3 (5 – 10% concentration)** Rat LD50 (oral): 4164 mg/kg • **COMPONENT 4 (5 – 10% concentration)** No scientific data or research is available for this component. • **COMPONENT 5 (1 – 5% concentration)** No scientific data or research is available for this component. **CHRONIC TOXICITY**		

Chemical Disclosure

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached
			No known carcinogenic, chronic, mutagenic or reproductive effects.		
CORR11447A (Updated product from EC1477A)	Champion X	Corrosion Inhibitor	This product contains organic components. **AQUATIC TOXICOLOGY** • **COMPONENT 1 (60 – 100% concentration)** Natural product – exempt under the Chemical Disclosure Guidelines • **COMPONENT 2 (0 – 1% concentration)** o PLONOR • **COMPONENT 3 (1 – 10% concentration)** o *Skeletonema costatum* (Marine algae) EC50 72 hrs: 98.58 mg/L o *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: 32.60 mg/L o *Cyprinodon variegatus (sheepshead minnow)* LC50 96 hrs: >18 mg/L • **COMPONENT 4 (1 – 10% concentration)** o *Skeletonema costatum* (Marine algae) EC50 72 hrs: No data available o *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: No data available o *Scophthalmus maximus* (Marine fish) LC50 96 hrs: No data available • **COMPONENT 5 (1 – 10% concentration)** o *Skeletonema costatum* (Marine algae) EC50 72 hrs: 0.08 mg/L o *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: 1.2 mg/L o *Scophthalmus maximus* (Marine fish) LC50 96 hrs: 3.4 mg/L **CHEMICAL FATE** • **COMPONENT 1 (60 – 100% concentration)** Natural product – exempt under the Chemical Disclosure Guidelines • **COMPONENT 2 (0 – 1% concentration)** PLONOR • **COMPONENT 3 (1 – 10% concentration)** Log Pow <0 • **COMPONENT 4 (1 – 10% concentration)** No data available • **COMPONENT 5 (1 – 10% concentration)** Log Pow 2.3 **ENVIRONMENTAL FATE** • **COMPONENT 1 (60 – 100% concentration)** Natural product – exempt under the Chemical Disclosure Guidelines • **COMPONENT 2 (0 – 1% concentration)** PLONOR	0.0030%	Yes

Chemical Disclosure

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached
			• **COMPONENT 3 (1 – 10% concentration)** Biodegradability, 28 days: 24% • **COMPONENT 4 (1 – 10% concentration)** Biodegradability, 28 days: No data available • **COMPONENT 5 (1 – 10% concentration)** Biodegradability, 28 days: 35% **ACUTE MAMMALIAN TOXICITY** • **COMPONENT 1 (60 – 100% concentration)** Natural product – exempt under the Chemical Disclosure Guidelines • **COMPONENT 2 (0 – 1% concentration)** Rat LD50 (oral): 9690 mg/kg Rabbit LD50 (dermal): 15,800 mg/kg • **COMPONENT 3 (1 – 10% concentration)** Rat LD50 (oral): 131 mg/kg Rabbit LD50 (dermal): 168 mg/kg Rat LC50 (inhalation) 4h: 2.03 mg/L • **COMPONENT 4 (1 – 10% concentration)** Rat LD50 (oral): 850 mg/kg Rabbit LD50 (dermal): 2300 mg/kg • **COMPONENT 5 (1 – 10% concentration)** Rat LD50 (oral): >2500 mg/kg **CHRONIC TOXICITY** • **COMPONENT 1 (60 – 100% concentration)** Natural product – exempt under the Chemical Disclosure Guidelines • **COMPONENT 2 (0 – 1% concentration)** No known carcinogenic, chronic, mutagenic or reproductive effects. • **COMPONENT 3 (1 – 10% concentration)** No known carcinogenic, chronic, mutagenic or reproductive effects. • **COMPONENT 4 (1 – 10% concentration)** No known carcinogenic, chronic, mutagenic or reproductive effects. • **COMPONENT 5 (1 – 10% concentration)** No known carcinogenic, chronic, mutagenic or reproductive effects.		

Chemical Disclosure

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached
BIOC16733A (Updated name from EC6733A)	ChampionX	Biocide	This product contains organic components. **AQUATIC TOXICOLOGY** • **COMPONENT 1 (1 – 10% concentration)** o *Skeletonema costatum* (Marine algae) EC50 72 hrs: 0.26 mg/L o *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: 0.4 mg/L o *Cyprinodon variegatus (sheepshead minnow)* (Marine fish) LC50 96 hrs: 1.7 mg/L • **COMPONENT 2 (60 – 100% concentration)** o *Skeletonema costatum* (Marine algae) EC50 72 hrs: 0.16 mg/L o *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: 0.6 mg/L o *Scophthalmus maximus* (Marine fish) LC50 96 hrs: 72 mg/L • **COMPONENT 3 (0 – 1% concentration)** o *Skeletonema costatum* (Marine algae) EC50 72 hrs: 4.1 mg/L o *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: 38 mg/L o *Scophthalmus maximus* (Marine fish) LC50 96 hrs: 611 mg/L • **COMPONENT 4 (10 – 30% concentration)** Natural product – exempt under the Chemical Disclosure Guidelines **CHEMICAL FATE** • **COMPONENT 1 (1 – 10% concentration)** Log Pow 2.28 (theoretical) • **COMPONENT 2 (60 – 100% concentration)** Log Pow 0 • **COMPONENT 3 (0 – 1% concentration)** Log Pow <0 • **COMPONENT 4 (10 – 30% concentration)** Natural product – exempt under the Chemical Disclosure Guidelines **ENVIRONMENTAL FATE** • **COMPONENT 1 (1 – 10% concentration)** Biodegradability, 28 days: 34% • **COMPONENT 2 (60 – 100% concentration)** Biodegradability, 28 days: 61% • **COMPONENT 3 (0 – 1% concentration)** Biodegradability, 28 days: 83% • **COMPONENT 4 (10 – 30% concentration)** Natural product – exempt under the Chemical Disclosure Guidelines	0.0011%	Yes

Chemical Disclosure

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached
			ACUTE MAMMALIAN TOXICITY • **COMPONENT 1 (1 – 10% concentration)** Rat LD50 (oral): 344 mg/kg Rabbit LD50 (dermal): 3340 mg/kg Rat LC50 (inhalation) 4h: >0.054 mg/L • **COMPONENT 2 (60 – 100% concentration)** Rat LD50 (oral): 575 mg/kg (75% active ingredient in water) Rat LD50 (dermal): >2000 mg/kg (75% active ingredient in water) Rat LC50 (inhalation) 4h: 0.591 mg/l (75% active ingredient in water) • **COMPONENT 3 (0 – 1% concentration)** Guinea pig LD50 (oral): 260* mg/kg Rabbit LD50 (dermal): 270* mg/kg Mouse LC50 (inhalation) 4 hr: 497* mg/kg • **COMPONENT 4 (10 – 30% concentration)** Natural product – exempt under the Chemical Disclosure Guidelines **Literature data from HSNO CCID* **CHRONIC TOXICITY** • **COMPONENT 1 (1 – 10% concentration)** No known carcinogenic, chronic, mutagenic or reproductive effects. • **COMPONENT 2 (60 – 100% concentration)** Skin sensitizer. Reproductive toxicant to rabbits/rats at 50mg/kg/day. • **COMPONENT 3 (0 – 1% concentration)** Skin sensitizer. May cause cancer, IARC Group 1 Carcinogen. • **COMPONENT 4 (10 – 30% concentration)** Natural product – exempt under the Chemical Disclosure Guidelines		
EMBR12034A (Updated name from EC2034A)	ChampionX	Emulsion Breaker	This product contains organic components. **AQUATIC TOXICOLOGY** • **COMPONENT 1 (30 – 60% concentration)** o *Scophthalmus maximus* (Marine fish) LC50 96 hrs: >1000* mg/L **Estimated data based on structural analogue* • **COMPONENT 2 (10 – 30% concentration) tingenc** o *Daphnia magna* (Marine invertebrate) EC50 48 hrs: 24500 mg/L o *Oncorhynchus mykiss (rainbow trout)* (Marine fish) LC50 96 hrs: 19000 mg/L • **COMPONENT 3 (10 – 30% concentration)** o *Skeletonema costatum* (Marine algae) EC50 72 hrs: 114 mg/L	0.0042%	Yes

Chemical Disclosure

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached
			○ *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: 29.2 mg/L ○ *Cyprinodon variegatus (sheepshead minnow)* (Marine fish) LC50 96 hrs: >1000 mg/L • **COMPONENT 4 (5 – 10% concentration)** ○ *Skeletonema costatum* (Marine algae) EC50 72 hrs: 165 mg/L ○ *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: 360 mg/L ○ *Scophthalmus maximus* (Marine fish) LC50 96 hrs: 811 mg/L • **COMPONENT 5 (5 – 10% concentration)** ○ *Skeletonema costatum* (Marine algae) EC50 72 hrs: 0.5 mg/L ○ *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: 119 mg/L ○ *Scophthalmus maximus* (Marine fish) LC50 96 hrs: 148 mg/L **CHEMICAL FATE** • **COMPONENT 1 (30 – 60% concentration)** Log Pow 4.4 • **COMPONENT 2 (10 – 30% concentration)** Log Pow <1 • **COMPONENT 3 (10 – 30% concentration)** Log Pow 3.5 – 5.1 • **COMPONENT 4 (5 – 10% concentration)** Log Pow 4.66 • **COMPONENT 5 (5 – 10% concentration)** Log Pow 4.7 **ENVIRONMENTAL FATE** • **COMPONENT 1 (30 – 60% concentration)** Biodegradability, 28 days: 15% • **COMPONENT 2 (10 – 30% concentration)** Biodegradability, 3 days: 83-91% • **COMPONENT 3 (10 – 30% concentration)** Biodegradability, 28 days: 29% • **COMPONENT 4 (5 – 10% concentration)** Biodegradability, 28 days: 70% • **COMPONENT 5 (5 – 10% concentration)** Biodegradability, 28 days: 21% **ACUTE MAMMALIAN TOXICITY** • **COMPONENT 1 (30 – 60% concentration)** No scientific data or research is available for this component.		

Chemical Disclosure

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached
			• **COMPONENT 2 (10 – 30% concentration)** Rat LD50 (oral): 5628 mg/kg Rabbit LD50 (dermal): 15800* mg/kg Rat LC50 (inhalation) 4 hr: 64000 ppm • **COMPONENT 3 (10 – 30% concentration)** Rat LD50 (oral): >5000 mg/kg Rabbit LD50 (dermal): >2000 mg/kg Rat LC50 (inhalation) 4h: >5 mg/L • **COMPONENT 4 (5 – 10% concentration)** Rat LD50 (oral): >5000 mg/kg • **COMPONENT 5 (5 – 10% concentration)** No scientific data or research is available for this component. **CHRONIC TOXICITY** • **COMPONENT 1 (30 – 60% concentration)** No known carcinogenic, chronic, mutagenic or reproductive effects. • **COMPONENT 2 (10 – 30% concentration)** No known carcinogenic, chronic, mutagenic or reproductive effects. • **COMPONENT 3 (10 – 30% concentration)** May cause genetic defects. May cause cancer. • **COMPONENT 4 (5 – 10% concentration)** Suspected of causing cancer. • **COMPONENT 5 (5 – 10% concentration)** No known carcinogenic, chronic, mutagenic or reproductive effects.		
Water	-	Water	-	~ 99.9907%	N/A
TOTAL				**100%**	
HSCV19356A (Updated name from EC9356A)	ChampionX	Hydrogen Sulfide Scavenger	This product contains organic components. **AQUATIC TOXICOLOGY** • **COMPONENT 1 (60 – 100% concentration)** Natural product – exempt under the Chemical Disclosure Guidelines • **COMPONENT 2 (10 – 30% concentration)** o *Skeletonema costatum* (Marine algae) EC50 72 hrs: 35 mg/L o *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: 20 mg/L o *Scophthalmus maximus* (Marine fish) LC50 96 hrs: 81 mg/L **CHEMICAL FATE** • **COMPONENT 1 (60 – 100% concentration)** Natural product – exempt under the Chemical Disclosure Guidelines	Contingency, 0.003%	Yes

Chemical Disclosure

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached
			• **COMPONENT 2 (10 – 30% concentration)** Log Pow < 3 **ENVIRONMENTAL FATE** • **COMPONENT 1 (60 – 100% concentration)** Natural product – exempt under the Chemical Disclosure Guidelines • **COMPONENT 2 (10 – 30% concentration)** Biodegradability, 28 days: 70% **ACUTE MAMMALIAN TOXICITY** • **COMPONENT 1 (60 – 100% concentration)** Natural product – exempt under the Chemical Disclosure Guidelines • **COMPONENT 2 (10 – 30% concentration)** Rat LD50 (oral): 500 mg/kg **CHRONIC TOXICITY** • **COMPONENT 1 (60 – 100% concentration)** Natural product – exempt under the Chemical Disclosure Guidelines • **COMPONENT 2 (10 – 30% concentration)** Skin sensitizer. May cause damage to organs through prolonged or repeated exposure if swallowed.		
ACPC19610A (Updated name from EC9610A)	ChampionX	Cleaner	This product contains organic components. **AQUATIC TOXICOLOGY** • **COMPONENT 1 (100% concentration)** o *Skeletonema costatum* (Marine algae) EC50 72 hrs: 1100 mg/L o *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: 1195 mg/L o *Scophthalmus maximus* (Marine fish) LC50 96 hrs: 2100 mg/L **CHEMICAL FATE** • **COMPONENT 1 (100% concentration)** Log Pow 1.6 **ENVIRONMENTAL FATE** • **COMPONENT 1 (100% concentration)** Biodegradability, 28 days: 67.5% **ACUTE MAMMALIAN TOXICITY** • **COMPONENT 1 (100% concentration)** Rat LD50 (oral): 1500 mg/kg **CHRONIC TOXICITY** • **COMPONENT 1 (100% concentration)**	Contingency, 0.4%	Yes

Chemical Disclosure

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached
			No known carcinogenic, chronic, mutagenic or reproductive effects.		
NAPH22211A (Updated name from EC2211A)	ChampionX	Demulsifier	This product contains organic components. **AQUATIC TOXICOLOGY** • **COMPONENT 1 (30 – 60% concentration)** o *Skeletonema costatum* (Marine algae) EC50 72 hrs: 375 mg/L o *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: 439 mg/L o *Cyprinodon variegatus (sheepshead minnow)* (Marine fish) LC50 96 hrs: 51.43 mg/L • **COMPONENT 2 (10 – 30% concentration)** o *Skeletonema costatum* (Marine algae) EC50 72 hrs: < 0.5 mg/L o *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: 119 mg/L o *Scophthalmus maximus* (Marine fish) LC50 96 hrs: 148 mg/L • **COMPONENT 3 (5 – 10% concentration)** o *Skeletonema costatum* (Marine algae) EC50 72 hrs: 610 mg/L o *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: 534 mg/L o *Cyprinodon variegatus (sheepshead minnow)* (Marine fish) LC50 96 hrs: 550 mg/L **CHEMICAL FATE** • **COMPONENT 1 (30 – 60% concentration)** Log Pow 4.6 • **COMPONENT 2 (10 – 30% concentration)** Log Pow 4.73 • **COMPONENT 3 (5 – 10% concentration)** Log Pow > 3 **ENVIRONMENTAL FATE** • **COMPONENT 1 (30 – 60% concentration)** Biodegradability, 28 days: 86% • **COMPONENT 2 (10 – 30% concentration)** Biodegradability, 28 days: 17% • **COMPONENT 3 (5 – 10% concentration)** Biodegradability, 28 days: 11%	0.0042%	Yes

Chemical Disclosure

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached
			ACUTE MAMMALIAN TOXICITY • **COMPONENT 1 (30 – 60% concentration)** Rat LD50 (oral): > 5,000 mg/kg • **COMPONENT 2 (10 – 30% concentration)** No data available • **COMPONENT 3 (5 – 10% concentration)** No data available **CHRONIC TOXICITY** • **COMPONENT 1 (30 – 60% concentration)** Suspected of causing cancer. • **COMPONENT 2 (10 – 30% concentration)** No known carcinogenic, chronic, mutagenic or reproductive effects. • **COMPONENT 3 (5 – 10% concentration)** No known carcinogenic, chronic, mutagenic or reproductive effects.		
HSUR43670A / Hydrosure O-3670R	ChampionX	Hydrotest Chemical	This product contains organic components. **AQUATIC TOXICOLOGY** • **COMPONENT 1 (10 – 30% concentration)** o *Skeletonema costatum* (Marine algae) EC50 72 hrs: 0.26 mg/L o *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: 0.4 mg/L o *Scophthalmus maximus* (Marine fish) LC50 96 hrs: 1.7 mg/L • **COMPONENT 2 (10 – 30% concentration)** o PLONOR • **COMPONENT 3 (5 – 10% concentration)** o *Skeletonema costatum* (Marine algae) EC50 72 hrs: >2000 mg/L o *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: >2000 mg/L o *Scophthalmus maximus* (Marine fish) LC50 96 hrs: >1800 mg/L • **COMPONENT 4 (5 – 10% concentration)** o PLONOR **CHEMICAL FATE** • **COMPONENT 1 (10 – 30% concentration)** Log Pow 2.28 (theoretical) • **COMPONENT 2 (10 – 30% concentration)**	Contingency, <0.1%	Yes

Chemical Disclosure

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached
			PLONOR • **COMPONENT 3 (5 – 10% concentration)** Log Pow 1.05 • **COMPONENT 4 (5 – 10% concentration)** PLONOR **ENVIRONMENTAL FATE** • **COMPONENT 1 (10 – 30% concentration)** Biodegradability, 28 days: 34% • **COMPONENT 2 (10 – 30% concentration)** PLONOR • **COMPONENT 3 (5 – 10% concentration)** Biodegradability, 28 days: 76% • **COMPONENT 4 (5 – 10% concentration)** PLONOR **ACUTE MAMMALIAN TOXICITY** • **COMPONENT 1 (10 – 30% concentration)** Rat LD50 (oral): 344 mg/kg Rabbit LD50 (dermal): 3340 mg/kg Rat LC50 (inhalation) 4h: >0.054 mg/L • **COMPONENT 2 (10 – 30% concentration)** Rat LD50 (oral): >2000 mg/kg (25% active ingredient in water) Rat LD50 (dermal): >2000 mg/kg (20% active ingredient in water) Rat LC50 (inhalation) 4h: >5.5 mg/L • **COMPONENT 3 (5 – 10% concentration)** Guinea pig LD50 (oral): >5000 mg/kg (50% active ingredient in vehicle)* Rabbit LD50 (dermal): 9510 mg/kg* **Literature data from ECHA* • **COMPONENT 4 (5 – 10% concentration)** Rat LD50 (oral): 7712 mg/kg* Rabbit LD50 (dermal): 10600 mg/kg **Literature data from ECHA* **CHRONIC TOXICITY** • **COMPONENT 1 (10 – 30% concentration)**		

Chemical Disclosure

Product Name	Supplier	Purpose	Toxicity, Ecotoxicity & Biodegradability data**	% Product in system fluid	MSDS Attached
			No known carcinogenic, chronic, mutagenic or reproductive effects. • **COMPONENT 2 (10 – 30% concentration)** No known carcinogenic, chronic, mutagenic or reproductive effects. • **COMPONENT 3 (5 – 10% concentration)** No known carcinogenic, mutagenic or reproductive effects. May cause damage to organs for repeated dose (oral route). • **COMPONENT 4 (5 – 10% concentration)** No known carcinogenic, chronic, mutagenic or reproductive effects.		

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

C. CHEMICAL LIST

Chemical List (Chemicals within fluid system identified in the table above)

Chemicals Name	CAS Number	Mass Fraction (%)	
WATER	7732-18-5	99.99396554	%
TETRAKIS(HYDROXYMETHYL)PHOSPHONIUM SULPHATE	55566-30-8	0.0025	%
SOLVENT NAPHTHA (PETROLEUM), HEAVY AROM.	64742-94-5	0.00205	%
NAPHTHALENE	91-20-3	0.00027	%
1,2,4-TRIMETHYLBENZENE	95-63-6	0.000062	%
C12-16 ALKYLBENZYLDIMETHYLAMMONIUM CHLORIDE	68424-85-1	0.00085	%
TALL OIL, DETA IMIDAZOLINE ACETATES	68140-11-4	0.0002	%
BENZYL-DIMETHYL-DODECYL-AMMONIUM CHLORIDE	139-07-1	0.000001	%
2-MERCAPTOETHANOL	60-24-2	0.0000008	%
BENZYL-DIMETHYL-TETRADECYL-AMMONIUM CHLORIDE	139-08-2	0.0000007	%
AMMONIUM HYDROXIDE	1336-21-6	0.0001	%
FORMALDEHYDE	50-00-0	< 0.00001	%
TOTAL	**-**	**100**	**%**
2-BUTOXYETHANOL	111-76-2	Contingency, 0.4	%
WATER	7732-18-5	Contingency, 0.56375	%
HEXAHYDRO-1,3,5-TRIMETHYL-S-TRIAZINE	108-74-7	Contingency, 0.00084	%
MONOMETHYLAMINE	74-89-5	Contingency, 0.00001	%
SOLVENT NAPHTHA (PETROLEUM), HEAVY AROM.	64742-94-5	Contingency, 0.00272	%
HYDROTREATED HEAVY NAPHTHA	64742-48-9	Contingency, 0.00108	%

Chemical Disclosure

Chemicals Name	CAS Number	Mass Fraction (%)
METHANOL	67-56-1	Contingency, 0.00050 %
ETHYLBENZENE	100-41-4	Contingency, 0.000075 %
XYLENE	1330-20-7	Contingency, 0.000075 %
NAPHTHALENE	91-20-3	Contingency, 0.000060 %
1,2,4-TRIMETHYLBENZENE	95-63-6	Contingency, 0.00001 %
TOLUENE	108-88-3	Contingency, 0.00001 %
ACETIC ACID	64-19-7	Contingency, 0.00002 %
BENZYL-(C12-C16 LINEAR ALKYL)-DIMETHYL-AMMONIUM CHLORIDE	68424-85-1	Contingency, 0.2037 %
AMMONIUM BISULFITE	10192-30-0	Contingency, 0.1337 %
DIPROPYLENE GLYCOL MONOMETHYL ETHER	34590-94-8	Contingency, 0.0501 %
ETHYLENE GLYCOL	107-21-1	Contingency, 0.0509 %
NICKEL SULPHATE	7786-81-4	Contingency, <0.00001 %

Chemical Disclosure

A. SYSTEM DETAILS	
OPERATOR:	Buru Energy
PROJECT / WELL:	Ungani Wells
SYSTEM:	Suspension Fluid
TOTAL VOLUME OF SYSTEM (m^3):	Approximately 850 bbl (135 kL)

B. PRODUCT LIST

Trade name	Supplier	Purpose	Product in system (%)	Toxicity & Ecotoxicity Info	MSDS Attached
Fresh water	Onsite bore	Mix water	96.212%	N/A	N/A
BIOC16733A (Updated name from EC6733A)	ChampionX	Biocide	3.788%	This product contains organic components. **AQUATIC TOXICOLOGY** **COMPONENT 1 (10 – 30% concentration)** o *Skeletonema costatum* (Marine algae) EC50 72 hrs: 0.26 mg/L o *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: 0.4 mg/L o *Cyprinodon variegatus (sheepshead minnow)* (Marine fish) LC50 96 hrs: 1.7 mg/L **COMPONENT 2 (60 – 100% concentration)** o *Skeletonema costatum* (Marine algae) EC50 72 hrs: 0.16 mg/L o *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: 0.6 mg/L o *Scophthalmus maximus* (Marine fish) LC50 96 hrs: 72 mg/L **COMPONENT 3 (0 – 1% concentration)** o *Skeletonema costatum* (Marine algae) EC50 72 hrs: 4.1 mg/L o *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: 38 mg/L o *Scophthalmus maximus* (Marine fish) LC50 96 hrs: 611 mg/L **CHEMICAL FATE** **COMPONENT 1 (10 – 30% concentration)** Log Pow 2.28 (theoretical) **COMPONENT 2 (60 – 100% concentration)** Log Pow 0 **COMPONENT 3 (0 – 1% concentration)** Log Pow <0 **ENVIRONMENTAL FATE** **COMPONENT 1 (10 – 30% concentration)** Biodegradability, 28 days: 34% **COMPONENT 2 (60 – 100% concentration)** Biodegradability, 28 days: 61% **COMPONENT 3 (0 – 1% concentration)** Biodegradability, 28 days: 83% **ACUTE MAMMALIAN TOXICITY** **COMPONENT 1 (10 – 30% concentration)** Rat LD50 (oral): 344 mg/kg Rabbit LD50 (dermal): 3340 mg/kg Rat LC50 (inhalation) 4h: >0.054 mg/L **COMPONENT 2 (60 – 100% concentration)** Rat LD50 (oral): 575 mg/kg (75% active ingredient in water)	Yes

