Project KEA

Hazardous Substances Report

for: South Island Resource Recovery Ltd

PROJECT KEA

Job No: 64308

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Cover photo: Project KEA's official logo, retrieved from https://www.projectkea.co.nz/

EXECUTIVE SUMMARY

Babbage Consultants Limited ("**Babbage**") has been engaged by South Island Resource Recovery Limited ("**SIRRL**") to prepare a resource consenting application for the establishment of an Energy from Waste ("**EfW**") facility, known as Project KEA.

The EfW facility will nominally operate 24hrs per day, 365 days per year converting Municipal Solid Waste ("**MSW**") that would otherwise be sent to landfill, into electrical energy through the process of combustion.

The facility and the process requires the storage and use of certain hazardous substances. The proposed activity is to handle and store specified hazardous substances on site to support the operation and maintenance of the facility. These substances must be handled and stored correctly to mitigate risk to both personnel and the environment.

In accordance with the Canterbury Land and Water Regional Plan ("**CLWRP**") the proposed activity is a **DISCRETIONARY ACTIVITY.**

In accordance with the Waimate District Plan ("**WDP**") the proposed activity is a **DISCRETIONARY ACTIVITY.**

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1 INTRODUCTION

The EfW facility is a green field industrial development to recover the energy from MSW. As part of its process and operation the facility requires several hazardous substances to be stored and used on-site.

1.1 Scope of this Report

The scope of this report is to:

1. Identify the hazardous substances required to support the process
2. Identify the required on-site storage volumes of each hazardous substance
3. Assess the proposed activity against the CLWRP
4. Assess the proposed activity against the WDP
5. Identify the controls that will be implemented to guard against accidental discharge to the environment

1.2 Site Legal Description

The property is currently a vacant piece of farmland with a total area of around 14.85ha.

The legal description is Lot 2 of RS22268 RT CB27B/314 as shown in **Appendix A.**

1.3 Site conditions

The site is located in the corner of Morven-Glenavy Rd. The land is generally flat and has been assessed as being in a low flood risk area. Refer separate report *Project KEA – Flood Plain Assessment: Babbage 2022.*

There is a creek (Whitneys Creek) running along the northern boundary of the site. The creek is not within the site.

2 HAZARDOUS SUBSTANCES ON SITE

2.1 Hazardous Substances and Quantities held on site

The following is a list of the hazardous substances and their quantities expected to be on-site:

Table 1: Hazardous substances on site

Substance	HSNO Approval No.	CAS No.	Volume on site	Handling and Storage Solution
Aqueous Ammonia (25%)	HSR001526	1336-21-6	50,000L	Bunded Tank with spill protected tanker unload area
Sodium Hydroxide (30%)	HSR001576	1310-73-2	50,000L	Bunded Tank with spill protected tanker unload area
Sodium Hypochlorite (15%)	HSR003698	7681-52-9	1,000L	Bunded Portable container
Hydrochloric Acid (37%)	HSR001557	7647-01-0	1,000L	Bunded Portable container
Sulphuric Acid (40%)	HSR001572	7664-93-9	1,000L	Bunded Portable container
Biotrol 145	HSR002681	7681-52-9	80L	Bunded Portable container
Diesel Fuel	HSR001441	68334-30-5	100,000L	Bunded Tank with spill protected tanker unload area
Various Oils and Greases	Various	Various	1,000L	Dedicated storage rooms
V-Guard 230	HSR002681	1310-73-2	200L	Bunded Portable container
V-Guard 231	HSR002681	1310-73-2	200L	Bunded Portable container
Visentia 210	HSR002684	7681-57-4	1,000L	Bunded Portable container
V-Charge 412	HSR002684	1327-41-9	1,000L	Bunded Portable container
Chlorine (Liquid)	HSR001058	7782-50-5	70L	Bunded Portable container
Metal Hydroxide Sludge (approx. 40% TS)	N/A	N/A	20,000L	Bunded Tank with spill protected tanker loading area.

2.2 Metal Hydroxide Sludge (“MHS”)

MHS is a by-product stream from the Plasma Treatment of fly ash and accordingly has no HSNO Approval number.

MHS is a sludge type product with a moisture content around 60%. It contains the hydroxide compounds of low boiling point metals including Zinc hydroxide and Lead hydroxide. Typical composition

on an elemental dry basis is given in Table 2. Due to its composition, particularly lead component, this product is a potential health hazard and as such would be categorised as a hazardous substance under the CLWRP Schedule 4 Part A.

MHS will be stored on-site in a bunded tank until out loaded to a dedicated hazardous substance tanker for removal to a certified hazardous waste treatment and disposal facility.

On average approximately 1,000kg MHS is generated each day with the proposed storage volumes allowing for up to 20 days' worth to be stored on site.

It is noted that the lead, zinc and any other heavy metal compounds originate from the MSW being combusted in the EfW Plant. The EfW Plant does not in itself 'generate' these elements but rather captures and concentrates them into a dedicated waste stream that can then be further treated for either re-use or prior to disposal.

Table 2: Typical composition of Metal Hydroxide

Element	%
Na	2~10
Si	1~4
S	1~9
Cl	4~21
K	1~10
Ca	5~20
Fe	1~8
Cu	2~5
Zn	12~28
Pb	6~20
Other O, H, etc	21~32
Mg, Ni, Cd, Cr, etc.	Minor quantity

3 STATUTORY ASSESSMENT

3.1 Assessment of CLWRP Objectives

OBJECTIVE	COMMENT
3.13 Groundwater resources remain a sustainable source of high-quality water which is available for abstraction while supporting base flows or levels in surface water bodies, springs and wetlands and avoiding salt-water intrusion.	The proposed activity has proactive measures to mitigate against the risk of accidental discharge to the environment.
3.24 All activities operate at good environmental practice or better to optimise efficient resource use and protect the region's freshwater resources from quality and quantity degradation.	The proposed activity has proactive measures to mitigate against the risk of accidental discharge to the environment.

3.2 Assessment of CLWRP Policies – Hazardous Substances and hazardous activities

POLICY	COMMENT
4.24 The discharge of a hazardous substance to water, or onto or into land where it may enter water, to control a plant or animal pest or other unwanted organism only occurs: (a) if the substance is registered under the Hazardous Substances and New Organisms Act 1996 for use against the target organism; (b) if adverse effects on non-target organisms, Ngāi Tahu cultural values, or the use and consumption of water by humans or livestock are avoided as far as practicable; and (c) where good practices are used to minimise the risk of accidental discharge to water.	The proposed activity has proactive measures to mitigate against the risk of accidental discharge to the environment.
4.25 Unless the substance is approved under the Hazardous Substances and New Organisms Act 1996 to be applied onto land or into water, activities involving the use, storage or discharge of hazardous substances will be undertaken using the best practicable option to: (a) as a first priority, avoid the discharge (including accidental spillage) of hazardous substances onto land or into water, including reticulated stormwater systems; and (b) as a second priority, ensure, where there is a residual risk of a discharge of hazardous substances including any accidental spillage, it is contained on-site and does not enter surface water bodies, groundwater or stormwater systems.	The proposed activity has proactive measures to mitigate against the risk of accidental discharge to land, water or stormwater. The proposed activity has proactive measures to mitigate against the risk of accidental discharge to the environment.

4.26 Any discharges of hazardous substances from contaminated land, including existing and closed landfills, are managed to ensure that adverse effects beyond the site boundary on people's health or safety, on human or stock water supplies, or on surface water are avoided.	The Preliminary Site Investigation (Contaminated Land) concludes that the land is more likely than not to be free of ground contamination.
4.27 Landfills and other waste collection or disposal sites are designed and sited to avoid the contamination of groundwater or surface water either through the direct discharge of hazardous substances to water or the leaching of contaminants into or onto land where they may enter water.	The facility collects and stores waste. Waste is stored in defined locations and buildings with collection points to capture any leachate which is then sent through a treatment plant.
4.28 The disposal of sewage sludge from the treatment of human effluent: (a) does not contaminate any drinking-water supply; (b) avoids adverse effects on people's health or safety, on human or stock water supplies and on surface water beyond the site boundary; (c) does not restrict activities on adjoining properties; (d) avoids creating a dust nuisance on adjoining properties.	A separate report covering the installation of a domestic wastewater treatment plant and disposal drip irrigation field has been presented. The treatment system does not create any sludge required to be disposed of on site.
4.29 Where an on-site effluent treatment and disposal system is to be installed to treat and dispose of human effluent the system proposed will: (a) effectively treat and dispose of human effluent, given the conditions of the site; (b) avoid adverse effects on people's health or safety, on human or stock water supplies and on surface water beyond the site boundary; (c) not restrict activities on adjoining properties; (d) allow sufficient distance between the discharge from the on-site system and other discharges, wells or groundwater to avoid elevation of groundwater levels to an extent that land drainage is impeded.	An on-site domestic wastewater treatment system is proposed. Treatment and disposal is in accordance with AS/NZS1547:2012 The disposal system obeys all distance rules from groundwater level, bores used for abstraction of water and surface water bodies. The system does not restrict any activities on adjacent properties.
4.30 New cemeteries are located away from areas where they may be subject to inundation from surface water bodies or in areas with groundwater less than 3 m below the ground surface.	Not applicable.

3.3 Assessment of CLWRP Rules – Hazardous Substances

RULE	COMMENT
Rule 5.179: The use of land for the storage in a portable container and use of a hazardous substance listed in Part A of Schedule 4 is a permitted activity, provided the following conditions are met: **1**. The substance is approved under the Hazardous Substances and New Organisms Act 1996 and the storage and use of the substance is in accordance with all conditions of the approval; and **2.** The container(s) are not located within: (a) 20 m of a surface water body or a bore; or (b) a Community Drinking-water Protection Zone as set out in Schedule 1.	**N/A.** Some hazardous substances are stored in permanent (non-portable) vessels.
Rule 5.180: The use of land for the storage in a portable container and use of a hazardous substance listed in Part A of Schedule 4 that does not meet one or more of the conditions in Rule 5.179 is a restricted discretionary activity. The exercise of discretion is restricted to the following matters: **1**. Measures to avoid: (a) the entry of the substances or associated contaminants into groundwater, surface water, supplies of drinking-water and aquatic ecosystems; and (b) any actual or potential adverse environmental effects on the current or future use of the water resource, as a result of leakage or spillage of the substance, or a release of the substance as a result of a natural event; and **2**. Measures to prevent or contain spills or leaks, including site layout and drainage, waste management, emergency management and leak detection; and **3.** Maintenance and monitoring of the storage or use system including containment measures.	**N/A**. Some hazardous substances are stored in permanent (non-portable) vessels.
Rule 5.181 The use of land for the storage, other than in a portable container, and use of a hazardous substance listed in Part A of Schedule 4 is a permitted activity, provided the following conditions are met: **1.** The substance is approved under the Hazardous Substances and New Organisms Act 1996 and the storage and use of the	**Non-complies.** All substances are HSNO Approved other than the Metal Hydroxide by-product.

substance is in accordance with all conditions of the approval; and	
2. A current inventory of all hazardous substances on the site is maintained, and a copy of the inventory shall be made available to the CRC or emergency services on request; and	**Complies.** An inventory will be maintained and available to CRC and emergency services.
3. For hazardous substances stored or held on or over land, all areas or installations used to store or hold hazardous substances are inspected at least once per month or annually if the site is outside of any area or zone identified in a proposed or operative district plan for residential, commercial or industrial purposes and is unstaffed, and repaired or maintained if any defects are found that may compromise the containment of the hazardous substance; and	**Complies.** Storage vessels and spill containment measures will be inspected monthly and maintained and repaired if any defects are identified.
4. For hazardous substances stored or held in a container located in or under land: (a) if there has been any physical loss of product, then the Canterbury Regional Council shall be notified within 24 hours of confirmation of the loss; and (b) records of stock reconciliations over the past 12 months shall be made available to the CRC upon request. If requested, a copy of the stock reconciliation and the most recent certification of the container shall be provided to the CRC within five working days; and	**N/A.** All hazardous substances will be stored above ground level.
5. For substances stored within a Community Drinking-water Protection Zone as set out in Schedule 1: (a) all hazardous substances on a site are stored under cover in a facility which is designed, constructed and managed to contain a leak or spill and allow the leaked or spilled substance to either be collected or lawfully disposed of; and (b) spill kits to contain or absorb a spilled substance are located with the storage facility and use areas at all times and	**N/A.** Proposed activity is not within a Community Drinking-water Protection Zone.
6. Except where the storage was lawfully established before 4 July 2004 and the maximum quantity stored has not increased since that date, or the storage relates to transformers and other equipment associated with electricity infrastructure, the substances shall not be stored within: (a) 20 m of a surface waterbody or a bore used for water abstraction; or	**Complies.** No storage of hazardous substances will be within 20m from a surface water body or bore.

(b) 250 m of a known active fault that has a recurrence period of less than 10,000 years, and the land is: (i) over an unconfined or semi-confined aquifer; or (ii) within 50 m of a permanently or intermittently flowing river or a lake.	**Complies.** No known active faults within 250m of storage.
Rule 5.182 The use of land for the storage, other than in a portable container, and use of a hazardous substance listed in Part A of Schedule 4 that does not meet one or more of the conditions in Rule 5.181 is a discretionary activity.	Proposed activity does not comply with Rule 5.181 item 1 and is therefore a **DISCRETIONARY ACTIVITY**
Rule 5.183 The use of land for the decommissioning of a container located on, in or under land that is or has been used to store a hazardous substance is a permitted activity, provided the following condition is met: **1**. The information listed in Part B of Schedule 4 is provided to the CRC at least one week before the decommissioning is undertaken, except for item 12, which is to be provided within one month of completion of the report or plan for each phase of the investigation or remediation.	**N/A.**
Rule 5.184 The use of land for the decommissioning of a container located on, in or under land that is or has been used to store a hazardous substance that does not meet the condition in Rule 5.183 is a discretionary activity.	**N/A.**

In accordance with the CLWRP Rule 5.182 the storage and use of the listed hazardous substances is a **DISCRETIONARY ACTIVITY**.

3.4 Assessment of WDP Rules – Hazardous Substances

Section 12 Hazardous Substances	
1.1 Permitted Activities The following activities shall be Permitted Activities, provided that they comply with all of the Site Standards specified below.	
1.1.1 The use, storage or disposal of hazardous substances which are not listed in Schedule 1 or are listed in Schedule 1 but their quantities are below those specified in Tables 12.1 to 12.3 for Permitted Activities in the relevant zone.	**Non-complying.** Volume of Diesel (category 3b) exceeds Permitted Activity quantity (i.e., >3,000L)
1.1.2 The storage and/or use of hazardous substances associated with temporary military training activities.	N/A

1.2 Controlled Activities Notwithstanding Rules 1.1, 1.3 and 1.4 in all Zones: 1.2.1 The storage and retail sale of petrol up to 100,000l in underground tanks and diesel up to 50,000l in underground tanks shall be a Controlled Activity provided that the "Code of Practice for the Design, Installation and Operation of Underground Petroleum Storage Systems" (Department of Labour, First Edition 1992) and the "Supplement No 1 Management of Existing Underground Petroleum Storage Systems, June 1995" be complied with. 1.2.2 The storage and retail sale of LPG up to 6.0 tonnes shall be Controlled Activity.	N/A N/A
1.3 Discretionary Activities The following activities shall be Discretionary Activities in respect of the matter specified: 1.3.1 The use, storage, or disposal of hazardous substances where: a. the quantities exceed those specified in Tables 12.1 to 12.3 for permitted activities in the relevant zone, but are below those specified for noncomplying activities; or b. the activity does not comply with any one or more of the Site Standards listed for permitted activities. c. the activity does not comply with the requirement for controlled activities. 1.3.2 The manufacturing of hazardous substances.	Quantity of Diesel stored is 100,000L which exceeds the Permitted limit of 3,000 under table 12.3. Therefore: **Discretionary Activity** N/A N/A Facility generates a Metal Hydroxide Sludge which is a hazardous substance. Therefore: **Discretionary Activity**
1.4 Non-complying Activities The following activities shall be Non-Complying Activities: 1.4.1 The use, storage or disposal of hazardous substances where the quantities exceed those specified in Tables 12.1 to 12.3 for discretionary activities in the relevant zone,	N/A

Table 12.1: Diesel is a Category 3B Hazardous Substance and quantities exceeding 3,000 L in the Rural Zone is a Discretionary Activity. There is no Non-Complying Activity Quantity for this substance in the Rural Zone.	Quantity of Diesel stored is 100,000L which exceeds the Permitted limit of 3,000 under table 12.3. Therefore: **Discretionary Activity**
2. SITE STANDARDS	
2.1 All areas or parts of sites where hazardous substances (including waste) are stored, used, loaded or unloaded shall be sealed, bunded and roofed or covered.	Complies
2.2 To achieve a, the following specifications are required:	
2.2.1 The volume of any containment system shall be 100% of the maximum volume of the hazardous substance to be stored, used, loaded or unloaded when the site is roofed or;	Complies
2.2.2 the volume of any containment system shall be 120% of the maximum volume of the hazardous substance to be stored, used, loaded or unloaded when the site is unroofed;	Complies
2.2.3 the containment system should be designed in such a way as to ensure containment of any hazardous substance that spills due to the collapse of any container (e.g. tank), and the containment from the direct leakage from any container;	Complies
2.2.4 the containment system shall be sealed with impervious materials that are resistant to breakdown from the particular hazardous substances which they are designed to contain;	Complies
2.2.5 the containment system and its sealment shall be maintained as and when necessary.	Complies
2.3 The storage of petrol or diesel in above ground tanks in Rural Zones shall be exempt from rules 2.2.1 and 2.2.2, providing the tank is at least 20m away from any natural waterway, water race or formed drain.	Complies
2.4 The storage of diesel in above ground tanks in association with residential activities shall be exempt from rules 2.2.1 and 2.2.2.	N/A
2.5 Collection of hazardous substances for disposal purposes, or for subsequent use, shall be in containers that seal and contain the hazardous substances collected.	Complies (noting that the 'container' used for storage of Metal Hydroxide is a tank)
2.6 All hazardous substance sites shall be adequately signposted according to the Code of Practice for "Warning Signs for	

Premises Storing Hazardous Substances" of the New Zealand Chemical Industry Council.	Complies
2.7 Any use, storage of radioactive material, including radiation machines, comply with conditions set by the National Radiation laboratory.	N/A
2.8 The storage and use of hazardous substances in association with temporary military training activities shall be exempt from standards 2.1, 2.2 and 2.6.	N/A
2.9 There shall be no storage of hazardous substances within areas of flooding risk identified on the Flood Risk Maps.	Complies
2.10 Any electrical transformer installation with an oil capacity of less than 1000 litres is excluded from the provisions of Rule 2.1 and 2.2 above, where operated by a network utility operator as defined in the Resource Management Act 1991.	Complies
Rule 1.3.1: The use, storage, or disposal of hazardous substances where the quantities exceed those specified for permitted activities in the relevant zone, but are below those specified for noncomplying activities, is a **Discretionary Activity**.	