Chemical Disclosure

Trade name	Supplier	Purpose	Product in system (%)	Toxicity & Ecotoxicity Info	MSDS Attached
				Rat LD50 (dermal): >2000 mg/kg (75% active ingredient in water) Rat LC50 (inhalation) 4h: 0.591 mg/l (75% active ingredient in water) **COMPONENT 3 (0 – 1% concentration)** Guinea pig LD50 (oral): 260* mg/kg Rabbit LD50 (dermal): 270* mg/kg Mouse LC50 (inhalation) 4 hr: 497* mg/kg **Literature data from HSNO CCID* **CHRONIC TOXICITY** **COMPONENT 1 (10 – 30% concentration)** No known carcinogenic, chronic, mutagenic or reproductive effects. **COMPONENT 2 (60 – 100% concentration)** Skin sensitizer. Reproductive toxicant to rabbits/rats at 50mg/kg/day. **COMPONENT 3 (0 – 1% concentration)** Skin sensitizer. May cause cancer, IARC Group 1 Carcinogen.	
		Total	100%		
Potassium Chloride	Halliburton Baroid	Weighting Material	Contingency, ~5%	**Acute Toxicity:** Oral – LD50: 2,600 mg/kg (Rat). Fish – LC50 (48 hr): 720 mg/L (*Lctalurus punctulus*). Crustacean – LC50 (48 hr): 177 mg/L (*Daphnia magna*). Algae – EC50 (120 hr): 1,337 mg/L (*Nitzschia linearis*). **Chronic Toxicity:** Prolonged or repeated skin contact may cause drying with irritation etc. A chronic reproductive test with invertebrate (*D. magna)* gave LOEC of 101 mg/L. **Biodegradation/bioaccumulation:** Potassium Chloride is an inorganic salt, naturally occurring. KCl is fully soluble and highly mobile in soil. The product is not known to be bioaccumulative.	Yes
Sodium Chloride	Halliburton	Weighting Material	Contingency, ~5%	**Acute Toxicity:** Oral (rat) LD50: 3,000 mg/kg **Chronic Toxicity:** No data available to indicate product or components present at greater than 1% are chronic health hazards. **Biodegradation/bioaccumulation:** Sodium Chloride is an inorganic, naturally occurring salt and Biodegradation does not apply due to being inorganic (does not contain any Carbon or Hydrogen). Sodium Chloride is fully water soluble, abundant in nature and highly mobile in soil. The product is not known to be Bioaccumulative.	Yes

Chemical Disclosure

C. CHEMICAL LIST

Chemicals within products in Part B	CAS #	Maximum Mass fraction in System (%)
water	7732-18-5	96.212%
Tetrakis(hydroxymethyl) phosphonium sulfate	55566-30-8	3.3713%
Benzyl-(C12-C16 Linear Alkyl)-Dimethyl-Ammonium Chloride	68424-85-1	0.3788%
Formaldehyde	50-00-0	0.0379%
	Total	100%
Potassium Chloride	7447-40-7	Contingency, 5%
Sodium Chloride	7647-14-5	Contingency, 5%

Chemical Disclosure

SYSTEM DETAILS:

OPERATOR:	**Buru Energy**
PROJECT / WELL:	**Ungani Wells**
SYSTEM:	**Well Circulation Fluid**
TOTAL VOLUME OF SYSTEM:	**Approx. 150 bbl (24 kL)**

A. PRODUCT LIST:

Product name	Supplier	Purpose	Toxicity, Ecotoxicity and Biodegradability data	Product in system (%)	MSDS Attached
Fresh water	Onsite bore	Mix water	N/A	59.3495%	N/A
Hydrochloric Acid	Coogee Chemicals	pH Control	**Constituent 1 as an ingredient 15%** **Acute Toxicity:** EC50 (72 h) 0.73 mg/L (non-neutralized) Chlorella vulgaris (freshwater algae). LC50 (48 h) 0.44 mg/L (non-neutralized) Daphnia magna (freshwater invertebrate). LC50 (96 h) 20.5 mg/L (non-neutralized) Lepomis macrochirus (freshwater fish) LD50 (oral) 238 – 277 mg/kg (Non-neutralized) Rat **Chronic Toxicity:** No known carcinogenic, chronic, mutagenic or reproductive effects for this product. **Biodegradation/bioaccumulation:** Not applicable to inorganic compounds **Constituent 2 as an ingredient 85%** Water	34.8902%	Yes
Acetic acid	Halliburton	Chelating agent	**Acute Toxicity:** EC50 (72h) 55.22 mg/L *Anabaena* (algae) LC50 (96h) 75 mg/L *Lepomis macrochirus* (fish) LC50 (96h) 251 mg/L *Gambusia affinis* (fish) EC50 (48h) 65 mg/L *Daphnia magna* (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.	0.111%	Yes
Rodine 85	Henkel	Acid inhibitor	**Toxicology Data:** **Component 1 (<10%)** LC50 (96h) 4.6 mg/L *Leuciscus idus* (fish)	0.01843%	Yes

Chemical Disclosure

Product name	Supplier	Purpose	Toxicity, Ecotoxicity and Biodegradability data	Product in system (%)	MSDS Attached
			EC50 (24h) 11 mg/L *Daphnia magna* (freshwater invertebrate) EC50 (8d) >18 mg/L *Scenedesmus quadricauda* (algae) **Component 2 (<5%)** EC50 (48h) 56 mg/L *Daphnia magna* (freshwater invertebrate) **Component 3 (<30%)** No data available. Data presented for a similar compound LC50 (96h) *P. promelas* 24 mg/L (fish) LC50 (96h) *B. rerio* 41 mg/L (fish) EC50 (48h) *Daphnia magna* ~2 mg/L (freshwater invertebrate) **Component 4 (60%)** Water **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		
Citric Acid	Halliburton	pH control	Acute Fish Toxicity 96h LC50: >440-760 mg/l (Leuciscus idus) Acute Crustacean Toxicity 72h EC50: 120 mg/l (Daphnia magna) Acute Toxicity 7d EC3: 640 mg/l (Scenedesmus quadrucauda) Source: IUCLID 2000 **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.	1.843%	Yes
BIOC16733A (Updated name from EC6733A)	ChampionX	Biocide	This product contains organic components. **AQUATIC TOXICOLOGY** **COMPONENT 1 (10 – 30% concentration)** ○ *Skeletonema costatum* (Marine algae) EC50 72 hrs: 0.26 mg/L ○ *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: 0.4 mg/L ○ *Cyprinodon variegatus (sheepshead minnow)* (Marine fish) LC50 96 hrs: 1.7 mg/L **COMPONENT 2 (60 – 100% concentration)** ○ *Skeletonema costatum* (Marine algae) EC50 72 hrs: 0.16 mg/L ○ *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: 0.6 mg/L ○ *Scophthalmus maximus* (Marine fish) LC50 96 hrs: 72 mg/L **COMPONENT 3 (0 – 1% concentration)** ○ *Skeletonema costatum* (Marine algae) EC50 72 hrs: 4.1 mg/L ○ *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: 38 mg/L ○ *Scophthalmus maximus* (Marine fish) LC50 96 hrs: 611 mg/L **CHEMICAL FATE** **COMPONENT 1 (10 – 30% concentration)**	3.788%	Yes

Chemical Disclosure

Product name	Supplier	Purpose	Toxicity, Ecotoxicity and Biodegradability data	Product in system (%)	MSDS Attached
			Log Pow 2.28 (theoretical) **COMPONENT 2 (60 – 100% concentration)** Log Pow 0 **COMPONENT 3 (0 – 1% concentration)** Log Pow <0 **ENVIRONMENTAL FATE** **COMPONENT 1 (10 – 30% concentration)** Biodegradability, 28 days: 34% **COMPONENT 2 (60 – 100% concentration)** Biodegradability, 28 days: 61% **COMPONENT 3 (0 – 1% concentration)** Biodegradability, 28 days: 83% **ACUTE MAMMALIAN TOXICITY** **COMPONENT 1 (10 – 30% concentration)** Rat LD50 (oral): 344 mg/kg Rabbit LD50 (dermal): 3340 mg/kg Rat LC50 (inhalation) 4h: >0.054 mg/L **COMPONENT 2 (60 – 100% concentration)** Rat LD50 (oral): 575 mg/kg (75% active ingredient in water) Rat LD50 (dermal): >2000 mg/kg (75% active ingredient in water) Rat LC50 (inhalation) 4h: 0.591 mg/l (75% active ingredient in water) **COMPONENT 3 (0 – 1% concentration)** Guinea pig LD50 (oral): 260* mg/kg Rabbit LD50 (dermal): 270* mg/kg Mouse LC50 (inhalation) 4 hr: 497* mg/kg **Literature data from HSNO CCID* **CHRONIC TOXICITY** **COMPONENT 1 (10 – 30% concentration)** No known carcinogenic, chronic, mutagenic or reproductive effects. **COMPONENT 2 (60 – 100% concentration)** Skin sensitizer. Reproductive toxicant to rabbits/rats at 50mg/kg/day. **COMPONENT 3 (0 – 1% concentration)** Skin sensitizer. May cause cancer, IARC Group 1 Carcinogen.		
			Total:	100%	100%
Soda Ash	Halliburton	pH control	**Toxicology Data** LD50 Oral: 4090 mg/kg (Rat); 2800 mg/kg (Rat)LD50 Dermal: 2210 mg/kg (Mouse); >2000	0.0500%	Yes

Chemical Disclosure

Product name	Supplier	Purpose	Toxicity, Ecotoxicity and Biodegradability data	Product in system (%)	MSDS Attached
			mg/kg (Rabbit)LC50 Inhalation: 2.3 mg/L (Rat) 2h **Substance Ecotoxicity Data** Toxicity to Algae - EC50 242 mg/L (Nitzschia) Toxicity to Fish – TLM24 385 mg/L (Lepomis macrochirus); LC50 310-1220 mg/L (Pimephales promelas); LC50 (96h) 300 mg/L (Lepomis macrochirus) Toxicity to Microorganisms - No information available Toxicity to Invertibrates – EC50 265 mg/L (Daphnia magna); EC50 (48h) 200 – 227 mg/L (Ceriodaphnia sp.) **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.		
Sodium Bicarbonate	Halliburton	pH control	**Toxicology Data for Components** LD50 Oral: No data availableLD50 Dermal: No data availableLC50 Inhalation: No data available **Substance Ecotoxicity Data** Toxicity to Algae - No information available - EC50 (5d): 650 mg/l (Nitzschia linearis) Toxicity to Fish – No information available - LC50 (96h): 7550 mg/l (Gambusia affinis) Toxicity to Microorganisms - No information available Toxicity to Invertibrates – No information available - EC50 (48h): 2350 mg/l (Daphnia magna) Source: IUCLID 2000 **Biodegradation/bioaccumulation:** Sodium Bicarbonate is an inorganic, naturally occurring salt and partially biodegradable. Sodium Bicarbonate is fully water soluble and highly mobile in soil. The product is not known to be Bioaccumulative.	0.0500%	Yes

Chemical Disclosure

B. Chemical List:

Chemicals within products in Part B	CAS #	Maximum Mass fraction in System (%)
Water	7732-18-5	89.0062%
Hydrochloric acid	7647-01-0	5.23353%
Acetic acid	64-19-7	0.111%
Citric Acid	77-92-9	1.8415%
Prop-2-yn-1-ol	107-19-7	0.002%
1,3-diethyl-2-thiourea	105-55-5	0.001%
Formaldehyde reaction products with o-toluidine	68411-63-2	0.006%
Tetrakis(hydroxymethyl) phosphonium sulfate	55566-30-8	3.3713%
Benzyl-(C12-C16 Linear Alkyl)-Dimethyl-Ammonium Chloride	68424-85-1	0.3788%
Formaldehyde	50-00-0	0.0379%
	Total	100%
Sodium Carbonate	497-19-8	Contingency, 0.050000%
Sodium Bicarbonate	144-55-8	Contingency, 0.050000%

Chemical Disclosure

A. SYSTEM DETAILS:

OPERATOR:	**Buru Energy**
PROJECT / WELL:	**Ungani Wells**
SYSTEM:	**Formation Circulation Fluid**
TOTAL VOLUME OF SYSTEM:	**Approx. 150 bbl (24 kL)**

B. PRODUCT LIST:

Product name	Supplier	Purpose	Toxicity, Ecotoxicity and Biodegradability data	Product in system (%)	MSDS Attached
Fresh water	Onsite bore	Mix water	N/A	59.3495%	N/A
Hydrochloric Acid	Coogee Chemicals	pH Control	**Constituent 1 as an ingredient 30%** **Acute Toxicity:** EC50 (72 h) 0.73 mg/L (non-neutralized) Chlorella vulgaris (freshwater algae). LC50 (48 h) 0.44 mg/L (non-neutralized) Daphnia magna (freshwater invertebrate). LC50 (96 h) 20.5 mg/L (non-neutralized) Lepomis macrochirus (freshwater fish) LD50 (oral) 238 – 277 mg/kg (Non-neutralized) Rat **Chronic Toxicity:** No known carcinogenic, chronic, mutagenic or reproductive effects for this product. **Biodegradation/bioaccumulation:** Not applicable to inorganic compounds **Constituent 2 as an ingredient 70%** Water	34.8902%	Yes
Acetic acid	Halliburton	Chelating agent	**Acute Toxicity:** EC50 (72h) 55.22 mg/L *Anabaena* (algae) LC50 (96h) 75 mg/L *Lepomis macrochirus* (fish) LC50 (96h) 251 mg/L *Gambusia affinis* (fish) EC50 (48h) 65 mg/L *Daphnia magna* (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.	0.111%	Yes
Rodine 85	Henkel	Acid inhibitor	**Toxicology Data:** **Component 1 (<10%)** LC50 (96h) 4.6 mg/L *Leuciscus idus* (fish)	0.01843%	Yes

Chemical Disclosure

Product name	Supplier	Purpose	Toxicity, Ecotoxicity and Biodegradability data	Product in system (%)	MSDS Attached
			EC50 (24h) 11 mg/L *Daphnia magna* (freshwater invertebrate) EC50 (8d) >18 mg/L *Scenedesmus quadricauda* (algae) **Component 2 (<5%)** EC50 (48h) 56 mg/L *Daphnia magna* (freshwater invertebrate) **Component 3 (<30%)** No data available. Data presented for a similar compound LC50 (96h) *P. promelas* 24 mg/L (fish) LC50 (96h) *B. rerio* 41 mg/L (fish) EC50 (48h) *Daphnia magna* ~2 mg/L (freshwater invertebrate) **Component 4 (60%)** Water **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		
Citric Acid	Halliburton	pH control	Acute Fish Toxicity 96h LC50: >440-760 mg/l (Leuciscus idus) Acute Crustacean Toxicity 72h EC50: 120 mg/l (Daphnia magna) Acute Toxicity 7d EC3: 640 mg/l (Scenedesmus quadrucauda) Source: IUCLID 2000 **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.	1.843%	Yes
BIOC16733A (Updated name from EC6733A)	ChampionX	Biocide	This product contains organic components. **AQUATIC TOXICOLOGY** **COMPONENT 1 (10 – 30% concentration)** ○ *Skeletonema costatum* (Marine algae) EC50 72 hrs: 0.26 mg/L ○ *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: 0.4 mg/L ○ *Cyprinodon variegatus (sheepshead minnow)* (Marine fish) LC50 96 hrs: 1.7 mg/L **COMPONENT 2 (60 – 100% concentration)** ○ *Skeletonema costatum* (Marine algae) EC50 72 hrs: 0.16 mg/L ○ *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: 0.6 mg/L ○ *Scophthalmus maximus* (Marine fish) LC50 96 hrs: 72 mg/L **COMPONENT 3 (0 – 1% concentration)** ○ *Skeletonema costatum* (Marine algae) EC50 72 hrs: 4.1 mg/L ○ *Acartia tonsa* (Marine invertebrate) LC50 48 hrs: 38 mg/L ○ *Scophthalmus maximus* (Marine fish) LC50 96 hrs: 611 mg/L **CHEMICAL FATE** **COMPONENT 1 (10 – 30% concentration)**	3.788%	Yes

Chemical Disclosure

Product name	Supplier	Purpose	Toxicity, Ecotoxicity and Biodegradability data	Product in system (%)	MSDS Attached
			Log Pow 2.28 (theoretical) **COMPONENT 2 (60 – 100% concentration)** Log Pow 0 **COMPONENT 3 (0 – 1% concentration)** Log Pow <0 **ENVIRONMENTAL FATE** **COMPONENT 1 (10 – 30% concentration)** Biodegradability, 28 days: 34% **COMPONENT 2 (60 – 100% concentration)** Biodegradability, 28 days: 61% **COMPONENT 3 (0 – 1% concentration)** Biodegradability, 28 days: 83% **ACUTE MAMMALIAN TOXICITY** **COMPONENT 1 (10 – 30% concentration)** Rat LD50 (oral): 344 mg/kg Rabbit LD50 (dermal): 3340 mg/kg Rat LC50 (inhalation) 4h: >0.054 mg/L **COMPONENT 2 (60 – 100% concentration)** Rat LD50 (oral): 575 mg/kg (75% active ingredient in water) Rat LD50 (dermal): >2000 mg/kg (75% active ingredient in water) Rat LC50 (inhalation) 4h: 0.591 mg/l (75% active ingredient in water) **COMPONENT 3 (0 – 1% concentration)** Guinea pig LD50 (oral): 260* mg/kg Rabbit LD50 (dermal): 270* mg/kg Mouse LC50 (inhalation) 4 hr: 497* mg/kg **Literature data from HSNO CCID* **CHRONIC TOXICITY** **COMPONENT 1 (10 – 30% concentration)** No known carcinogenic, chronic, mutagenic or reproductive effects. **COMPONENT 2 (60 – 100% concentration)** Skin sensitizer. Reproductive toxicant to rabbits/rats at 50mg/kg/day. **COMPONENT 3 (0 – 1% concentration)** Skin sensitizer. May cause cancer, IARC Group 1 Carcinogen.		
			Total:	100%	100%
Soda Ash	Halliburton	pH control	**Toxicology Data** LD50 Oral: 4090 mg/kg (Rat); 2800 mg/kg (Rat)LD50 Dermal: 2210 mg/kg (Mouse); >2000	0.0500%	Yes

Chemical Disclosure

Product name	Supplier	Purpose	Toxicity, Ecotoxicity and Biodegradability data	Product in system (%)	MSDS Attached
			mg/kg (Rabbit)LC50 Inhalation: 2.3 mg/L (Rat) 2h **Substance Ecotoxicity Data** Toxicity to Algae - EC50 242 mg/L (Nitzschia) Toxicity to Fish – TLM24 385 mg/L (Lepomis macrochirus); LC50 310-1220 mg/L (Pimephales promelas); LC50 (96h) 300 mg/L (Lepomis macrochirus) Toxicity to Microorganisms - No information available Toxicity to Invertibrates – EC50 265 mg/L (Daphnia magna); EC50 (48h) 200 – 227 mg/L (Ceriodaphnia sp.) **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.		
Sodium Bicarbonate	Halliburton	pH control	**Toxicology Data for Components** LD50 Oral: No data availableLD50 Dermal: No data availableLC50 Inhalation: No data available **Substance Ecotoxicity Data** Toxicity to Algae - No information available - EC50 (5d): 650 mg/l (Nitzschia linearis) Toxicity to Fish – No information available - LC50 (96h): 7550 mg/l (Gambusia affinis) Toxicity to Microorganisms - No information available Toxicity to Invertibrates – No information available - EC50 (48h): 2350 mg/l (Daphnia magna) Source: IUCLID 2000 **Biodegradation/bioaccumulation:** Sodium Bicarbonate is an inorganic, naturally occurring salt and partially biodegradable. Sodium Bicarbonate is fully water soluble and highly mobile in soil. The product is not known to be Bioaccumulative.	0.0500%	Yes

C. Chemical List:

Chemicals within products in Part B	CAS #	Maximum Mass fraction in System (%)
Water	7732-18-5	83.7835%
Hydrochloric acid	7647-01-0	10.467%
Acetic acid	64-19-7	0.111%
Citric Acid	77-92-9	1.8415%
Prop-2-yn-1-ol	107-19-7	0.002%
1,3-diethyl-2-thiourea	105-55-5	0.001%
Formaldehyde reaction products with o-toluidine	68411-63-2	0.006%
Tetrakis(hydroxymethyl) phosphonium sulfate	55566-30-8	3.3713%
Benzyl-(C12-C16 Linear Alkyl)-Dimethyl-Ammonium Chloride	68424-85-1	0.3788%
Formaldehyde	50-00-0	0.0379%
	Total	100%
Sodium Carbonate	497-19-8	Contingency, 0.050000%
Sodium Bicarbonate	144-55-8	Contingency, 0.050000%

Appendix B Chemical SDS

SAFETY DATA SHEET

EMBR12034A

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	EMBR12034A
Other means of identification	:	Not applicable.
Recommended use	:	EMULSION BREAKER
Restrictions on use	:	Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	:	ChampionX Australia Pty Ltd Suite 1/5 Brodie-Hall Drive, Technology Park Bentley WA 6102 Australia TEL: +61 8 9473 9000
Emergency telephone number	:	CHEMCALL 1800 127 406, International: +64 4 917 8888
Issuing date	:	16.03.2022

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Flammable liquids	:	Category 2
Acute toxicity (Oral)	:	Category 4
Skin corrosion/irritation	:	Category 2
Carcinogenicity	:	Category 2
Specific target organ toxicity - single exposure	:	Category 1 (Eyes)
Specific target organ toxicity - single exposure	:	Category 3 (Central Nervous System)
Aspiration hazard	:	Category 1

GHS Label element

Hazard pictograms :

Signal Word : Danger

Hazard Statements :
Highly flammable liquid and vapour.
Harmful if swallowed.
May be fatal if swallowed and enters airways.
Causes skin irritation.
May cause drowsiness or dizziness.
Suspected of causing cancer.
Causes damage to organs (Eyes).

Precautionary Statements : **Prevention:**
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Do not breathe dust/fume/gas/mist/vapours/spray. Wear

protective gloves/ eye protection/ face protection. Use personal protective equipment as required.
Response:
IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/ physician. IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.

Other hazards : None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture : Mixture

Chemical Name	CAS-No.	Concentration: (%)
Hydrotreated Heavy Naphtha	64742-48-9	20 - 30
Methanol	67-56-1	10 - 20
Heavy Aromatic Naphtha	64742-94-5	5 - 10
Ethylbenzene	100-41-4	1 - 5
Xylene	1330-20-7	1 - 5
Naphthalene	91-20-3	1 - 5
1,2,4-Trimethylbenzene	95-63-6	0.1 - 1
Toluene	108-88-3	0.1 - 1
Acetic Acid	64-19-7	0.1 - 1

Section: 4. FIRST AID MEASURES

In case of eye contact : Rinse with plenty of water. Get medical attention if symptoms occur.

In case of skin contact : Wash off with soap and plenty of water. Get medical attention if symptoms occur.

If swallowed : Contact the Poison's Information Centre (eg Australia 13 1126; New Zealand 0800 764 766).

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Aspiration hazard if swallowed - can enter lungs and cause damage. Get medical attention immediately.

If inhaled : Remove to fresh air. Treat symptomatically. Get medical attention if symptoms occur.

Protection of first-aiders : In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.

Notes to physician : Treat symptomatically.

Most important symptoms and effects, both acute and delayed : See Section 11 for more detailed information on health effects and symptoms.

Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Foam Carbon dioxide Dry powder Other extinguishing agent suitable for Class B fires For large fires, use water spray or fog, thoroughly drenching the burning material.
Unsuitable extinguishing media	:	None known.
Specific hazards during firefighting	:	Fire Hazard Keep away from heat and sources of ignition. Flash back possible over considerable distance. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
Hazardous combustion products	:	Decomposition products may include the following materials: Carbon oxides
Special protective equipment for firefighters	:	Use personal protective equipment.
Specific extinguishing methods	:	Use water spray to cool unopened containers. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Hazchem Code	:	●3YE

Section: 6. ACCIDENTAL RELEASE MEASURES

Initial Emergency Response Guide No	:	14
Personal precautions, protective equipment and emergency procedures	:	Ensure adequate ventilation. Remove all sources of ignition. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	Do not allow contact with soil, surface or ground water.
Methods and materials for containment and cleaning up	:	Eliminate all ignition sources if safe to do so. Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Flush away traces with water. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway.

Section: 7. HANDLING AND STORAGE

Advice on safe handling	:	Open drum carefully as content may be under pressure. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Do not ingest. Keep away from fire, sparks and heated surfaces. Do not breathe dust/fume/gas/mist/vapours/spray. Wash hands thoroughly after handling. Use only with adequate ventilation.
Conditions for safe storage	:	Keep away from heat and sources of ignition. Keep in a cool, well-ventilated place. Keep away from oxidizing agents. Keep out of reach of children. Keep container tightly closed. Store in suitable labelled containers.

Suitable material : The following compatibility data is suggested based on similar product data and/or industry experience: Mild steel, Stainless Steel 316L, Stainless Steel 304, Aluminum, Hastelloy C-276, Nylon, Teflon (PTFE), Kalrez, Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use.

Unsuitable material : The following compatibility data is suggested based on similar product data and/or industry experience: Brass, Copper, Buna-N, Natural rubber, Polyethylene, Polypropylene, Plexiglass, Polyurethane, PVC, HDPE (high density polyethylene), Ethylene propylene, EPDM, Neoprene, Viton, Alfax, Hypalon, Viton

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Form of exposure	Permissible concentration	Basis
Hydrotreated Heavy Naphtha	64742-48-9	TWA	900 mg/m3	AU OEL
Hydrotreated Heavy Naphtha	64742-48-9	WES-TWA	300 ppm 890 mg/m3	NZ OEL
		WES-STEL	500 ppm 1,480 mg/m3	NZ OEL
Hydrotreated Heavy Naphtha	64742-48-9	TWA	500 ppm 2,000 mg/m3	OSHA Z1
Methanol	67-56-1	TWA	200 ppm 262 mg/m3	AU OEL
		VLE	250 ppm 328 mg/m3	AU OEL
Methanol	67-56-1	WES-TWA	200 ppm 262 mg/m3	NZ OEL
		WES-STEL	250 ppm 328 mg/m3	NZ OEL
Methanol	67-56-1	TWA	200 ppm	ACGIH
		STEL	250 ppm	ACGIH
		TWA	200 ppm 260 mg/m3	NIOSH REL
		STEL	250 ppm 325 mg/m3	NIOSH REL
		TWA	200 ppm 260 mg/m3	OSHA Z1
Heavy Aromatic Naphtha	64742-94-5	TWA	500 ppm 2,000 mg/m3	OSHA Z1
		TWA	200 mg/m3 (as total hydrocarbon vapor)	ACGIH
Ethylbenzene	100-41-4	VLE	125 ppm 543 mg/m3	AU OEL
		TWA	100 ppm 434 mg/m3	AU OEL
Ethylbenzene	100-41-4	WES-STEL	125 ppm 543 mg/m3	NZ OEL
		WES-TWA	100 ppm 434 mg/m3	NZ OEL
Ethylbenzene	100-41-4	TWA	20 ppm	ACGIH
		TWA	100 ppm 435 mg/m3	NIOSH REL

		STEL	125 ppm 545 mg/m3	NIOSH REL
		TWA	100 ppm 435 mg/m3	OSHA Z1
Xylene	1330-20-7	TWA	80 ppm 350 mg/m3	AU OEL
		VLE	150 ppm 655 mg/m3	AU OEL
Xylene	1330-20-7	WES-TWA	50 ppm 217 mg/m3	NZ OEL
Xylene	1330-20-7	TWA	100 ppm 435 mg/m3	OSHA Z1
		TWA	100 ppm	ACGIH
		STEL	150 ppm	ACGIH
Naphthalene	91-20-3	TWA	10 ppm 52 mg/m3	AU OEL
		VLE	15 ppm 79 mg/m3	AU OEL
Naphthalene	91-20-3	WES-TWA	0.5 ppm 2.6 mg/m3	NZ OEL
		WES-STEL	2 ppm 10 mg/m3	NZ OEL
Naphthalene	91-20-3	TWA	10 ppm	ACGIH
		TWA	10 ppm 50 mg/m3	NIOSH REL
		STEL	15 ppm 75 mg/m3	NIOSH REL
		TWA	10 ppm 50 mg/m3	OSHA Z1
1,2,4-Trimethylbenzene	95-63-6	TWA	25 ppm 123 mg/m3	AU OEL
1,2,4-Trimethylbenzene	95-63-6	WES-TWA	25 ppm 123 mg/m3	NZ OEL
1,2,4-Trimethylbenzene	95-63-6	TWA	25 ppm 125 mg/m3	NIOSH REL
		TWA	25 ppm	ACGIH
Toluene	108-88-3	VLE	150 ppm 574 mg/m3	AU OEL
		TWA	50 ppm 191 mg/m3	AU OEL
Toluene	108-88-3	WES-TWA	50 ppm 188 mg/m3	NZ OEL
Toluene	108-88-3	TWA	20 ppm	ACGIH
		TWA	100 ppm 375 mg/m3	NIOSH REL
		STEL	150 ppm 560 mg/m3	NIOSH REL
		TWA	200 ppm	OSHA/Z2
		CEIL	300 ppm	OSHA/Z2
		Peak	500 ppm	OSHA/Z2
Acetic Acid	64-19-7	VLE	15 ppm 37 mg/m3	AU OEL
		TWA	10 ppm 25 mg/m3	AU OEL
Acetic Acid	64-19-7	WES-TWA	10 ppm 25 mg/m3	NZ OEL
		WES-STEL	15 ppm	NZ OEL

			37 mg/m3	
Acetic Acid	64-19-7	TWA	10 ppm	ACGIH
		STEL	15 ppm	ACGIH
		STEL	15 ppm 37 mg/m3	NIOSH REL
		TWA	10 ppm 25 mg/m3	NIOSH REL
		TWA	10 ppm 25 mg/m3	OSHA Z1

Engineering measures : Effective exhaust ventilation system. Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection : Safety goggles
Face-shield

Hand protection : Wear impervious chemical-resistant gloves when handling this product.
The following glove types are recommended based on our review of glove manufacturer information and/or other available sources.
Viton® gloves
Other glove types may be used for short term, incidental contact if determined by testing to provide adequate worker protection.
Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Skin protection : Wear suitable protective clothing.

Respiratory protection : Refer to AS/NZS 1715 and AS/NZS 1716 for selection, use and maintenance of respiratory protective equipment as applicable.

Use local exhaust ventilation or other engineering controls as necessary to control airborne vapour and mist.
When significant vapours are generated, an approved air purifying respirator is recommended to supplement other control measures for short term exposure.
Use a particulate pre-filter where operations generate significant mists or aerosols.
Recommended gas and vapour cartridge:
Multi-purpose combination filter
Methanol Warning! Protection provided by air purifying respirators is limited due to methanol's ability to break through filter media and its poor warning properties. For prolonged exposures, entry into unknown environments or where methanol is suspected to exceed exposure limits, use a positive pressure, full-facepiece SCBA or supplied-air respirator.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling.

The Personal Protective Equipment (PPE) recommendations provided above have been made in good faith based on typical expected conditions of use. PPE selection should always be completed in conjunction with a proper risk assessment and in accordance with a PPE management program.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Liquid

Colour : clear

		light yellow
Odour	:	hydrocarbon-like
Flash point	:	11 °C, Method: ASTM D 56, Tag closed cup
pH	:	no data available
Odour Threshold	:	no data available
Melting point/freezing point	:	POUR POINT: -34.3 °C, <
Initial boiling point and boiling range	:	65 °C, Method: ASTM D 86
Evaporation rate	:	no data available
Flammability (solid, gas)	:	Not applicable.
Upper explosion limit	:	no data available
Lower explosion limit	:	no data available
Vapour pressure	:	194.4 hPa, (37.8 °C), ASTM D-5191,
Relative vapour density	:	no data available
Relative density	:	0.96, (15.6 °C),
Density	:	8 lb/gal
Water solubility	:	dispersible
Solubility in other solvents	:	no data available
Partition coefficient: n-octanol/water	:	no data available
Auto-ignition temperature	:	no data available
Thermal decomposition	:	no data available
Viscosity, dynamic	:	no data available
Viscosity, kinematic	:	50 mm2/s (40 °C)
Molecular weight	:	no data available
VOC	:	no data available

Section: 10. STABILITY AND REACTIVITY

Reactivity	:	No dangerous reaction known under conditions of normal use.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	Heat, flames and sparks.
Incompatible materials	:	Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors. Strong oxidizing agents
Hazardous decomposition products	:	In case of fire, hazardous decomposition products may be produced such as: Carbon oxides

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes	:	Health injuries are not known or expected under normal use.
Skin	:	Causes skin irritation.
Ingestion	:	Harmful if swallowed. May be fatal if swallowed and enters airways. Causes digestive tract burns.
Inhalation	:	May cause drowsiness or dizziness. May cause nose, throat, and lung irritation.
Chronic Exposure	:	Causes damage to organs. Suspected of causing cancer.

Experience with human exposure

Eye contact	:	No symptoms known or expected.
Skin contact	:	slight irritation
Ingestion	:	Vomiting, Abdominal pain
Inhalation	:	Respiratory irritation, Cough, Dizziness, Drowsiness

Toxicity

Product

Acute oral toxicity	:	Acute toxicity estimate: 821.26 mg/kg
Acute inhalation toxicity	:	Acute toxicity estimate: > 20 mg/l Exposure time: 4 h Test atmosphere: vapour
Acute dermal toxicity	:	Acute toxicity estimate: > 2,000 mg/kg
Skin corrosion/irritation	:	no data available
Serious eye damage/eye irritation	:	no data available
Respiratory or skin sensitization	:	no data available
Carcinogenicity	:	This product contains naphthalene. The International Agency for Research on Cancer (IARC) has evaluated naphthalene and determined it to be possibly carcinogenic to humans (Group 2B, based on sufficient evidence in experimental animals and inadequate evidence in humans).
Reproductive effects	:	No reproductive toxic effects expected.
Germ cell mutagenicity	:	Contains no ingredient listed as a mutagen
Teratogenicity	:	no data available
STOT - single exposure	:	May cause drowsiness or dizziness. Causes damage to organs.
STOT - repeated exposure	:	no data available
Aspiration toxicity	:	May be fatal if swallowed and enters airways.

Human Hazard Characterization

Based on our hazard characterization, the potential human hazard is: High

Section: 12. ECOLOGICAL INFORMATION

Toxicity

Environmental Effects : Toxic to aquatic life with long lasting effects.

Product

Toxicity to fish : LC50 Fish: 1 - 10 mg/l
Exposure time: 96 hrs
Test substance: Product (estimated)

Toxicity to daphnia and other aquatic invertebrates : LC50 Daphnia magna: 1 - 10 mg/l
Exposure time: 48 hrs
Test substance: Product (estimated)

Toxicity to algae : no data available

Components

Toxicity to algae : Methanol
EC50 : 22,000 mg/l
Exposure time: 72 h

Toluene
EC50 Chlorella vulgaris (Fresh water algae): 134 mg/l
Exposure time: 72 h

Acetic Acid
EC50 Skeletonema costatum (marine diatom): > 1,000 mg/l
Exposure time: 72 h

Components

Toxicity to bacteria : Methanol
> 1,000 mg/l

Toluene
84 mg/l
EC50 Nitrosomonas Sp.: 84 mg/l
Exposure time: 24 h

Components

Toxicity to fish (Chronic toxicity) : Hydrotreated Heavy Naphtha
NOEC: 2.6 mg/l
Exposure time: 14 d
Species: Pimephales promelas (fathead minnow)

Methanol
NOEC: 7,900 mg/l
Exposure time: 8.3 d

Toluene
NOEC: 1.39 mg/l
Exposure time: 40 d
Species: Oncorhynchus kisutch (coho salmon)

Components

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	Hydrotreated Heavy Naphtha NOEC: 2.6 mg/l Exposure time: 21 d Species: Daphnia magna (Water flea) Toluene NOEC: 0.74 mg/l Exposure time: 7 d Species: Ceriodaphnia dubia

Persistence and degradability

no data available

Mobility

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.
If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	:	10 - 30%
Water	:	10 - 30%
Soil	:	50 - 70%

The portion in water is expected to be soluble or dispersible.

Bioaccumulative potential

no data available

Other information

no data available

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION
Based on our hazard characterization, the potential environmental hazard is: Moderate

Section: 13. DISPOSAL CONSIDERATIONS

Disposal methods	:	The product should not be allowed to enter drains, water courses or the soil. Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.
Disposal considerations	:	Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport

Proper shipping name	:	FLAMMABLE LIQUID, N.O.S.
Technical name(s):	:	Methanol, Ethylbenzene
UN/ID No.	:	UN 1993
Transport hazard class(es)	:	3
Packing group	:	II
IERG No	:	14
Hazchem Code	:	●3YE

Air transport (IATA)

UN/ID No.	:	UN 1993
Proper shipping name	:	FLAMMABLE LIQUID, N.O.S.
Technical name(s)	:	Methanol, Ethylbenzene
Transport hazard class(es)	:	3
Packing group	:	II

Sea transport (IMDG/IMO)

UN/ID No.	:	UN 1993
Proper shipping name	:	FLAMMABLE LIQUID, N.O.S.
Technical name(s)	:	Methanol, Ethylbenzene
Transport hazard class(es)	:	3
Packing group	:	II
Marine pollutant	:	Naphthalene, 1,2,4-Trimethylbenzene

Section: 15. REGULATORY INFORMATION

Standard for the Uniform Scheduling of Medicines and Poisons	:	Schedule 6

INTERNATIONAL CHEMICAL CONTROL LAWS :

United States TSCA Inventory
On the inventory, or in compliance with the inventory.

Australia. Australian Industrial Chemicals Introduction Scheme (AICIS)
All substances in this product comply with the Australian Industrial Chemicals Introduction Scheme (AICIS)

Canadian Domestic Substances List (DSL)
The substance(s) in this preparation are included in or exempted from the Domestic Substance List (DSL).

Japan. ENCS - Existing and New Chemical Substances Inventory
All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Existing and New Chemical Substances list (ENCS).

Korea. Korean Existing Chemicals Inventory (KECI)
All substances in this product comply with the Chemical Control Act (CCA) and are listed on the Existing Chemicals List (ECL)

Philippines Inventory of Chemicals and Chemical Substances (PICCS)
All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).

China Inventory of Existing Chemical Substances
All substances in this product comply with the Provisions on the Environmental Administration of New Chemical Substances and are listed on or exempt from the Inventory of Existing Chemical Substances China (IECSC).

Section: 16. OTHER INFORMATION

REFERENCES

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version),
Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH,
(TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Revision Date	:	16.03.2022
Version Number	:	1.0
Prepared By	:	Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

to the competent authority				

Immediate, delayed and chronic health effects from exposure

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

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

Exposure Levels
No data available

Interactive effects
Skin disorders.

Data limitations
No data available

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

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

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

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

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

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

Substances	CAS Number	Reproductive toxicity

Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable

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

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

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

12. Ecological Information

Ecotoxicity

Product Ecotoxicity Data

No data available

Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available	No information available	No information available	No information available

12.2. Persistence and degradability

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

12.3. Bioaccumulative potential

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

12.4. Mobility in soil

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

12.6. Other adverse effects

Endocrine Disruptor Information
This product does not contain any known or suspected endocrine disruptors

13. Disposal Considerations

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

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

Environmental regulations
Not applicable

14. Transport Information

Transportation Information

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

Special precautions during transport
None

HazChem Code
None Allocated

15. Regulatory Information

Safety, health and environmental regulations specific for the product

International Inventories

Australian AICS Inventory	All components listed on inventory or are exempt.
New Zealand Inventory of Chemicals	All components listed on inventory or are exempt.
EINECS Inventory	This product, and all its components, complies with EINECS
US TSCA Inventory	All components listed on inventory or are exempt.
Canadian DSL Inventory	All components listed on inventory or are exempt.

Poisons Schedule number
None Allocated

16. Other information

Date of preparation or review

Revision Date: 04-Sep-2015

Revision Note
SDS sections updated: 2

Full text of R-phrases referred to under Sections 2 and 3
None

HYDROCHLORIC ACID 32%

Coogee Chemicals Pty Ltd

Chemwatch Hazard Alert Code: **3**

Chemwatch: **48-4484**
Version No: **7.1**
Safety Data Sheet according to WHS Regulations (Hazardous Chemicals) Amendment 2020 and ADG requirements

Issue Date: **03/09/2020**
Print Date: **17/03/2022**
L.GHS.AUS.EN.E

SECTION 1 Identification of the substance / mixture and of the company / undertaking

Product Identifier

Product name	HYDROCHLORIC ACID 32%
Chemical Name	Not Applicable
Synonyms	COOGEE HYDROCHLORIC ACID 32%, MURIATIC ACID, SPIRITS OF SALTS; Product code: 9178
Proper shipping name	HYDROCHLORIC ACID
Chemical formula	Not Applicable
Other means of identification	Not Available

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

Relevant identified uses	Acidifier, Chemical intermediate, Laboratory reagent, Pickling and anodising metals, scale remover.

Details of the supplier of the safety data sheet

Registered company name	**Coogee Chemicals Pty Ltd**
Address	Cnr of Patterson and Kwinana Beach Roads Kwinana WA Australia
Telephone	+61 8 9439 8200
Fax	+61 8 9439 8300
Website	www.coogee.com.au
Email	enquiry@coogee.com.au

Emergency telephone number

Association / Organisation	**Coogee Chemicals**
Emergency telephone numbers	**1800 800 655**
Other emergency telephone numbers	**Not Available**

SECTION 2 Hazards identification

Classification of the substance or mixture

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

Poisons Schedule	S6
Classification [1]	Serious Eye Damage/Eye Irritation Category 1, Hazardous to the Aquatic Environment Long-Term Hazard Category 4, Skin Corrosion/Irritation Category 1B
Legend:	*1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI*

Label elements

Hazard pictogram(s)	
Signal word	**Danger**

Hazard statement(s)

H413	May cause long lasting harmful effects to aquatic life.
H314	Causes severe skin burns and eye damage.

Supplementary statement(s)

Not Applicable

Precautionary statement(s) Prevention

P260	Do not breathe mist/vapours/spray.

Page 1 continued...

P264	Wash all exposed external body areas thoroughly after handling.

Precautionary statement(s) 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 [or shower].

Precautionary statement(s) Storage

P405	Store locked up.

Precautionary statement(s) Disposal

P501	Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation.

SECTION 3 Composition / information on ingredients

Substances

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name
7647-01-0	32	hydrochloric acid
7732-18-5	balance	water
Legend:	*1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI; 4. Classification drawn from C&L; * EU IOELVs available*	

SECTION 4 First aid measures

Description of first aid measures

Eye Contact	If this product comes in contact with the eyes: ▸ Immediately hold eyelids apart and flush the eye continuously with running water. ▸ Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. ▸ Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes. ▸ Transport to hospital or doctor without delay. ▸ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	If skin or hair contact occurs: ▸ Immediately flush body and clothes with large amounts of water, using safety shower if available. ▸ Quickly remove all contaminated clothing, including footwear. ▸ Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre. ▸ Transport to hospital, or doctor.
Inhalation	▸ If fumes or combustion products are inhaled remove from contaminated area. ▸ Lay patient down. Keep warm and rested. ▸ Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. ▸ Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. ▸ Transport to hospital, or doctor, without delay.
Ingestion	▸ For advice, contact a Poisons Information Centre or a doctor at once. ▸ Urgent hospital treatment is likely to be needed. ▸ If swallowed do **NOT** induce vomiting. ▸ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. ▸ Observe the patient carefully. ▸ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. ▸ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. ▸ Transport to hospital or doctor without delay.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.
For acute or short term repeated exposures to strong acids:
- Airway problems may arise from laryngeal edema and inhalation exposure. Treat with 100% oxygen initially.
- Respiratory distress may require cricothyroidotomy if endotracheal intubation is contraindicated by excessive swelling
- Intravenous lines should be established immediately in all cases where there is evidence of circulatory compromise.
- Strong acids produce a coagulation necrosis characterised by formation of a coagulum (eschar) as a result of the dessicating action of the acid on proteins in specific tissues.

INGESTION:
- Immediate dilution (milk or water) within 30 minutes post ingestion is recommended.
- **DO NOT** attempt to neutralise the acid since exothermic reaction may extend the corrosive injury.
- Be careful to avoid further vomit since re-exposure of the mucosa to the acid is harmful. Limit fluids to one or two glasses in an adult.
- Charcoal has no place in acid management.
- Some authors suggest the use of lavage within 1 hour of ingestion.

SKIN:
- Skin lesions require copious saline irrigation. Treat chemical burns as thermal burns with non-adherent gauze and wrapping.
- Deep second-degree burns may benefit from topical silver sulfadiazine.

EYE:
- Eye injuries require retraction of the eyelids to ensure thorough irrigation of the conjuctival cul-de-sacs. Irrigation should last at least 20-30 minutes. **DO NOT** use neutralising agents or any other additives. Several litres of saline are required.
- Cycloplegic drops, (1% cyclopentolate for short-term use or 5% homatropine for longer term use) antibiotic drops, vasoconstrictive agents or artificial tears may be indicated dependent on the severity of the injury.
- Steroid eye drops should only be administered with the approval of a consulting ophthalmologist).

Continued...

[Ellenhorn and Barceloux: Medical Toxicology]

SECTION 5 Firefighting measures

Extinguishing media

- Water spray or fog.
- Foam.

Special hazards arising from the substrate or mixture

Fire Incompatibility	None known.

Advice for firefighters

Fire Fighting	HCl can liberate highly flammable hydrogen gas when in contact with certain metals. ▸ Alert Fire Brigade and tell them location and nature of hazard. ▸ Wear full body protective clothing with breathing apparatus.
Fire/Explosion Hazard	▸ Non combustible. ▸ Not considered to be a significant fire risk. Decomposition may produce toxic fumes of: hydrogen chloride
HAZCHEM	2R

SECTION 6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

Minor Spills	▸ Drains for storage or use areas should have retention basins for pH adjustments and dilution of spills before discharge or disposal of material. ▸ Check regularly for spills and leaks. ▸ Clean up all spills immediately. ▸ Avoid breathing vapours and contact with skin and eyes.
Major Spills	Chemical Class:acidic compounds, inorganic For release onto land: recommended sorbents listed in order of priority.

SORBENT TYPE	RANK	APPLICATION	COLLECTION	LIMITATIONS
LAND SPILL - SMALL				
foamed glass - pillows	1	throw	pitchfork	R, P, DGC, RT
expanded mineral - particulate	2	shovel	shovel	R, I, W, P, DGC
foamed glass - particulate	2	shovel	shovel	R, W, P, DGC
LAND SPILL - MEDIUM				
expanded mineral -particulate	1	blower	skiploader	R, I, W, P, DGC
foamed glass- particulate	2	blower	skiploader	R, W, P, DGC
foamed glass - particulate	3	throw	skiploader	R, W, P, DGC

Legend
DGC: Not effective where ground cover is dense
R; Not reusable
I: Not incinerable
P: Effectiveness reduced when rainy
RT:Not effective where terrain is rugged
SS: Not for use within environmentally sensitive sites
W: Effectiveness reduced when windy
Reference: Sorbents for Liquid Hazardous Substance Cleanup and Control;
R.W Melvold et al: Pollution Technology Review No. 150: Noyes Data Corporation 1988

- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.

Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 Handling and storage

Precautions for safe handling

Safe handling	▸ Avoid all personal contact, including inhalation. ▸ Wear protective clothing when risk of exposure occurs.
Other information	▸ Store in original containers. ▸ Keep containers securely sealed.

Conditions for safe storage, including any incompatibilities

Continued...

Suitable container	▸ **DO NOT** use aluminium or galvanised containers ▸ Lined metal can, lined metal pail/ can. ▸ Plastic pail. For low viscosity materials ▸ Drums and jerricans must be of the non-removable head type. ▸ Where a can is to be used as an inner package, the can must have a screwed enclosure.
Storage incompatibility	Incompatible with oxidizing agents eg. hypochlorites, alkalis, most metals etc, alcohols and amines. ▸ Inorganic acids are generally soluble in water with the release of hydrogen ions. The resulting solutions have pH's of less than 7.0. ▸ Reacts vigorously with alkalis ▸ Reacts with mild steel, galvanised steel / zinc producing hydrogen gas which may form an explosive mixture with air.

SECTION 8 Exposure controls / personal protection

Control parameters

Occupational Exposure Limits (OEL)

INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Australia Exposure Standards	hydrochloric acid	Hydrogen chloride	Not Available	Not Available	5 ppm / 7.5 mg/m3	Not Available

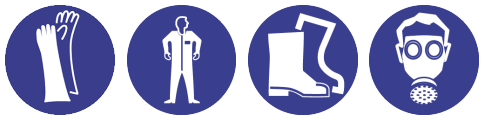
Emergency Limits

Ingredient	TEEL-1	TEEL-2	TEEL-3
hydrochloric acid	Not Available	Not Available	Not Available
hydrochloric acid	1.8 ppm	22 ppm	100 ppm

Ingredient	Original IDLH	Revised IDLH
hydrochloric acid	50 ppm	Not Available
water	Not Available	Not Available

MATERIAL DATA

Exposure controls

Appropriate engineering controls	Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.
Personal protection	
Eye and face protection	▸ Chemical goggles. ▸ Full face shield may be required for supplementary but never for primary protection of eyes.
Skin protection	See Hand protection below
Hands/feet protection	▸ Wear chemical protective gloves, e.g. PVC. ▸ Wear safety footwear or safety gumboots, e.g. Rubber ▸ When handling corrosive liquids, wear trousers or overalls outside of boots, to avoid spills entering boots.
Body protection	See Other protection below
Other protection	▸ Overalls. ▸ PVC Apron.