In accordance with the WDP Rule 1.3 the storage and use of the listed hazardous substances is a **DISCRETIONARY ACTIVITY**.

4 ENVIRONMENTAL CONTROLS

4.1 Handling and Storage

All hazardous substances will be handled and stored in accordance with the HSNO approved storage and handling rules and in a manner that mitigates the risk of accidental discharge to the environment. Primarily the facility will implement the following measures:

- The operating site will be fully fenced with controlled access.
- All hazardous substances will be stored and handled in accordance with HSNO and manufacturers requirements.
- All permanent tanks will be contained within bunded areas with a capacity equal to 100% (if covered) or 120% (if uncovered) of the tank capacity.
- All portable containers will be stored on concrete floors, sloped, and drained to the process wastewater treatment plant
- All portable containers in use (i.e. 1,000l and 200l containers being drawn from) will be mounted over proprietary bund systems
- Tanker unloading and loading facilities will be undertaken on dedicated tanker slabs sloped to capture any spill and drained to the on-site process wastewater treatment facility.
- Bunded areas will drain to the on-site process wastewater treatment plant.
- Minor volumes of oils and greases will be stored in a dedicated building.

4.2 Environmental Management Plan

Prior to receipt of any hazardous substances on site, SIRRL will generate a detailed Environmental Management Plant – Hazardous Substances ("**EMP-HS**") which will address the following issues:

- Hazardous Substances Inventory (and its upkeep)
- The handling and control measures in place for each hazardous substance to protect the environment in the event of a spill
- The inspection and audit procedures to be undertaken to ensure control measures function correctly
- Incident response and procedures to be followed in the case of a spill

5 CONCLUSIONS AND RECOMMENDATIONS:

All hazardous substances are to be handled and stored in such a way as to protect the environment in the event of a spill.

The measures implemented will include:

- Bunded storage compounds for those hazardous substances not stored in portable containers. Bunded areas drain to the site process wastewater treatment plant.
- Dedicated storage areas for those hazardous substances stored in portable containers. Floors of such dedicated storage areas drain to the site process wastewater treatment plant.
- Transfer activities (i.e., loading/unloading tankers) will occur on dedicated hardstand areas which are drained to the site wastewater treatment plant.
- An Environmental Management Plan – Hazardous Substances will be created before any hazardous substances are brought onto site. The plan will include the control measures and inspection procedures to be implemented.

Based upon the storage and handling of the hazardous substances being done in accordance with the manufacturer's recommendations, and the implementation of the storage and protective measures outlined in this report, then we believe the risk of potential impact on the environment arising from these hazardous substances has been appropriately mitigated.

6 LIST OF APPENDICES

6.1 Appendix A – Title Plan

6.2 Appendix B – CLWRP Schedule 4

6.3 Appendix C – WDP Section 12

6.4 Appendix D – Material Safety Data Sheets

APPLICABILITY AND LIMITATIONS

Restrictions of Intended Purpose

This report has been prepared solely for the benefit of South Island Resource Recovery Ltd as our client with respect to the brief. The reliance by other parties on the information or opinions contained in the report shall, without our prior review and agreement in writing, be at such party's sole risk.

Legal Interpretation

Opinions and judgements expressed herein are based on our understanding and interpretation of current regulatory standards and should not be construed as legal opinions. Where opinions or judgements are to be relied on they should be independently verified with appropriate legal advice.

Maps and Images

All maps, plans, and figures included in this report are indicative only and are not to be used or interpreted as engineering drafts. Do not scale any of the maps, plans or figures in this report. Any information shown here on maps, plans and figures should be independently verified on site before taking any action. Sources for map and plan compositions include LINZ Data and Map Services and local council GIS services. For further details regarding any maps, plans or figures in this report, please contact Babbage Consultants Limited.

Appendix A Title Plan

Contractor to locate all existing services & verify all dimensions before commencing work

Issue	Date	Reason	Approved
A	10/21	For Consent	DS

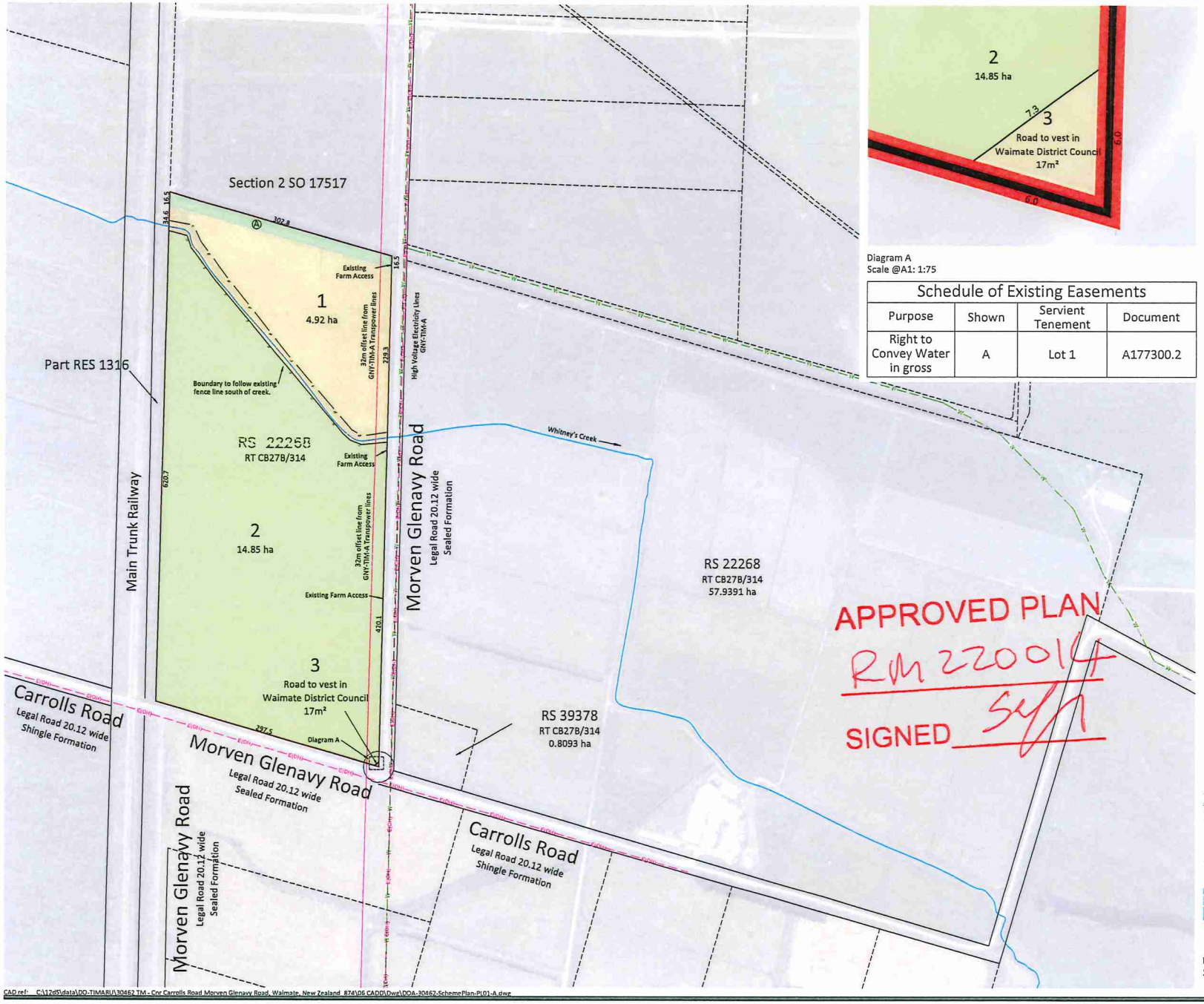

Diagram A
Scale @A1: 1:75

Schedule of Existing Easements			
Purpose	Shown	Servient Tenement	Document
Right to Convey Water in gross	A	Lot 1	A177300.2

NORTH

Notes:

Owners: Murphy Farms Limited

Address: Cnr Carrolls Road &
Morven Glenavy Road
Appellation: RS 22268
RT Reference: RT CB27B/314
Total Area: 78.4406 ha

- All dimensions in metres unless shown otherwise;
- Existing boundaries adopted from LINZ online database;
- Aerial Photography: Sourced from LINZ Database https://data.linz.govt.n layer 99197 cnterbury-03m-rural-aerial-photos-2017-2018/ under Creative Commons Attribution 4.0 International;
- This plan is in terms of NZGD2000 Timaru Circuit;
- This plan has been prepared for the sole purpose of obtaining subdivision consent pursuant to Section 88 of the Resource Management Act 1991;
- Use of this plan for other purposes or its reproduction in part or full is not permitted without the prior consent of Davis Ogilvie (Aoraki) Ltd;
- A full assessment of easements will be undertaken prior to final survey and subsequent to proposed servicing and engineering requirements being confirmed;
- All dimensions and areas are subject to final legal survey;
- Services are sourced from Canterbury Maps and are indicative only;

Key:

- Water Supply
- Electricity (Overhead)
- Fence
- Whitney's Creek
- Existing Easement

Location Diagram
Scale @A1: 1:40,000

CAD ref: C:\12d5\data\DO-TIMARU\30462 TM - Cnr Carrolls Road Morven Glenavy Road, Waimate, New Zealand_874\06 CADD\Dwg\DOA-30462-SchemePlan-PL01-A.dwg

DAVIS OGILVIE
Davis Ogilvie (Aoraki) & Partners Ltd
Engineers - Surveyors - Planners
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P.O. Box 359 Timaru, NZ
Ph. 03 688 8350 / 0800 888 350
Also - Nelson, Christchurch, Greymouth

LOTS 1 - 3 BEING A PROPOSED SUBDIVISION OF RS 22268

MURPHY FARMS LTD.
CNR CARROLLS ROAD & MORVEN GLENAVY ROAD

Design	Drawn	QA check	dwg	Issue
DS	TH	DS	PL01	A
Scale @ A1 1:2500	Date 10/21	File 30462		

Appendix B CLWRP Schedule 4

Schedule 4 Hazardous Substances

Part A – Hazardous Substances

Hazardous substance means, unless expressly provided otherwise by regulations, any substance defined in the Hazardous Substances (Minimum Degrees of Hazard) Regulations 2001 —

(a) with one or more of the following intrinsic properties:
  (i) explosiveness:
  (ii) flammability:
  (iii) a capacity to oxidise:
  (iv) corrosiveness:
  (v) toxicity (including chronic toxicity):
  (vi) ecotoxicity, with or without bioaccumulation; or

(b) which on contact with air or water (other than air or water where the temperature or pressure has been artificially increased or decreased) generates a substance with any one or more of the properties specified in paragraph (a) of this definition; and

(c) is environmentally persistent or will bio-accumulate to a level that has acute or chronic toxic effects on humans or other non-target species.

Part B – Decommissioning

Information to be provided:

1. the information required by clauses 8(b)(i) – 8(b)(iii) of the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011;
2. the capacity of the container;
3. the type of specified hazardous substance that is or has been stored in the container;
4. the legal description of the site and the location of the container on the site;
5. the name and address of the person undertaking the decommissioning of the container;
6. the proposed method of decommissioning;
7. the date and approximate time the container is to be decommissioned;
8. the reason for the decommissioning of the container;
9. the destination or proposed use of the decommissioned container;
10. the process for cleaning or decontaminating the container, and the disposal of any residue from this process;
11. the proposed method of backfilling and/or repairing disturbed land as a result of the decommissioning and a description of any backfill materials to be used.
12. a copy of any site assessment report and remedial action plan.

Appendix C WDP Section 12

SCHEDULE 1: HAZARDOUS SUBSTANCES

	District Plan Category (see Tables 12.1 to 12.3 for quantities)	UN Classification for the Transportation of Dangerous Goods
Explosives nitrate mixtures, nitro-compounds, chlorate mixture	1a	1
Ammunition Includes but is not limited to: gunpowder, or nitro compound adapted and exclusively used for cartridges for small arms	1b	1
Gases Includes but not limited to: LPG, Ethylene, Acetylene, Chlorine, Liquid Oxygen	2	2
Flammable liquids with flash point lower than 61 degrees celsius Includes but is not limited to: Petroleum, Jet fuel, Kerosene	3a	3
Flammable liquids with flash point above 61 degrees celsius and any other petroleum products Includes but is not limited to: Diesel, Oil	3b	3
Flammable liquids (within underground storage tanks only) Includes but is not limited to: Petroleum, Oil, Diesel, Jet fuel, Kerosene	3u	3
Flammable Solids Includes but is not limited to: Nitocellulose, photographic x-ray film, various chemicals (eg. urea nitrate) that are wetted, metal alkyls	4a[1]	4
Flammable Solids Includes but is not limited to: various chemicals (eg: Aluminium powder coated, camphor, phosphorus red), matches, sulphur, fish meal, various sodium compounds	4b	4
Oxidising Substances Includes but is not limited to: Bromates, hypochlorites, nitrate, hydrogen peroxide, organic peroxides	5	5

Note Category 4a for this plan equals Class 4.1 Categories A and B and Class 4.2 Categories A and C of the UN Classification for the Transportation of Dangerous Goods.

	District Plan Category (see Tables 12.1 to 12.3 for quantities)	UN Classification for the Transportation of Dangerous Goods
Timber Preservatives Includes but is not limited to: Copper, chromium, arsenic, boron, other water-borne preservatives Light organic solvent preservatives, anti sapstain chemicals	6	3,9
Chlorinated Solvents Includes but is not limited to: Bromodichloromethane, Trichloroethane, Chlorodibromomethane 1,1,1 - Tricholoroethene, Tetrachloroethene, Trichloromethane Tetrachloromethane, Tribromomethane	7	5,9
Corrosives Includes but is not limited to: sulphuric acid, nitric acid, hydrochloric acid, caustic soda	8	8
Agrichemicals includes herbicides, fungicides, insecticides and other pesticides	9	6,9

TABLE 12.3 RURAL ZONES

District Plan Category	Permitted Activity	Discretionary Activity	Non-complying Activity
1a	< 50 kg	> 50 kg	-
1b	< 50 kg	> 50 kg	-
2	< 250 litres	< 40,000 litres	> 40,000 litres
3a	< 2,000 litres	> 2,000 litres	-
3b	< 3,000 litres	> 3,000 litres	-
3u	< 20,000 litres	> 20,000 litres	-
4a	< 50 kg	> 50 kg	-
4b	< 1,000 kg	> 1,000 kg	-
5	< 1,000 kg	> 1,000 kg	-
6	< 20 litres	> 20 litres	-
7	< 20 litres	> 20 litres	-
8	< 100 litres	> 100 litres	-
9	< 1,000 litres	> 1,000 litres	-

Appendix D Material Safety Data Sheets

Safety Data Sheet

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: **AMMONIA - AQUEOUS SOLUTIONS (10% - 35%)**

Other name(s): Aqua ammonia; Ammonium hydroxide solution; Ammonium hydrate; Aqua ammonia 12.5%; Aqua ammonia 25%; Aqua ammonia 32%; Ammonia aqueous solution 32%.

Recommended Use of the Chemical and Restrictions on Use Textiles, manufacture of rayon, rubber, fertilizers, refrigeration, condensation polymerization, pharmaceuticals, ammonia soaps, lubricants, ink manufacture, explosives, ceramics, detergents, food additives, household cleaners.

Supplier: Ixom Operations Pty Ltd
ABN: 51 600 546 512
Street Address: Level 8, 1 Nicholson Street
East Melbourne Victoria 3002
Australia

Telephone Number: +61 3 9906 3000
Emergency Telephone: **1 800 033 111 (ALL HOURS)**

Please ensure you refer to the limitations of this Safety Data Sheet as set out in the "Other Information" section at the end of this Data Sheet.

2. HAZARDS IDENTIFICATION

Classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for Transport by Road and Rail; DANGEROUS GOODS.

This material is hazardous according to Safe Work Australia; HAZARDOUS CHEMICAL.

Classification of the chemical:
Acute Oral Toxicity - Category 4
Skin Corrosion - Sub-category 1C
Specific target organ toxicity (single exposure) - Category 3
Acute Aquatic Toxicity - Category 1

SIGNAL WORD: DANGER

Hazard Statement(s):
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H335 May cause respiratory irritation.
H400 Very toxic to aquatic life.

Precautionary Statement(s):

Prevention:
P260 Do not breathe mist, vapours, spray.
P264 Wash hands thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.
P280 Wear protective gloves / protective clothing / eye protection / face protection.

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Response:
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P321 Specific treatment (see First Aid Measures on Safety Data Sheet).
P363 Wash contaminated clothing before re-use.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312 Call a POISON CENTER or doctor/physician if you feel unwell.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor/physician.
P391 Collect spillage.

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

Disposal:
P501 Dispose of contents and container in accordance with local, regional, national, international regulations.

Other Hazards:
AUH071 Corrosive to the respiratory tract.

Poisons Schedule (SUSMP): S6 Poison.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Components	CAS Number	Proportion	Hazard Codes
Water	7732-18-5	65-90%	-
Ammonia, aqueous solution	1336-21-6	10-35%	H314 H400

4. FIRST AID MEASURES

For advice, contact a Poisons Information Centre (e.g. phone Australia 131 126; New Zealand 0800 764 766) or a doctor.

Inhalation:
Remove victim from area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. If patient finds breathing difficult and develops a bluish discolouration of the skin (which suggests a lack of oxygen in the blood - cyanosis), ensure airways are clear of any obstruction and have a qualified person give oxygen through a face mask. Apply artificial respiration if patient is not breathing. Seek immediate medical advice.

Skin Contact:
If spilt on large areas of skin or hair, immediately drench with running water and remove clothing. Continue to wash skin and hair with plenty of water (and soap if material is insoluble) until advised to stop by the Poisons Information Centre or a doctor.

Eye Contact:
Immediately wash in and around the eye area with large amounts of water for at least 15 minutes. Eyelids to be held apart. Remove clothing if contaminated and wash skin. Urgently seek medical assistance. Transport promptly to hospital or medical centre.

Ingestion:
Immediately rinse mouth with water. If swallowed, do NOT induce vomiting. Give a glass of water. Never give anything by the mouth to an unconscious patient. Seek immediate medical assistance.

Safety Data Sheet

Indication of immediate medical attention and special treatment needed:
Treat symptomatically. Can cause corneal burns. Following severe exposure, the patient should be kept under medical supervision for at least 48 hours.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media:
Not combustible, however, if material is involved in a fire use: Fine water spray, normal foam, dry agent (carbon dioxide, dry chemical powder).

Hazchem or Emergency Action Code: 2X

Specific hazards arising from the chemical:
Non-combustible material. May form flammable vapour mixtures with air. Avoid all ignition sources. Caution should be exercised when opening storage containers or vessels. Flammable concentrations of ammonia gas can accumulate in the head space. Environmentally hazardous.

Special protective equipment and precautions for fire-fighters:
Ammonia: The main products of combustion in air, at or above 780 °C, are nitrogen and water with small amounts of nitrogen dioxide and ammonium nitrate. Ammonia decomposes into flammable hydrogen gas at approximately 450 °C. May form flammable mixtures in air. The presence of oil or other combustible material will increase the fire hazard. Fatalaties have occurred as a result of the explosive nature of the ammonia gas. If involved in a fire, keep containers cool with water spray. If safe to do so, remove containers from path of fire. Fire-fighters to wear full body protective clothing and self-contained breathing apparatus. Consider evacuation.