Respiratory protection

Type B-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

SECTION 9 Physical and chemical properties

Information on basic physical and chemical properties

Appearance	Colourless to slightly yellow corrosive liquid with pungent acidic odour; miscible with water.

Physical state	Liquid	**Relative density (Water = 1)**	1.161
Odour	Not Available	**Partition coefficient n-octanol / water**	Not Available
Odour threshold	Not Available	**Auto-ignition temperature (°C)**	Not Available
pH (as supplied)	<1	**Decomposition temperature**	Not Available
Melting point / freezing point (°C)	<-20	**Viscosity (cSt)**	Not Available
Initial boiling point and boiling range (°C)	109	**Molecular weight (g/mol)**	Not Applicable
Flash point (°C)	Not Applicable	**Taste**	Not Available
Evaporation rate	as for water	**Explosive properties**	Not Available
Flammability	Not Applicable	**Oxidising properties**	Not Available
Upper Explosive Limit (%)	Not Applicable	**Surface Tension (dyn/cm or mN/m)**	Not Available

Continued...

Lower Explosive Limit (%)	Not Applicable	**Volatile Component (%vol)**	100
Vapour pressure (kPa)	2	**Gas group**	Not Available
Solubility in water	Miscible	**pH as a solution (Not Available%)**	Not Available
Vapour density (Air = 1)	1.3	**VOC g/L**	Not Available

SECTION 10 Stability and reactivity

Reactivity	See section 7
Chemical stability	▸ Contact with alkaline material liberates heat
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 Toxicological information

Information on toxicological effects

Inhaled	Acidic corrosives produce respiratory tract irritation with coughing, choking and mucous membrane damage. Symptoms of exposure may include dizziness, headache, nausea and weakness. Hydrogen chloride (HCl) vapour or fumes present a hazard from a single acute exposure. Exposures of 1300 to 2000 ppm have been lethal to humans in a few minutes. Inhalation of aerosols (mists, fumes), generated by the material during the course of normal handling, may produce toxic effects; these may be fatal. Inhalation of the vapour is hazardous and may even be fatal
Ingestion	Ingestion of acidic corrosives may produce circumoral burns with a distinct discolouration of the mucous membranes of the mouth, throat and oesophagus. Immediate pain and difficulties in swallowing and speaking may also be evident.
Skin Contact	The material can produce chemical burns following direct contact with the skin. Skin contact with acidic corrosives may result in pain and burns; these may be deep with distinct edges and may heal slowly with the formation of scar tissue. Open cuts, abraded or irritated skin should not be exposed to this material Entry into the blood-stream through, for example, cuts, abrasions, puncture wounds or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.
Eye	The material can produce chemical burns to the eye following direct contact. Vapours or mists may be extremely irritating. When applied to the eye(s) of animals, the material produces severe ocular lesions which are present twenty-four hours or more after instillation.
Chronic	Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems. Repeated or prolonged exposure to acids may result in the erosion of teeth, inflammatory and ulcerative changes in the mouth and necrosis (rarely) of the jaw. Bronchial irritation, with cough, and frequent attacks of bronchial pneumonia may ensue. Chronic minor exposure to hydrogen chloride (HCl) vapour or fume may cause discolouration or erosion of the teeth, bleeding of the nose and gums; and ulceration of the nasal mucous membranes. Repeated exposures of animals to concentrations of about 34 ppm HCl produced no immediate toxic effects.

HYDROCHLORIC ACID 32%	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
hydrochloric acid	**TOXICITY**	**IRRITATION**
	dermal (mouse) LD50: 1449 mg/kg[2]	Eye (rabbit): 5mg/30s - mild
	Oral (Rat) LD50; 900 mg/kg[2]	Eye: adverse effect observed (irritating)[1]
		Skin: adverse effect observed (corrosive)[1]
		Skin: adverse effect observed (irritating)[1]
water	**TOXICITY**	**IRRITATION**
	Oral (Rat) LD50; >90000 mg/kg[2]	Not Available
Legend:	*1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.* Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances*	

HYDROCHLORIC ACID 32%	Inhalation (Rat) LC50: 4.2-4.7 mg/l/1h
HYDROCHLORIC ACID	Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. for acid mists, aerosols, vapours Data from assays for genotoxic activity in vitro suggest that eukaryotic cells are susceptible to genetic damage when the pH falls to about 6.5. Cells from the respiratory tract have not been examined in this respect. The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

Continued...

	The substance is classified by IARC as Group 3: **NOT** classifiable as to its carcinogenicity to humans. Evidence of carcinogenicity may be inadequate or limited in animal testing.
HYDROCHLORIC ACID & WATER	No significant acute toxicological data identified in literature search.

Acute Toxicity	✗	**Carcinogenicity**	✗
Skin Irritation/Corrosion	✓	**Reproductivity**	✗
Serious Eye Damage/Irritation	✓	**STOT - Single Exposure**	✗
Respiratory or Skin sensitisation	✗	**STOT - Repeated Exposure**	✗
Mutagenicity	✗	**Aspiration Hazard**	✗

Legend: ✗ *– Data either not available or does not fill the criteria for classification*
✓ *– Data available to make classification*

SECTION 12 Ecological information

Toxicity

HYDROCHLORIC ACID 32%

Endpoint	Test Duration (hr)	Species	Value	Source
Not Available	Not Available	Not Available	Not Available	Not Available

hydrochloric acid

Endpoint	Test Duration (hr)	Species	Value	Source
EC50(ECx)	9.33h	Fish	0.51mg/L	4
LC50	96h	Fish	334.734mg/L	4

water

Endpoint	Test Duration (hr)	Species	Value	Source
Not Available	Not Available	Not Available	Not Available	Not Available

Legend: *Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data*

Prevent, by any means available, spillage from entering drains or water courses.
DO NOT discharge into sewer or waterways.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
hydrochloric acid	LOW	LOW
water	LOW	LOW

Bioaccumulative potential

Ingredient	Bioaccumulation
hydrochloric acid	LOW (LogKOW = 0.5392)

Mobility in soil

Ingredient	Mobility
hydrochloric acid	LOW (KOC = 14.3)

SECTION 13 Disposal considerations

Waste treatment methods

Product / Packaging disposal	▸ Containers may still present a chemical hazard/ danger when empty. ▸ Return to supplier for reuse/ recycling if possible. ▸ Recycle wherever possible. ▸ Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.

SECTION 14 Transport information

Labels Required

Marine Pollutant	NO

Continued...

HAZCHEM	2R

Land transport (ADG)

UN number	1789
UN proper shipping name	HYDROCHLORIC ACID
Transport hazard class(es)	Class: 8 Subrisk: Not Applicable
Packing group	II
Environmental hazard	Not Applicable
Special precautions for user	Special provisions: Not Applicable Limited quantity: 1 L

Air transport (ICAO-IATA / DGR)

UN number	1789
UN proper shipping name	Hydrochloric acid
Transport hazard class(es)	ICAO/IATA Class: 8 ICAO / IATA Subrisk: Not Applicable ERG Code: 8L
Packing group	II
Environmental hazard	Not Applicable
Special precautions for user	Special provisions: A3 A803 Cargo Only Packing Instructions: 855 Cargo Only Maximum Qty / Pack: 30 L Passenger and Cargo Packing Instructions: 851 Passenger and Cargo Maximum Qty / Pack: 1 L Passenger and Cargo Limited Quantity Packing Instructions: Y840 Passenger and Cargo Limited Maximum Qty / Pack: 0.5 L

Sea transport (IMDG-Code / GGVSee)

UN number	1789
UN proper shipping name	HYDROCHLORIC ACID
Transport hazard class(es)	IMDG Class: 8 IMDG Subrisk: Not Applicable
Packing group	II
Environmental hazard	Not Applicable
Special precautions for user	EMS Number: F-A, S-B Special provisions: Not Applicable Limited Quantities: 1 L

Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

Product name	Group
hydrochloric acid	Not Available
water	Not Available

Transport in bulk in accordance with the ICG Code

Product name	Ship Type
hydrochloric acid	Not Available
water	Not Available

SECTION 15 Regulatory information

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

hydrochloric acid is found on the following regulatory lists

Continued...

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6
Australian Inventory of Industrial Chemicals (AIIC)
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs

water is found on the following regulatory lists

Australian Inventory of Industrial Chemicals (AIIC)

National Inventory Status

National Inventory	Status
Australia - AIIC / Australia Non-Industrial Use	Yes
Canada - DSL	Yes
Canada - NDSL	No (hydrochloric acid; water)
China - IECSC	Yes
Europe - EINEC / ELINCS / NLP	Yes
Japan - ENCS	Yes
Korea - KECI	Yes
New Zealand - NZIoC	Yes
Philippines - PICCS	Yes
USA - TSCA	Yes
Taiwan - TCSI	Yes
Mexico - INSQ	Yes
Vietnam - NCI	Yes
Russia - FBEPH	Yes
Legend:	*Yes = All CAS declared ingredients are on the inventory* *No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration.*

SECTION 16 Other information

Revision Date	03/09/2020
Initial Date	31/03/2015

SDS Version Summary

Version	Date of Update	Sections Updated
6.1	01/11/2019	One-off system update. NOTE: This may or may not change the GHS classification
7.1	03/09/2020	Classification change due to full database hazard calculation/update.

Other information

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

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings.

Definitions and abbreviations

PC—TWA: Permissible Concentration-Time Weighted Average
PC—STEL: Permissible Concentration-Short Term Exposure Limit
IARC: International Agency for Research on Cancer
ACGIH: American Conference of Governmental Industrial Hygienists
STEL: Short Term Exposure Limit
TEEL: Temporary Emergency Exposure Limit。
IDLH: Immediately Dangerous to Life or Health Concentrations
ES: Exposure Standard
OSF: Odour Safety Factor
NOAEL :No Observed Adverse Effect Level
LOAEL: Lowest Observed Adverse Effect Level
TLV: Threshold Limit Value
LOD: Limit Of Detection
OTV: Odour Threshold Value
BCF: BioConcentration Factors
BEI: Biological Exposure Index
AIIC: Australian Inventory of Industrial Chemicals
DSL: Domestic Substances List
NDSL: Non-Domestic Substances List
IECSC: Inventory of Existing Chemical Substance in China
EINECS: European INventory of Existing Commercial chemical Substances
ELINCS: European List of Notified Chemical Substances
NLP: No-Longer Polymers
ENCS: Existing and New Chemical Substances Inventory
KECI: Korea Existing Chemicals Inventory
NZIoC: New Zealand Inventory of Chemicals
PICCS: Philippine Inventory of Chemicals and Chemical Substances

Continued...

TSCA: Toxic Substances Control Act
TCSI: Taiwan Chemical Substance Inventory
INSQ: Inventario Nacional de Sustancias Químicas
NCI: National Chemical Inventory
FBEPH: Russian Register of Potentially Hazardous Chemical and Biological Substances

Full text of H-Statements referred to under sections 2 and 3
None

Additional information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

Key abreviations 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/m^3 - milligram/cubic meter mm - millimeter mmHg - millimeter mercury w/w - weight/weight d - day

Key literature references and sources for data
www.ChemADVISOR.com/
NZ CCID

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End of Safety Data Sheet

Safety Data Sheet

BONDERITE S-AD 85 ACID INHIBITOR ACHESON known as RODINE 85

SDS No. : 169742
V001.1
Date of issue: 15.04.2022

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

Product name: BONDERITE S-AD 85 ACID INHIBITOR ACHESON known as RODINE 85

Intended use: Etch Inhibitors

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:

Hazard Class	Hazard Category	Route of Exposure
Acute toxicity	Category 4	Oral
Skin irritation	Category 2	
Serious eye damage/eye irritation	Category 1	
Skin sensitizer	Category 1	
Carcinogenicity	Category 2	
Target Organ Systemic Toxicant - Repeated exposure	Category 2	

Hazard pictogram:

Signal word: Danger

Hazard statement(s):
H302 Harmful if swallowed.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H351 Suspected of causing cancer.
H373 May cause damage to organs through prolonged or repeated exposure.

Precautionary Statement(s):

Prevention:
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe mist/vapours.
P264 Wash hands thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P272 Contaminated work clothing should not be allowed out of the workplace.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response:
P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor/… if you feel unwell.
P302+P352 IF ON SKIN: Wash with plenty of water.
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.
P362+P364 Take off contaminated clothing and wash it 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.

Dangerous Goods information:
Not classified as Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Code).

Section 3. Composition / information on ingredients

General chemical description:
Mixture
polymers

Identity of ingredients:

Chemical ingredients	CAS-No.	Proportion
Formaldehyde polymer with o-toluidinium chloride	68492-82-0	10- < 30 %
prop-2-yn-1-ol	107-19-7	3- < 5 %
1,3-Diethyl-2-thiourea	105-55-5	3- < 10 %
methanol	67-56-1	< 1 %
non hazardous ingredients~		60- <= 100 %

Section 4. First aid measures

Ingestion:
Do not induce vomiting.
Have victim rinse mouth thoroughly with water.
Never give anything by mouth if the victim is rapidly losing consciousness, or is unconscious or convulsing.
Seek medical advice.

Skin:
Rinse with running water and soap. Apply replenishing cream. Change all contaminated clothing. If necessary, see a dermatologist.

Eyes: Hold eye open and rinse slowly and gently with water for 15 - 20 minutes.
Get immediate medical attention.

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

First Aid facilities: Eye wash
Normal washroom facilities

Medical attention and special treatment: Treat symptomatically and supportively.

Section 5. Fire fighting measures

Suitable extinguishing media: Foam, extinguishing powder, carbon dioxide.
Water spray or fog.

Decomposition products in case of fire: Thermal decomposition can lead to release of irritating gases and vapors.
carbon monoxide
Carbon dioxide.

Special protective equipment for fire-fighters: Wear full protective clothing.
Fire fighters should wear positive pressure self-contained breathing apparatus (SCBA).

Additional fire fighting advice: In case of fire, keep containers cool with water spray.
Collect contaminated fire fighting water separately. It must not enter drains.

Section 6. Accidental release measures

Personal precautions: Avoid skin and eye contact.
Danger of slipping on spilled product.

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

Clean-up methods: Remove with liquid-absorbing material (sand, peat, sawdust).
Wash away residue with plenty of water.
Dispose of contaminated material as waste according to Section 13.

Section 7. Handling and storage

Precautions for safe handling: Avoid skin and eye contact.
Ensure that workrooms are adequately ventilated.
Wear suitable protective clothing, safety glasses and gloves.

Conditions for safe storage: Ensure good ventilation/extraction.
Store only in the original container.
Temperatures between + 5 °C and + 30 °C

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				

METHYL ALCOHOL 67-56-1		200	262				
METHYL ALCOHOL 67-56-1						250	328

Engineering controls: Ensure good ventilation/extraction.

Eye protection: Wear chemical goggles and face shield.

Skin protection: Suitable protective clothing
Suitable protective gloves.
Please note that in practice the working life of chemical resistant gloves may be considerably reduced as a result of many influencing factors (e.g. temperature). Suitable risk assessment should be carried out by the end user. If signs of wear and tear are noticed then the gloves should be replaced.

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
Liquid
Odor: Aromatic
pH: < 2.0
Melting point / freezing point: 25 °F (-3.9 °C)
Specific gravity: 1.06 - 1.09
Solubility in water: fully miscible
VOC content (2004/42/EC) 0.2 % (2010/75/EU)

Section 10. Stability and reactivity

Stability: Stable under normal conditions of temperature and pressure.

Conditions to avoid: Extremes of temperature.

Incompatible materials: Reaction with strong oxidants.

Hazardous decomposition products: Thermal decomposition can lead to release of irritating gases and vapors.

carbon monoxide
Carbon dioxide.

Hazardous polymerization: Will not occur.

Section 11. Toxicological information

Health Effects:

Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea.

Skin: Causes skin irritation.
Symptoms may include redness, edema, drying, defatting and cracking of the skin.
May cause skin sensitization.

Eyes: Causes serious eye damage.
Contact with the eyes may cause moderate to severe eye injury. Eye contact may result in corneal injury. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva.

Inhalation: May cause respiratory tract irritation.
Inhalation of product mist may cause irritation of the nose, throat, and respiratory tract.

Chronic effects:

methanol 67-56-1: Neurological symptoms; irritation to the nasal mucous membranes through exposure to higher vapor concentrations; headaches, blurred vision and nausea; damage to the skin due to repeated contact; prenatal toxic effects were seen in rats and mice.

Carcinogenicity: Category 2 (Carcinogen), Suspected of causing cancer.

Toxicity for reproduction: Toxic to reproduction, category 2, Suspected of damaging fertility or the unborn child.

Acute toxicity:

Hazardous components CAS-No.	Value type	Value	Route of application	Exposure time	Species	Method
prop-2-yn-1-ol 107-19-7	LD50	56.4 mg/kg	oral		rat	OECD Guideline 401 (Acute Oral Toxicity)
1,3-Diethyl-2-thiourea 105-55-5	LD50 LD50 Acute toxicity estimate (ATE)	930 mg/kg > 1,000 - < 2,000 mg/kg 1,001 mg/kg	oral dermal dermal		mouse rat	not specified OECD Guideline 402 (Acute Dermal Toxicity) Expert judgement
methanol 67-56-1	Acute toxicity estimate (ATE)	300 mg/kg	oral			Expert judgement

Skin corrosion/irritation:

Hazardous components CAS-No.	Result	Exposure time	Species	Method
1,3-Diethyl-2-thiourea 105-55-5	not irritating	4 h	rabbit	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
methanol 67-56-1	not irritating	20 h	rabbit	BASF Test

Serious eye damage/irritation:

Hazardous components CAS-No.	Result	Exposure time	Species	Method
1,3-Diethyl-2-thiourea 105-55-5	Category 1 (irreversible effects on the eye)		rabbit	OECD Guideline 405 (Acute Eye Irritation / Corrosion)
methanol 67-56-1	not irritating		rabbit	OECD Guideline 405 (Acute Eye Irritation / Corrosion)

Respiratory or skin sensitization:

Hazardous components CAS-No.	Result	Test type	Species	Method
1,3-Diethyl-2-thiourea 105-55-5	Sensitizing	Guinea pig maximisation test	guinea pig	Magnusson and Kligman Method
methanol 67-56-1	not sensitising	Guinea pig maximisation test	guinea pig	equivalent or similar to OECD Guideline 406 (Skin Sensitisation)

Germ cell mutagenicity:

Hazardous components CAS-No.	Result	Type of study / Route of administration	Metabolic activation / Exposure time	Species	Method
1,3-Diethyl-2-thiourea 105-55-5	negative positive positive	bacterial reverse mutation assay (e.g Ames test) single cell gel/comet assay in mammalian cells mammalian cell gene mutation assay	with and without without without		not specified not specified Mammalian Cell Gene Mutation Assay
1,3-Diethyl-2-thiourea 105-55-5	negative	oral: gavage		rat	OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)
methanol 67-56-1	negative negative negative	bacterial reverse mutation assay (e.g Ames test) in vitro mammalian cell micronucleus test mammalian cell gene mutation assay	with and without without with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay) not specified equivalent or similar to OECD Guideline 476 (In vitro Mammalian Cell Gene Mutation Test)
methanol 67-56-1	negative	intraperitoneal		mouse	equivalent or similar to OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)

Repeated dose toxicity:

Hazardous components CAS-No.	Result	Route of application	Exposure time / Frequency of treatment	Species	Method
1,3-Diethyl-2-thiourea 105-55-5	NOAEL=7.35 mg/kg	oral: feed	7 wdaily	rat	not specified
1,3-Diethyl-2-thiourea 105-55-5	LOAEL=10 mg/kg	oral: feed	52 wdaily	rat	not specified
methanol 67-56-1	NOAEL=6.63 mg/l	inhalation: vapour	4 weeks6 h/d, 5 d/w	rat	equivalent or similar to OECD Guideline 412 (Repeated Dose Inhalation Toxicity: 28/14-Day)
methanol 67-56-1	NOAEL=0.13 mg/l	inhalation: vapour	12 m20 h/d	rat	equivalent or similar to OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)

Section 12. Ecological information

General ecological information: Do not empty into drains / surface water / ground water.

Ecotoxicity: Harmful to aquatic life with long lasting effects.

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	LC50	910 mg/l	Fish	96 h	Danio rerio	OECD Guideline 203 (Fish, Acute Toxicity 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)
1,3-Diethyl-2-thiourea 105-55-5	EC50	310 mg/l	Algae	72 h	Pseudokirchneriella subcapitata	OECD Guideline 201 (Alga, Growth Inhibition Test)
1,3-Diethyl-2-thiourea 105-55-5	NOEC	73 mg/l	Algae	72 h	Pseudokirchneriella subcapitata	OECD Guideline 201 (Alga, Growth Inhibition Test)
methanol 67-56-1	LC50	15,400 mg/l	Fish	96 h	Lepomis macrochirus	EPA-660 (Methods for Acute Toxicity Tests with Fish, Macroinvertebrates and Amphibians)
methanol 67-56-1	NOEC	7,900 mg/l	Fish	200 h	Oryzias latipes	OECD Guideline 210 (fish early lite stage toxicity test)
methanol 67-56-1	EC50	18,260 mg/l	Daphnia	96 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
methanol 67-56-1	EC50	22,000 mg/l	Algae	96 h	Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata)	OECD Guideline 201 (Alga, Growth Inhibition Test)
methanol 67-56-1	IC50	> 1,000 mg/l	Bacteria	3 h	activated sludge of a predominantly domestic sewage	OECD Guideline 209 (Activated Sludge, Respiration Inhibition 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	not readily biodegradable.	aerobic	3 %	OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)
methanol 67-56-1	readily biodegradable	aerobic	82 - 92 %	EU Method C.4-E (Determination of the "Ready" Biodegradability Closed Bottle Test)

Bioaccumulative potential / Mobility in soil:

Hazardous components CAS-No.	LogPow	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)
methanol 67-56-1		< 10	72 h	Leuciscus idus melanotus		not specified
methanol 67-56-1	-0.77					other guideline:

Section 13. Disposal considerations

Waste disposal of product: Dispose of according to Federal, State and local governmental regulations.

Recommended cleanser: Water, if necessary with added cleaning agent.

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: Not classified as Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Code).

Marine transport IMDG:

UN no.: 3265
Proper shipping name: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (o-Toluidine hydrochloride copolymer)
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. (o-Toluidine hydrochloride copolymer)
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
IMDG: International Maritime Dangerous Goods code
IATA-DGR: International Air Transport Association – Dangerous Goods Regulations
STEL - Short term exposure limit
TWA - Time weighted average
AIIC - Australian Inventory of Industrial Chemicals (AIIC)
AICIS - Australian Industrial Chemicals Introduction Scheme

Reason for issue: Reviewed SDS. Reissued with new date. involved chapters: 1 - 16

Date of previous issue: 24.01.2017

Disclaimer:

The percentage weight (% w/w) of ingredients is not to be taken as a specification guaranteed by Henkel Australia Pty. Limited, but only as an approximate guide to the content of hazardous ingredients in the material. The information contained herein does not constitute a guarantee by Henkel Australia Pty. Limited concerning the properties of the material.
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HALLIBURTON

SAFETY DATA SHEET

SODIUM BICARBONATE

Revision Date: 22-Sep-2015 **Revision Number:** 26

1. Product Identifier & Identity for the Chemical

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

1.1. Product Identifier

Product Name SODIUM BICARBONATE

Other means of Identification

Synonyms: None

Product Code: HM001824

Recommended use of the chemical and restrictions on use

Recommended Use Buffer

Uses Advised Against No information available

Supplier's name, address and phone number

Manufacturer/Supplier Halliburton Australia Pty. Ltd.
15 Marriott Road
Jandakot
WA 6164
Australia

ACN Number: 009 000 775
Telephone Number: + 61 1 800 686 951
Fax Number: 61 (08) 9455 5300

E-Mail address: fdunexchem@halliburton.com

Emergency phone number

+ 61 1 800 686 951

Australian Poisons Information Centre

24 Hour Service: - 13 11 26

Police or Fire Brigade: - 000 (exchange): - 1100

2. Hazard Identification

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

Classification of the hazardous chemical

Not classified

Label elements, including precautionary statements

Hazard Pictograms

Signal Word Not Hazardous

Hazard Statements Not Classified

Precautionary Statements

Prevention None

Response None

Storage None

Disposal None

Contains

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

Other hazards which do not result in classification
This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).
This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

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

Classification Not Classified
Risk Phrases None

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - Australia
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	60 - 100%	Not Applicable

4. First aid measures

Description of necessary first aid measures

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

Eyes In case of contact, 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 Under normal conditions, first aid procedures are not required.

Symptoms caused by exposure
No significant hazards expected.

Medical Attention and Special Treatment
Notes to Physician Treat symptomatically

5. Fire Fighting Measures

Suitable extinguishing equipment
Suitable Extinguishing Media
All standard fire fighting media
Extinguishing media which must not be used for safety reasons
None known.

Specific hazards arising from the chemical
Special Exposure Hazards
Not applicable.

Special protective equipment and precautions for fire fighters
Special Protective Equipment for Fire-Fighters
Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Use appropriate protective equipment. Avoid creating and breathing dust. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.