6. ACCIDENTAL RELEASE MEASURES

Emergency procedures/Environmental precautions:
Clear area of all unprotected personnel. Do not allow container or product to get into drains, sewers, streams or ponds. If contamination of sewers or waterways has occurred advise local emergency services.

Personal precautions/Protective equipment/Methods and materials for containment and cleaning up:
Slippery when spilt. Avoid accidents, clean up immediately. Wear protective equipment to prevent skin and eye contact and breathing in vapours. Work up wind or increase ventilation. Contain - prevent run off into drains and waterways. Use absorbent (soil, sand or other inert material). Collect and seal in properly labelled containers or drums for disposal.

7. HANDLING AND STORAGE

This material is a Scheduled Poison S6 and must be stored, maintained and used in accordance with the relevant regulations.

Precautions for safe handling:
Avoid skin and eye contact and breathing in vapour, mists and aerosols. Keep out of reach of children. When using do not eat, drink or smoke. Wash hands thoroughly after handling.

Conditions for safe storage, including any incompatibilities:
Store in a cool, dry, well ventilated place. Store away from foodstuffs. Store away from incompatible materials described in Section 10. Keep containers closed when not in use - check regularly for leaks.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Safety Data Sheet

Control Parameters: No value assigned for this specific material by Safe Work Australia. However, Workplace Exposure Standard(s) for constituent(s):

Ammonia: 8hr TWA = 17 mg/m^3 (25 ppm), 15 min STEL = 24 mg/m^3 (35 ppm)

As published by Safe Work Australia Workplace Exposure Standards for Airborne Contaminants.

TWA - The time-weighted average airborne concentration of a particular substance when calculated over an eight-hour working day, for a five-day working week.

STEL (Short Term Exposure Limit) - the airborne concentration of a particular substance calculated as a time-weighted average over 15 minutes, which should not be exceeded at any time during a normal eight hour work day. According to current knowledge this concentration should neither impair the health of, nor cause undue discomfort to, nearly all workers.

These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

Appropriate engineering controls:
Ensure ventilation is adequate and that air concentrations of components are controlled below quoted Workplace Exposure Standards. Keep containers closed when not in use.

If in the handling and application of this material, safe exposure levels could be exceeded, the use of engineering controls such as local exhaust ventilation must be considered and the results documented. If achieving safe exposure levels does not require engineering controls, then a detailed and documented risk assessment using the relevant Personal Protective Equipment (PPE) (refer to PPE section below) as a basis must be carried out to determine the minimum PPE requirements.

Individual protection measures, such as Personal Protective Equipment (PPE):
The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.

OVERALLS, CHEMICAL GOGGLES, RUBBER BOOTS, AIR MASK , GLOVES (Long), APRON.
* Not required if wearing air supplied mask.

Wear overalls, chemical goggles, full face shield, elbow-length impervious gloves, splash apron or equivalent chemical impervious outer garment, and rubber boots. Use with adequate ventilation. If determined by a risk assessment an inhalation risk exists, wear an air-supplied mask meeting the requirements of AS/NZS 1715 and AS/NZS 1716. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Liquid
Colour:	Colourless

Safety Data Sheet

Odour:	Sharp , Irritating
Odour Threshold:	0.6-53 ppm (detection); 0.7-55 ppm (recognition).
Solubility:	Miscible in water.
Specific Gravity:	0.88-0.92 @20°C
Relative Vapour Density (air=1):	0.6
Vapour Pressure (20 °C):	6.9-10.5 psi
Flash Point (°C):	Not applicable
Flammability Limits (%):	16-25
Autoignition Temperature (°C):	Not applicable
% Volatile by Volume:	100
Boiling Point/Range (°C):	18-37
pH:	11.7 (1% aqueous solution)

10. STABILITY AND REACTIVITY

Reactivity: Reacts violently with acids.

Chemical stability: May form explosive compounds with mercury, halogens, and hypochlorites. Reacts exothermically with strong mineral acids .

Possibility of hazardous reactions: Corrosive to copper , nickel , tin , zinc , and their alloys , iron .

Conditions to avoid: Avoid exposure to heat. Avoid exposure to light.

Incompatible materials: Incompatible with peroxides , metal salts , acids , reducing agents , some metals .

Hazardous decomposition products: Hydrogen. Oxides of nitrogen.

11. TOXICOLOGICAL INFORMATION

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

Ingestion: Swallowing can result in nausea, vomiting, diarrhoea, abdominal pain and chemical burns to the gastrointestinal tract.

Eye contact: A severe eye irritant. Corrosive to eyes; contact can cause corneal burns. Contamination of eyes can result in permanent injury.

Skin contact: Contact with skin will result in severe irritation. Corrosive to skin - may cause skin burns.

Inhalation: Breathing in mists or aerosols will produce respiratory irritation. Inhalation of high concentrations may result in shortness of breath, chest pain, severe headache and lung damage including pulmonary oedema. Effects may be delayed.

Acute toxicity:
Oral LD50 (rat): 350 mg/kg (1)

Respiratory or skin sensitisation: No information available.

Chronic effects: Chronic exposure to ammonia may cause chemical pneumonitis and kidney damage.

Safety Data Sheet

Mutagenicity:	No information available.
Carcinogenicity:	Not listed as carcinogenic according to the International Agency for Research on Cancer (IARC).
Reproductive toxicity:	No information available.
Specific Target Organ Toxicity (STOT) - single exposure:	May cause respiratory irritation.
Specific Target Organ Toxicity (STOT) - repeated exposure:	No information available.
Aspiration hazard:	No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity Avoid contaminating waterways.

Persistence/degradability: The material is biodegradable.

Bioaccumulative potential: Does not bioaccumulate.

Aquatic toxicity: Toxic to aquatic organisms.

48hr LC50 (Daphnia magna):	0.66 mg/L
96hr LC50 (rainbow trout):	0.53 mg/L (for ammonia) (2)

13. DISPOSAL CONSIDERATIONS

Disposal methods:
Refer to Waste Management Authority. Dispose of contents and container in accordance with local, regional, national, international regulations.

14. TRANSPORT INFORMATION

Road and Rail Transport
Classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for Transport by Road and Rail; DANGEROUS GOODS.

UN No:	2672
Transport Hazard Class:	8 Corrosive
Packing Group:	III
Proper Shipping Name or Technical Name:	AMMONIA SOLUTION
Hazchem or Emergency Action Code:	2X

Marine Transport
Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea; DANGEROUS GOODS.

UN No:	2672
Transport Hazard Class:	8 Corrosive
Packing Group:	III

Safety Data Sheet

Proper Shipping Name or Technical Name:	AMMONIA SOLUTION
IMDG EMS Fire:	F-A
IMDG EMS Spill:	S-B

Air Transport
Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air; DANGEROUS GOODS.

UN No:	2672
Transport Hazard Class:	8 Corrosive
Packing Group:	III
Proper Shipping Name or Technical Name:	AMMONIA SOLUTION

15. REGULATORY INFORMATION

Classification:
This material is hazardous according to Safe Work Australia; HAZARDOUS CHEMICAL.

Classification of the chemical:
Acute Oral Toxicity - Category 4
Skin Corrosion - Sub-category 1C
Specific target organ toxicity (single exposure) - Category 3
Acute Aquatic Toxicity - Category 1

Hazard Statement(s):
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H335 May cause respiratory irritation.
H400 Very toxic to aquatic life.

Poisons Schedule (SUSMP): S6 Poison.

All the constituents of this material are listed on the Australian Inventory of Chemical Substances (AICS).

16. OTHER INFORMATION

(1) `Registry of Toxic Effects of Chemical Substances'. Ed. D. Sweet, US Dept. of Health & Human Services: Cincinatti, 2019.
(2) In: 'The Dictionary of Substances and their Effects'. Ed.Gangolli S. Royal Society of Chemistry, 1999.

This safety data sheet has been prepared by Ixom Operations Pty Ltd (Toxicology & SDS Services).

Reason(s) for Issue:
5 Yearly Revised Primary SDS
Change in Hazardous Chemical Classification
Update in Toxicological Information
Change in Handling & Storage Requirements
Change in Stability and Reactivity

Safety Data Sheet

This SDS summarises to our best knowledge at the date of issue, the chemical health and safety hazards of the material and general guidance on how to safely handle the material in the workplace. Since Ixom Operations Pty Ltd cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, assess and control the risks arising from its use of the material.

If clarification or further information is needed, the user should contact their Ixom representative or Ixom Operations Pty Ltd at the contact details on page 1.

Ixom Operations Pty Ltd's responsibility for the material as sold is subject to the terms and conditions of sale, a copy of which is available upon request.

Visentia
better water | better lives

Safety Data Sheet

BIOTROL 145
Oxidising Biocide

Classified as: Hazardous according to the EPA Hazardous Substances (Minimum Degrees of Hazard) Notice 2017.

SECTION 1: SUBSTANCE AND SUPPLIER DETAILS

Product Name:	BIOTROL 145
Supplier:	Visentia Ltd 119 Carbine Road Mt Wellington Auckland 1060 New Zealand
Telephone:	+64 9 216 9824
Recommended Use:	Water Treatment Chemical
In Case of Emergency Contact:	0800 CHEMCALL (243 622)

SECTION 2: HAZARDS IDENTIFICATION

BIOTROL 145 is classified as a Dangerous Good for Transport.

BIOTROL 145 is classified as hazardous according to criteria in the EPA Hazardous Substances (Minimum Degrees of Hazards) Notice 2017.

Classified under the group standard "Water Treatment Chemicals (Corrosive) Group Standard 2017"

HSNO Approval Number:	HSR002681
HSNO Classifications:	8.2C – Skin corrosive 8.3A – Corrosive to eyes 9.1B – Ecotoxic in the aquatic environment (chronic)
GHS Classification:	Skin corrosion/irritation – Category 1C Serious eye damage/eye irritation - Category 1 Aquatic toxicity, chronic - Category 2
Hazard Statements:	H314 – Causes severe skin burns and eye damage H318 – Causes serious eye damage H411 – Toxic to aquatic life with long lasting effects

GHS Pictograms:

Signal Word: DANGER

Prevention Statements:

P260 – Do not breathe mist/vapours/spray.

P264 - Wash hands, exposed skin, thoroughly after handling.

P273 - Avoid release to the environment.

P280 - Wear protective gloves, protective clothing, eye protection, face protection.

Response Statements:

P301 + P330 + P331 – IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303 + P361 + P353 – IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P363 – Wash contaminated clothing before re-use.

P304 + P340 – IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.

P305 + P351 + P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 – Immediately call a POISON CENTER or doctor/physician.

P321 – Specific treatment (see first aid panel on this label).

P391 – Collect spillage.

Storage: P405 – Store locked up.

Disposal: P501 - In accordance with the EPA Hazardous Substances (Disposal) Notice 2017. Refer to Section 13 of this SDS.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Main Component	CAS Number	Concentration
Sodium hypochlorite	7681-52-9	10-15%
Water	7732-18-5	Balance

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

SECTION 4: FIRST AID MEASURES

Workplace Facilities Required:	Eye wash and safety shower facilities should be provided.
If Inhaled:	Remove to fresh air. Lie patient down and keep warm and at rest. Apply artificial respiration if not breathing. Seek immediate medical attention.
In Contact with Eye:	Hold eyes open, flush with water for at least 15 minutes. Seek immediate medical attention.
In Contact with Skin:	Wash skin with plenty of water, while removing contaminated clothing and shoes. Wash contaminated clothing before re-use. Seek immediate medical attention.
If Swallowed:	DO NOT INDUCE VOMITING. Rinse mouth. Give small quantities of water. Never give anything by mouth to an unconscious person. Seek immediate medical attention. If vomiting occurs, keep head below hips to prevent aspiration to lungs.
Advice to Doctor:	Treat symptomatically. Substance is alkaline and may continue to cause damage several hours after exposure.

SECTION 5: FIRE FIGHTING MEASURES

Fire/Explosion Hazard:	Product is not flammable or combustible.
Suitable Extinguishing Media:	Use water spray or fog, foam, dry chemical powder or carbon dioxide. Remove containers from path of fire if safe to do so. Cool exposed containers with water spray from a safe location.
Precautions in Connection with Fire:	May give off toxic and corrosive fumes in a fire. Fumes may contain hydrogen chloride.
Advice for firefighters:	Wear full firefighting gear and self-contained breathing apparatus. Prevent spills from entering drains and water courses.

SECTION 6: ACCIDENTAL RELEASE MEASURES

An emergency response plan is required under Part 5 of the Health and Safety at Work (Hazardous Substances) Regulations 2017 when held in quantities greater than 1,000L.

Precautions:	Clear area of all unprotected personnel. Keep unnecessary and unprotected personnel from entering area. Avoid generating mist/spray. Avoid release to the environment. If spill does enter waterways inform the relevant authority (e.g. Local Council Pollution hotline).
Suitable Protective Equipment:	Emergency responders must use personal protective equipment, including gloves, protective overalls and footwear, safety goggles or face shield and respiratory protection.
Spill or Leak Procedures:	CAUTION: Slippery when spilt. Stop leak if safe to do so. Contain the spill. Spills may be neutralised with a suitable dilute acid. Use inert material such as sand, earth or vermiculite to absorb spill. Collect spilled material and place in a suitable, clean, chemical waste container. Ensure waste container is properly labelled.
Waste Disposal Methods:	Dispose of as per Section 13.
Emergency Preparation:	Ensure there is appropriate and adequate personal protective equipment, trained personnel and clean up materials for management of accidental release.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling:	Avoid contact with skin and eyes. Do not breathe mist/vapour/spray. Use in a well-ventilated area. Do not eat, drink or smoke when using this product. Remove contaminated clothing and wash hands and face before entering eating areas.
Storage:	Keep container tightly closed when not in use. Store in original container in a cool, dry, well-ventilated area. Keep away from food, drink and animal feed. Ensure storage area has suitable secondary containment.
Site Storage Requirements:	Site Signage will be required when quantities exceed 1,000L.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Workplace Exposure Standards NZ:	No Workplace Exposure Standards have been established for this product.
Engineering Controls:	Eyewash facilities and safety showers should be provided in the work area where there is a risk of exposure to eyes and skin. Use in a well-ventilated area. If natural ventilation is insufficient consider engineering controls such as local exhaust ventilation to ensure workers are not exposed to levels exceeding the exposure standards.
Personal Protective Equipment:	Avoid contact with the skin and eyes. Avoid inhaling mist/vapours/spray.
Hand protection:	Wear protective gloves that are resistant to the product, e.g. PVC. Gloves should be elbow length. Refer to Australian and New Zealand Standard AS/NZS 2161 for protective gloves.
Skin and body protection:	Use protective overalls and PVC apron. Remove any contaminated clothing to avoid prolonged contact with the skin. Wash work clothes regularly. Refer to Australian and New Zealand Standard AS/NZS 4501 for occupational protective clothing.
Eye protection:	Use chemical safety goggles to protect eyes. When handling bulk quantities where there may be a risk of splashing, a face shield may also be used along with eye protection to protect the face. Refer to AS/NZS 1336 for suitable eye and face protection.
Respiratory protection:	Where there is inadequate ventilation and use results in the formation of mist/vapours/spray, use a respirator. Refer to AS/NZS 1715 and AS/NZS 1716 for suitable respiratory protection. A full-face respirator with chlorine cartridges (for protection against any liberated chlorine gas) is recommended.
Other information:	PPE selected must be impervious to the substance. Do not eat, smoke or drink where material is handled, processed or stored. Wash hands carefully before eating, drinking or smoking. Handle in accordance with safe industrial hygiene practices.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Description:	Liquid	**Colour:**	Pale, yellow-green
Odour:	Chlorine odour	**Odour Threshold:**	Not available
pH (25°C):	12.5	**Solubility (water, 25°C):**	Miscible
Melting/Freezing point:	Not available	**Boiling Point:**	100°C
Flammability:	Non-flammable	**Flash Point:**	Not applicable
UEL/LEL:	Not applicable	**Vapour Pressure (20°C):**	Not available
Decomposition Temp:	Not available	**Autoignition Temp:**	Not available
Relative Density:	1.24 (water = 1)	**Vapour Density:**	Not available
Partition Coefficient:	Not available	**Viscosity:**	Not available
n-octanol/water			

SECTION 10: STABILITY AND REACTIVITY

Stability:	Stable under normal cool, dry storage conditions.
Reactivity:	Reacts exothermically with acids. May produce toxic gases on contact with acids.
Conditions to Avoid:	Excessive heat.
Incompatibility:	Incompatible with acids and oxidising agents.
Hazardous Decomposition:	Decomposition may result in formation of hydrogen chloride.

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Exposure

Acute Toxicity:	LD50 oral > 5000 mg/kg. LD50 dermal > 5000 mg/kg LC50 inhalation > 5 mg/L (dust or mist)
Inhalation:	Not an expected route of exposure under normal operating conditions. Inhalation of large volumes of mist/spray may cause irritation to mucous membranes.
Ingestion:	Not an expected route of exposure under normal operating conditions. Ingestion may cause chemical burns to mouth and gastrointestinal tract and may cause nausea, diarrhoea and vomiting.
Skin Contact:	Corrosive to skin. May cause skin burns.
Eye Contact:	Corrosive to eyes. May cause corneal damage and permanent injury.
Sensitiser:	Not expected to be a respiratory or contact sensitiser.

Chronic Exposure

Mutagen, Carcinogen, or Reproductive Toxicant:	No known effects.
Specific Target Organ Systemic Toxicity:	No known effects.

Toxicity data is based on hazardous ingredient information and information in the EPA Chemical Classification and Identification Database.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity: LC/EC_{50} > 1 but ≤ 10 mg/kg

Product is toxic to aquatic life with long lasting effects. Avoid losses to the environment wherever possible.

Persistence/degradability: No data.

Bio-accumulation: No data.

Mobility: Product is miscible in water.

Ecotoxicity data is based on hazardous ingredient information.

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal: Do not allow product to enter drains or waterways. Recycle and reuse wherever possible. Waste product may be treated with dilute acid prior to disposal so it is no longer hazardous. Dispose of waste product via an approved waste disposal contractor.

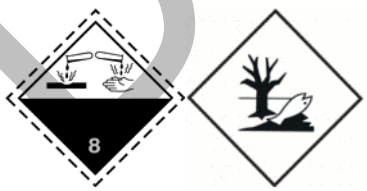
Disposal of Packaging: Packaging may contain product residues and should be treated as hazardous. Where possible return to supplier for reuse/recycling. Dispose of packaging via an approved waste disposal contractor.

SECTION 14: TRANSPORT INFORMATION

BIOTROL 145 is classified as a Dangerous Good for transport in accordance with NZS5433:2012, IMDG or IATA.