6.2. Environmental precautions
Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up
Scoop up and remove.

7. Handling and storage

7.1. Precautions for Safe Handling
Handling Precautions
Avoid creating or inhaling dust. Avoid contact with eyes, skin, or clothing. 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 dry location.
Other Guidelines
No information available

8. Exposure Controls/Personal Protection

Control parameters - exposure standards, biological monitoring
Exposure Limits

Substances	CAS Number	Australia NOHSC	ACGIH TLV-TWA
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable	Not applicable

Appropriate engineering controls
Engineering Controls A well ventilated area to control dust levels. Local exhaust ventilation should be used in areas without good cross ventilation.

Personal protective equipment (PPE)
Respiratory Protection Not normally needed. But if significant exposures are possible then the following respirator is recommended:
Dust/mist respirator. (N95, P2/P3)
Hand Protection Normal work gloves.
Skin Protection Normal work coveralls.
Eye Protection Wear safety glasses or goggles to protect against exposure.
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: Solid
Color: White
Odor: Odorless
Odor Threshold: No information available

Property Remarks/ - Method	Values
pH:	8
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	2.16
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

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.

Sympotoms related to exposure
Most Important Symptoms/Effects
No significant hazards expected.

Numerical measures of toxicity

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Contains no hazardous substances in concentrations above	NA	No data available	No data available	No data available

cut-off values according to the competent authority				

Immediate, delayed and chronic health effects from exposure

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

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
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable.

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

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

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

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

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

Substances	CAS Number	Reproductive toxicity

Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable

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

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

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

12. Ecological Information

Ecotoxicity

Product Ecotoxicity Data

No data available

Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available	No information available	No information available	No information available

12.2. Persistence and degradability

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

12.3. Bioaccumulative potential

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

12.4. Mobility in soil

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

12.6. Other adverse effects

Endocrine Disruptor Information
This product does not contain any known or suspected endocrine disruptors

13. Disposal Considerations

Safe handling and disposal methods
Bury in a licensed landfill according to federal, state, and local regulations.

Disposal of any contaminated packaging
Follow all applicable national or local regulations.

Environmental regulations
Not applicable

14. Transport Information

Transportation Information

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

Special precautions during transport
None

HazChem Code
None Allocated

15. Regulatory Information

Safety, health and environmental regulations specific for the product

International Inventories

Australian AICS Inventory	All components listed on inventory or are exempt.
New Zealand Inventory of Chemicals	All components listed on inventory or are exempt.
EINECS Inventory	This product, and all its components, complies with EINECS
US TSCA Inventory	All components listed on inventory or are exempt.
Canadian DSL Inventory	All components listed on inventory or are exempt.

Poisons Schedule number
None Allocated

16. Other information

Date of preparation or review

Revision Date: 22-Sep-2015

Revision Note
SDS sections updated: 2

Full text of R-phrases referred to under Sections 2 and 3
None

Full text of H-Statements referred to under sections 2 and 3
None

Additional information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

Key abreviations 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/m^3 - milligram/cubic meter mm - millimeter mmHg - millimeter mercury w/w - weight/weight d - day

Key literature references and sources for data

www.ChemADVISOR.com/
NZ CCID

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End of Safety Data Sheet

HALLIBURTON

SAFETY DATA SHEET

SODIUM CHLORIDE

Revision Date: 08-Sep-2015 **Revision Number:** 23

1. Product Identifier & Identity for the Chemical

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

1.1. Product Identifier

Product Name SODIUM CHLORIDE

Other means of Identification

Synonyms: None

Product Code: HM001682

Recommended use of the chemical and restrictions on use

Recommended Use Additive

Uses Advised Against No information available

Supplier's name, address and phone number

Manufacturer/Supplier

Halliburton Australia Pty. Ltd.
15 Marriott Road
Jandakot
WA 6164
Australia

ACN Number: 009 000 775
Telephone Number: + 61 1 800 686 951
Fax Number: 61 (08) 9455 5300

E-Mail address: fdunexchem@halliburton.com

Emergency phone number

+ 61 1 800 686 951

Australian Poisons Information Centre

24 Hour Service: - 13 11 26

Police or Fire Brigade: - 000 (exchange): - 1100

2. Hazard Identification

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

Classification of the hazardous chemical

Not classified

Label elements, including precautionary statements

Hazard Pictograms

Signal Word Not Hazardous

Hazard Statements Not Classified

Precautionary Statements

Prevention None

Response None

Storage None

Disposal None

Contains

Substances	**CAS Number**
Sodium chloride	7647-14-5

Other hazards which do not result in classification
This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).
This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

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

Classification Not Classified
Risk Phrases None

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - Australia
Sodium chloride	7647-14-5	60 - 100%	

4. First aid measures

Description of necessary first aid measures

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

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

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

Ingestion Under normal conditions, first aid procedures are not required.

Symptoms caused by exposure
Causes mild eye irritation.

Medical Attention and Special Treatment
Notes to Physician Treat symptomatically

5. Fire Fighting Measures

Suitable extinguishing equipment
Suitable Extinguishing Media
All standard fire fighting media
Extinguishing media which must not be used for safety reasons
None known.

Specific hazards arising from the chemical

Special Exposure Hazards
None anticipated

Special protective equipment and precautions for fire fighters
Special Protective Equipment for Fire-Fighters
Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Use appropriate protective equipment. Avoid creating and breathing dust.

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 creating or inhaling dust.
Hygiene Measures
Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities
Storage Information
Store in a cool, dry location.
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 chloride	7647-14-5	Not applicable	Not applicable

Appropriate 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 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 Wear safety glasses or goggles to protect against exposure.
Other Precautions None known.
Environmental Exposure Controls No information available

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

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

Property Remarks/ - Method	Values
pH:	No data available
Freezing Point/Range	No data available
Melting Point/Range	801 °C / 1473.8 °F
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	2.16
Water Solubility	Very 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

VOC Content (%) No data available

10. Stability and Reactivity

10.1. Reactivity

Not expected to be reactive.

10.2. Chemical Stability

Stable

10.3. Possibility of Hazardous Reactions

Will Not Occur

10.4. Conditions to Avoid

None anticipated

10.5. Incompatible Materials

None known.

10.6. Hazardous Decomposition Products

None known.

11. Toxicological Information

Information on routes of exposure

Principle Route of Exposure Eye or skin contact, inhalation.

Sympotoms related to exposure

Most Important Symptoms/Effects

Causes mild eye irritation.

Numerical measures of toxicity

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sodium chloride	7647-14-5	3000 mg/kg (Rat) 3550 mg/kg (Rat)	>10000 mg/kg (Rabbit)	42 mg/L (Rat) 1h

Immediate, delayed and chronic health effects from exposure

Inhalation May cause mild respiratory irritation.

Eye Contact Causes mild eye irritation.

Skin Contact May cause mild skin irritation.

Ingestion None known.

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 chloride	7647-14-5	Non-irritating to the skin (Rabbit)

Substances	CAS Number	Eye damage/irritation
Sodium chloride	7647-14-5	May cause mild eye irritation. (Rabbit)

Substances	CAS Number	Skin Sensitization
Sodium chloride	7647-14-5	No information available

Substances	CAS Number	Respiratory Sensitization
Sodium chloride	7647-14-5	No information available

Substances	CAS Number	Mutagenic Effects
Sodium chloride	7647-14-5	No information available

Substances	CAS Number	Carcinogenic Effects
Sodium chloride	7647-14-5	Did not show carcinogenic effects in animal experiments

Substances	CAS Number	Reproductive toxicity
Sodium chloride	7647-14-5	Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments.

Substances	CAS Number	STOT - single exposure
Sodium chloride	7647-14-5	No information available

Substances	CAS Number	STOT - repeated exposure
Sodium chloride	7647-14-5	No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	Aspiration hazard
Sodium chloride	7647-14-5	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 chloride	7647-14-5	EC50 (120h) 2430 mg/L (Nitzschia sp.)	TLM96 > 1000 mg/L (Oncorhynchus mykiss) LC50 (96h) 5840 mg/L (Lepomis macrochirus) NOEC (33d) 252 mg/L (Pimephales promelas)	NOEC 5000 – 8000 mg/L (activated sludge) NOEC 292-584 mg/L (Escherichia coli)	TLM96 > 1,000,000 ppm (Mysidopsis bahia) LC50 (48h) 874-4136 mg/L (Daphnia magna) NOEC (21d) 314 mg/L (Daphnia pulex)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Sodium chloride	7647-14-5	No information available

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Sodium chloride	7647-14-5	No information available

12.4. Mobility in soil

Substances	CAS Number	Mobility
Sodium chloride	7647-14-5	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. Contaminated packaging may be disposed of by: rendering packaging incapable of containing any substance, or treating packaging to remove residual contents, or treating packaging to make sure the residual contents are no longer hazardous, or by disposing of packaging into commercial waste collection.

Environmental regulations
Not applicable

14. Transport Information

Transportation Information

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

Special precautions during transport
None

HazChem Code
None Allocated

15. Regulatory Information

Safety, health and environmental regulations specific for the product

International Inventories

Australian AICS Inventory	All components listed on inventory or are exempt.
New Zealand Inventory of Chemicals	All components listed on inventory or are exempt.
EINECS Inventory	This product, and all its components, complies with EINECS
US TSCA Inventory	All components listed on inventory or are exempt.
Canadian DSL Inventory	All components listed on inventory or are exempt.

Poisons Schedule number

None Allocated

16. Other information

Date of preparation or review

Revision Date: 08-Sep-2015

Revision Note
SDS sections updated: 2

Full text of R-phrases referred to under Sections 2 and 3
None

Full text of H-Statements referred to under sections 2 and 3
None

Additional information For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

Key abreviations 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/m^3 - milligram/cubic meter mm - millimeter mmHg - millimeter mercury w/w - weight/weight d - day

Key literature references and sources for data
www.ChemADVISOR.com/
NZ CCID

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End of Safety Data Sheet

HALLIBURTON

SAFETY DATA SHEET

POTASSIUM CHLORIDE

Revision Date: 04-Sep-2015 **Revision Number:** 22

1. Product Identifier & Identity for the Chemical

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

1.1. Product Identifier

Product Name POTASSIUM CHLORIDE

Other means of Identification

Synonyms: None

Product Code: HM001200

Recommended use of the chemical and restrictions on use

Recommended Use Brine

Uses Advised Against No information available

Supplier's name, address and phone number

Manufacturer/Supplier Halliburton Australia Pty. Ltd.
15 Marriott Road
Jandakot
WA 6164
Australia

ACN Number: 009 000 775
Telephone Number: + 61 1 800 686 951
Fax Number: 61 (08) 9455 5300

E-Mail address: fdunexchem@halliburton.com

Emergency phone number

+ 61 1 800 686 951

Australian Poisons Information Centre

24 Hour Service: - 13 11 26

Police or Fire Brigade: - 000 (exchange): - 1100

2. Hazard Identification

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

Classification of the hazardous chemical

Not classified

Label elements, including precautionary statements

Hazard Pictograms

Signal Word Not Hazardous

Hazard Statements Not Classified

Precautionary Statements

Prevention None

Response None

Storage None

Disposal None

Contains

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

Other hazards which do not result in classification
This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).
This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

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

Classification Not Classified
Risk Phrases None

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - Australia
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	60 - 100%	Not Applicable

4. First aid measures

Description of necessary first aid measures

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

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

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

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

Symptoms caused by exposure
No significant hazards expected.

Medical Attention and Special Treatment
Notes to Physician Treat symptomatically

5. Fire Fighting Measures

Suitable extinguishing equipment
Suitable Extinguishing Media
All standard fire fighting media
Extinguishing media which must not be used for safety reasons

None known.

Specific hazards arising from the chemical
Special Exposure Hazards
Not applicable.

Special protective equipment and precautions for fire fighters
Special Protective Equipment for Fire-Fighters
Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Use appropriate protective equipment. Avoid creating and breathing dust. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.

6.2. Environmental precautions
Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up
Scoop up and remove.

7. Handling and storage

7.1. Precautions for Safe Handling
Handling Precautions
Avoid contact with eyes, skin, or clothing. Avoid creating or inhaling dust. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.
Hygiene Measures
Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities
Storage Information
Store in a cool, dry location. Product has a shelf life of 60 months.
Other Guidelines
No information available

8. Exposure Controls/Personal Protection

Control parameters - exposure standards, biological monitoring
Exposure Limits

Substances	CAS Number	Australia NOHSC	ACGIH TLV-TWA
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable	Not applicable

Appropriate engineering controls
Engineering Controls Use in a well ventilated area.

Personal protective equipment (PPE)
Respiratory Protection Dust/mist respirator. (N95, P2/P3)
Hand Protection Normal work gloves.
Skin Protection Normal work coveralls.
Eye Protection Dust proof goggles.
Other Precautions None known.
Environmental Exposure Controls No information available

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

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

Property Remarks/ - Method	Values
pH:	~7
Freezing Point/Range	771 °C
Melting Point/Range	No data available
Boiling Point/Range	No data available
Flash Point	No data available
Evaporation rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	1.99
Water Solubility	Soluble in water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2. Other information

Molecular Weight	74.55
VOC Content (%)	No data available

10. Stability and Reactivity

10.1. Reactivity
Not expected to be reactive.
10.2. Chemical Stability
Stable
10.3. Possibility of Hazardous Reactions
Will Not Occur
10.4. Conditions to Avoid
None anticipated
10.5. Incompatible Materials
None known.
10.6. Hazardous Decomposition Products
None known.

11. Toxicological Information

Information on routes of exposure
Principle Route of Exposure Eye or skin contact, inhalation.

Sympotoms related to exposure
Most Important Symptoms/Effects
No significant hazards expected.

Numerical measures of toxicity

Toxicology data for the components

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

to the competent authority				

Immediate, delayed and chronic health effects from exposure

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

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

Exposure Levels
No data available

Interactive effects
Skin disorders.

Data limitations
No data available

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

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

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

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

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

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

Substances	CAS Number	Reproductive toxicity

Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable

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

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

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

12. Ecological Information

Ecotoxicity

Product Ecotoxicity Data

No data available

Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available	No information available	No information available	No information available

12.2. Persistence and degradability

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

12.3. Bioaccumulative potential

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

12.4. Mobility in soil

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

12.6. Other adverse effects

Endocrine Disruptor Information
This product does not contain any known or suspected endocrine disruptors

13. Disposal Considerations

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

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

Environmental regulations
Not applicable

14. Transport Information

Transportation Information

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

Special precautions during transport
None

HazChem Code
None Allocated

15. Regulatory Information

Safety, health and environmental regulations specific for the product

International Inventories

Australian AICS Inventory	All components listed on inventory or are exempt.
New Zealand Inventory of Chemicals	All components listed on inventory or are exempt.
EINECS Inventory	This product, and all its components, complies with EINECS
US TSCA Inventory	All components listed on inventory or are exempt.
Canadian DSL Inventory	All components listed on inventory or are exempt.

Poisons Schedule number
None Allocated

16. Other information

Date of preparation or review

Revision Date: 04-Sep-2015

Revision Note
SDS sections updated: 2

Full text of R-phrases referred to under Sections 2 and 3
None

Full text of H-Statements referred to under sections 2 and 3
None

Additional information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

Key abreviations 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/m^3 - milligram/cubic meter mm - millimeter mmHg - millimeter mercury w/w - weight/weight d - day

Key literature references and sources for data
www.ChemADVISOR.com/
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End of Safety Data Sheet

Hazard Statements Not Classified

Precautionary Statements

Prevention None

Response None

Storage None

Disposal None

Contains

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

Other hazards which do not result in classification
This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).
This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

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

Classification Not Classified
Risk Phrases None

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - Australia
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	60 - 100%	Not Applicable

4. First aid measures

Description of necessary first aid measures

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

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

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

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

Symptoms caused by exposure
No significant hazards expected.

Medical Attention and Special Treatment
Notes to Physician Treat symptomatically

5. Fire Fighting Measures

Suitable extinguishing equipment
Suitable Extinguishing Media
All standard fire fighting media
Extinguishing media which must not be used for safety reasons

None known.

Specific hazards arising from the chemical
Special Exposure Hazards
Not applicable.

Special protective equipment and precautions for fire fighters
Special Protective Equipment for Fire-Fighters
Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Use appropriate protective equipment. Avoid creating and breathing dust. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.

6.2. Environmental precautions
Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up
Scoop up and remove.

7. Handling and storage

7.1. Precautions for Safe Handling
Handling Precautions
Avoid contact with eyes, skin, or clothing. Avoid creating or inhaling dust. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.
Hygiene Measures
Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities
Storage Information
Store in a cool, dry location. Product has a shelf life of 60 months.
Other Guidelines
No information available

8. Exposure Controls/Personal Protection

Control parameters - exposure standards, biological monitoring
Exposure Limits

Substances	CAS Number	Australia NOHSC	ACGIH TLV-TWA
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable	Not applicable

Appropriate engineering controls
Engineering Controls Use in a well ventilated area.

Personal protective equipment (PPE)
Respiratory Protection Dust/mist respirator. (N95, P2/P3)
Hand Protection Normal work gloves.
Skin Protection Normal work coveralls.
Eye Protection Dust proof goggles.
Other Precautions None known.
Environmental Exposure Controls No information available

9. Physical and Chemical Properties

HALLIBURTON

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

	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	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	Normal work coveralls.
Eye Protection	Chemical goggles; also wear a face shield if splashing hazard exists.
Other Precautions	None known.
Hygiene Measures	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 Remarks/ - Method	Values
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 Bury in a licensed landfill according to federal, state, and local regulations.

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

14. Transport Information

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

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End of Safety Data Sheet

HALLIBURTON

SAFETY DATA SHEET

POTASSIUM CHLORIDE

Revision Date: 04-Sep-2015 **Revision Number:** 22

1. Product Identifier & Identity for the Chemical

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

1.1. Product Identifier

Product Name POTASSIUM CHLORIDE

Other means of Identification

Synonyms: None

Product Code: HM001200

Recommended use of the chemical and restrictions on use

Recommended Use Brine

Uses Advised Against No information available

Supplier's name, address and phone number

Manufacturer/Supplier Halliburton Australia Pty. Ltd.
15 Marriott Road
Jandakot
WA 6164
Australia

ACN Number: 009 000 775
Telephone Number: + 61 1 800 686 951
Fax Number: 61 (08) 9455 5300

E-Mail address: fdunexchem@halliburton.com

Emergency phone number

+ 61 1 800 686 951

Australian Poisons Information Centre

24 Hour Service: - 13 11 26

Police or Fire Brigade: - 000 (exchange): - 1100

2. Hazard Identification

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

Classification of the hazardous chemical

Not classified

Label elements, including precautionary statements

Hazard Pictograms

Signal Word Not Hazardous

HALLIBURTON

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	**CAS Number**
Sodium carbonate	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

Property Remarks/ - Method	Values
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
Stolkhom Convention - Persistent Organic Pollutants:	Does not apply
Rotterdam Convention - Prior Informed Consent:	Does not apply
Basel Convention - Hazardous Waste:	Does not apply

16. Other information

Date of preparation or review

Revision Date: 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 abreviations 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/m^3 - 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

HALLIBURTON

SAFETY DATA SHEET

Product Trade Name: **ACETIC ACID**

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

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

Property Remarks/ - Method	Values
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.)

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/m^3 - 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

9.1. Information on basic physical and chemical properties

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

Property Remarks/ - Method	Values
pH:	~7
Freezing Point/Range	771 °C
Melting Point/Range	No data available
Boiling Point/Range	No data available
Flash Point	No data available
Evaporation rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	1.99
Water Solubility	Soluble in water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2. Other information

Molecular Weight	74.55
VOC Content (%)	No data available

10. Stability and Reactivity

10.1. Reactivity
Not expected to be reactive.
10.2. Chemical Stability
Stable
10.3. Possibility of Hazardous Reactions
Will Not Occur
10.4. Conditions to Avoid
None anticipated
10.5. Incompatible Materials
None known.
10.6. Hazardous Decomposition Products
None known.

11. Toxicological Information

Information on routes of exposure
Principle Route of Exposure Eye or skin contact, inhalation.

Sympotoms related to exposure
Most Important Symptoms/Effects
No significant hazards expected.

Numerical measures of toxicity

Toxicology data for the components

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

SAFETY DATA SHEET

HSCV19356A

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	HSCV19356A
Other means of identification	:	Not applicable.
Recommended use	:	HYDROGEN SULFIDE SCAVENGER
Restrictions on use	:	Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	:	ChampionX Australia Pty Ltd Suite 1/5 Brodie-Hall Drive, Technology Park Bentley WA 6102 Australia TEL: +61 8 9473 9000
Emergency telephone number	:	CHEMCALL 1800 127 406, International: +64 4 917 8888
Issuing date	:	09.06.2020

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Flammable liquids	:	Category 4
Acute toxicity (Oral)	:	Category 4
Skin corrosion/irritation	:	Category 1C
Serious eye damage/eye irritation	:	Category 1
Skin sensitization	:	Category 1
Specific target organ toxicity - repeated exposure (Oral)	:	Category 2

GHS Label element

Hazard pictograms :

Signal Word : Danger

Hazard Statements : Combustible liquid
Harmful if swallowed.
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
May cause damage to organs through prolonged or repeated exposure if swallowed.

Precautionary Statements : **Prevention:**
Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Do not breathe dust/fume/gas/mist/vapours/spray. Wear protective gloves/ protective clothing/ eye protection/ face protection. Do not eat, drink or smoke when using this product.
Response:

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing. Wash contaminated clothing before reuse. IF ON SKIN: Wash with plenty of soap and water. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Other hazards : None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture : Mixture

Chemical Name	CAS-No.	Concentration: (%)
Hexahydro-1,3,5-Trimethyl-S-Triazine	108-74-7	10 - 30
Monomethylamine	74-89-5	0.1 - 1

Section: 4. FIRST AID MEASURES

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

In case of skin contact : Wash off immediately with plenty of water for at least 15 minutes. Use a mild soap if available. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

If swallowed : Contact the Poison's Information Centre (eg Australia 13 1126; New Zealand 0800 764 766).

Rinse mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately.

If inhaled : Remove to fresh air. Treat symptomatically. Get medical attention if symptoms occur.

Protection of first-aiders : In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.

Notes to physician : Treat symptomatically.

Most important symptoms and effects, both acute and delayed : See Section 11 for more detailed information on health effects and symptoms.

Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Foam
Carbon dioxide
Dry powder
Other extinguishing agent suitable for Class B fires
For large fires, use water spray or fog, thoroughly drenching the burning material.

Unsuitable extinguishing media	:	None known.
Specific hazards during firefighting	:	Fire Hazard Keep away from heat and sources of ignition. Flash back possible over considerable distance.
Hazardous combustion products	:	Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NOx)
Special protective equipment for firefighters	:	Use personal protective equipment.
Specific extinguishing methods	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Hazchem Code	:	2X

Section: 6. ACCIDENTAL RELEASE MEASURES

Initial Emergency Response Guide No	:	36
Personal precautions, protective equipment and emergency procedures	:	Ensure adequate ventilation. Remove all sources of ignition. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	Do not allow contact with soil, surface or ground water.
Methods and materials for containment and cleaning up	:	Eliminate all ignition sources if safe to do so. Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Flush away traces with water. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway.

Section: 7. HANDLING AND STORAGE

Advice on safe handling	:	Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Do not ingest. Keep away from fire, sparks and heated surfaces. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Wash hands thoroughly after handling. Use only with adequate ventilation.
Conditions for safe storage	:	Keep away from heat and sources of ignition. Keep away from oxidizing agents. Keep out of reach of children. Keep container tightly closed. Store in suitable labelled containers.
Suitable material	:	Keep in properly labelled containers.
Unsuitable material	:	not determined

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures	:	Effective exhaust ventilation system. Effective exhaust ventilation system. Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection	:	Safety goggles Face-shield
Hand protection	:	Wear the following personal protective equipment: Standard glove type. Nitrile rubber butyl-rubber Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Skin protection	:	Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing
Respiratory protection	:	When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Refer to AS/NZS 1715 and AS/NZS 1716 for selection, use and maintenance of respiratory protective equipment as applicable.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling. Provide suitable facilities for quick drenching or flushing of the eyes and body in case of contact or splash hazard.

The Personal Protective Equipment (PPE) recommendations provided above have been made in good faith based on typical expected conditions of use. PPE selection should always be completed in conjunction with a proper risk assessment and in accordance with a PPE management program.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Liquid
Colour	:	colourless
Odour	:	Pungent
Flash point	:	90 °C, Method: ASTM D 93, Pensky-Martens closed cup
pH	:	11,(100 %)
Odour Threshold	:	no data available
Melting point/freezing point	:	MELTING POINT: -15 °C, ASTM D-97
Initial boiling point and boiling range	:	no data available
Evaporation rate	:	no data available
Flammability (solid, gas)	:	Not applicable.
Upper explosion limit	:	no data available

Lower explosion limit	:	no data available
Vapour pressure	:	no data available
Relative vapour density	:	no data available
Relative density	:	1.013, (15 °C),
Density	:	8.42 lb/gal
Water solubility	:	completely soluble
Solubility in other solvents	:	no data available
Partition coefficient: n-octanol/water	:	no data available
Auto-ignition temperature	:	no data available
Thermal decomposition	:	no data available
Viscosity, dynamic	:	no data available
Viscosity, kinematic	:	2.3 mm2/s (40 °C), Method: ASTM D 445
Molecular weight	:	no data available
VOC	:	no data available

Section: 10. STABILITY AND REACTIVITY

Reactivity	:	No dangerous reaction known under conditions of normal use.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	Heat, flames and sparks.
Incompatible materials	:	Contact with strong acids (e.g. sulfuric, phosphoric, nitric, hydrochloric, chromic, sulfonic) may generate heat, splattering or boiling and toxic vapors. Toxic gases may be released if in contact with the following: Acids Bases Strong oxidizing agents
Hazardous decomposition products	:	Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NOx)

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes	:	Causes serious eye damage.
Skin	:	Causes severe skin burns. May cause allergic skin reaction.
Ingestion	:	Harmful if swallowed. Causes digestive tract burns.

Inhalation	:	May cause nose, throat, and lung irritation.
Chronic Exposure	:	May cause damage to organs through prolonged or repeated exposure.

Experience with human exposure

Eye contact	:	Redness, Pain, Corrosion
Skin contact	:	Redness, Pain, Irritation, Corrosion, Allergic reactions
Ingestion	:	Corrosion, Abdominal pain, Vomiting
Inhalation	:	Respiratory irritation, Cough

Toxicity

Product

Acute oral toxicity	:	Acute toxicity estimate: 1,786 mg/kg
Acute inhalation toxicity	:	no data available
Acute dermal toxicity	:	no data available
Skin corrosion/irritation	:	no data available
Serious eye damage/eye irritation	:	no data available
Respiratory or skin sensitization	:	no data available
Carcinogenicity	:	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
Reproductive effects	:	No reproductive toxic effects expected.
Germ cell mutagenicity	:	Contains no ingredient listed as a mutagen
Teratogenicity	:	no data available
STOT - single exposure	:	no data available
STOT - repeated exposure	:	May cause damage to organs through prolonged or repeated exposure.
Aspiration toxicity	:	No aspiration toxicity classification

Human Hazard Characterization

Based on our hazard characterization, the potential human hazard is: High

Section: 12. ECOLOGICAL INFORMATION

Ecotoxicity

Environmental Effects	:	Toxic to aquatic life.

Product

Toxicity to fish	:	no data available
Toxicity to daphnia and other aquatic invertebrates	:	no data available
Toxicity to algae	:	no data available

Components

Toxicity to fish : Hexahydro-1,3,5-Trimethyl-S-Triazine
LC50 : > 1.908 mg/l
Exposure time: 96 h

Components

Toxicity to daphnia and other aquatic invertebrates : Hexahydro-1,3,5-Trimethyl-S-Triazine
LC50 : 20.352 mg/l
Exposure time: 48 h

Components

Toxicity to algae : Hexahydro-1,3,5-Trimethyl-S-Triazine
EC50 : 1.145 mg/l
Exposure time: 72 h

Persistence and degradability

The organic portion of this preparation is expected to be inherently biodegradable.

Mobility

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.
If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air : <5%
Water : 50 - 70%
Soil : 30 - 50%

The portion in water is expected to be soluble or dispersible.

Bioaccumulative potential

This preparation or material is not expected to bioaccumulate.

Other information

no data available

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION
Based on our hazard characterization, the potential environmental hazard is: Moderate

Section: 13. DISPOSAL CONSIDERATIONS

Disposal methods : The product should not be allowed to enter drains, water courses or the soil. Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.

Disposal considerations : Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport

Proper shipping name	:	AMINES, LIQUID, CORROSIVE, N.O.S.
Technical name(s):	:	Hexahydro-1,3,5-Trimethyl-S-Triazine
UN/ID No.	:	UN 2735
Transport hazard class(es)	:	8
Packing group	:	III
IERG No	:	36
Hazchem Code	:	2X

Special precautions for user : Dangerous goods of Class 8 (Alkali) are incompatible in a placard load with any of the following:
Class 1 Explosives
Class 4.3 Dangerous when wet substances
Class 5.1 Oxidising agents
Class 5.2 Organic peroxides
Class 7 Radioactive substances
and are incompatible with food or food packaging in any quantity.

Air transport (IATA)

UN/ID No.	:	UN 2735
Proper shipping name	:	AMINES, LIQUID, CORROSIVE, N.O.S.
Technical name(s)	:	Hexahydro-1,3,5-Trimethyl-S-Triazine
Transport hazard class(es)	:	8
Packing group	:	III

Sea transport (IMDG/IMO)

UN/ID No.	:	UN 2735
Proper shipping name	:	AMINES, LIQUID, CORROSIVE, N.O.S.
Technical name(s)	:	Hexahydro-1,3,5-Trimethyl-S-Triazine
Transport hazard class(es)	:	8
Packing group	:	III

Section: 15. REGULATORY INFORMATION

Standard for the Uniform Scheduling of Medicines and Poisons : Schedule 5

INTERNATIONAL CHEMICAL CONTROL LAWS :

United States TSCA Inventory
The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

Australia. Industrial Chemical (Notification and Assessment) Act
All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

Canadian Domestic Substances List (DSL)
The substances in this preparation are listed on the Domestic Substances List (DSL), are exempt, or have been reported in accordance with the New Substances Notification Regulations.

Japan. ENCS - Existing and New Chemical Substances Inventory
This product contains substance(s) which are not in compliance with the Law Regulating the Manufacture and Importation Of Chemical Substances and are not listed on the Existing and New Chemical Substances list (ENCS).

Korea. Korean Existing Chemicals Inventory (KECI)
All substances in this product comply with the Chemical Control Act (CCA) and are listed on the Existing Chemicals List (ECL)

Philippines Inventory of Chemicals and Chemical Substances (PICCS)
All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).

China Inventory of Existing Chemical Substances
All substances in this product comply with the Provisions on the Environmental Administration of New Chemical Substances and are listed on or exempt from the Inventory of Existing Chemical Substances China (IECSC).

New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand
All substances in this product comply with the Hazardous Substances and New Organisms (HSNO) Act 1996,and are listed on or are exempt from the New Zealand Inventory of Chemicals.

Section: 16. OTHER INFORMATION

REFERENCES

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version),
Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH,
(TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Revision Date	:	09.06.2020
Date of first issue	:	31.03.2017
Version Number	:	1.2
Prepared By	:	Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

SAFETY DATA SHEET

NAPH22211A

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	NAPH22211A
Other means of identification	:	Not applicable.
Recommended use	:	DEMULSIFIER
Restrictions on use	:	Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	:	ChampionX Australia Pty Ltd Suite 1/5 Brodie-Hall Drive, Technology Park Bentley WA 6102 Australia TEL: +61 8 9473 9000
Emergency telephone number	:	CHEMCALL 1800 127 406, International: +64 4 917 8888
Issuing date	:	11.10.2021

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Flammable liquids	:	Category 4
Carcinogenicity	:	Category 2
Aspiration hazard	:	Category 1

GHS Label element

Hazard pictograms :

Signal Word : Danger

Hazard Statements : Combustible liquid
May be fatal if swallowed and enters airways.
Suspected of causing cancer.

Precautionary Statements : **Prevention:**
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Wear protective gloves/ eye protection/ face protection. Use personal protective equipment as required.
Response:
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/ physician. IF exposed or concerned: Get medical advice/attention.
Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Other hazards : None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture : Mixture

Chemical Name	CAS-No.	Concentration: (%)
Heavy Aromatic Naphtha	64742-94-5	30 - 60
Naphthalene	91-20-3	5 - 10
1,2,4-Trimethylbenzene	95-63-6	1 - 5

Section: 4. FIRST AID MEASURES

In case of eye contact : Rinse with plenty of water. Get medical attention if symptoms occur.

In case of skin contact : Wash off with soap and plenty of water. Get medical attention if symptoms occur.

If swallowed : Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Aspiration hazard if swallowed - can enter lungs and cause damage. Get medical attention immediately.

Contact the Poison's Information Centre (eg Australia 13 1126; New Zealand 0800 764 766).

If inhaled : Get medical attention if symptoms occur.

Protection of first-aiders : In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.

Notes to physician : Treat symptomatically.

Most important symptoms and effects, both acute and delayed : See Section 11 for more detailed information on health effects and symptoms.

Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Foam
Carbon dioxide
Dry powder
Other extinguishing agent suitable for Class B fires
For large fires, use water spray or fog, thoroughly drenching the burning material.

Unsuitable extinguishing media : High volume water jet

Specific hazards during firefighting : Fire Hazard
Keep away from heat and sources of ignition.
Flash back possible over considerable distance.

Hazardous combustion products : Decomposition products may include the following materials: Carbon oxides

Special protective equipment for firefighters : Use personal protective equipment.

Specific extinguishing : Collect contaminated fire extinguishing water separately. This must not be

methods		discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Hazchem Code	:	●3Z

Section: 6. ACCIDENTAL RELEASE MEASURES

Initial Emergency Response Guide No	:	47
Personal precautions, protective equipment and emergency procedures	:	Ensure adequate ventilation. Remove all sources of ignition. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	Do not allow contact with soil, surface or ground water.
Methods and materials for containment and cleaning up	:	Eliminate all ignition sources if safe to do so. Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Do not flush into surface water or sanitary sewer system.

Section: 7. HANDLING AND STORAGE

Advice on safe handling	:	Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Keep away from fire, sparks and heated surfaces. Wash hands thoroughly after handling.
Conditions for safe storage	:	Keep away from heat and sources of ignition. Keep away from oxidizing agents. Keep out of reach of children. Keep container tightly closed. Store in suitable labelled containers.
Suitable material	:	Keep in properly labelled containers.
Unsuitable material	:	not determined

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Form of exposure	Permissible concentration	Basis
Heavy Aromatic Naphtha	64742-94-5	TWA	500 ppm 2,000 mg/m3	OSHA Z1
		TWA	200 mg/m3 (as total hydrocarbon vapor)	ACGIH
Naphthalene	91-20-3	TWA	10 ppm 52 mg/m3	AU OEL
		VLE	15 ppm 79 mg/m3	AU OEL
Naphthalene	91-20-3	WES-TWA	0.5 ppm 2.6 mg/m3	NZ OEL
		WES-STEL	2 ppm 10 mg/m3	NZ OEL
Naphthalene	91-20-3	TWA	10 ppm	ACGIH
		TWA	10 ppm	NIOSH REL

			50 mg/m3	
		STEL	15 ppm 75 mg/m3	NIOSH REL
		TWA	10 ppm 50 mg/m3	OSHA Z1
1,2,4-Trimethylbenzene	95-63-6	TWA	25 ppm 123 mg/m3	AU OEL
1,2,4-Trimethylbenzene	95-63-6	WES-TWA	25 ppm 123 mg/m3	NZ OEL
1,2,4-Trimethylbenzene	95-63-6	TWA	25 ppm 125 mg/m3	NIOSH REL
		TWA	25 ppm	ACGIH

Engineering measures : Effective exhaust ventilation system. Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection : Safety goggles
Face-shield

Hand protection : Wear impervious chemical-resistant gloves when handling this product.
The following glove types are recommended based on our review of glove manufacturer information and/or other available sources.
Viton® gloves
Other glove types may be used for short term, incidental contact if determined by testing to provide adequate worker protection.
Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Skin protection : Wear suitable protective clothing.

Respiratory protection : Use local exhaust ventilation or other engineering controls as necessary to control airborne vapour and mist.
Where concentrations in air may exceed the limits given in this section or when significant vapours are generated, use an approved air purifying respirator fitted with a gas and vapour cartridge.
Use a particulate pre-filter where operations generate significant mists or aerosols.
Recommended gas and vapour cartridge:
Organic vapor cartridge.
In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA or supplied-air respirator should be used.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling.

The Personal Protective Equipment (PPE) recommendations provided above have been made in good faith based on typical expected conditions of use. PPE selection should always be completed in conjunction with a proper risk assessment and in accordance with a PPE management program.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Liquid

Colour : black

Odour : hydrocarbon-like

Flash point	:	68.3 °C, Method: ASTM D 93, Pensky-Martens closed cup
pH	:	no data available
Odour Threshold	:	no data available
Melting point/freezing point	:	Freezing Point: -17.78 °C
Initial boiling point and boiling range	:	no data available
Evaporation rate	:	no data available
Flammability (solid, gas)	:	Not applicable.
Upper explosion limit	:	no data available
Lower explosion limit	:	no data available
Vapour pressure	:	10.3 mm Hg, (37.8 °C),
Relative vapour density	:	no data available
Relative density	:	0.93 - 0.97, (15.6 °C), ASTM D-1298
Density	:	7.7 - 8.1 lb/gal
Water solubility	:	insoluble
Solubility in other solvents	:	no data available
Partition coefficient: n-octanol/water	:	no data available
Auto-ignition temperature	:	no data available
Thermal decomposition	:	no data available
Viscosity, dynamic	:	21 mPa.s (23.9 °C)
Viscosity, kinematic	:	no data available
Molecular weight	:	no data available
VOC	:	no data available

Section: 10. STABILITY AND REACTIVITY

Reactivity	:	No dangerous reaction known under conditions of normal use.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	Heat, flames and sparks.
Incompatible materials	:	Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors. Strong oxidizing agents
Hazardous decomposition products	:	Decomposition products may include the following materials: Carbon oxides

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of	:	Inhalation, Eye contact, Skin contact

exposure

Potential Health Effects

Eyes	:	Causes eye irritation.
Skin	:	Causes mild skin irritation.
Ingestion	:	May be fatal if swallowed and enters airways.
Inhalation	:	Health injuries are not known or expected under normal use.
Chronic Exposure	:	Suspected of causing cancer.

Experience with human exposure

Eye contact	:	No symptoms known or expected.
Skin contact	:	slight irritation
Ingestion	:	Vomiting
Inhalation	:	No symptoms known or expected.

Toxicity

Product

Acute oral toxicity	:	Acute toxicity estimate: > 2,000 mg/kg
Acute inhalation toxicity	:	Acute toxicity estimate: > 20 mg/l Exposure time: 4 h Test atmosphere: vapour
Acute dermal toxicity	:	no data available
Skin corrosion/irritation	:	no data available
Serious eye damage/eye irritation	:	Result: Mild eye irritation
Respiratory or skin sensitization	:	no data available
Carcinogenicity	:	This product contains naphthalene. The International Agency for Research on Cancer (IARC) has evaluated naphthalene and determined it to be possibly carcinogenic to humans (Group 2B, based on sufficient evidence in experimental animals and inadequate evidence in humans).
Reproductive effects	:	No toxicity to reproduction
Germ cell mutagenicity	:	Contains no ingredient listed as a mutagen
Teratogenicity	:	no data available
STOT - single exposure	:	no data available
STOT - repeated exposure	:	no data available
Aspiration toxicity	:	May be fatal if swallowed and enters airways.

Components

Acute dermal toxicity	:	1,2,4-Trimethylbenzene LD50 rat: 3,440 mg/kg Test substance: Information given is based on data obtained from similar substances.

Human Hazard Characterization

Based on our hazard characterization, the potential human hazard is: High

Section: 12. ECOLOGICAL INFORMATION

Toxicity

Environmental Effects : Toxic to aquatic life with long lasting effects.

Product

Toxicity to fish : no data available

Toxicity to daphnia and other aquatic invertebrates : no data available

Toxicity to algae : no data available

Components

Toxicity to fish : Heavy Aromatic Naphtha
LC50 Oncorhynchus mykiss (rainbow trout): 3.5 mg/l
Exposure time: 96 h

1,2,4-Trimethylbenzene
LC50 Pimephales promelas (fathead minnow): 7.72 mg/l
Exposure time: 96 h

Components

Toxicity to daphnia and other aquatic invertebrates : 1,2,4-Trimethylbenzene
LC50 Daphnia magna (Water flea): 3.6 mg/l
Exposure time: 48 h

Persistence and degradability

no data available

Mobility

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.
If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air : 10 - 30%
Water : 30 - 50%
Soil : 30 - 50%

Bioaccumulative potential

no data available

Other information

no data available

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION
Based on our hazard characterization, the potential environmental hazard is: Moderate

Section: 13. DISPOSAL CONSIDERATIONS

Disposal methods	:	The product should not be allowed to enter drains, water courses or the soil. Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.
Disposal considerations	:	Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport

Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical name(s):	:	Naphthalene, 1,2,4-Trimethylbenzene
UN/ID No.	:	UN 3082
Transport hazard class(es)	:	9
Packing group	:	III
IERG No	:	47
Hazchem Code	:	●3Z
Special precautions for user	:	Dangerous goods of Class 9 (Miscellaneous - fire risk substance, or combustible liquid) are incompatible in a placard load with any of the following: Class 1 Explosives Class 5.1 Oxidising agents Class 5.2 Organic peroxides

Air transport (IATA)

UN/ID No.	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical name(s)	:	Naphthalene, 1,2,4-Trimethylbenzene
Transport hazard class(es)	:	9
Packing group	:	III

Sea transport (IMDG/IMO)

UN/ID No.	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical name(s)	:	Naphthalene, 1,2,4-Trimethylbenzene
Transport hazard class(es)	:	9
Packing group	:	III
Marine pollutant	:	Naphthalene, 1,2,4-Trimethylbenzene

Section: 15. REGULATORY INFORMATION

Standard for the Uniform Scheduling of Medicines and Poisons : Schedule 6

INTERNATIONAL CHEMICAL CONTROL LAWS :

United States TSCA Inventory
The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

Australia. Australian Industrial Chemicals Introduction Scheme (AICIS)
All substances in this product comply with the Australian Industrial Chemicals Introduction Scheme (AICIS)

Canadian Domestic Substances List (DSL)
The substances in this preparation are listed on the Domestic Substances List (DSL), are exempt, or have been reported in accordance with the New Substances Notification Regulations.

Japan. ENCS - Existing and New Chemical Substances Inventory
All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Existing and New Chemical Substances list (ENCS).

Korea. Korean Existing Chemicals Inventory (KECI)
All substances in this product comply with the Chemical Control Act (CCA) and are listed on the Existing Chemicals List (ECL)

Philippines Inventory of Chemicals and Chemical Substances (PICCS)
All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).

China Inventory of Existing Chemical Substances
All substances in this product comply with the Provisions on the Environmental Administration of New Chemical Substances and are listed on or exempt from the Inventory of Existing Chemical Substances China (IECSC).

Section: 16. OTHER INFORMATION

REFERENCES

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version),
Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH,
(TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Revision Date : 11.10.2021
Version Number : 1.0
Prepared By : Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

SAFETY DATA SHEET

SCAL16109A

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	SCAL16109A
Other means of identification	:	Not applicable.
Recommended use	:	SCALE INHIBITOR
Restrictions on use	:	Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	:	ChampionX Australia Pty Ltd Suite 1/5 Brodie-Hall Drive, Technology Park Bentley WA 6102 Australia TEL: +61 8 9473 9000
Emergency telephone number	:	CHEMCALL 1800 127 406, International: +64 4 917 8888
Issuing date	:	09.06.2020

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Not a hazardous substance or mixture.

Precautionary Statements	:	**Prevention:** Wash hands thoroughly after handling. **Response:** Get medical advice/ attention if you feel unwell. **Storage:** Store in accordance with local regulations.
Other hazards	:	None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture : Mixture

Chemical Name	CAS-No.	Concentration: (%)
Ammonium Hydroxide	1336-21-6	1 - 5

Section: 4. FIRST AID MEASURES

In case of eye contact	:	Rinse with plenty of water. Get medical attention if symptoms occur.
In case of skin contact	:	Wash off with soap and plenty of water. Get medical attention if symptoms occur.
If swallowed	:	Rinse mouth. Get medical attention if symptoms occur. Contact the Poison's Information Centre (eg Australia 13 1126; New Zealand 0800 764 766).

If inhaled	:	Get medical attention if symptoms occur.
Protection of first-aiders	:	In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.
Notes to physician	:	Treat symptomatically.
Most important symptoms and effects, both acute and delayed	:	See Section 11 for more detailed information on health effects and symptoms.

Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	:	None known.
Specific hazards during firefighting	:	Not flammable or combustible.
Hazardous combustion products	:	Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NOx) Oxides of phosphorus
Special protective equipment for firefighters	:	Use personal protective equipment.
Specific extinguishing methods	:	Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Section: 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Ensure adequate ventilation. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	Do not allow contact with soil, surface or ground water.
Methods and materials for containment and cleaning up	:	Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway.

Section: 7. HANDLING AND STORAGE

Advice on safe handling	:	Wash hands thoroughly after handling.
Conditions for safe storage	:	Keep out of reach of children. Keep container tightly closed. Store in suitable labelled containers.
Suitable material	:	Keep in properly labelled containers.
Unsuitable material	:	not determined

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Form of exposure	Permissible concentration	Basis
Ammonium Hydroxide	1336-21-6	TWA	25 ppm (Ammonia)	ACGIH
		STEL	35 ppm (Ammonia)	ACGIH
		TWA	25 ppm 18 mg/m3 (Ammonia)	NIOSH REL
		STEL	35 ppm 27 mg/m3 (Ammonia)	NIOSH REL

Engineering measures : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protective equipment

Eye protection : Safety glasses

Hand protection : Wear protective gloves.
Laminate film
Nitrile
Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Skin protection : Wear suitable protective clothing.

Respiratory protection : No personal respiratory protective equipment normally required.

Refer to AS/NZS 1715 and AS/NZS 1716 for selection, use and maintenance of respiratory protective equipment as applicable.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling.

The Personal Protective Equipment (PPE) recommendations provided above have been made in good faith based on typical expected conditions of use. PPE selection should always be completed in conjunction with a proper risk assessment and in accordance with a PPE management program.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Liquid

Colour : Clear Brown

Odour : no data available

Flash point : > 93.0 °C

pH : 4.5 - 5.5

Odour Threshold : no data available

Melting point/freezing point : no data available

Initial boiling point and boiling : no data available

range		
Evaporation rate	:	no data available
Flammability (solid, gas)	:	Not applicable.
Upper explosion limit	:	no data available
Lower explosion limit	:	no data available
Vapour pressure	:	no data available
Relative vapour density	:	no data available
Relative density	:	1.09 - 1.13, (25 °C),
Density	:	no data available
Water solubility	:	no data available
Solubility in other solvents	:	no data available
Partition coefficient: n-octanol/water	:	no data available
Auto-ignition temperature	:	no data available
Thermal decomposition	:	no data available
Viscosity, dynamic	:	no data available
Viscosity, kinematic	:	no data available
Molecular weight	:	no data available
VOC	:	no data available

Section: 10. STABILITY AND REACTIVITY

Reactivity	:	No dangerous reaction known under conditions of normal use.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	None known.
Incompatible materials	:	None known.
Hazardous decomposition products	:	Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NOx) Oxides of phosphorus

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes	:	Health injuries are not known or expected under normal use.
Skin	:	Health injuries are not known or expected under normal use.
Ingestion	:	Health injuries are not known or expected under normal use.

Inhalation	:	Health injuries are not known or expected under normal use.
Chronic Exposure	:	Health injuries are not known or expected under normal use.

Experience with human exposure

Eye contact	:	No symptoms known or expected.
Skin contact	:	No symptoms known or expected.
Ingestion	:	No symptoms known or expected.
Inhalation	:	No symptoms known or expected.

Toxicity

Product

Acute oral toxicity	:	no data available
Acute inhalation toxicity	:	no data available
Acute dermal toxicity	:	no data available
Skin corrosion/irritation	:	no data available
Serious eye damage/eye irritation	:	Result: Mild eye irritation
Respiratory or skin sensitization	:	no data available
Carcinogenicity	:	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
Reproductive effects	:	No toxicity to reproduction
Germ cell mutagenicity	:	Contains no ingredient listed as a mutagen
Teratogenicity	:	no data available
STOT - single exposure	:	no data available
STOT - repeated exposure	:	no data available
Aspiration toxicity	:	No aspiration toxicity classification

Human Hazard Characterization

Based on our hazard characterization, the potential human hazard is: Low

Section: 12. ECOLOGICAL INFORMATION

Ecotoxicity

Environmental Effects	:	This product has no known ecotoxicological effects.

Product

Toxicity to fish	:	no data available
Toxicity to daphnia and other aquatic invertebrates	:	no data available
Toxicity to algae	:	no data available

Persistence and degradability

no data available

Mobility

no data available

Bioaccumulative potential

no data available

Other information

no data available

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION
Based on our hazard characterization, the potential environmental hazard is: Low

Section: 13. DISPOSAL CONSIDERATIONS

Disposal methods	:	Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.
Disposal considerations	:	Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport

Proper shipping name	:	PRODUCT IS NOT REGULATED DURING TRANSPORTATION

Air transport (IATA)

Proper shipping name	:	PRODUCT IS NOT REGULATED DURING TRANSPORTATION

Sea transport (IMDG/IMO)

Proper shipping name	:	PRODUCT IS NOT REGULATED DURING TRANSPORTATION

Section: 15. REGULATORY INFORMATION

Standard for the Uniform Scheduling of Medicines and Poisons	:	Schedule 5

INTERNATIONAL CHEMICAL CONTROL LAWS :

Australia. Industrial Chemical (Notification and Assessment) Act

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand
All substances in this product comply with the Hazardous Substances and New Organisms (HSNO) Act 1996,and are listed on or are exempt from the New Zealand Inventory of Chemicals.