Hazchem Code: 2X

Hazchem Pictograms:



NZS5433:2012: UN No: 1791

Proper Shipping Name: Hypochlorite Solution

Class: 8

Packing Group: III

Environmental hazard: Environmentally hazardous

Limited Quantity: 5L

IMDG: UN No: 1791

Proper Shipping Name: Hypochlorite Solution

Class: 8

Packing Group: III

Marine Pollutant: Yes

EmS: F-A, S-B

	Limited Quantity: 5L
IATA:	UN No: 1791
	Proper Shipping Name: Hypochlorite Solution
	Class: 8
	Packing Group: III
	Environmental hazard: Environmentally hazardous
	ERG Code: 8L
	Special Provisions: A3, A803
	Cargo Only: Packing Instructions – 856, Maximum Quantity/Pack – 60L
	Passenger and Cargo: Packing Instructions – 852, Maximum Quantity/Pack – 5L
	Passenger and Cargo Limited Quantity: Packing Instructions – Y841, Maximum Quantity/Pack – 1L

Ensure transportation methods prevent leakage from packages and collapsing loads.

SECTION 15: REGULATORY INFORMATION

Group Standard Allocation:	Water Treatment Chemicals (Corrosive) Group Standard 2017
HSNO Approval Code:	HSR002681
HSNO Classifications:	8.2C – Skin corrosive
	8.3A – Eye corrosive
	9.1B chronic – Ecotoxic in the aquatic environment
This substance triggers:	Compliance Certificate – N/A
	Certified Handler – N/A
	Quantity to be secured when unattended – N/A
	Emergency Response Plan – 1,000L
	Secondary Containment – 1,000L
	Signage – 1,000L
	This substance is not required to be Tracked. All workplace personnel handling this substance are required to be trained on the safe handling and PPE requirements for the hazards associated with this substance.

SECTION 16: OTHER INFORMATION

The information provided in this Safety Data Sheet relates only to the specific material designated herein. This Safety Data Sheet summarises our best knowledge of the health and safety hazard information of the product and how to safely handle the product in the workplace. Each user should read this SDS and consider the information in the context of how the product will be handled and used in the workplace including its use in conjunction with other products.

This substance is approved under HSNO for use as a water treatment chemical. All reasonable care has been taken to ensure that the information and advice contained herein are from sources believed to be reliable and to represent the most up-to-date knowledge available at the date given in Section 16. No liability is assumed for any damages related to the use or misuse of this substance.

All chemical materials may present unknown hazards as people have varying degrees of sensitivity to chemicals. Therefore, this product should be used with caution. The information herein is given in good faith, but no warranty, express or implied is made.

SDS Issued:	08/03/2019
Reason for Revision:	Update to New Zealand regulatory requirements.
References:	EPA NZ Chemical Classification and Information Database
	EPA Guide: Assigning a Hazardous Substance to a Group Standard, 2014

END OF SAFETY DATA SHEET

Safety Data Sheet

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: **CHLORINE**

Other name(s): Liquefied chlorine, Liquid chlorine, Diatomic chlorine, Chlorine cylinder (used)

Recommended Use of the Chemical and Restrictions on Use Disinfection, water treatment, bleaching, metal recovery, neutralising agent, oxidant.

Supplier: Ixom Operations Pty Ltd (Incorporated in Australia)
NZBN: 9429041465226
Street Address: 166 Totara Street
Mt Maunganui South
New Zealand

Telephone Number: +64 9 368 2700
Facsimile: +64 9 368 2710
Emergency Telephone: **0 800 734 607 (ALL HOURS)**

Please ensure you refer to the limitations of this Safety Data Sheet as set out in the "Other Information" section at the end of this Data Sheet.

2. HAZARDS IDENTIFICATION

Classified as a Dangerous Good according to NZS 5433:2012 Transport of Dangerous Goods on Land.

Classified as hazardous according to criteria in the Hazardous Substances (Minimum Degrees of Hazard) Notice 2017 and the Hazardous Substances (Classification) Notice 2017.

SIGNAL WORD: DANGER

Subclasses:
Subclass 5.1.2 Category A (Oxidising Substances that are gases) - Oxidising Substances.
Subclass 6.1 Category A - Substances which are acutely toxic.
Subclass 6.9 Category A - Substances that are toxic to human target organs or systems.
Subclass 8.1 Category A - Substances that are corrosive to metals.
Subclass 8.2 Category A - Substances that are corrosive to dermal tissue.
Subclass 8.3 Category A - Substances that are corrosive to ocular tissue.
Subclass 9.1 Category A - Substances that are very ecotoxic in the aquatic environment.
Subclass 9.2 Category A - Substances that are very ecotoxic in the soil environment.

The 'Hazardous Substances (Tracking) Regulations 2001' are applicable to this material.

Approval Number: HSR001058

Hazard Statement(s):
H270 May cause or intensify fire; oxidizer.
H290 May be corrosive to metals.
H330 Fatal if inhaled.
H314 Causes severe skin burns and eye damage.
H372 Causes damage to organs through prolonged or repeated exposure.
H400 Very toxic to aquatic life.
H421 Very toxic to the soil environment.

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Precautionary Statement(s):

Prevention:
P102 Keep out of reach of children.
P260 Do not breathe mist/vapours/spray.
P264 Wash hands thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P284 Wear respiratory protection.
P273 Avoid release to the environment.

Response:
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P363 Wash contaminated clothing before re-use.
P320 Specific treatment is urgent (see First Aid Measures on the Safety Data Sheet).
P304+P340 IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
P314 Get medical advice/attention if you feel unwell.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor/physician.
P391 Collect spillage.

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

Disposal:
P501 In case of a substance that is in compliance with a HSNO approval other than a Part 6A (Group Standards) approval, a label must provide a description of one or more appropriate and achievable methods for the disposal of a substance in accordance with the Hazardous Substances (Disposal) Notice 2017. This may also include any method of disposal that must be avoided.

Other Hazards:
Corrosive to the respiratory tract.
Contact with evaporating liquid may cause frostbite or freezing of skin.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Components	CAS Number	Proportion	Hazard Codes
Chlorine	7782-50-5	>=99.8%	H270 H331 H319 H335 H315 H400

4. FIRST AID MEASURES

For advice, contact a Poisons Information Centre (e.g. phone Australia 131 126; New Zealand 0800 764 766) or a doctor at once.

Inhalation:
Remove victim from area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. If patient finds breathing difficult and develops a bluish discolouration of the skin (which suggests a lack of oxygen in the blood - cyanosis), ensure airways are clear of any obstruction and have a qualified person give oxygen through a face mask. Apply artificial respiration if patient is not breathing. Seek immediate medical advice.

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Skin Contact:
If skin or hair contact occurs, immediately remove any contaminated clothing and wash skin and hair thoroughly with running water. If swelling, redness, blistering or irritation occurs seek medical assistance. For skin burns, cover with a clean, dry dressing until medical help is available. Launder contaminated clothing before reuse.

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

Ingestion:
Immediately rinse mouth with water. If swallowed, do NOT induce vomiting. Give a glass of water. Seek immediate medical assistance.

Indication of immediate medical attention and special treatment needed:
Treat symptomatically. Effects may be delayed. Delayed pulmonary oedema may result. May be fatal if inhaled.

Administration of 5% carbon dioxide/oxygen medical gas mixture to patients with chronic respiratory disease or drug induced respiratory depression is potentially dangerous. 5% carbon dioxide/oxygen medical gas mixture should not be given to acidotic patients.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media:
Not combustible, however, if material is involved in a fire use: Fine water spray, normal foam, dry agent (carbon dioxide, dry chemical powder).

Hazchem or Emergency Action Code: 2XE

Specific hazards arising from the chemical:
Non combustible, but will support combustion of other materials. Oxidizing substance. Gas/vapour is heavier than air; may accumulate in confined spaces. Environmentally hazardous.

Special protective equipment and precautions for fire-fighters:
Not combustible, however will support the combustion of other materials. Keep containers cool with water spray. Heating can cause expansion or decomposition of the material, which can lead to the containers exploding. If safe to do so, remove containers from the path of fire. Only move cool cylinders. Do not approach cylinders suspected to be hot. Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure. If unable to keep cylinders cool, evacuate area.

6. ACCIDENTAL RELEASE MEASURES

Emergency procedures/Environmental precautions:
Clear area of all unprotected personnel. Evacuate personnel from downwind areas. Wear protective equipment to prevent skin and eye contact and inhalation of vapours/dusts. Avoid breathing in vapours. Work up wind or increase ventilation. Wear self contained breathing apparatus. Shut off leak if possible without risk. Work up wind. Use water spray to disperse vapour. DO NOT spray water directly on the leak, liquid chlorine or chlorine container. If safe to do so, rotate container so that gas and not liquid escapes. SMALL SPILLS: Allow liquid to evaporate.

Seek specialist advice. For large spills notify the Emergency Services. Do not allow container or product to get into drains, sewers, streams or ponds.

Chlorine gas only becomes visible at high concentrations.

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Personal precautions/Protective equipment/Methods and materials for containment and cleaning up:
Clear area of all unprotected personnel. Wear protective equipment to prevent skin and eye contact and breathing in vapours. Avoid breathing in vapours. Work up wind or increase ventilation. Air-supplied masks are recommended to avoid inhalation of toxic material. For gas leak, DO NOT spray water directly on the leak or chlorine container. Use fire hoses equipped with fog nozzles to disperse gas downwind. For liquid: Contain - prevent run off into drains and waterways. Use fog nozzles as before. Do NOT allow any water to fall onto a pool of liquid chlorine as this will increase gas cloud. If safe to do so, cover with large plastic sheet. Where possible vapour knock down water should be contained.

7. HANDLING AND STORAGE

Precautions for safe handling: Avoid all contact. When using do not eat, drink or smoke. Only experienced and properly instructed persons should handle gases under pressure. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Do not drag, drop, slide or roll cylinders. The uncontrolled release of a gas under pressure may cause physical harm. Use a suitable hand truck for cylinder movement. Never attempt to transfer gases from one container to another.

Conditions for safe storage, including any incompatibilities: Store in a well ventilated area. Store below 50°C. Store away from foodstuffs. Store away from combustible materials. Store away from incompatible materials described in Section 10. Keep dry - reacts with water. Cylinders should be securely restrained so that they are kept upright at all times. Drums should be stored horizontally. Keep containers closed when not in use - check regularly for leaks.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Chlorine: WES-TWA 0.5 ppm, 1.5 mg/m^3; WES-STEL 1 ppm, 2.9 mg/m^3

As published by the New Zealand Workplace Health & Safety Authority.

WES - TWA (Workplace Exposure Standard - Time Weighted Average) - The eight-hour, time-weighted average exposure standard is designed to protect the worker from the effects of long-term exposure.

WES - STEL (Workplace Exposure Standard - Short Term Exposure Limits) - The 15 minute average exposure standard. Applies to any 15 minute period in the working day and is designed to protect the worker against adverse effects of irritation, chronic or irreversible tissue change, or narcosis that may increase the likelihood of accidents. The WES-STEL is not an alternative to the WES-TWA; both short-term and eight-hour, time-weighted average exposures should be determined.

These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

Appropriate engineering controls:
Ensure ventilation is adequate to maintain air concentrations below Workplace Exposure Standards. Vapour heavier than air - prevent concentration in hollows or sumps. DO NOT enter confined spaces where vapour may have collected.

If in the handling and application of this material, safe exposure levels could be exceeded, the use of engineering controls such as local exhaust ventilation must be considered and the results documented. If achieving safe exposure levels does not require engineering controls, then a detailed and documented risk assessment using the relevant Personal Protective Equipment (PPE) (refer to PPE section below) as a basis must be carried out to determine the minimum PPE requirements.

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Individual protection measures, such as Personal Protective Equipment (PPE):
The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.

OVERALLS, CHEMICAL GOGGLES, SAFETY SHOES, FACE SHIELD OR AIR MASK, GLOVES (Long).
* Not required if wearing air supplied mask.

Wear overalls, chemical goggles, full face shield, elbow-length impervious gloves. Use with adequate ventilation. If determined by a risk assessment an inhalation risk exists, wear an air-supplied mask meeting the requirements of AS/NZS 1715 and AS/NZS 1716. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Gas / Liquefied gas
Colour:	Greenish - Yellow (high concentrations) ; Clear/invisible (low concentrations)
Odour:	Pungent , Irritating
Odour Threshold:	1 ppm (approx)
Molecular Formula:	Cl2
Specific Gravity:	1.468 (liquid); 1.56 (@ -35°C).
Relative Vapour Density (air=1):	2.4
Vapour Pressure (20 °C):	666 kPa
Flash Point (°C):	Not applicable.
% Volatile by Volume:	ca. 100
Solubility in water (g/L):	5.1 @30°C
Boiling Point/Range (°C):	-34
Freezing Point/Range (°C):	-101

10. STABILITY AND REACTIVITY

Reactivity:	Reacts violently with many organic chemicals (e.g. mineral oils, greases), hydrocarbons, silicones, and finely divided metals. Forms explosive mixtures with alcohols, glycols, ammonia and its compounds, and hydrogen over a wide range of concentrations.
Chemical stability:	Reactive chemical. Corrosive in the presence of moisture.
Possibility of hazardous reactions:	Oxidizing agent. Supports combustion of other materials and increases intensity of a fire. Corrosive to some metals in the presence of moisture. (brass, copper, lead, nickel, steel and stainless steel) Heating can cause expansion or decomposition of the material, which can lead to the containers exploding. Can react with acids and some nitrogen or phosphorous compounds. Hazardous polymerisation will not occur.
Conditions to avoid:	Avoid exposure to heat, sources of ignition, and open flame. Avoid contact with combustible chemicals. Do not allow water to come into contact with liquid chlorine.

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Incompatible materials: Incompatible with combustible materials. Incompatible with heat and hot surfaces. Incompatible with reducing agents. Incompatible with glass.

Hazardous decomposition products: Oxides of chlorine. Chlorine compounds.

11. TOXICOLOGICAL INFORMATION

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

Ingestion: Not a likely route of exposure, however, swallowing liquid will result in freeze burns of the mouth, throat and stomach. Swallowing can result in chemical burns to the mouth, throat and abdomen; perforation of the gastrointestinal tract and vomiting of blood and eroded tissue.

Eye contact: A severe eye irritant. Corrosive to eyes; contact can cause corneal burns. Contamination of eyes can result in permanent injury. Liquid splashes or spray may cause freeze burns to the eye.

Skin contact: Liquid chlorine is corrosive to skin. Contact with skin will result in irritation. Liquid splashes or spray may cause freeze burns.

Inhalation: Material is irritant to the mucous membranes of the respiratory tract (airways). May cause coughing and shortness of breath. May cause adverse lung effects if high concentrations are inhaled. Inhalation of vapours may cause severe breathing difficulties and lung oedema. Delayed (up to 48 hours) fluid build up in the lungs may occur. Severe exposure may cause lung damage. Overexposure may result in death.

Acute toxicity:
Inhalation LC50 (rat): 146.5 ppm/4hr.

Skin corrosion/irritation: Corrosive (rabbit).
Serious eye damage/irritation: Severe irritant (rabbit).
Respiratory or skin sensitisation: Not classified.

Chronic effects: Not listed as carcinogenic according to the International Agency for Research on Cancer (IARC).

Mutagenicity: Not classified.
Carcinogenicity: Not classified.
Reproductive toxicity: Not classified.
Specific Target Organ Toxicity (STOT) - single exposure: Severe corrosion to the respiratory tract at high concentrations.
Specific Target Organ Toxicity (STOT) - repeated exposure: Not classified.
Aspiration hazard: Not applicable.

12. ECOLOGICAL INFORMATION

Ecotoxicity Avoid contaminating waterways.

Persistence/degradability: Not readily biodegradable.

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Bioaccumulative potential: Does not bioaccumulate.

Mobility in soil: Low mobility in soil.

Aquatic toxicity: Very toxic to aquatic organisms.

48hr LC50 (Daphnia magna): 0.15 mg/L (Static) Remarks: Mortality.
96hr LC50 (fish): 0.014 mg/L
Terrestrial toxicity: Very ecotoxic in the soil environment.

13. DISPOSAL CONSIDERATIONS

Disposal methods:
Refer to local government authority for disposal recommendations. Dispose of material through a licensed waste contractor. Contact supplier for advice. For all Ixom labelled chlorine packages, return directly to Ixom.

14. TRANSPORT INFORMATION

Road and Rail Transport
Classified as a Dangerous Good according to NZS 5433:2012 Transport of Dangerous Goods on Land.

UN No: 1017
Transport Hazard Class: 2.3 Toxic Gas
Subrisk 1: 5.1 Oxidising Agent
Subrisk 2: 8 Corrosive
Proper Shipping Name or Technical Name: CHLORINE
Hazchem or Emergency Action Code: 2XE

Marine Transport
Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea; DANGEROUS GOODS.

UN No: 1017
Transport Hazard Class: 2.3 Toxic Gas
Subrisk 1: 5.1 Oxidising Agent
Subrisk 2: 8 Corrosive
Proper Shipping Name or Technical Name: CHLORINE

IMDG EMS Fire: F-C
IMDG EMS Spill: S-U

Marine Pollutant Yes

Air Transport
TRANSPORT PROHIBITED under the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air in Passenger and Cargo Aircraft, and Cargo Aircraft Only.

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15. REGULATORY INFORMATION

Classification:
Classified as hazardous according to criteria in the Hazardous Substances (Minimum Degrees of Hazard) Notice 2017 and the Hazardous Substances (Classification) Notice 2017.

Subclasses:
Subclass 5.1.2 Category A (Oxidising Substances that are gases) - Oxidising Substances.
Subclass 6.1 Category A - Substances which are acutely toxic.
Subclass 6.9 Category A - Substances that are toxic to human target organs or systems.
Subclass 8.1 Category A - Substances that are corrosive to metals.
Subclass 8.2 Category A - Substances that are corrosive to dermal tissue.
Subclass 8.3 Category A - Substances that are corrosive to ocular tissue.
Subclass 9.1 Category A - Substances that are very ecotoxic in the aquatic environment.
Subclass 9.2 Category A - Substances that are very ecotoxic in the soil environment.

The 'Hazardous Substances (Tracking) Regulations 2001' are applicable to this material.

Approval Number: HSR001058

Hazard Statement(s):
H270 May cause or intensify fire; oxidizer.
H290 May be corrosive to metals.
H330 Fatal if inhaled.
H314 Causes severe skin burns and eye damage.
H372 Causes damage to organs through prolonged or repeated exposure.
H400 Very toxic to aquatic life.
H421 Very toxic to the soil environment.

16. OTHER INFORMATION

Supplier Safety Data Sheet; 10/ 2015.

This safety data sheet has been prepared by Ixom Operations Pty Ltd Toxicology & SDS Services.

Maximum use rate for potable water treatment is 30 mg/L (as per NSF certification)
Reason(s) for Issue:
5 Yearly Revised Primary SDS

This SDS summarises to our best knowledge at the date of issue, the chemical health and safety hazards of the material and general guidance on how to safely handle the material in the workplace. Since Ixom Operations Pty Ltd cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, assess and control the risks arising from its use of the material.