Section: 16. OTHER INFORMATION

REFERENCES

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version),
Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH,
(TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Revision Date	:	09.06.2020
Date of first issue	:	28.07.2017
Version Number	:	1.3
Prepared By	:	Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

SAFETY DATA SHEET

ACPC19610A

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	ACPC19610A
Other means of identification	:	Not applicable.
Recommended use	:	CLEANER
Restrictions on use	:	Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	:	ChampionX Australia Pty Ltd Suite 1/5 Brodie-Hall Drive, Technology Park Bentley WA 6102 Australia TEL: +61 8 9473 9000
Emergency telephone number	:	CHEMCALL 1800 127 406, International: +64 4 917 8888
Issuing date	:	13.08.2021

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Flammable liquids	:	Category 4
Acute toxicity (Oral)	:	Category 4
Acute toxicity (Inhalation)	:	Category 4
Acute toxicity (Dermal)	:	Category 4
Skin corrosion/irritation	:	Category 2
Serious eye damage/eye irritation	:	Category 2A

GHS Label element

Hazard pictograms :

Signal Word : Warning

Hazard Statements : Combustible liquid
Harmful if swallowed, in contact with skin or if inhaled.
Causes skin irritation.
Causes serious eye irritation.

Precautionary Statements : **Prevention:**
Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray. Wear protective gloves/ eye protection/ face protection. Wash skin thoroughly after handling. Do not eat, drink or smoke when using this product.
Response:
IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.IF ON SKIN: Wash with plenty of soap and water. Call a POISON CENTER or doctor/ physician if you feel unwell.

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.If skin irritation occurs: Get medical advice/attention.If eye irritation persists: Get medical advice/ attention.Wash contaminated clothing before reuse.Take off contaminated clothing and wash it before reuse.

Storage:
Store in a well-ventilated place. Keep cool.

Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Other hazards : None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture : Substance

Chemical Name	CAS-No.	Concentration: (%)
2-Butoxyethanol	111-76-2	60 - 100

Section: 4. FIRST AID MEASURES

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention.

In case of skin contact : Wash off immediately with plenty of water for at least 15 minutes. Use a mild soap if available. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

If swallowed : Rinse mouth. Get medical attention if symptoms occur.

Contact the Poison's Information Centre (eg Australia 13 1126; New Zealand 0800 764 766).

If inhaled : Remove to fresh air. Treat symptomatically. Get medical attention.

Protection of first-aiders : In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.

Notes to physician : Treat symptomatically.

Most important symptoms and effects, both acute and delayed : See Section 11 for more detailed information on health effects and symptoms.

Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Foam
Carbon dioxide
Dry powder
Other extinguishing agent suitable for Class B fires
For large fires, use water spray or fog, thoroughly drenching the burning material.

Unsuitable extinguishing : None known.

media

Specific hazards during firefighting	:	Fire Hazard Keep away from heat and sources of ignition. Flash back possible over considerable distance.
Hazardous combustion products	:	Decomposition products may include the following materials: Carbon oxides
Special protective equipment for firefighters	:	Use personal protective equipment.
Specific extinguishing methods	:	Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. In the event of fire and/or explosion do not breathe fumes.

Section: 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Ensure adequate ventilation. Remove all sources of ignition. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	Do not allow contact with soil, surface or ground water.
Methods and materials for containment and cleaning up	:	Eliminate all ignition sources if safe to do so. Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Flush away traces with water. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway.

Section: 7. HANDLING AND STORAGE

Advice on safe handling	:	Avoid contact with skin and eyes. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Do not ingest. Keep away from fire, sparks and heated surfaces. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Wash hands thoroughly after handling. Use only with adequate ventilation.
Conditions for safe storage	:	Keep away from heat and sources of ignition. Keep away from oxidizing agents. Keep out of reach of children. Keep container tightly closed. Store in suitable labelled containers.
Suitable material	:	The following compatibility data is suggested based on similar product data and/or industry experience: Teflon (PTFE), Kalrez, Perfluoroelastomer, TFE, HDPE (high density polyethylene), Aluminum, Mild steel, Carbon Steel C1018, Stainless Steel 304, Stainless Steel 316L, Hastelloy C-276, MDPE (medium density polyethylene)
Unsuitable material	:	The following compatibility data is suggested based on similar product data and/or industry experience: Copper, Neoprene, Ethylene propylene, Polypropylene, Polyethylene, Nitrile, Plexiglass, EPDM, Alfax, Brass, Nylon, PVC, Buna-N, Natural rubber, Polyurethane, Fluoroelastomer, Chlorosulfonated polyethylene rubber

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Form of exposure	Permissible concentration	Basis
2-Butoxyethanol	111-76-2	TWA	20 ppm 96.9 mg/m3	AU OEL
		VLE	50 ppm 242 mg/m3	AU OEL
2-Butoxyethanol	111-76-2	WES-TWA	25 ppm 121 mg/m3	NZ OEL
2-Butoxyethanol	111-76-2	TWA	20 ppm	ACGIH
		TWA	5 ppm 24 mg/m3	NIOSH REL
		TWA	50 ppm 240 mg/m3	OSHA Z1
2-Butoxyethanol				

Engineering measures : Effective exhaust ventilation system. Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection : Safety goggles
Face-shield

Hand protection : Wear the following personal protective equipment:
Butyl gloves
Nitrile gloves
Gloves should be replaced immediately if signs of degradation are observed.

Skin protection : Wear suitable protective clothing.

Respiratory protection : When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Refer to AS/NZS 1715 and AS/NZS 1716 for selection, use and maintenance of respiratory protective equipment as applicable.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling.

The Personal Protective Equipment (PPE) recommendations provided above have been made in good faith based on typical expected conditions of use. PPE selection should always be completed in conjunction with a proper risk assessment and in accordance with a PPE management program.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Liquid

Colour : Colorless

Odour : Glycol Ether

Flash point : 71 °C, Method: ASTM D 93, Pensky-Martens closed cup

pH : no data available

Odour Threshold : no data available

Melting point/freezing point : Freezing Point: -71 °C, ASTM D-1177

Initial boiling point and boiling range	:	171 °C, (760 mm Hg), Method: ASTM D 86
Evaporation rate	:	no data available
Flammability (solid, gas)	:	Not applicable.
Upper explosion limit	:	10.6 V%
Lower explosion limit	:	1.1 V%
Vapour pressure	:	0.6 mm Hg, (20 °C), ASTM D 323,
Relative vapour density	:	1(Air = 1)
Relative density	:	0.89 - 0.91, (16 °C), ASTM D-1298
Density	:	7.4 - 7.6 lb/gal
Water solubility	:	completely soluble
Solubility in other solvents	:	no data available
Partition coefficient: n-octanol/water	:	no data available
Auto-ignition temperature	:	244 °C
Thermal decomposition	:	no data available
Viscosity, dynamic	:	no data available
Viscosity, kinematic	:	2.53 mm2/s (38 °C)
Molecular weight	:	no data available
VOC	:	no data available

Section: 10. STABILITY AND REACTIVITY

Reactivity	:	No dangerous reaction known under conditions of normal use.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	Heat, flames and sparks.
Incompatible materials	:	Strong oxidizing agents
Hazardous decomposition products	:	Decomposition products may include the following materials: Carbon oxides

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes	:	Causes serious eye irritation.
Skin	:	Harmful in contact with skin. Causes skin irritation.
Ingestion	:	Harmful if swallowed.

Inhalation	:	Harmful if inhaled.
Chronic Exposure	:	Health injuries are not known or expected under normal use.

Experience with human exposure

Eye contact	:	Redness, Pain, Irritation
Skin contact	:	Redness, Irritation, slight irritation
Ingestion	:	Vomiting
Inhalation	:	Respiratory irritation, Cough

Toxicity

Product

Acute oral toxicity	:	Acute toxicity estimate: 1,500 mg/kg
Acute inhalation toxicity	:	Acute toxicity estimate: 11 mg/l Exposure time: 4 h Test atmosphere: vapour
Acute dermal toxicity	:	Acute toxicity estimate: 1,100 mg/kg
Skin corrosion/irritation	:	no data available
Serious eye damage/eye irritation	:	no data available
Respiratory or skin sensitization	:	no data available
Carcinogenicity	:	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
Reproductive effects	:	No toxicity to reproduction
Germ cell mutagenicity	:	Contains no ingredient listed as a mutagen
Teratogenicity	:	no data available
STOT - single exposure	:	no data available
STOT - repeated exposure	:	no data available
Aspiration toxicity	:	No aspiration toxicity classification

Human Hazard Characterization

Based on our hazard characterization, the potential human hazard is: Moderate

Section: 12. ECOLOGICAL INFORMATION

Toxicity

Environmental Effects	:	This product has no known ecotoxicological effects.

Product

Toxicity to fish	:	LC50 Bluegill Sunfish: > 1,000 mg/l Exposure time: 96 hrs Test substance: Product LC50 Inland Silverside: > 1,000 mg/l

Exposure time: 96 hrs
Test substance: Product

LC50 Mosquito Fish (Gambusia spp.): > 1,000 mg/l
Exposure time: 96 hrs
Test substance: Product

Toxicity to daphnia and other aquatic invertebrates : LC50 Acartia tonsa: 730 mg/l
Exposure time: 48 hrs
Test substance: Product

Toxicity to algae : EC50 Marine Algae (Skeletonema costatum): 109 mg/l
Exposure time: 72 hrs
Test substance: Product

Components

Toxicity to bacteria : 2-Butoxyethanol
EC50 : 463 mg/l

Components

Toxicity to fish (Chronic toxicity) : 2-Butoxyethanol
NOEC: > 100 mg/l
Exposure time: 21 d

Components

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : 2-Butoxyethanol
NOEC: > 100 mg/l
Exposure time: 21 d

Persistence and degradability

The organic portion of this preparation is expected to be readily biodegradable.

Mobility

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.
If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air : <5%
Water : 50 - 70%
Soil : 30 - 50%

The portion in water is expected to float on the surface.

Bioaccumulative potential

This preparation or material is not expected to bioaccumulate.

Other information

no data available

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION
Based on our hazard characterization, the potential environmental hazard is: Low

Section: 13. DISPOSAL CONSIDERATIONS

Disposal methods	:	Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.
Disposal considerations	:	Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport

Proper shipping name	:	PRODUCT IS NOT REGULATED DURING TRANSPORTATION

Air transport (IATA)

Proper shipping name	:	PRODUCT IS NOT REGULATED DURING TRANSPORTATION

Sea transport (IMDG/IMO)

Proper shipping name	:	PRODUCT IS NOT REGULATED DURING TRANSPORTATION

Section: 15. REGULATORY INFORMATION

Standard for the Uniform Scheduling of Medicines and Poisons	:	Schedule 6

INTERNATIONAL CHEMICAL CONTROL LAWS :

United States TSCA Inventory
The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

Australia. Australian Industrial Chemicals Introduction Scheme (AICIS)
All substances in this product comply with the Australian Industrial Chemicals Introduction Scheme (AICIS)

Canadian Domestic Substances List (DSL)
The substance(s) in this preparation are included in or exempted from the Domestic Substance List (DSL).

Japan. ENCS - Existing and New Chemical Substances Inventory
All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Existing and New Chemical Substances list (ENCS).

Korea. Korean Existing Chemicals Inventory (KECI)
All substances in this product comply with the Chemical Control Act (CCA) and are listed on the Existing Chemicals List (ECL)

Philippines Inventory of Chemicals and Chemical Substances (PICCS)

All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).

China Inventory of Existing Chemical Substances
All substances in this product comply with the Provisions on the Environmental Administration of New Chemical Substances and are listed on or exempt from the Inventory of Existing Chemical Substances China (IECSC).

New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand
All substances in this product comply with the Hazardous Substances and New Organisms (HSNO) Act 1996,and are listed on or are exempt from the New Zealand Inventory of Chemicals.

Taiwan Chemical Substance Inventory
All substances in this product comply with the Taiwan Existing Chemical Substances Inventory (ECSI).

Section: 16. OTHER INFORMATION

REFERENCES

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version),
Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH,
(TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Revision Date	:	13.08.2021
Version Number	:	1.3
Prepared By	:	Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

SAFETY DATA SHEET

BIOC16733A

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	BIOC16733A
Other means of identification	:	Not applicable.
Restrictions on use	:	Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	:	ChampionX Australia Pty Ltd Suite 1/5 Brodie-Hall Drive, Technology Park Bentley WA 6102 Australia TEL: +61 8 9473 9000
Emergency telephone number	:	CHEMCALL 1800 127 406, International: +64 4 917 8888
Issuing date	:	05.10.2020

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Flammable liquids	:	Category 4
Acute toxicity (Oral)	:	Category 4
Acute toxicity (Inhalation)	:	Category 3
Skin corrosion/irritation	:	Category 1B
Serious eye damage/eye irritation	:	Category 1
Skin sensitization	:	Category 1
Carcinogenicity	:	Category 1A
Reproductive toxicity	:	Category 2

GHS Label element

Hazard pictograms :

Signal Word : Danger

Hazard Statements :
Combustible liquid
Harmful if swallowed.
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
Toxic if inhaled.
May cause cancer.
Suspected of damaging fertility or the unborn child.

Precautionary Statements :
Prevention:
Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray. Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel

unwell. Rinse mouth. IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/ physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.
Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Other hazards : None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture : Mixture

Chemical Name	CAS-No.	Concentration: (%)
Tetrakis(hydroxymethyl) phosphonium sulfate	55566-30-8	60 - 100
benzalkonium chloride	68424-85-1	5 - 10
Formaldehyde	50-00-0	0.2 - 1

Section: 4. FIRST AID MEASURES

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

In case of skin contact : Wash off immediately with plenty of water for at least 15 minutes. Use a mild soap if available. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

If swallowed : Contact the Poison's Information Centre (eg Australia 13 1126; New Zealand 0800 764 766).

Rinse mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately.

If inhaled : Remove to fresh air. Treat symptomatically. Get medical attention immediately.

Protection of first-aiders : In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.

Notes to physician : Treat symptomatically.

Most important symptoms and effects, both acute and delayed : See Section 11 for more detailed information on health effects and symptoms.

Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Foam
Carbon dioxide
Dry powder
Other extinguishing agent suitable for Class B fires
For large fires, use water spray or fog, thoroughly drenching the burning material.

Unsuitable extinguishing : None known.

media

Specific hazards during firefighting	:	Fire Hazard Keep away from heat and sources of ignition. Flash back possible over considerable distance.
Hazardous combustion products	:	Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NOx) Sulphur oxides Oxides of phosphorus Hydrogen chloride
Special protective equipment for firefighters	:	Use personal protective equipment.
Specific extinguishing methods	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. In the event of fire and/or explosion do not breathe fumes.
Hazchem Code	:	2X

Section: 6. ACCIDENTAL RELEASE MEASURES

Initial Emergency Response Guide No	:	36
Personal precautions, protective equipment and emergency procedures	:	Ensure adequate ventilation. Remove all sources of ignition. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	Do not allow contact with soil, surface or ground water.
Methods and materials for containment and cleaning up	:	Eliminate all ignition sources if safe to do so. Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Flush away traces with water. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway.

Section: 7. HANDLING AND STORAGE

Advice on safe handling	:	Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Do not ingest. Keep away from fire, sparks and heated surfaces. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Wash hands thoroughly after handling. Use only with adequate ventilation.
Conditions for safe storage	:	Keep away from heat and sources of ignition. Keep away from oxidizing agents. Keep out of reach of children. Keep container tightly closed. Store in suitable labelled containers.
Suitable material	:	Keep in properly labelled containers.
Unsuitable material	:	not determined

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Form of exposure	Permissible concentration	Basis
Tetrakis(hydroxymethyl) phosphonium sulfate	55566-30-8	TWA	2 mg/m3	ACGIH
Formaldehyde	50-00-0	TWA	1 ppm 1.2 mg/m3	AU OEL
		VLE	2 ppm 2.5 mg/m3	AU OEL
Formaldehyde	50-00-0	WES-TWA	0.5 ppm	NZ OEL
		WES-TWA	0.33 ppm	NZ OEL
		WES-Ceiling	1 ppm	NZ OEL
Formaldehyde	50-00-0	TWA	0.016 ppm	NIOSH REL
		Ceiling	0.1 ppm	NIOSH REL
		PEL	0.75 ppm	OSHA CARC
		STEL	2 ppm	OSHA CARC
		TWA	0.016 ppm (Formaldehyde)	NIOSH REL
		Ceiling	0.1 ppm (Formaldehyde)	NIOSH REL
		TWA	0.1 ppm	ACGIH
		STEL	0.3 ppm	ACGIH

Engineering measures : Effective exhaust ventilation system. Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection : Safety goggles
Face-shield

Hand protection : Wear the following personal protective equipment:
Standard glove type.
Butyl rubber
Nitrile
Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Skin protection : Wear protective overalls, chemical splash goggles and impervious gloves.
A full slicker suit is recommended if gross exposure is possible.

Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing

Respiratory protection : An approved respirator must be worn if the occupational exposure limit is likely to be exceeded.
An organic vapor cartridge with dust/mist prefilter may be used.
In event of emergency or planned entry into unknown concentrations, a positive pressure, full-facepiece SCBA or supplied-air respirator should be used.
If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

Refer to AS/NZS 1715 and AS/NZS 1716 for selection, use and maintenance of respiratory protective equipment as applicable.

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling. Provide suitable facilities for quick drenching or flushing of the eyes and body in case of contact or splash hazard.

The Personal Protective Equipment (PPE) recommendations provided above have been made in good faith based on typical expected conditions of use. PPE selection should always be completed in conjunction with a proper risk assessment and in accordance with a PPE management program.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Liquid
Colour	:	clear
Odour	:	Pungent
Flash point	:	74 °C
pH	:	4.0 - 4.5,(100 %)
Odour Threshold	:	no data available
Melting point/freezing point	:	no data available
Initial boiling point and boiling range	:	105 °C
Evaporation rate	:	no data available
Flammability (solid, gas)	:	Not applicable.
Upper explosion limit	:	no data available
Lower explosion limit	:	no data available
Vapour pressure	:	17 kPa, (37.8 °C),
Relative vapour density	:	no data available
Relative density	:	1.32, (19 °C),
Density	:	10.3 lb/gal
Water solubility	:	completely soluble
Solubility in other solvents	:	no data available
Partition coefficient: n-octanol/water	:	no data available
Auto-ignition temperature	:	no data available
Thermal decomposition	:	no data available
Viscosity, dynamic	:	33 mPa.s (19 °C)
Viscosity, kinematic	:	no data available
Molecular weight	:	no data available
VOC	:	no data available

Section: 10. STABILITY AND REACTIVITY

Reactivity	:	No dangerous reaction known under conditions of normal use.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.

Conditions to avoid	:	Heat, flames and sparks.
Incompatible materials	:	Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors. Strong acids Strong Bases Reducing agents Strong oxidizing agents
Hazardous decomposition products	:	In case of fire, hazardous decomposition products may be produced such as: Carbon oxides nitrogen oxides (NOx) Sulphur oxides Oxides of phosphorus Hydrogen chloride

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes	:	Causes serious eye damage.
Skin	:	Causes severe skin burns. May cause allergic skin reaction. May be harmful in contact with skin.
Ingestion	:	Harmful if swallowed. Causes digestive tract burns.
Inhalation	:	Toxic if inhaled. May cause nose, throat, and lung irritation.
Chronic Exposure	:	May cause cancer. Suspected of damaging fertility or the unborn child.

Experience with human exposure

Eye contact	:	Redness, Pain, Corrosion
Skin contact	:	Redness, Pain, Irritation, Corrosion, Allergic reactions
Ingestion	:	Corrosion, Abdominal pain
Inhalation	:	Respiratory irritation, Cough

Toxicity

Product

Acute oral toxicity	:	LD50 rat: 575 mg/kg Test substance: 75% Active Ingredient
Acute inhalation toxicity	:	LC50 rat: 0.591 mg/l Exposure time: 4 hrs Test atmosphere: dust/mist Test substance: 75% Active Ingredient
Acute dermal toxicity	:	LD50 rat: > 2,000 mg/kg

Test substance: 75% Active Ingredient

Skin corrosion/irritation	:	no data available
Serious eye damage/eye irritation	:	no data available
Respiratory or skin sensitization	:	no data available
Carcinogenicity	:	Studies indicate that formaldehyde is a suspected human carcinogen.
Reproductive effects	:	Suspected of damaging fertility or the unborn child.
Germ cell mutagenicity	:	Contains no ingredient listed as a mutagen
Teratogenicity	:	no data available
STOT - single exposure	:	no data available
STOT - repeated exposure	:	no data available
Aspiration toxicity	:	No aspiration toxicity classification

Human Hazard Characterization

Based on our hazard characterization, the potential human hazard is: High

Section: 12. ECOLOGICAL INFORMATION

Ecotoxicity

Environmental Effects	:	Toxic to aquatic life with long lasting effects. Harmful to aquatic life.

Product

Toxicity to fish	:	LC50 Lepomis macrochirus (Bluegill sunfish): 93 mg/l Exposure time: 96 hrs Test substance: 75% Active Ingredient LC50 Oncorhynchus mykiss (rainbow trout): 119 mg/l Exposure time: 96 hrs Test substance: 75% Active Ingredient
Toxicity to daphnia and other aquatic invertebrates	:	EC50 Daphnia magna (Water flea): 19.4 mg/l Exposure time: 48 hrs Test substance: 75% Active Ingredient
Toxicity to algae	:	LC50 Green Algae (Pseudokirchneriella subcapitata, previously Selenastrum capricornutum): 0.20 mg/l Exposure time: 96 hrs Test substance: 75% Active Ingredient
Toxicity to bacteria	:	EC50 Bacteria: 24 mg/l Exposure time: 3 hrs Test substance: 75% Active Ingredient

Components

Toxicity to fish (Chronic toxicity)	:	Formaldehyde LC50: 21 mg/l Exposure time: 96 h

Persistence and degradability

The organic portion of this preparation is expected to be readily biodegradable.

Mobility

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.
If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	:	<5%
Water	:	30 - 50%
Soil	:	50 - 70%

The portion in water is expected to be soluble or dispersible.

Bioaccumulative potential

This preparation or material is not expected to bioaccumulate.

Other information

no data available

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION
Based on our hazard characterization, the potential environmental hazard is: Moderate

Section: 13. DISPOSAL CONSIDERATIONS

Disposal methods	:	The product should not be allowed to enter drains, water courses or the soil. Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.
Disposal considerations	:	Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport

Proper shipping name	:	TOXIC LIQUID, ORGANIC, N.O.S.
Technical name(s):	:	Tetrakis(hydroxymethyl) phosphonium sulfate
UN/ID No.	:	UN 2810
Transport hazard class(es)	:	6.1
Packing group	:	III
IERG No	:	36
Hazchem Code	:	2X
Special precautions for user	:	Dangerous goods of Class 6 (Toxic and Infectious Substances) and fire risk substances and combustible liquids

are incompatible in a placard load of the following:
Class 1 Explosives
Class 3 Nitromethane only
Class 5.1 Oxidising agents
Class 5.2 Organic peroxides
and are incompatible with food or food packaging in any quantity.

Air transport (IATA)

UN/ID No.	:	UN 2810
Proper shipping name	:	TOXIC LIQUID, ORGANIC, N.O.S.
Technical name(s)	:	Tetrakis(hydroxymethyl) phosphonium sulfate
Transport hazard class(es)	:	6.1
Packing group	:	III

Sea transport (IMDG/IMO)

UN/ID No.	:	UN 2810
Proper shipping name	:	TOXIC LIQUID, ORGANIC, N.O.S.
Technical name(s)	:	Tetrakis(hydroxymethyl) phosphonium sulfate
Transport hazard class(es)	:	6.1
Packing group	:	III
Marine pollutant	:	benzalkonium chloride

Section: 15. REGULATORY INFORMATION

Standard for the Uniform Scheduling of Medicines and Poisons	:	Schedule 6

INTERNATIONAL CHEMICAL CONTROL LAWS :

United States TSCA Inventory
This product has not been evaluated for Chemical Inventory regulations and may contain substances not found on Inventory Lists such as TSCA, EINECS, DSL, etc.. This product should be used under the applicable Research and Development provisions of local notification regulations.

Australia. Australian Industrial Chemicals Introduction Scheme (AICIS)
All substances in this product comply with the Australian Industrial Chemicals Introduction Scheme (AICIS)

Canadian Domestic Substances List (DSL)
This product contains substance(s) which are found on the Non-Domestic Substances List (NDSL), or are not in compliance with other Canadian Acts.

Japan. ENCS - Existing and New Chemical Substances Inventory
All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Existing and New Chemical Substances list (ENCS).