If clarification or further information is needed, the user should contact their Ixom representative or Ixom Operations Pty Ltd at the contact details on page 1.

Ixom Operations Pty Ltd's responsibility for the material as sold is subject to the terms and conditions of sale, a copy of which is available upon request.

Safety Data Sheet

Diesel
Version 1.0
Effective Date 01.12.2015

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

Material Name	:	**DIESEL**
Other Names	:	Diesel, Caltex Diesel with Techron D, Automotive Gas Oil, Marine Gas Oil, Wintermix.
Recommended use / Restrictions of use	:	Fuel for diesel engines.
Supplier	:	Z Energy 2015 Limited 604 Great South Road, Greenlane Auckland 1051 New Zealand
Telephone	:	+64 9 583 5000
Fax	:	+64 9 950 3852
Local Contact		
Telephone	:	0800 733 835
Fax	:	0800 737 648
Email	:	cxservice@z.co.nz
Web location	:	www.Caltex.co.nz/resources
Emergency Telephone Number	:	0800 243 622 New Zealand free call - 24 hours +64 3 353 0199 International - 24 hours

2. HAZARDS IDENTIFICATION

HAZARDOUS SUBSTANCE. DANGEROUS GOODS.
Classified as hazardous according to criteria in the Hazardous Substances (Minimum Degrees of Hazard) Regulations 2001.

Classified as Dangerous Goods according to Land Transport Rule Dangerous Goods Amendment 2010 Rule 45001/2 - NZS 5433; 2007.

Hazardous Substances Classification	:	3.1D, 6.1E, 6.3B, 6.7B, 9.1B
Safety Hazards	:	Combustible liquid. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire.
GHS Classification	:	Flammable Liquids, Category 4 Aspiration Hazard, Category 1 Skin Corrosion/Irritation, Category 3 Carcinogenicity Category 2B Aquatic Toxicity (Acute), Category 2 Aquatic Toxicity (Chronic), Category 2

GHS label elements

Symbol(s) :

Signal Word : Danger

GHS Hazard Statements :

PHYSICAL HAZARDS:
Flammable liquid.

HEALTH HAZARDS:
May be fatal if swallowed and enters airways.
Causes mild skin irritation.
Suspected of causing cancer.

ENVIRONMENTAL HAZARDS:
Toxic to aquatic life with long lasting effects.

GHS Precautionary Statements :

PREVENTION:
Keep out of reach of children.
Read label before use.
Read Safety Data Sheet before use.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from sparks, open flames and hot surfaces. No smoking.
Wear protective gloves and eye/face protection.
Avoid release to the environment.

RESPONSE:
GENERAL
If medical advice is needed, have product container or label at hand. – This statement applies only where the substance is available to the general public.
If exposed or concerned: Get medical advice/attention.
Collect spillage.

SWALLOWED
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
Do NOT induce vomiting.

SKIN
If skin irritation occurs: Get medical advice/attention.

STORAGE:
Store in a well-ventilated place. Keep cool.
Store locked up.

DISPOSAL:
In the case of a substance that is in compliance with a HSNO approval other than a Part 6A (Group Standards) approval, a label must provide a description of one or more appropriate and achievable methods for the disposal of a substance in accordance with the Hazardous Substances (Disposal) Regulations 2001. This may also include any method of disposal that must be avoided.

Human Health Hazards

Harmful, may cause lung damage if swallowed. Irritating to skin. Aspiration into the lungs may cause chemical pneumonitis which can be fatal.

SAFETY HAZARDS
Combustible liquid. Liquid can ignite leading to a flash fire, or an explosion in a confined space. May ignite on surfaces at temperatures above auto-ignition temperature. Vapour in the headspace of tanks and containers may ignite and explode at temperatures exceeding auto-ignition temperature, where vapour concentrations are within the flammability range.

ENVIRONMENTAL HAZARDS
Toxic to aquatic organisms. May cause long term adverse effects in the aquatic environment.

OTHER INFORMATION
This product is intended for use as a fuel in a closed system. If used for any other purpose, in open systems or as a spray, ignition and exposure risks will increase and a careful risk assessment should be carried out.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Information on Composition : A complex combination of hydrocarbons produced by the distillation of crude oil. It consists of hydrocarbons having carbon numbers predominantly in the range C9 through C20, with an average of C15, and boiling in the range of 160°C to 400°C, with a flashpoint above 60°C. Very small amounts of performance enhancing additives may be included.

Hazardous Ingredients (GHS)

Chemical Identity	CAS	Identification number	Conc.[%]
Diesel Fuel	68334-30-5	269-822-7	100 %

4. FIRST AID MEASURES

Inhalation : If inhaled, remove affected person from contaminated area. Keep at rest until recovered. If symptoms persist seek medical attention.

Skin Contact : Wash affected area thoroughly with soap and water. Remove contaminated clothing and wash before reuse or discard. If symptoms develop, seek medical attention.

Eye Contact : If in eyes, hold eyelids apart and flush the eyes continuously with running water. Continue flushing for several minutes until all contaminants are washed out completely. Seek medical attention.

Ingestion	:	If swallowed, do not induce vomiting: transport to nearest medical facility for additional treatment. Wash out mouth and lips with water. If vomiting occurs spontaneously, keep head below hips to prevent aspiration.
First Aid Facilities	:	An eyewash facility, and a general washing facility.
Notes to Physician	:	Treat symptomatically.
Other Information	:	For advice in an emergency, contact a Poisons Information Centre (Phone New Zealand 0800 764 766) or a doctor at once.

5. FIRE FIGHTING MEASURES

Specific Hazards	:	The vapour is heavier than air, spreads along the ground and distant ignition is possible. Will float and may be reignited on surface water. Flammable vapours may be present even at temperatures below the flash point.
Hazards from Combustion Products		Combustion is likely to give rise to a complex mixture of airborne solid and liquid particulates and gases, including carbon monoxide and unidentified organic and inorganic compounds.
Extinguishing Media	:	Foam, fine water spray and dry chemical powder. Carbon dioxide, Clean Agents (e.g. Inergen, Argonite etc.), sand or earth may be used for small fires only.
Unsuitable Extinguishing Media	:	Do not use water jet.
Protective Equipment for Firefighters	:	Fire fighters should wear Self-Contained Breathing Apparatus (SCBA) operated in positive pressure mode and full protective clothing to prevent exposure to vapours or fumes. Water spray may be used to cool down heat-exposed containers. Fight fire from safe location. This product should be prevented from entering drains and watercourses.
Additional Advice	:	Keep adjacent drums and tanks cool by spraying with water from a safe location. If possible remove them from the danger zone. If adequate cooling cannot be achieved, the area needs to be evacuated, and further fire fighting and cooling attempts should be carried out from a safe location.
Hazchem Code	:	3Z

6. ACCIDENTAL RELEASE MEASURES

Observe all relevant local and international regulations.

Personal precautions, protective equipment and emergency procedures	:	Vapour can travel for considerable distances both above and below the ground surface. Underground services (drains, pipelines, cable ducts) can provide preferential flow paths. Remove all possible sources of ignition in the surrounding area. Contaminated clothing may be a fire hazard and therefore should be soaked with water before being removed. Ventilate contaminated area thoroughly. Do not breathe fumes, vapour. Do not operate electrical equipment. Avoid contact with skin, eyes, clothing. Wear chemical resistant knee length safety boots and PVC jacket and trousers. Wear safety glasses or full face shield if splashes are likely to occur. Extinguish or remove all sources of ignition. Wear appropriate personal protective equipment and clothing to prevent exposure. Stop leak if safe to do so. Increase ventilation. Evacuate all unprotected personnel. If possible contain the spill. Place inert absorbent, non-combustible material onto spillage. Use clean non-sparking tools to collect the material and place into suitable labelled containers for subsequent recycling or disposal. Dispose of waste according to the applicable local and national regulations. Cloth, paper and other materials that are used to absorb spills present a fire hazard. Avoid their accumulation by disposing of them safely and immediately. If contamination of sewers or waterways occurs inform the local water authorities and EPA in accordance with local regulations.
Environmental Precautions	:	Prevent from spreading or entering into drains and surface waters (e.g. lakes, ponds, ditches, rivers and streams) by using sand, earth, or other appropriate non-combustible barriers. Inform local authorities if impacts cannot be prevented.
Methods and material for containment and clean up (Small Spillages)	:	To minimize soil and groundwater contamination, absorb liquid with sand earth or other recommended adsorbent material, as soon as safe to do so after the spill. Sweep up and remove to a suitable, clearly marked container for disposal in accordance with local regulations. Do not dispose into an interceptor.
Methods and material for containment and clean up (Large Spillages)	:	Prevent from spreading by making a barrier with sand, earth or other containment material. Dispose of as for small spills. Maritime Spillages: Maritime spillages should be dealt with using a Shipboard Oil Pollution Emergency Plan (SOPEP), as required by MARPOL Annex 1 Regulation 26.

7. HANDLING AND STORAGE

Precautions for safe handling	:	Avoid naked flames. The vapour is heavier than air, spreads along the ground and distant ignition is possible. Avoid prolonged or repeated contact with skin. When handling product in drums, safety footwear should be worn and proper handling equipment should be used. Prevent spillages. Never siphon by mouth. When using do not eat,

drink or smoke. Avoid contact with skin, eyes and respiratory system. If using pressurised equipment, take extra care to avoid injection under the skin. Only use in well-ventilated areas. Take precautionary
measures against static discharges. Ensure all equipment is properly bonded. Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. Cloth, paper and other materials that are used to absorb spills present a fire hazard. Avoid their accumulation by disposing of them safely and immediately. In addition to any specific recommendations given for controls of risks to health, safety and the environment, an assessment of risks must be made to help determine controls appropriate to local circumstances.

Conditions for safe storage : This product must never be stored in buildings occupied by people. Drums and small containers should be stored in well-ventilated areas, flameproof cabinets or stores. Keep container tightly closed in a dry, well ventilated place away from direct sunlight and other sources of heat or ignition. Keep in a bunded area with a sealed (low permeability) floor, to provide containment against spillage. Stack drums to a height not exceeding 3 metres without the use of racking. Locate tanks away from heat and other sources of ignition. Seek specialist advice for the design, construction and operation of bulk storage facilities.

Product transfer : Electrostatic charges may be generated during pumping. Ensure electrical continuity by bonding all equipment. Avoid splash filling. Wait 2 minutes after tank filling (for tanks such as those on road tanker vehicles) before opening hatches or manholes. Wait 30 minutes after tank filling (for large storage tanks) before opening
hatches or manholes. When filling tanks there is always a danger of static discharge leading to explosion. This is particularly hazardous when switch loading tanks.
Product transfer may give rise to light hydrocarbon vapour in the headspace of tanks. This vapour may explode if there is a source of ignition such as static discharge.
Partly filled containers present a greater hazard than those that are full, therefore handling, transfer and sampling activities need special care. Conditions, such as filling empty Filter Water Separator vessels, that lead to the formation of hydrocarbon mists are also particularly hazardous.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

The following exposure standards have been established for the product by the Occupational Safety and Health Service (OSH) of the New Zealand Department of Labour.

Material	Source	Type	ppm	mg/m3	Notation
Oil Mist, mineral		TWA	-	5	

		STEL	-	10	

Additional Information : TWA (Time Weighted Average): The average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day week. STEL (Short Term Exposure Limit): The average airborne concentration over a 15 minute period which should not be exceeded at any time during a normal eight-hour workday.

Biological Limit Value (BLV) : Data not available.

Appropriate Engineering Controls : Provide sufficient ventilation to keep airborne levels below the exposure limits. Where vapours or mists are generated, particularly in enclosed areas, and natural ventilation is inadequate, a flameproof exhaust ventilation system is required. Refer to AS 1940 - The storage and handling of flammable and combustible liquids and AS/NZS 2430.3.1: Classification of hazardous areas - Examples of area classification - General, for further information concerning ventilation requirements.

Individual protection measures

Respiratory Protection : If engineering controls are not effective in controlling airborne exposure then an approved respirator with a replaceable organic vapour filter should be used. Reference should be made to Australian/New Zealand Standards AS/NZS 1715, Selection, Use and Maintenance of Respiratory Protective Devices; and AS/NZS 1716, Respiratory Protective Devices, in order to make any necessary changes for individual circumstances.

Hand Protection : Wear gloves of impervious material e.g. nitrile or neoprene rubber gloves. Final choice of appropriate gloves will vary according to individual circumstances i.e. methods of handling or according to risk assessments undertaken. Reference should be made to AS/NZS 2161.1: Occupational protective gloves - Selection, use and maintenance. The use of barrier cream is recommended.

Eye Protection : Chemical safety glasses or face shield recommended as appropriate. Final choice of appropriate eye/face protection will vary according to individual circumstances including methods of handling or engineering controls as determined by appropriate risk assessments. Eye protection should conform to Australian/New Zealand Standard AS/NZS 1337- Eye Protectors for Industrial Applications.

Protective Clothing : Suitable protective workwear, e.g. cotton overalls buttoned at neck and wrist is recommended. Chemical resistant apron is recommended where large quantities are handled. Industrial clothing should conform to the specifications detailed in AS/NZS 2919: Industrial clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Pale yellow clear and bright liquid.
Odour	:	Characteristic oil odour.
Initial Boiling point and boiling range	:	Initial Boiling Point: 180°C Final Boiling Point: 360°C
Melting / freezing point	:	Not available
Flash point	:	80ºC (Closed Cup)
Flammability limits	:	Lower: 1% v/v Upper: 6% v/v
Auto-ignition temperature	:	230°C
Flammability (solid, gas)	:	Flammable liquid and vapour.
Vapour pressure	:	<0.54 mmHg at 25ºC.
Density	:	830 kg/m3 at 15°C
Water solubility	:	Negligible
Viscosity, kinematic	:	Not available
Vapour density (air=1)	:	>1
Coefficient Water/Oil Distr.	:	Not available

10. STABILITY AND REACTIVITY

Chemical stability	:	Stable under normal conditions of storage and handling.
Conditions to Avoid	:	Heat, open flames, sparks and other sources of ignition.
Incompatible materials	:	Strong oxidizing agents.
Hazardous Decomposition Products	:	Thermal decomposition may result in the release of toxic and/or irritating fumes including carbon monoxide and carbon dioxide.
Hazardous Polymerization	:	Will not occur.

11. TOXICOLOGICAL INFORMATION

Basis for Assessment	:	Fuels are typically made from blending several refinery streams. Toxicological studies have been carried out on a variety of hydrocarbon blends and streams but not those containing additives. Information given is based on product data, a knowledge of the components and the toxicology of similar products.
Acute oral toxicity	:	LD50 (Oral): >5,000 mg/kg. Ingestion may lead to vomiting and aspiration into the lungs, this may result in chemical pneumonitis, which may be fatal.
Acute dermal toxicity		LD50 (Dermal): >2,000 mg/kg
Acute inhalation toxicity		LC50 expected to be >5mg/l. Vapours may cause drowsiness and dizziness.
Mutagenicity		In-vitro mutagenicity studies show that mutagenic activity is related to 4-6 ring polycyclic aromatic content.
Carcinogenicity	:	Dermal application to mice causes skin tumours. It may contain polycyclic aromatic hydrocarbons (PAHs) some of which has been shown by experimental studies to cause induce cancer.
Reproductive and Developmental Toxicity	:	Not a developmental toxicant.
Human Effects	:	Prolonged/repeated contact may cause defatting of the skin which can lead to dermatitis and may make the skin more susceptible to irritation and penetration by other materials. Under conditions of poor personal hygiene, excessive exposure may lead to irritation, oil acne and foliculitis and development of warty growths which may subsequently become malignant.
Other Information	:	High pressure injection of product into the skin may lead to local necrosis if the product is not surgically removed.
Eye	:	May cause irritation in contact with the eyes, which can result in redness, stinging and lachrymation.
Skin	:	May cause irritation to the skin resulting in itching and redness of the skin. Poisoning may occur from prolonged or massive skin contact.
Inhalation	:	Vapours may cause headache, nausea with vomiting, dizziness, confusion and other effects of central nervous system depression. Loss of consciousness can occur at high concentrations followed by convulsions and death. NOTE: Below 40^{o}C the vapour pressure is too low to cause any health hazard. High concentrations will build up in poorly ventilated areas and at higher temperatures.

Ingestion : May cause irritation to the gastrointestinal system. Symptoms may include abdominal pain, nausea, vomiting, diarrhoea or depression of the central nervous system including nausea, headaches, dizziness, fatigue, loss of coordination, unconsciousness and possibly narcosis. Small amounts of liquid aspirated into the respiratory system during ingestion or vomiting may lead to aspiration into the lungs with a possibility of chemical pneumonia or lung damage.

Chronic Effects : Harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed. Prolonged and repeated exposure through inhalation or swallowing of this material can result in harmful effects including central nervous system effects. Systemic effects of chronic exposure can also include damage to heart, kidneys and liver. Prolonged or repeated skin contact may also result in skin dryness and cracking, skin irritation leading to dermatitis.

12. ECOLOGICAL INFORMATION

Mobility : Floats on water. Contains volatile components. Evaporates within a day from water or soil surfaces. Large volumes may penetrate soil and could contaminate groundwater.

Persistence/ degradability : Major components are inherently biodegradable. Persists under anaerobic conditions. The volatile components oxidise rapidly by photochemical reactions in air.

Bioaccumulative potential : Contains components with the potential to bioaccumulate.

Exotoxicity : Fuels are typically made from blending several refinery streams. Ecotoxicological studies have been carried out on a variety of hydrocarbon blends and streams but not those containing additives. Information given is based on a knowledge of the components and the ecotoxicology of similar products.
Product is classified as toxic to aquatic organisms, LL/EL50: 1-10 mg/L. (LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract). Films formed on water may affect oxygen transfer and damage organisms.

Environmental Protection : Do not discharge this material into drains, sewers and waterways.

13. DISPOSAL CONSIDERATIONS

Disposal Considerations

Waste arising from a spillage or tank cleaning should be disposed of in accordance with applicable local and national regulations. Do not dispose into the environment, in drains or in water courses. Do not dispose of tank water bottoms by allowing them to drain into the ground. This will result in soil and groundwater contamination. Labels should not be removed from containers until they have been cleaned. Do not cut, puncture or weld on or near containers. Empty containers may contain hazardous residues. Contaminated containers must not be treated as household waste. Containers should be cleaned by appropriate methods and then re-used or disposed of by landfill or incineration as appropriate. Do not incinerate closed containers. Advise flammable nature.

14. TRANSPORT INFORMATION

Land Transport Rule Dangerous Goods Amendment 2010 Rule 45001/2 - NZS 5433; 2007.
Classified as Dangerous Goods for transport according to the NZS 5433:2007 Transport of Dangerous Goods on Land.

UN No	:	3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (Fuels, diesel)
Class	:	9
Packing group	:	III
Hazchem Code	:	3Z

IMDG
Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea.

UN No	:	3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (Fuels, diesel)
Class / Division	:	9
Packing group	:	III
Marine pollutant:	:	Yes

IATA (Country variations may apply)
Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.

UN No	:	3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (Fuels, diesel)
Class	:	9
Packing group	:	III

15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Classified as Hazardous according to the New Zealand Hazardous Substances (Minimum Degrees of Hazard) Regulations 2001.

Classified as Dangerous Goods according to Land Transport Rule Dangerous Goods Amendment 2010 Rule 45001/2 - NZS 5433; 2007.

ERMA HSNO Approval Code: HSR001441

NZIoC All components of this product are listed on the New Zealand Inventory of Chemicals (NZIoC).

AICS All components of this product are listed on the Australian Inventory of Chemical Substances (AICS).

Restrictions
This product must not be used in applications other than those recommended without first seeking the advice of the supplier.

16. OTHER INFORMATION

SDS Version Number	:	1.0
SDS Effective Date	:	01 December 2015
SDS Regulation	:	The content and format of this SDS is in accordance with HSNO Approved Code of Practice (No. HSNO CoP 8-1 09-06): Preparation of Safety Data Sheets.
Uses and Restrictions	:	This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product

Safety Data Sheet

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: **HYDROCHLORIC ACID >25% (NZ)**

Recommended Use of the Chemical and Restrictions on Use Precursor for generation of chlorine dioxide gas used in water treatment.

Supplier: Ixom Operations Pty Ltd (Incorporated in Australia)
NZBN: 9429041465226
Street Address: 166 Totara Street
Mt Maunganui South
New Zealand

Telephone Number: +64 9 368 2700
Facsimile: +64 9 368 2710
Emergency Telephone: **0 800 734 607 (ALL HOURS)**

Please ensure you refer to the limitations of this Safety Data Sheet as set out in the "Other Information" section at the end of this Data Sheet.

2. HAZARDS IDENTIFICATION

Classified as a Dangerous Good according to NZS 5433:2012 Transport of Dangerous Goods on Land.

Classified as hazardous according to criteria in the Hazardous Substances (Minimum Degrees of Hazard) Notice 2017 and the Hazardous Substances (Classification) Notice 2017.

SIGNAL WORD: DANGER

Subclasses:
Subclass 6.1 Category B - Substances which are acutely toxic.
Subclass 8.1 Category A - Substances that are corrosive to metals.
Subclass 8.2 Category B - Substances that are corrosive to dermal tissue.
Subclass 8.3 Category A - Substances that are corrosive to ocular tissue.
Subclass 9.1 Category D - Substances that are slightly harmful to the aquatic environment or are otherwise designed for biocidal action.
Subclass 9.3 Category C - Substances that are harmful to terrestrial vertebrates.

Approval Number: HSR001557

Hazard Statement(s):
H290 May be corrosive to metals.
H330 Fatal if inhaled.
H302+H312 Harmful if swallowed or in contact with skin.
H314 Causes severe skin burns and eye damage.
H433 Harmful to terrestrial vertebrates.

Safety Data Sheet

Precautionary Statement(s):

Prevention:
P102 Keep out of reach of children.
P234 Keep only in original container.
P260 Do not breathe mist/vapours/spray.
P264 Wash hands thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P284 Wear respiratory protection.

Response:
P304+P340 IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
P310 Immediately call a POISON CENTER or doctor/physician.
P320 Specific treatment is urgent (see First Aid Measures on the Safety Data Sheet).
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P302+P352 IF ON SKIN: Wash with plenty of soap and water.
P363 Wash contaminated clothing before re-use.
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.
P390 Absorb spillage to prevent material damage.

Storage:
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
P406 Store in corrosive resistant container with a resistant inner liner.

Disposal:
P501 In case of a substance that is in compliance with a HSNO approval other than a Part 6A (Group Standards) approval, a label must provide a description of one or more appropriate and achievable methods for the disposal of a substance in accordance with the Hazardous Substances (Disposal) Notice 2017. This may also include any method of disposal that must be avoided.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Components	CAS Number	Proportion	Hazard Codes
Hydrochloric acid	-	>25%	H314 H335
Water	7732-18-5	to 100%	-

4. FIRST AID MEASURES

For advice, contact a Poisons Information Centre (e.g. phone Australia 131 126; New Zealand 0800 764 766) or a doctor.

Inhalation:
Remove victim from area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. If patient finds breathing difficult and develops a bluish discolouration of the skin (which suggests a lack of oxygen in the blood - cyanosis), ensure airways are clear of any obstruction and have a qualified person give oxygen through a face mask. Apply artificial respiration if patient is not breathing. Seek immediate medical advice.

Safety Data Sheet

Skin Contact:
If spilt on large areas of skin or hair, immediately drench with running water and remove clothing. Continue to wash skin and hair with plenty of water (and soap if material is insoluble) until advised to stop by the Poisons Information Centre or a doctor.

Eye Contact:
If in eyes, hold eyelids apart and flush the eye continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre or a doctor, or for at least 15 minutes. Continue to wash with large amounts of water until medical help is available.

Ingestion:
Immediately rinse mouth with water. If swallowed, do NOT induce vomiting. Give a glass of water. Seek immediate medical assistance.

Indication of immediate medical attention and special treatment needed:
Treat symptomatically. Can cause corneal burns.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media:
Not combustible, however, if material is involved in a fire use: Fine water spray, normal foam, dry agent (carbon dioxide, dry chemical powder).

Hazchem or Emergency Action Code: 2R

Specific hazards arising from the chemical:
Non-combustible material. Corrosive chemical.

Special protective equipment and precautions for fire-fighters:
Decomposes on heating emitting toxic fumes. Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to products of decomposition. Heating can cause expansion or decomposition of the material, which can lead to the containers exploding. If safe to do so, remove containers from the path of fire.

6. ACCIDENTAL RELEASE MEASURES

Emergency procedures/Environmental precautions:
Clear area of all unprotected personnel. If contamination of sewers or waterways has occurred advise local emergency services.

Personal precautions/Protective equipment/Methods and materials for containment and cleaning up:
Slippery when spilt. Avoid accidents, clean up immediately. Wear protective equipment to prevent skin and eye contact and breathing in vapours. Work up wind or increase ventilation. Contain - prevent run off into drains and waterways. Use absorbent (soil, sand or other inert material). Collect and seal in properly labelled containers or drums for disposal. Neutralise residues with lime or soda ash. Wash area down with excess water.

7. HANDLING AND STORAGE

Precautions for safe handling: Avoid skin and eye contact and breathing in vapour, mists and aerosols. Keep out of reach of children. Always add the acid to water, never the reverse.

Conditions for safe storage, including any incompatibilities: Store in a cool, dry, well ventilated place. Store away from incompatible materials described in Section 10. Store away from foodstuffs. Do not store in aluminium containers. Do not store in galvanised containers. Keep containers closed when not in use - check regularly for leaks.

Safety Data Sheet

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Workplace Exposure Standards: No value assigned for this specific material by the New Zealand Workplace Health & Safety Authority. However, Workplace Exposure Standard(s) for constituent(s):

Hydrogen chloride: Ceiling 5 ppm, 7.5 mg/m^3

As published by the New Zealand Workplace Health & Safety Authority.

WES - Ceiling (Workplace Exposure Standard - Ceiling). A concentration that should not be exceeded during any part of the working day.

These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

Appropriate engineering controls:
Ensure ventilation is adequate and that air concentrations of components are controlled below quoted Workplace Exposure Standards. Keep containers closed when not in use.

If in the handling and application of this material, safe exposure levels could be exceeded, the use of engineering controls such as local exhaust ventilation must be considered and the results documented. If achieving safe exposure levels does not require engineering controls, then a detailed and documented risk assessment using the relevant Personal Protective Equipment (PPE) (refer to PPE section below) as a basis must be carried out to determine the minimum PPE requirements.

Individual protection measures, such as Personal Protective Equipment (PPE):
The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.

OVERALLS, CHEMICAL GOGGLES, RUBBER BOOTS, AIR MASK , GLOVES (Long), APRON.
* Not required if wearing air supplied mask.

Wear overalls, chemical goggles, full face shield, elbow-length impervious gloves, splash apron or equivalent chemical impervious outer garment, and rubber boots. Use with adequate ventilation. If determined by a risk assessment an inhalation risk exists, wear an air-supplied mask meeting the requirements of AS/NZS 1715 and AS/NZS 1716. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Clear Liquid
Colour:	Colourless to Slightly Yellow
Odour:	Pungent
Solubility:	Miscible with water.
Specific Gravity:	ca. 1.06 (for 26% concentration)

Safety Data Sheet

Relative Vapour Density (air=1):	Not available
Vapour Pressure (20 °C):	Not available
Flash Point (°C):	Not applicable
Flammability Limits (%):	Not applicable
Autoignition Temperature (°C):	Not applicable
Boiling Point/Range (°C):	98 (for 28% concentration)
pH:	<1

10. STABILITY AND REACTIVITY

Reactivity: Reacts with alkalis.

Chemical stability: Corrosive to many metals with the liberation of extremely flammable hydrogen gas.

Possibility of hazardous reactions: Reacts with oxidising agents and sodium hypochlorite liberating toxic chlorine gas.

Conditions to avoid: Avoid contact with foodstuffs.

Incompatible materials: Incompatible with alkalis , oxidising agents , sodium hypochlorite , cyanides , many metals .

Hazardous decomposition products: Hydrogen chloride.

11. TOXICOLOGICAL INFORMATION

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

Ingestion: Swallowing can result in nausea, vomiting, diarrhoea, abdominal pain and chemical burns to the gastrointestinal tract.

Eye contact: A severe eye irritant. Corrosive to eyes; contact can cause corneal burns. Contamination of eyes can result in permanent injury.

Skin contact: Contact with skin will result in severe irritation. Corrosive to skin - may cause skin burns.

Inhalation: Breathing in mists or aerosols will produce respiratory irritation.

Acute toxicity: No LD50 data available for the product. However, for constituent(s) HYDROGEN CHLORIDE:
Oral LD50 (rabbit): 900 mg/kg
Inhalation LC50 (rat): 3124 ppm/1h.

Respiratory or skin sensitisation: No information available.

Chronic effects: Repeated exposure to low levels of hydrochloric acid may produce discolouration and erosion of teeth and ulceration of the nasal passages.

Aspiration hazard: No information available.

12. ECOLOGICAL INFORMATION

Safety Data Sheet

Ecotoxicity	Avoid contaminating waterways.
Persistence/degradability:	Biodegradation is not an applicable endpoint since the product is an inorganic chemical.
Bioaccumulative potential:	No information available.
Mobility in soil:	No information available.

13. DISPOSAL CONSIDERATIONS

Disposal methods:
Refer to local government authority for disposal recommendations. Dispose of material through a licensed waste contractor. Decontamination and destruction of containers should be considered.

14. TRANSPORT INFORMATION

Road and Rail Transport
Classified as a Dangerous Good according to NZS 5433:2012 Transport of Dangerous Goods on Land.

UN No:	1789
Transport Hazard Class:	8 Corrosive
Packing Group:	II
Proper Shipping Name or Technical Name:	HYDROCHLORIC ACID
Hazchem or Emergency Action Code:	2R

Marine Transport
Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea; DANGEROUS GOODS.

UN No:	1789
Transport Hazard Class:	8 Corrosive
Packing Group:	II
Proper Shipping Name or Technical Name:	HYDROCHLORIC ACID
IMDG EMS Fire:	F-A
IMDG EMS Spill:	S-B

Air Transport
Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air; DANGEROUS GOODS.

UN No:	1789
Transport Hazard Class:	8 Corrosive
Packing Group:	II
Proper Shipping Name or Technical Name:	HYDROCHLORIC ACID

Safety Data Sheet

15. REGULATORY INFORMATION

Classification:
Classified as hazardous according to criteria in the Hazardous Substances (Minimum Degrees of Hazard) Notice 2017 and the Hazardous Substances (Classification) Notice 2017.

Subclasses:
Subclass 6.1 Category B - Substances which are acutely toxic.
Subclass 8.1 Category A - Substances that are corrosive to metals.
Subclass 8.2 Category B - Substances that are corrosive to dermal tissue.
Subclass 8.3 Category A - Substances that are corrosive to ocular tissue.
Subclass 9.1 Category D - Substances that are slightly harmful to the aquatic environment or are otherwise designed for biocidal action.
Subclass 9.3 Category C - Substances that are harmful to terrestrial vertebrates.

Approval Number: HSR001557

Hazard Statement(s):
H290 May be corrosive to metals.
H330 Fatal if inhaled.
H302+H312 Harmful if swallowed or in contact with skin.
H314 Causes severe skin burns and eye damage.
H433 Harmful to terrestrial vertebrates.

16. OTHER INFORMATION

`Registry of Toxic Effects of Chemical Substances'. Ed. D. Sweet, US Dept. of Health & Human Services: Cincinatti, 2019.

This safety data sheet has been prepared by Ixom Operations Pty Ltd (Toxicology & SDS Services).

Reason(s) for Issue:
5 Yearly Revised Primary SDS

This SDS summarises to our best knowledge at the date of issue, the chemical health and safety hazards of the material and general guidance on how to safely handle the material in the workplace. Since Ixom Operations Pty Ltd cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, assess and control the risks arising from its use of the material.

If clarification or further information is needed, the user should contact their Ixom representative or Ixom Operations Pty Ltd at the contact details on page 1.

Ixom Operations Pty Ltd's responsibility for the material as sold is subject to the terms and conditions of sale, a copy of which is available upon request.

Safety Data Sheet

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: **PEARL CAUSTIC SODA**

Other name(s): Sodium hydroxide; Soda lye; Sodium hydrate; White caustic; Caustic soda solid; Caustic pearl; Solid caustic soda; Lye.

Recommended Use of the Chemical and Restrictions on Use General chemical.

Supplier: Ixom Operations Pty Ltd (Incorporated in Australia)
NZBN: 9429041465226
Street Address: 166 Totara Street
Mt Maunganui South
New Zealand

Telephone Number: +64 9 368 2700
Facsimile: +64 9 368 2710
Emergency Telephone: **0 800 734 607 (ALL HOURS)**

Please ensure you refer to the limitations of this Safety Data Sheet as set out in the "Other Information" section at the end of this Data Sheet.

2. HAZARDS IDENTIFICATION

Classified as a Dangerous Good according to NZS 5433:2012 Transport of Dangerous Goods on Land.

Classified as hazardous according to criteria in the Hazardous Substances (Minimum Degrees of Hazard) Notice 2017 and the Hazardous Substances (Classification) Notice 2017.

SIGNAL WORD: DANGER

Subclasses:
Subclass 6.1 Category D - Substances which are acutely toxic.
Subclass 8.1 Category A - Substances that are corrosive to metals.
Subclass 8.2 Category B - Substances that are corrosive to dermal tissue.
Subclass 8.3 Category A - Substances that are corrosive to ocular tissue.
Subclass 9.1 Category D - Substances that are slightly harmful to the aquatic environment or are otherwise designed for biocidal action.
Subclass 9.3 Category C - Substances that are harmful to terrestrial vertebrates.

Approval Number: HSR001547

Hazard Statement(s):
H290 May be corrosive to metals.
H302+H312 Harmful if swallowed or in contact with skin.
H314 Causes severe skin burns and eye damage.
H433 Harmful to terrestrial vertebrates.

Safety Data Sheet

Precautionary Statement(s):

Prevention:
P102 Keep out of reach of children.
P234 Keep only in original container.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P264 Wash hands thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P273 Avoid release to the environment.

Response:
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P321 Specific treatment (see First Aid Measures on the Safety Data Sheet).
P363 Wash contaminated clothing before re-use.
P304+P340 IF INHALED: Remove 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.
P390 Absorb spillage to prevent material damage.

Storage:
P405 Store locked up.
P406 Store in corrosive resistant container with a resistant inner liner.

Disposal:
P501 In case of a substance that is in compliance with a HSNO approval other than a Part 6A (Group Standards) approval, a label must provide a description of one or more appropriate and achievable methods for the disposal of a substance in accordance with the Hazardous Substances (Disposal) Notice 2017. This may also include any method of disposal that must be avoided.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Components	CAS Number	Proportion	Hazard Codes
Sodium hydroxide	1310-73-2	100%	H290 H314 H318 H335

4. FIRST AID MEASURES

For advice, contact a Poisons Information Centre (e.g. phone Australia 131 126; New Zealand 0800 764 766) or a doctor.

Inhalation:
Remove victim from area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. If patient finds breathing difficult and develops a bluish discolouration of the skin (which suggests a lack of oxygen in the blood - cyanosis), ensure airways are clear of any obstruction and have a qualified person give oxygen through a face mask. Apply artificial respiration if patient is not breathing. Seek immediate medical advice.

Skin Contact:
If spilt on large areas of skin or hair, immediately drench with running water and remove clothing. Continue to wash skin and hair with plenty of water (and soap if material is insoluble) until advised to stop by the Poisons Information Centre or a doctor. For skin burns, cover with a clean, dry dressing until medical help is available.

Eye Contact:
Immediately wash in and around the eye area with large amounts of water for at least 15 minutes. Eyelids to be held apart. Remove clothing if contaminated and wash skin. Urgently seek medical assistance. Transport promptly to hospital or medical centre.

Safety Data Sheet

Ingestion:
Immediately rinse mouth with water. If swallowed, do NOT induce vomiting. Give a glass of water. Never give anything by the mouth to an unconscious patient. Seek immediate medical assistance.

Indication of immediate medical attention and special treatment needed:
Treat symptomatically. Can cause corneal burns.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media:
Not combustible, however, if material is involved in a fire use: Fine water spray, normal foam, dry agent (carbon dioxide, dry chemical powder).

Hazchem or Emergency Action Code: 2W

Specific hazards arising from the chemical:
Corrosive substance. Non-combustible material.

Special protective equipment and precautions for fire-fighters:
Decomposes on heating emitting toxic fumes, including those of oxides of sodium. Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to products of decomposition.

6. ACCIDENTAL RELEASE MEASURES

Emergency procedures/Environmental precautions:
Clear area of all unprotected personnel. If contamination of sewers or waterways has occurred advise local emergency services.

Personal precautions/Protective equipment/Methods and materials for containment and cleaning up:
Wear protective equipment to prevent skin and eye contact and breathing in dust. Work up wind or increase ventilation. Cover with damp absorbent (inert material, sand or soil). Sweep or vacuum up, but avoid generating dust. Collect and seal in properly labelled containers or drums for disposal. Caution - heat may be evolved on contact with water.

7. HANDLING AND STORAGE

Precautions for safe handling: Avoid skin and eye contact and breathing in dust. Keep out of reach of children. There is a risk of splash-back causing injury if Pearl Caustic Soda is added to HOT water.

Conditions for safe storage, including any incompatibilities: Store in a cool, dry, well ventilated place. Store away from foodstuffs. Store away from incompatible materials described in Section 10. Keep containers closed when not in use - check regularly for spills.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Sodium hydroxide: Ceiling 2 mg/m^3

Safety Data Sheet

As published by the New Zealand Workplace Health & Safety Authority.

WES - Ceiling (Workplace Exposure Standard - Ceiling). A concentration that should not be exceeded during any part of the working day.

These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

Appropriate engineering controls:
Ensure ventilation is adequate to maintain air concentrations below Workplace Exposure Standards. Keep containers closed when not in use.