China Inventory of Existing Chemical Substances
All substances in this product comply with the Provisions on the Environmental Administration of New Chemical Substances and are listed on or exempt from the Inventory of Existing Chemical Substances China (IECSC).

Korea. Korean Existing Chemicals Inventory (KECI)
All substances in this product comply with the Chemical Control Act (CCA) and are listed on the Existing Chemicals List (ECL)

Philippines Inventory of Chemicals and Chemical Substances (PICCS)

All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).

Section: 16. OTHER INFORMATION

REFERENCES

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version),
Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH,
(TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Revision Date	:	05.10.2020
Version Number	:	1.0
Prepared By	:	Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

SAFETY DATA SHEET

CORR11447A

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	CORR11447A
Other means of identification	:	Not applicable.
Recommended use	:	CORROSION INHIBITOR
Restrictions on use	:	Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	:	ChampionX Australia Pty Ltd Suite 1/5 Brodie-Hall Drive, Technology Park Bentley WA 6102 Australia TEL: +61 8 9473 9000
Emergency telephone number	:	CHEMCALL 1800 127 406, International: +64 4 917 8888
Issuing date	:	23.03.2021

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Skin corrosion/irritation	:	Category 2
Serious eye damage/eye irritation	:	Category 1
Skin sensitization	:	Category 1

GHS Label element

Hazard pictograms :

Signal Word : Danger

Hazard Statements :
Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye damage.

Precautionary Statements :
Prevention:
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray. Wear protective gloves/ eye protection/ face protection.
Response:
IF ON SKIN: Wash with plenty of soap and water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.
Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Other hazards : None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture	:	Mixture

Chemical Name	CAS-No.	Concentration: (%)
Tall Oil, DETA Imidazoline Acetates	68140-11-4	5 - 10
Benzyl-Dimethyl-Dodecyl-Ammonium Chloride	139-07-1	1 - 5
2-Mercaptoethanol	60-24-2	1 - 5
Benzyl-Dimethyl-Tetradecyl-Ammonium Chloride	139-08-2	1 - 5

Section: 4. FIRST AID MEASURES

In case of eye contact	:	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.
In case of skin contact	:	Wash off immediately with plenty of water for at least 15 minutes. Use a mild soap if available. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
If swallowed	:	Rinse mouth. Get medical attention if symptoms occur. Contact the Poison's Information Centre (eg Australia 13 1126; New Zealand 0800 764 766).
If inhaled	:	Remove to fresh air. Treat symptomatically. Get medical attention if symptoms occur.
Protection of first-aiders	:	In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.
Notes to physician	:	Treat symptomatically.
Most important symptoms and effects, both acute and delayed	:	See Section 11 for more detailed information on health effects and symptoms.

Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	:	None known.
Specific hazards during firefighting	:	Not flammable or combustible.
Hazardous combustion products	:	Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NOx) Sulphur oxides Hydrogen chloride
Special protective equipment for firefighters	:	Use personal protective equipment.
Specific extinguishing methods	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Hazchem Code : ●3Z

Section: 6. ACCIDENTAL RELEASE MEASURES

Initial Emergency Response Guide No : 47

Personal precautions, protective equipment and emergency procedures : Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8. A respirator suitable for H2S may be necessary in the event of a spill. Cover spilled material with a H2S scavenger if available (Hydrogen peroxide, Triazine, Glyoxal).

Environmental precautions : Do not allow contact with soil, surface or ground water.

Methods and materials for containment and cleaning up : Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Flush away traces with water. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway.

Section: 7. HANDLING AND STORAGE

Advice on safe handling : Avoid contact with skin and eyes. Do not ingest. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Wash hands thoroughly after handling. Toxic hydrogen sulfide gas may accumulate in the headspace of containers during storage. Containers should be opened cautiously and only in well ventilated areas.

Conditions for safe storage : Keep out of reach of children. Keep container tightly closed. Store in suitable labelled containers. Avoid direct sunlight. A component of this product may degrade leading to the production of hydrogen sulfide (H2S). Do not store at elevated temperature. Keep in a cool, well-ventilated place.

Suitable material : The following compatibility data is suggested based on similar product data and/or industry experience: Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use.

Unsuitable material : not determined

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures : Effective exhaust ventilation system. Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection : Safety goggles
Face-shield

Hand protection : Wear the following personal protective equipment:
Nitrile rubber

		PVC Butyl rubber Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Skin protection	:	Wear suitable protective clothing.
Respiratory protection	:	When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Before opening containers and using this product, attach and wear a hydrogen sulfide (H2S) monitor in good working condition. Hydrogen sulfide gas accumulates in the headspace of containers of this product. Respiratory protection is not expected to be necessary in well-ventilated areas. However, if after a thorough hazard assessment respiratory protection is deemed necessary, an appropriate H2S respirator must be utilized. Refer to AS/NZS 1715 and AS/NZS 1716 for selection, use and maintenance of respiratory protective equipment as applicable.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling. Provide suitable facilities for quick drenching or flushing of the eyes and body in case of contact or splash hazard.

The Personal Protective Equipment (PPE) recommendations provided above have been made in good faith based on typical expected conditions of use. PPE selection should always be completed in conjunction with a proper risk assessment and in accordance with a PPE management program.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Liquid
Colour	:	amber
Odour	:	hydrocarbon-like
Flash point	:	> 93.3 °C
pH	:	4.5,(100 %)
Odour Threshold	:	no data available
Melting point/freezing point	:	no data available
Initial boiling point and boiling range	:	no data available
Evaporation rate	:	no data available
Flammability (solid, gas)	:	Not applicable.
Upper explosion limit	:	no data available
Lower explosion limit	:	no data available
Vapour pressure	:	no data available
Relative vapour density	:	no data available
Relative density	:	0.98 - 1.02, (15.6 °C),
Density	:	no data available
Water solubility	:	completely soluble
Solubility in other solvents	:	no data available
Partition coefficient: n-	:	no data available

octanol/water		
Auto-ignition temperature	:	no data available
Thermal decomposition	:	no data available
Viscosity, dynamic	:	no data available
Viscosity, kinematic	:	no data available
Molecular weight	:	no data available
VOC	:	3.9 %

Section: 10. STABILITY AND REACTIVITY

Reactivity	:	No dangerous reaction known under conditions of normal use.
Chemical stability	:	A component of this product may degrade leading to the production of hydrogen sulfide (H2S).
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	None known.
Incompatible materials	:	Oxidizing agents
Hazardous decomposition products	:	Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NOx) Sulphur oxides Hydrogen chloride

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes	:	Causes serious eye damage.
Skin	:	Causes skin irritation. May cause allergic skin reaction.
Ingestion	:	May be harmful if swallowed.
Inhalation	:	Health injuries are not known or expected under normal use.
Chronic Exposure	:	Suspected of damaging fertility or the unborn child. May cause damage to organs through prolonged or repeated exposure.

Experience with human exposure

Eye contact	:	Redness, Pain, Corrosion
Skin contact	:	Redness, Pain, Irritation, Allergic reactions
Ingestion	:	No symptoms known or expected.
Inhalation	:	Respiratory irritation, Cough

Toxicity

Product

Acute oral toxicity	:	Acute toxicity estimate: > 2,000 mg/kg
Acute inhalation toxicity	:	Acute toxicity estimate: > 20 mg/l Exposure time: 4 h Test atmosphere: vapour
Acute dermal toxicity	:	Acute toxicity estimate: > 2,000 mg/kg
Skin corrosion/irritation	:	no data available
Serious eye damage/eye irritation	:	no data available
Respiratory or skin sensitization	:	no data available
Carcinogenicity	:	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
Reproductive effects	:	Suspected of damaging fertility or the unborn child.
Germ cell mutagenicity	:	Contains no ingredient listed as a mutagen
Teratogenicity	:	no data available
STOT - single exposure	:	no data available
STOT - repeated exposure	:	May cause damage to organs through prolonged or repeated exposure.
Aspiration toxicity	:	No aspiration toxicity classification

Human Hazard Characterization

Based on our hazard characterization, the potential human hazard is: High

Section: 12. ECOLOGICAL INFORMATION

Toxicity

Environmental Effects	:	Toxic to aquatic life with long lasting effects.

Product

Toxicity to fish	:	no data available
Toxicity to daphnia and other aquatic invertebrates	:	no data available
Toxicity to algae	:	no data available

Components

Toxicity to fish	:	Tall Oil, DETA Imidazoline Acetates LC50 : > 0.23 mg/l Exposure time: 96 h 2-Mercaptoethanol LC50 Leuciscus idus (Golden orfe): 37 mg/l Exposure time: 96 h

Components

Toxicity to daphnia and other	:	Tall Oil, DETA Imidazoline Acetates

aquatic invertebrates	EC50 : 0.72 mg/l Exposure time: 48 h 2-Mercaptoethanol EC50 Daphnia magna (Water flea): 0.4 mg/l Exposure time: 48 h

Components

Toxicity to algae	:	Tall Oil, DETA Imidazoline Acetates EC50 : 0.17 mg/l Exposure time: 72 h 2-Mercaptoethanol EC50 Desmodesmus subspicatus (green algae): 19 mg/l Exposure time: 72 h NOEC Desmodesmus subspicatus (green algae): 1.7 mg/l Exposure time: 72 h

Components

Toxicity to bacteria	:	Tall Oil, DETA Imidazoline Acetates 175 mg/l

Components

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	2-Mercaptoethanol NOEC: 0.063 mg/l Exposure time: 21 d Species: Daphnia magna (Water flea)

Persistence and degradability

no data available

Mobility

The environmental fate was estimated using level III fugacity mathematical models developed by the US EPA. The model assumes a steady state condition where the total input and output have equilibrated. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.

Air	:	<5%
Water	:	30 - 50%
Soil	:	50 - 70%

Bioaccumulative potential

no data available

Other information

no data available

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION
Based on our hazard characterization, the potential environmental hazard is: Moderate

Section: 13. DISPOSAL CONSIDERATIONS

Disposal methods	:	The product should not be allowed to enter drains, water courses or the soil. Where possible recycling is preferred to

disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.

Disposal considerations : Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport

Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical name(s):	:	Imidazoline Salts
UN/ID No.	:	UN 3082
Transport hazard class(es)	:	9
Packing group	:	III
IERG No	:	47
Hazchem Code	:	●3Z
Special precautions for user	:	Dangerous goods of Class 9 (Miscellaneous - not fire risk substance, not combustible liquid) are incompatible in a placard load with any of the following: Class 1 Explosives

Air transport (IATA)

UN/ID No.	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical name(s)	:	Imidazoline Salts
Transport hazard class(es)	:	9
Packing group	:	III

Sea transport (IMDG/IMO)

UN/ID No.	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical name(s)	:	Imidazoline Salts
Transport hazard class(es)	:	9
Packing group	:	III
Marine pollutant	:	Imidazoline Salts

Section: 15. REGULATORY INFORMATION

Standard for the Uniform Scheduling of Medicines and Poisons : Schedule 6

INTERNATIONAL CHEMICAL CONTROL LAWS :

United States TSCA Inventory
On the inventory, or in compliance with the inventory.

Japan. ENCS - Existing and New Chemical Substances Inventory
All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Existing and New Chemical Substances list (ENCS).

Australia. Australian Industrial Chemicals Introduction Scheme (AICIS)
All substances in this product comply with the Australian Industrial Chemicals Introduction Scheme (AICIS)

New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand
All substances in this product comply with the Hazardous Substances and New Organisms (HSNO) Act 1996,and are listed on or are exempt from the New Zealand Inventory of Chemicals.

Korea. Korean Existing Chemicals Inventory (KECI)
On the inventory, or in compliance with the inventory.

Philippines Inventory of Chemicals and Chemical Substances (PICCS)
On the inventory, or in compliance with the inventory.

China Inventory of Existing Chemical Substances
On the inventory, or in compliance with the inventory.

Section: 16. OTHER INFORMATION

REFERENCES

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version),
Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH,
(TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Revision Date	:	23.03.2021
Version Number	:	1.1
Prepared By	:	Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

SAFETY DATA SHEET

HSUR43670A

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	HSUR43670A
Other means of identification	:	Not applicable.
Recommended use	:	OXYGEN SCAVENGER, CORROSION INHIBITOR, HYDROTEST CHEMICAL
Restrictions on use	:	Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	:	ChampionX Australia Pty Ltd Suite 1/5 Brodie-Hall Drive, Technology Park Bentley WA 6102 Australia TEL: +61 8 9473 9000
Emergency telephone number	:	CHEMCALL 1800 127 406, International: +64 4 917 8888
Issuing date	:	17.01.2023

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Corrosive to metals	:	Category 1
Acute toxicity (Oral)	:	Category 4
Acute toxicity (Inhalation)	:	Category 2
Skin corrosion/irritation	:	Sub-category 1B
Serious eye damage/eye irritation	:	Category 1

GHS Label element

Hazard pictograms :

Signal Word : Danger

Hazard Statements : May be corrosive to metals.
Harmful if swallowed.
Causes severe skin burns and eye damage.
Fatal if inhaled.

Precautionary Statements : **Prevention:**
Do not breathe mist or vapours. Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection. Wear respiratory protection.
Response:
IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician.
Storage:

Store in a well-ventilated place. Keep container tightly closed.
Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Other hazards : Contact with acids liberates toxic gas.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture : Mixture

Chemical Name	CAS-No.	Concentration: (%)
Quaternary Ammonium Compounds, Benzyl-C12-16-Alkyldimethyl, Chlorides	68424-85-1	10 - 30
Ammonium Bisulfite	10192-30-0	10 - 30
Ethylene Glycol	107-21-1	5 - 10
Dipropylene Glycol Monomethyl Ether	34590-94-8	5 - 10

Section: 4. FIRST AID MEASURES

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

In case of skin contact : Wash off immediately with plenty of water for at least 15 minutes. Use a mild soap if available. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

If swallowed : Rinse mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Contact the Poison's Information Centre (eg Australia 13 1126; New Zealand 0800 764 766).

If inhaled : Remove to fresh air. Treat symptomatically. Get medical attention if symptoms occur.

Protection of first-aiders : In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.

Notes to physician : Treat symptomatically.

Most important symptoms and effects, both acute and delayed : See Section 11 for more detailed information on health effects and symptoms.

Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media : None known.

Specific hazards during firefighting : Not flammable or combustible.

Hazardous combustion : Decomposition products may include the following materials: Carbon oxides

products		nitrogen oxides (NOx) Sulphur oxides Hydrogen chloride
Special protective equipment for firefighters	:	Use personal protective equipment.
Specific extinguishing methods	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Hazchem Code	:	2X

Section: 6. ACCIDENTAL RELEASE MEASURES

Initial Emergency Response Guide No	:	37
Personal precautions, protective equipment and emergency procedures	:	Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	Do not allow contact with soil, surface or ground water.
Methods and materials for containment and cleaning up	:	Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Flush away traces with water. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway.

Section: 7. HANDLING AND STORAGE

Advice on safe handling	:	Do not ingest. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Wash hands thoroughly after handling. Use only with adequate ventilation.
Conditions for safe storage	:	Keep out of reach of children. Keep container tightly closed. Store in suitable labelled containers.
Suitable material	:	Keep in properly labelled containers.
Unsuitable material	:	not determined

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Form of exposure	Permissible concentration	Basis
Ethylene Glycol	107-21-1	TWA (Vapour.)	20 ppm 52 mg/m3	AU OEL
		VLE (Vapour.)	40 ppm 104 mg/m3	AU OEL
		TWA (Particulate.)	10 mg/m3	AU OEL
Ethylene Glycol	107-21-1	WES-Ceiling (Vapour and mist)	50 ppm 127 mg/m3	NZ OEL
Ethylene Glycol	107-21-1	TWA (Vapour.)	25 ppm	ACGIH
		STEL (Vapour.)	50 ppm	ACGIH
		STEL (Inhalable	10 mg/m3	ACGIH

		fraction, Aerosol only)		
Dipropylene Glycol Monomethyl Ether	34590-94-8	TWA	50 ppm 308 mg/m3	AU OEL
Dipropylene Glycol Monomethyl Ether	34590-94-8	WES-STEL	150 ppm 909 mg/m3	NZ OEL
		WES-TWA	100 ppm 606 mg/m3	NZ OEL
Dipropylene Glycol Monomethyl Ether	34590-94-8	STEL	150 ppm 900 mg/m3	NIOSH REL
		TWA	100 ppm 600 mg/m3	NIOSH REL
		TWA	100 ppm 600 mg/m3	OSHA Z1

Engineering measures : Effective exhaust ventilation system. Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection : Safety goggles
Face-shield

Hand protection : Wear impervious chemical-resistant gloves when handling this product.
The following glove types are recommended based on our review of glove manufacturer information and/or other available sources.
butyl-rubber
Nitrile rubber
Other glove types may be used for short term, incidental contact if determined by testing to provide adequate worker protection.
Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Skin protection : Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing

Respiratory protection : Use local exhaust ventilation or other engineering controls as necessary to control airborne vapour and mist.
Where concentrations in air may exceed the limits given in this section or when significant vapours are generated, use an approved air purifying respirator fitted with a gas and vapour cartridge.
Use a particulate pre-filter where operations generate significant mists or aerosols.
Recommended gas and vapour cartridge:
Multi-purpose combination filter
In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA or supplied-air respirator should be used.
Refer to AS/NZS 1715 and AS/NZS 1716 for selection, use and maintenance of respiratory protective equipment as applicable.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling. Provide suitable facilities for quick drenching or flushing of the eyes and body in case of contact or splash hazard.

The Personal Protective Equipment (PPE) recommendations provided above have been made in good faith based on typical expected conditions of use. PPE selection should always be completed in conjunction with a proper risk assessment and in accordance with a PPE management program.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Colour	:	colourless
Odour	:	Pungent
Flash point	:	Not applicable.
pH	:	4 - 6
Odour Threshold	:	no data available
Melting point/freezing point	:	no data available
Initial boiling point and boiling range	:	Not applicable.
Evaporation rate	:	no data available
Flammability (solid, gas)	:	Not applicable.
Upper explosion limit	:	no data available
Lower explosion limit	:	no data available
Vapour pressure	:	not determined
Relative vapour density	:	no data available
Relative density	:	1.045 - 1.075, (20 °C),
Density	:	no data available
Water solubility	:	completely miscible
Solubility in other solvents	:	no data available
Partition coefficient: n-octanol/water	:	no data available
Auto-ignition temperature	:	no data available
Thermal decomposition	:	no data available
Viscosity, dynamic	:	< 20 mPa.s (20 °C)
Viscosity, kinematic	:	10 mm2/s (40 °C)
Molecular weight	:	no data available
VOC	:	no data available

Note: properties listed in this section may be typical, calculated, or estimated values and should not be used as product specifications or for system design. For product specifications see the COA or Technical Data sheet.

Section: 10. STABILITY AND REACTIVITY

Reactivity	:	No dangerous reaction known under conditions of normal use.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	None known.
Incompatible materials	:	Strong acids Strong bases Strong oxidizing agents
Hazardous decomposition products	:	Decomposition products may include the following materials: Carbon oxides

nitrogen oxides (NOx)
Sulphur oxides
Hydrogen chloride

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes : Causes serious eye damage.

Skin : Causes severe skin burns.

Ingestion : Harmful if swallowed. Causes digestive tract burns.

Inhalation : May cause nose, throat, and lung irritation.

Chronic Exposure : Health injuries are not known or expected under normal use.

Experience with human exposure

Eye contact : Redness, Pain, Corrosion

Skin contact : Redness, Pain, Corrosion

Ingestion : Corrosion, Abdominal pain, Vomiting

Inhalation : Respiratory irritation, Cough

Toxicity

Product

Acute oral toxicity : Acute toxicity estimate: 1,441 mg/kg

Acute inhalation toxicity : Acute toxicity estimate: 0.2651 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : no data available

Skin corrosion/irritation : no data available

Serious eye damage/eye irritation : no data available

Respiratory or skin sensitization : Result: Contains an ingredient that can cause asthmatic-like reactions in sulfite-sensitive individuals.

Carcinogenicity : No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive effects : No reproductive toxic effects expected.

Germ cell mutagenicity : Contains no ingredient listed as a mutagen

Teratogenicity : no data available

STOT - single exposure : no data available

STOT - repeated exposure : no data available

Aspiration toxicity : No aspiration toxicity classification

Components

Acute dermal toxicity : Quaternary Ammonium Compounds, Benzyl-C12-16-Alkyldimethyl, Chlorides
LD50 rabbit: 3,340 mg/kg

Ethylene Glycol
LD50 rabbit: 10,600 mg/kg

Dipropylene Glycol Monomethyl Ether
LD50 rabbit: 9,510 mg/kg

Human Hazard Characterization

Based on our hazard characterization, the potential human hazard is: High

Section: 12. ECOLOGICAL INFORMATION

Toxicity

Environmental Effects : Very toxic to aquatic life.
Toxic to aquatic life with long lasting effects.

Product

Toxicity to fish : no data available

Toxicity to daphnia and other aquatic invertebrates : no data available

Toxicity to algae : no data available

Components

Toxicity to fish : Ethylene Glycol
LC50 : 72,860 mg/l
Exposure time: 96 h

Dipropylene Glycol Monomethyl Ether
LC50 Fish: > 1,000 mg/l
Exposure time: 96 h

Components

Toxicity to daphnia and other aquatic invertebrates : Quaternary Ammonium Compounds, Benzyl-C12-16-Alkyldimethyl, Chlorides
EC50 Daphnia magna (Water flea): 0.016 mg/l
Exposure time: 48 h

Ammonium Bisulfite
EC50 : 89 mg/l
Exposure time: 48 h

Ethylene Glycol
EC50 : > 100 mg/l
Exposure time: 48 h

Components

Toxicity to algae : Ethylene Glycol
EC50 : 6,500 mg/l
Exposure time: 96 h

Components

Toxicity to bacteria	:	Ethylene Glycol > 1,995 mg/l

Components

Toxicity to fish (Chronic toxicity)	:	Ethylene Glycol NOEC: 15,380 mg/l Exposure time: 7 d

Components

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	Ethylene Glycol NOEC: 8,590 mg/l Exposure time: 7 d

Persistence and degradability

no data available

Mobility

no data available

Bioaccumulative potential

no data available

Other information

no data available

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION
Based on our hazard characterization, the potential environmental hazard is: High

Section: 13. DISPOSAL CONSIDERATIONS

Disposal methods	:	The product should not be allowed to enter drains, water courses or the soil. Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.
Disposal considerations	:	Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport

Proper shipping name	:	CORROSIVE LIQUID, N.O.S.
Technical name(s):	:	Quaternary Ammonium Compounds, Benzyl-C12-16-Alkyldimethyl, Chlorides
UN/ID No.	:	UN 1760
Transport hazard class(es)	:	8
Packing group	:	II
IERG No	:	37

Hazchem Code : 2X

Air transport (IATA)

UN/ID No.	:	UN 1760
Proper shipping name	:	CORROSIVE LIQUID, N.O.S.
Technical name(s)	:	Quaternary Ammonium Compounds, Benzyl-C12-16-Alkyldimethyl, Chlorides
Transport hazard class(es)	:	8
Packing group	:	II

Sea transport (IMDG/IMO)

UN/ID No.	:	UN 1760
Proper shipping name	:	CORROSIVE LIQUID, N.O.S.
Technical name(s)	:	Quaternary Ammonium Compounds, Benzyl-C12-16-Alkyldimethyl, Chlorides
Transport hazard class(es)	:	8
Packing group	:	II
Marine pollutant	:	Quaternary ammonium compound

Section: 15. REGULATORY INFORMATION

Standard for the Uniform Scheduling of Medicines and Poisons : Schedule 6

INTERNATIONAL CHEMICAL CONTROL LAWS :

Canadian Domestic Substances List (DSL)
The substance(s) in this preparation are included in or exempted from the Domestic Substance List (DSL).

United States TSCA Inventory
On or in compliance with the active portion of the TSCA inventory.

Australia. Australian Industrial Chemicals Introduction Scheme (AICIS)
All substances in this product comply with the Australian Industrial Chemicals Introduction Scheme (AICIS)

Japan. ENCS - Existing and New Chemical Substances Inventory
On the inventory, or in compliance with the inventory

New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand
All substances in this product comply with the Hazardous Substances and New Organisms (HSNO) Act 1996,and are listed on or are exempt from the New Zealand Inventory of Chemicals.

Korea. Korean Existing Chemicals Inventory (KECI)
On the inventory, or in compliance with the inventory

Philippines Inventory of Chemicals and Chemical Substances (PICCS)
On the inventory, or in compliance with the inventory

China Inventory of Existing Chemical Substances
All substances in this product comply with the Provisions on the Environmental Administration of New Chemical Substances and are listed on or exempt from the Inventory of Existing Chemical Substances China (IECSC).

Taiwan Chemical Substance Inventory
On the inventory, or in compliance with the inventory

Section: 16. OTHER INFORMATION

REFERENCES

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version),
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Revision Date	:	17.01.2023
Version Number	:	1.8
Prepared By	:	Regulatory Affairs

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