If in the handling and application of this material, safe exposure levels could be exceeded, the use of engineering controls such as local exhaust ventilation must be considered and the results documented. If achieving safe exposure levels does not require engineering controls, then a detailed and documented risk assessment using the relevant Personal Protective Equipment (PPE) (refer to PPE section below) as a basis must be carried out to determine the minimum PPE requirements.

Individual protection measures, such as Personal Protective Equipment (PPE):
The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.

OVERALLS, SAFETY SHOES, CHEMICAL GOGGLES, GLOVES, DUST MASK.

Wear overalls, chemical goggles and impervious gloves. Avoid generating and inhaling dusts. If determined by a risk assessment an inhalation risk exists, wear a dust mask/respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Solid
Colour:	White
Odour:	Odourless
Molecular Formula:	NaOH
Solubility:	Soluble in water.
Specific Gravity:	2.13 @20°C
Relative Vapour Density (air=1):	1.38
Vapour Pressure (20 °C):	<24 hPa
Flash Point (°C):	Not applicable
Flammability Limits (%):	Not available
Autoignition Temperature (°C):	Not available
Melting Point/Range (°C):	318
Boiling Point/Range (°C):	1390

Safety Data Sheet

pH: 14 (50 g/L, 20°C)

10. STABILITY AND REACTIVITY

Reactivity: Reacts violently with acids. Reacts with ammonium salts liberating ammonia gas.

Chemical stability: Stable. Hygroscopic: absorbs moisture or water from surrounding air.

Possibility of hazardous reactions: In the presence of moisture, the material is corrosive to aluminium, zinc and tin producing highly flammable hydrogen gas. May react violently with acids and chlorinated hydrocarbons . Can react vigorously with water .

Conditions to avoid: Avoid dust generation. Avoid exposure to moisture. Avoid contact with foodstuffs.

Incompatible materials: Incompatible with ammonium salts , acids , chlorinated hydrocarbons , aluminium , zinc , lead , tin , and their alloys .

Hazardous decomposition products: Oxides of sodium.

11. TOXICOLOGICAL INFORMATION

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

Ingestion: Swallowing can result in nausea, vomiting, diarrhoea, abdominal pain and chemical burns to the gastrointestinal tract.

Eye contact: A severe eye irritant. Corrosive to eyes; contact can cause corneal burns. Contamination of eyes can result in permanent injury.

Skin contact: Contact with skin will result in severe irritation. Corrosive to skin - may cause skin burns.

Inhalation: Breathing in dust will result in respiratory irritation.

Acute toxicity: No oral LD50 data available for the product.

Skin corrosion/irritation: Corrosive (rabbit).
Serious eye damage/irritation: Corrosive (rabbit).
Respiratory or skin sensitisation: Not a respiratory sensitiser. Not a skin sensitiser.

Chronic effects:

Mutagenicity: No information available.
Carcinogenicity: Not listed as carcinogenic according to the International Agency for Research on Cancer (IARC).
Reproductive toxicity: No information available.
Specific Target Organ Toxicity (STOT) - single exposure: May cause respiratory irritation.
Specific Target Organ Toxicity (STOT) - repeated exposure: No information available.
Aspiration hazard: No information available.

Safety Data Sheet

12. ECOLOGICAL INFORMATION

Ecotoxicity Avoid contaminating waterways.

Persistence/degradability: Biodegradation is not an applicable endpoint since the product is an inorganic chemical.

Bioaccumulative potential: No information available.

Mobility in soil: No information available.

13. DISPOSAL CONSIDERATIONS

Disposal methods:
Refer to local government authority for disposal recommendations. Dispose of contents/container in accordance with local/regional/national/international regulations.

14. TRANSPORT INFORMATION

Road and Rail Transport
Classified as a Dangerous Good according to NZS 5433:2012 Transport of Dangerous Goods on Land.

UN No:	1823
Transport Hazard Class:	8 Corrosive
Packing Group:	II
Proper Shipping Name or Technical Name:	SODIUM HYDROXIDE, SOLID
Hazchem or Emergency Action Code:	2W

Marine Transport
Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea; DANGEROUS GOODS.

UN No:	1823
Transport Hazard Class:	8 Corrosive
Packing Group:	II
Proper Shipping Name or Technical Name:	SODIUM HYDROXIDE, SOLID
IMDG EMS Fire:	F-A
IMDG EMS Spill:	S-B

Air Transport
Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air; DANGEROUS GOODS.

UN No:	1823
Transport Hazard Class:	8 Corrosive
Packing Group:	II

Safety Data Sheet

Proper Shipping Name or Technical Name: SODIUM HYDROXIDE, SOLID

15. REGULATORY INFORMATION

Classification:
Classified as hazardous according to criteria in the Hazardous Substances (Minimum Degrees of Hazard) Notice 2017 and the Hazardous Substances (Classification) Notice 2017.

Subclasses:
Subclass 6.1 Category D - Substances which are acutely toxic.
Subclass 8.1 Category A - Substances that are corrosive to metals.
Subclass 8.2 Category B - Substances that are corrosive to dermal tissue.
Subclass 8.3 Category A - Substances that are corrosive to ocular tissue.
Subclass 9.1 Category D - Substances that are slightly harmful to the aquatic environment or are otherwise designed for biocidal action.
Subclass 9.3 Category C - Substances that are harmful to terrestrial vertebrates.

Approval Number: HSR001547

Hazard Statement(s):
H290 May be corrosive to metals.
H302+H312 Harmful if swallowed or in contact with skin.
H314 Causes severe skin burns and eye damage.
H433 Harmful to terrestrial vertebrates.

16. OTHER INFORMATION

Supplier Safety Data Sheet; 03/ 2017.

This safety data sheet has been prepared by Ixom Operations Pty Ltd (Toxicology & SDS Services).

Reason(s) for Issue:
5 Yearly Revised Primary SDS
Change in Hazardous Chemical Classification
Change in Physical Properties

This SDS summarises to our best knowledge at the date of issue, the chemical health and safety hazards of the material and general guidance on how to safely handle the material in the workplace. Since Ixom Operations Pty Ltd cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, assess and control the risks arising from its use of the material.

If clarification or further information is needed, the user should contact their Ixom representative or Ixom Operations Pty Ltd at the contact details on page 1.

Ixom Operations Pty Ltd's responsibility for the material as sold is subject to the terms and conditions of sale, a copy of which is available upon request.

Safety Data Sheet

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: **SODIUM HYPOCHLORITE SOLUTION (10-15% AVAILABLE CHLORINE) NZ**

Recommended Use of the Chemical and Restrictions on Use: Water treatment: Sanitising agent.
Available chlorine = 10 - 15%.

Supplier: Ixom Operations Pty Ltd (Incorporated in Australia)
NZBN: 9429041465226
Street Address: 166 Totara Street
Mt Maunganui South
New Zealand

Telephone Number: +64 9 368 2700
Facsimile: +64 9 368 2710
Emergency Telephone: **0 800 734 607 (ALL HOURS)**

Please ensure you refer to the limitations of this Safety Data Sheet as set out in the "Other Information" section at the end of this Data Sheet.

2. HAZARDS IDENTIFICATION

Classified as a Dangerous Good according to NZS 5433:2012 Transport of Dangerous Goods on Land.

Classified as hazardous according to criteria in the Hazardous Substances (Minimum Degrees of Hazard) Notice 2017 and the Hazardous Substances (Classification) Notice 2017.

SIGNAL WORD: DANGER

Subclasses:
Subclass 8.2 Category C - Substances that are corrosive to dermal tissue.
Subclass 8.3 Category A - Substances that are corrosive to ocular tissue.
Subclass 9.1 Category B - Substances that are ecotoxic in the aquatic environment.

Approval Number: HSR004692

Hazard Statement(s):
H314 Causes severe skin burns and eye damage.
H411 Toxic to aquatic life with long lasting effects.

Precautionary Statement(s):

Prevention:
P260 Do not breathe mist/vapours/spray.
P264 Wash hands thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P273 Avoid release to the environment.

Safety Data Sheet

Response:
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P321 Specific treatment (see First Aid Measures on the Safety Data Sheet).
P363 Wash contaminated clothing before re-use.
P304+P340 IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
P310 Immediately call a POISON CENTER or doctor/physician.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P391 Collect spillage.

Storage:
P405 Store locked up.

Disposal:
P501 In case of a substance that is in compliance with a HSNO approval other than a Part 6A (Group Standards) approval, a label must provide a description of one or more appropriate and achievable methods for the disposal of a substance in accordance with the Hazardous Substances (Disposal) Notice 2017. This may also include any method of disposal that must be avoided.

Other Hazards:
Contact with acids liberates toxic gas.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Components	CAS Number	Proportion	Hazard Codes
Water	7732-18-5	>60%	-
Sodium hypochlorite	7681-52-9	10-<30%	H314 H400
Sodium hydroxide	1310-73-2	<1%	H290 H314 H318

4. FIRST AID MEASURES

For advice, contact a Poisons Information Centre (e.g. phone Australia 131 126; New Zealand 0800 764 766) or a doctor.

Inhalation:
Remove victim from area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. If patient finds breathing difficult and develops a bluish discolouration of the skin (which suggests a lack of oxygen in the blood - cyanosis), ensure airways are clear of any obstruction and have a qualified person give oxygen through a face mask. Apply artificial respiration if patient is not breathing. Seek immediate medical advice.

Skin Contact:
If spilt on large areas of skin or hair, immediately drench with running water and remove clothing. Continue to wash skin and hair with plenty of water (and soap if material is insoluble) until advised to stop by the Poisons Information Centre or a doctor.

Eye Contact:
Immediately wash in and around the eye area with large amounts of water for at least 15 minutes. Eyelids to be held apart. Remove clothing if contaminated and wash skin. Urgently seek medical assistance. Transport promptly to hospital or medical centre. Continue to wash with large amounts of water until medical help is available.

Ingestion:
Immediately rinse mouth with water. If swallowed, do NOT induce vomiting. Give a glass of water. Seek immediate medical assistance.

Safety Data Sheet

Indication of immediate medical attention and special treatment needed:
Treat symptomatically. Can cause corneal burns. Delayed pulmonary oedema may result.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media:
Not combustible, however, if material is involved in a fire use: Fine water spray, normal foam, dry agent (carbon dioxide, dry chemical powder).

Hazchem or Emergency Action Code: 2X

Specific hazards arising from the chemical:
Non-combustible material. Corrosive chemical. Environmentally hazardous.

Special protective equipment and precautions for fire-fighters:
Decomposes on heating emitting toxic fumes, including those of chlorine . Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to products of decomposition.

6. ACCIDENTAL RELEASE MEASURES

Emergency procedures/Environmental precautions:
Clear area of all unprotected personnel. Do not allow container or product to get into drains, sewers, streams or ponds. If contamination of sewers or waterways has occurred advise local emergency services.

Personal precautions/Protective equipment/Methods and materials for containment and cleaning up:
Slippery when spilt. Avoid accidents, clean up immediately. Wear protective equipment to prevent skin and eye contact and breathing in vapours. Work up wind or increase ventilation. Contain - prevent run off into drains and waterways. Use absorbent (soil, sand or other inert material). Collect and seal in properly labelled containers or drums for disposal. For small amounts, in case of spillage flush with large quantities of water.

7. HANDLING AND STORAGE

Precautions for safe handling: Avoid skin and eye contact and breathing in vapour, mists and aerosols. Keep out of reach of children.

Conditions for safe storage, including any incompatibilities: Store in a cool, dry, well ventilated place. Store away from foodstuffs. Store away from acids. Store away from incompatible materials described in Section 10. Keep containers closed when not in use - check regularly for leaks.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Workplace Exposure Standards: No value assigned for this specific material by the New Zealand Workplace Health & Safety Authority. However, Workplace Exposure Standard(s) for constituent(s) and decomposition product(s):

Sodium hydroxide: Ceiling 2 mg/m^3
Chlorine: WES-TWA 0.5 ppm, 1.5 mg/m^3; WES-STEL 1 ppm, 2.9 mg/m^3

Safety Data Sheet

As published by the New Zealand Workplace Health & Safety Authority.

WES - TWA (Workplace Exposure Standard - Time Weighted Average) - The eight-hour, time-weighted average exposure standard is designed to protect the worker from the effects of long-term exposure.

WES - STEL (Workplace Exposure Standard - Short Term Exposure Limits) - The 15 minute average exposure standard. Applies to any 15 minute period in the working day and is designed to protect the worker against adverse effects of irritation, chronic or irreversible tissue change, or narcosis that may increase the likelihood of accidents. The WES-STEL is not an alternative to the WES-TWA; both short-term and eight-hour, time-weighted average exposures should be determined.

WES - Ceiling (Workplace Exposure Standard - Ceiling). A concentration that should not be exceeded during any part of the working day.

These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

Appropriate engineering controls:
Ensure ventilation is adequate and that air concentrations of components are controlled below quoted Workplace Exposure Standards. Keep containers closed when not in use.

If in the handling and application of this material, safe exposure levels could be exceeded, the use of engineering controls such as local exhaust ventilation must be considered and the results documented. If achieving safe exposure levels does not require engineering controls, then a detailed and documented risk assessment using the relevant Personal Protective Equipment (PPE) (refer to PPE section below) as a basis must be carried out to determine the minimum PPE requirements.

Individual protection measures, such as Personal Protective Equipment (PPE):
The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.

OVERALLS, CHEMICAL GOGGLES, FACE SHIELD, GLOVES (Long), APRON, RUBBER BOOTS.

Wear overalls, chemical goggles, face shield, elbow-length impervious gloves, splash apron or equivalent chemical impervious outer garment, and rubber boots. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.
If determined by a risk assessment an inhalation risk exists, wear an air supplied respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Liquid
Colour: Pale Yellow - Green

Safety Data Sheet

Odour:	Chlorine
Solubility:	Miscible in water.
Specific Gravity:	1.2 @20°C
Relative Vapour Density (air=1):	Not available
Vapour Pressure (20 °C):	Not available
Flash Point (°C):	Not applicable
Flammability Limits (%):	Not applicable
Autoignition Temperature (°C):	Not available
Boiling Point/Range (°C):	Not available
pH:	12.5 (1% w/w)

10. STABILITY AND REACTIVITY

Reactivity: Contact with acids liberates toxic gas.

Chemical stability: Stable under normal ambient and anticipated storage and handling conditions of temperature and pressure. The amount of available chlorine diminishes over time.

Possibility of hazardous reactions: Hazardous polymerisation will not occur. Reacts exothermically with acids . Reacts with ammonia, amines, or ammonium salts to produce chloramines. Decomposes on heating to produce chlorine gas.

Conditions to avoid: Avoid contact with foodstuffs. Avoid exposure to heat, sources of ignition, and open flame. Avoid exposure to light. Avoid contact with other chemicals. Avoid contact with acids .

Incompatible materials: Incompatible with acids , metals , metal salts , peroxides , reducing agents , ethylene diamine tetraacetic acid , methanol , aziridine , urea . Incompatible with ammonia and ammonium coumpounds such as amines and ammonium salts.

Hazardous decomposition products: Chlorine.

11. TOXICOLOGICAL INFORMATION

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

Ingestion: Swallowing can result in nausea, vomiting, diarrhoea, abdominal pain and chemical burns to the gastrointestinal tract.

Eye contact: A severe eye irritant. Corrosive to eyes; contact can cause corneal burns. Contamination of eyes can result in permanent injury.

Skin contact: Contact with skin will result in severe irritation. Corrosive to skin - may cause skin burns.

Inhalation: Breathing in mists or aerosols may produce respiratory irritation. Delayed (up to 48 hours) fluid build up in the lungs may occur.

Acute toxicity: No LD50 data available for the product. For the constituent SODIUM HYPOCHLORITE:
Oral LD50 (mice): 5800 mg/kg

Serious eye damage/irritation: Moderate irritant (rabbit). Standard Draize test

Safety Data Sheet

Respiratory or skin sensitisation: No information available.

Chronic effects: No information available for the product.

Aspiration hazard: No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity Avoid contaminating waterways.

Persistence/degradability: This material is biodegradable.

Bioaccumulative potential: Does not bioaccumulate.

Mobility in soil: No information available.

Aquatic toxicity: Very toxic to aquatic organisms.

96hr LC50 (fish): 0.065 mg/L (for sodium hypochlorite)

13. DISPOSAL CONSIDERATIONS

Disposal methods:
Refer to local government authority for disposal recommendations. Dispose of material through a licensed waste contractor. Decontamination and destruction of containers should be considered.

14. TRANSPORT INFORMATION

Road and Rail Transport
Classified as a Dangerous Good according to NZS 5433:2012 Transport of Dangerous Goods on Land.

UN No: 1791
Transport Hazard Class: 8 Corrosive
Packing Group: III
Proper Shipping Name or Technical Name: HYPOCHLORITE SOLUTION
Hazchem or Emergency Action Code: 2X

Marine Transport
Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea; DANGEROUS GOODS.

UN No: 1791
Transport Hazard Class: 8 Corrosive
Packing Group: III
Proper Shipping Name or Technical Name: HYPOCHLORITE SOLUTION

Safety Data Sheet

IMDG EMS Fire: F-A
IMDG EMS Spill: S-B

Air Transport
Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air; DANGEROUS GOODS.

UN No: 1791
Transport Hazard Class: 8 Corrosive
Packing Group: III
Proper Shipping Name or Technical Name: HYPOCHLORITE SOLUTION

15. REGULATORY INFORMATION

Classification:
Classified as hazardous according to criteria in the Hazardous Substances (Minimum Degrees of Hazard) Notice 2017 and the Hazardous Substances (Classification) Notice 2017.

Subclasses:
Subclass 8.2 Category C - Substances that are corrosive to dermal tissue.
Subclass 8.3 Category A - Substances that are corrosive to ocular tissue.
Subclass 9.1 Category B - Substances that are ecotoxic in the aquatic environment.

Approval Number: HSR004692

Hazard Statement(s):
H314 Causes severe skin burns and eye damage.
H411 Toxic to aquatic life with long lasting effects.

16. OTHER INFORMATION

`Registry of Toxic Effects of Chemical Substances'. Ed. D. Sweet, US Dept. of Health & Human Services: Cincinatti, 2018.

This safety data sheet has been prepared by Ixom Operations Pty Ltd (Toxicology & SDS Services).

Reason(s) for Issue:
First Issue Primary SDS

This SDS summarises to our best knowledge at the date of issue, the chemical health and safety hazards of the material and general guidance on how to safely handle the material in the workplace. Since Ixom Operations Pty Ltd cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, assess and control the risks arising from its use of the material.

If clarification or further information is needed, the user should contact their Ixom representative or Ixom Operations Pty Ltd at the contact details on page 1.

Ixom Operations Pty Ltd's responsibility for the material as sold is subject to the terms and conditions of sale, a copy of which is available upon request.

SAFETY DATA SHEET

Revision date: 11-Jan-2022

Revision Number 8

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product identifier

Product Name SULPHURIC ACID >10%-51%

Product Code(s) 000034551201

Other means of identification

UN number 2796

Synonyms Sulfuric acid >10%-51%; Sulphuric acid 20-35%.

Recommended use of the chemical and restrictions on use

Recommended use pH control agent.

Uses advised against No information available.

Details of the supplier of the safety data sheet

Supplier
Ixom Operations Pty Ltd (Incorporated in Australia)
NZBN: 9429041465226 Address: 166 Totara Street
Mt Maunganui South
New Zealand

Telephone Number: +64 9 368 2700
Facimile: +64 9 368 2710

For further information, please contact

Contact Point Product Safety Department

Emergency telephone number

Emergency Telephone **0 800 734 607 (ALL HOURS)**

Please ensure you refer to the limitations of this Safety Data Sheet as set out in the "Other Information" section at the end of this Data Sheet.

2. HAZARDS IDENTIFICATION

Classified as a Dangerous Good according to NZS 5433 Transport of Dangerous Goods on Land; DANGEROUS GOODS.

Classified as hazardous according to criteria in the Hazardous Substances (Hazard Classification) Notice 2020.

GHS Classification

SIGNAL WORD
Danger

Approval Number: HSR001572

Corrosive to metals	Category 1
Skin corrosion/irritation	Category 1 Sub-category A

Serious eye damage/eye irritation	Category 1

Label elements

Hazard statements
H290 - May be corrosive to metals
H314 - Causes severe skin burns and eye damage

Precautionary Statements - Prevention
Keep only in original container
Do not breathe fume, gas, mist, vapours, spray
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves / protective clothing / eye protection / face protection
Precautionary Statements - Response
Specific treatment (see First aid on this SDS)
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
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
IF SWALLOWED: Rinse mouth. DO NOT induce vomiting
Precautionary Statements - Storage
Store locked up
Store in corrosive resistant container with a resistant inner liner
Precautionary Statements - Disposal
Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

Other hazards which do not result in classification

3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

Chemical name	CAS No.	Weight-%
Sulfuric acid	7664-93-9	>10-51
Water	7732-18-5	to 100

4. FIRST AID MEASURES

Description of first aid measures

General advice For advice, contact a Poisons Information Centre (e.g. phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor. Show this safety data sheet to the doctor in attendance.

Emergency telephone number

Inhalation Remove to fresh air. If breathing is difficult, (trained personnel should) give oxygen. Give artificial respiration if victim is not breathing. Seek immediate medical attention/advice.

Eye contact Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.

Skin contact IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately call a POISON CENTER or doctor/physician.

Ingestion Rinse mouth thoroughly with water. Do NOT induce vomiting. Drink 1 or 2 glasses of water. Get immediate medical advice/attention.

Most important symptoms and effects, both acute and delayed

Symptoms Irritation/Corrosion. May cause redness and tearing of the eyes.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically. Can cause corneal burns.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media

Suitable Extinguishing Media Dry chemical, CO2, water spray or regular foam.

Unsuitable extinguishing media No information available.

Specific hazards arising from the chemical

Specific hazards arising from the chemical Corrosive hazard. Wear protective gloves/clothing and eye/face protection. Non-combustible.

Special protective actions for fire-fighters

Special protective equipment for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

Hazchem code 2R

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Do not breathe fume, gas, mist, vapours, spray. Do not get in eyes, on skin, or on clothing. Do not touch or walk through spilled material. Evacuate personnel to safe areas. Use personal protective equipment as required. Wash thoroughly after handling.

For emergency responders Use personal protection recommended in Section 8.

Environmental precautions

Environmental precautions Local authorities should be advised if significant spillages cannot be contained.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.

Precautions to prevent secondary hazards

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Do not breathe fume, gas, mist, vapours, spray. Do not eat, drink or smoke when using this product. Ensure adequate ventilation. Wash thoroughly after handling. Keep out of reach of children. When diluting, always add the product to water. Never add water to the product.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Store away from foodstuffs. Keep container closed when not in use.

Incompatible materials Alkalis. Organic material. Metals.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Limits No value assigned for this specific material by the New Zealand Workplace Health & Safety Authority. However, Workplace Exposure Standard(s) for constituent(s):

Sulphuric acid: WES-TWA 0.1 mg/m^3, Known or presumed human carcinogen

As published by the New Zealand Workplace Health & Safety Authority.

WES - TWA (Workplace Exposure Standard - Time Weighted Average) - The eight-hour, time-weighted average exposure standard is designed to protect the worker from the effects of long-term exposure.

These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

Appropriate engineering controls

Engineering controls Ensure that eyewash stations and safety showers are close to the workstation location. Apply technical measures to comply with the occupational exposure limits.

If in the handling and application of this material, safe exposure levels could be exceeded, the use of engineering controls such as local exhaust ventilation must be considered and the results documented. If achieving safe exposure levels does not require engineering controls, then a detailed and documented risk assessment using the relevant Personal Protective Equipment (PPE) (refer to PPE section below) as a basis must be carried out to determine the minimum PPE requirements.

Individual protection measures, such as personal protective equipment

The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.

OVERALLS, CHEMICAL GOGGLES, FACE SHIELD, GLOVES (Long), APRON, RUBBER BOOTS.

Eye/face protection	Tight sealing safety goggles. Face protection shield.
Hand protection	Impervious gloves.
Skin and body protection	Boots. Apron. Impervious clothing. Overalls.
Respiratory protection	If determined by a risk assessment an inhalation risk exists, wear a suitable mist respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716.
Environmental exposure controls	No information available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Oily
Color	Colourless
Odor	No information available.
Odor threshold	No information available.

Property	**Values**	**Remarks • Method**
pH	<1	None known
Melting point / freezing point	No data available	None known
Boiling point / boiling range	No data available	None known
Flash point	Not applicable	None known
Evaporation rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	Not applicable	
Lower flammability or explosive limits	Not applicable	
Vapor pressure	No data available	None known
Vapor density	No data available	None known
Relative density	ca. 1.1-1.4 @20°C	None known
Water solubility	Miscible in water	None known
Solubility(ies)	No data available	None known
Partition coefficient	No data available	None known
Autoignition temperature	Not applicable	None known
Decomposition temperature	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known

Other information

10. STABILITY AND REACTIVITY

Reactivity

Reactivity Reacts with strong alkalis.

Chemical stability

Stability Stable under normal conditions.

Explosion data

Sensitivity to mechanical impact None.

Sensitivity to static discharge None.

Possibility of hazardous reactions

Possibility of hazardous reactions Contact with metals may evolve flammable hydrogen gas. Contact with water generates heat.

Conditions to avoid

Conditions to avoid Moisture.

Incompatible materials

Incompatible materials Alkalis. Organic material. Metals.

Hazardous decomposition products

Hazardous decomposition products Oxides of sulfur.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Information on likely routes of exposure

Product Information No adverse health effects expected if the chemical is handled in accordance with this Safety Data Sheet and the chemical label. Symptoms or effects that may arise if the chemical is mishandled and overexposure occurs are:

Inhalation May cause irritation.

Eye contact Corrosive to the eyes and may cause severe damage including blindness.

Skin contact Contact causes severe skin irritation and possible burns.

Ingestion Can burn mouth, throat, and stomach.

Symptoms Irritation/Corrosion. May cause redness and tearing of the eyes.

Acute toxicity

Numerical measures of toxicity
No information available.

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50

Sulfuric acid	= 2140 mg/kg (Rat)	-	85 - 103 mg/m³ (Rat) 1 h
Water	> 90 mL/kg (Rat)	-	-

See section 16 for terms and abbreviations

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation Causes burns. Classification is based on mixture calculation methods based on component data.

Serious eye damage/eye irritation Causes serious eye damage. Classification is based on mixture calculation methods based on component data.

Respiratory or skin sensitization No information available.

Germ cell mutagenicity No information available.

Carcinogenicity Refer to 'Chronic effects' section below.

Reproductive toxicity No information available.

STOT - single exposure No information available.

STOT - repeated exposure No information available.

Aspiration hazard No information available.

Chronic effects: Repeated overexposure to sulphuric acid may lead to chronic conjunctivitus, lung damage and dental erosion. The International Agency for Research on Cancer (IARC) have concluded that occupational exposure to strong inorganic acid mists containing sulphuric acid is carcinogenic to humans, causing cancer of the larynx and to a lesser extent, the lung. No direct link has been established with sulphuric acid, itself, and cancer in humans. Exposure to any mist or aerosol during the use of this product should be avoided and exposure should not exceed the exposure standard. Available evidence indicates that exposure to strong inorganic acid mists containing sulphuric acid may produce erosion and discolouration of teeth.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity Keep out of waterways.

Terrestrial ecotoxicity There is no data for this product.

Chemical name	Algae/aquatic plants	Fish	Crustacea
Sulfuric acid	-	LC50: >500mg/L (96h, Brachydanio rerio)	EC50: =29mg/L (24h, Daphnia magna)

Persistence and degradability

Persistence and degradability No information available.

Bioaccumulative potential

Bioaccumulation No information available.

Mobility

Mobility in soil No information available.

Other adverse effects

Other adverse effects No information available.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from residues/unused products Dispose of product in packaging/container in a way that is consistent with the Hazardous Substances (Disposal) Notice 2017 and the Act, and Hazardous Substances (Amendments and Revocations) Notice 2020. Treat the chemical using a method that changes the characteristics or composition of the chemical so that the chemical is no longer a hazardous chemical; or export the chemical from New Zealand as waste. Class 6 and 8 chemicals – may be discharged into the environment if a tolerable exposure limit has been set for the substance (or a component of that chemical); and the discharge does not, after reasonable mixing, result in the concentration of the substance in an environmental medium exceeding the tolerable exposure limit. If there is not tolerable exposure limit for the substance, then it may only be discharged into the environment if the substance is very rapidly converted to substances that are not hazardous substances.

Contaminated packaging For packages that have been in direct contact with hazardous chemicals, the person must ensure that the package is rendered incapable of containing any chemical. It must be disposed of in a manner that is consistent with the requirements for disposal of the chemical that it contained, taking into account the material the package is manufactured from. Packages may only be reused or recycled if the package has been treated to remove any residual contents of the hazardous chemical (class 1, 2, 3, 4, or 5); or the contents of the residue in the package are below the threshold for the chemical to be classified as hazardous (class 6, 8, or 9 chemical).

14. TRANSPORT INFORMATION

ROAD AND RAIL TRANSPORT Classified as a Dangerous Good according to NZS 5433 Transport of Dangerous Goods on Land; DANGEROUS GOODS.

UN number 2796
Proper shipping name SULPHURIC ACID with not more than 51% acid
Hazard class 8
Packing group II
Hazchem code 2R

IATA Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air; DANGEROUS GOODS.

UN number 2796
UN proper shipping name SULPHURIC ACID with 51% or less acid
Transport hazard class(es) 8
Packing group II

IMDG Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea; DANGEROUS GOODS.

UN number 2796
UN proper shipping name SULPHURIC ACID with not more than 51% acid

Transport hazard class(es)	8
Packing group	II
IMDG EMS Fire	F-A
IMDG EMS Spill	S-B

15. REGULATORY INFORMATION

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

New Zealand

National regulations See section 8 for national exposure control parameters

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International Inventories

NZIoC	All the constituents of this material are listed on the New Zealand Inventory of Chemicals.
TSCA	Contact supplier for inventory compliance status.
DSL/NDSL	Contact supplier for inventory compliance status.
EINECS/ELINCS	Contact supplier for inventory compliance status.
ENCS	Contact supplier for inventory compliance status.
IECSC	Contact supplier for inventory compliance status.
KECL	Contact supplier for inventory compliance status.
PICCS	Contact supplier for inventory compliance status.
AIIC	Contact supplier for inventory compliance status.

Legend:
NZIoC - New Zealand Inventory of Chemicals
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
- Australian Inventory of Industrial Chemicals

International Regulations

The Montreal Protocol on Substances that Deplete the Ozone Layer Not applicable

The Stockholm Convention on Persistent Organic Pollutants Not applicable

The Rotterdam Convention Not applicable

16. OTHER INFORMATION

Prepared By	This Safety Data Sheet has been prepared by Ixom Operations Pty Ltd (Toxicology and SDS Services).
Issuing Date:	11-Jan-2022
Reason(s) For Issue:	Revised Primary SDS Alignment to GHS requirements Change in Hazardous Chemical Classification

Revision Note:
The symbol (*) in the margin of this SDS indicates that this line has been revised.

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

Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation
C	Carcinogen		

Key literature references and sources for data used to compile the SDS
Agency for Toxic Substances and Disease Registry (ATSDR)
U.S. Environmental Protection Agency ChemView Database
European Food Safety Authority (EFSA)
EPA (Environmental Protection Agency)
Acute Exposure Guideline Level(s) (AEGL(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
Japan GHS Classification
Australian Industrial Chemicals Introduction Scheme (AICIS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Library of Medicine's PubMed database (NLM PUBMED)
National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
Organization for Economic Co-operation and Development Environment, Health, and Safety Publications
Organization for Economic Co-operation and Development High Production Volume Chemicals Program
Organization for Economic Co-operation and Development Screening Information Data Set
RTECS (Registry of Toxic Effects of Chemical Substances)
World Health Organization

Disclaimer
This SDS summarises to our best knowledge at the date of issue, the chemical health and safety hazards of the material and general guidance on how to safely handle the material in the workplace. Since Ixom Operations Pty Ltd cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, assess and control the risks arising from its use of the material.

If clarification or further information is needed, the user should contact their Ixom representative or Ixom Operations Pty Ltd at the contact details on page 1.

Ixom Operations Pty Ltd's responsibility for the material as sold is subject to the terms and conditions of sale, a copy of which is available upon request.

End of Safety Data Sheet

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Safety Data Sheet

V-CHARGE 412

Inorganic Coagulant

Classified as: Hazardous according to the EPA Hazardous Substances (Minimum Degrees of Hazard) Notice 2017.

SECTION 1: SUBSTANCE AND SUPPLIER DETAILS

Product Name:	V-CHARGE 412
Supplier:	Visentia Ltd 119 Carbine Road Mt Wellington Auckland 1060 New Zealand
Telephone:	+64 9 216 9824
Recommended Use:	Water Treatment Chemical
In Case of Emergency Contact:	0800 CHEMCALL (243 622)

SECTION 2: HAZARDS IDENTIFICATION

V-CHARGE 412 is not classified as a Dangerous Good for Transport.

V-CHARGE 412 is classified as hazardous according to criteria in the EPA Hazardous Substances (Minimum Degrees of Hazards) Notice 2017.

Classified under the group standard "Water Treatment Chemicals (Subsidiary Hazard) Group Standard 2017"

HSNO Approval Number: HSR002684

HSNO Classifications:
6.1D oral – Acutely toxic
6.3A – Irritating to skin
6.4A – Irritating to eyes
9.3C – Harmful to terrestrial vertebrates

GHS Classification:
Acute toxicity: oral – Category 4
Skin corrosion/irritation – Category 2
Serious eye damage/eye irritation – Category 2
Note: There is no GHS equivalent for ecotoxicity to terrestrial vertebrates.

Hazard Statements:
H302 – Harmful if swallowed
H315 – Causes skin irritation
H319 – Causes serious eye irritation
H433 – Harmful to terrestrial vertebrates

GHS Pictograms:

Signal Word: DANGER

Prevention Statements:

P102 – Keep out of reach of children.

P264 – Wash hands, exposed skin, thoroughly after handling.

P270 – Do not eat, drink or smoke when using this product.

P273 – Avoid release to the environment.

P280 – Wear protective gloves, protective clothing, eye protection, face protection.

Response Statements:

P301 + P312 – IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

P330 – Rinse mouth.

P302 + P352 – IF ON SKIN: Wash with plenty of soap and water.

P332 + P313 – If skin irritation occurs: Get medical advice/attention.

P362 – Take off contaminated clothing and wash before re-use.

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:

Disposal: P501 – In accordance with the EPA Hazardous Substances (Disposal) Notice 2017. Refer to Section 13 of this SDS.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Main Component	CAS Number	Concentration
Polyaluminium Chloride	1327-41-9	30–45%

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

SECTION 4: FIRST AID MEASURES

Workplace Facilities Required: Eye wash and safety shower facilities should be provided.

If Inhaled:	Remove to fresh air. Seek medical attention if symptoms persist.
In Contact with Eye:	Hold eyes open, flush with water for at least 15 minutes. Seek medical attention if irritation develops and persists.
In Contact with Skin:	Wash skin with plenty of water, while removing contaminated clothing and shoes. Wash contaminated clothing before re-use. Seek medical attention if skin irritation develops and persists.
If Swallowed:	DO NOT INDUCE VOMITING. Rinse mouth. Give small quantities of water. Never give anything by mouth to an unconscious person. Seek immediate medical attention. If vomiting occurs, keep head below hips to prevent aspiration to lungs.
Advice to Doctor:	Treat symptomatically.

SECTION 5: FIRE FIGHTING MEASURES

Fire/Explosion Hazard:	Product is not flammable or combustible.
Suitable Extinguishing Media:	Use water fog, carbon dioxide, dry powder or foam.
Precautions in Connection with Fire:	May give off noxious fumes in a fire containing oxides of aluminium and hydrogen chloride.
Advice for firefighters:	Wear full firefighting gear and self-contained breathing apparatus.

SECTION 6: ACCIDENTAL RELEASE MEASURES

An emergency response plan is required under Part 5 of the Health and Safety at Work (Hazardous Substances) Regulations 2017 when held in quantities greater than 1,000kg.

Precautions:	Clear area of all unprotected personnel. Keep unnecessary and unprotected personnel from entering area. Avoid generating mist/spray. Avoid release to the environment.
Suitable Protective Equipment:	Emergency responders must use personal protective equipment, including gloves, protective overalls and footwear, safety goggles or face shield and respiratory protection if there is a risk of inhaling mist/spray.
Spill or Leak Procedures:	Contain the spill. Absorb with inert material such as sand, earth, or vermiculite. Collect spills and place in a suitable, closable chemical waste container. Ensure waste container is properly labelled.
Waste Disposal Methods:	Dispose of as per Section 13.
Emergency Preparation:	Ensure there is appropriate and adequate personal protective equipment, trained personnel and clean up materials for management of accidental release.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling:	Avoid contact with skin and eyes. Do not breathe mist/spray. Do not eat drink or smoke when using this product. Remove contaminated clothing and wash hands and face before entering eating areas.
Storage:	Keep in original container. Keep container tightly closed when not in use. Store in a cool, dry, well-ventilated area. Keep away from heat and direct sunlight.
Site Storage Requirements:	Site Signage will be required when quantities exceed 10,000kg.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Workplace Exposure Standards NZ:	No Workplace Exposure Standards have been established for this product. Constituent Aluminium as Soluble Salts: TWA 5 mg/m^3
Engineering Controls:	Eyewash facilities and safety showers should be provided in the work area where there is a risk of exposure to eyes and skin. Natural ventilation should be adequate under normal conditions of use. If use generates mist/spray, use engineering controls such as local exhaust ventilation to ensure workers are not exposed to levels exceeding the exposure standards.
Personal Protective Equipment:	Avoid contact with the skin and eyes. Avoid inhaling mist/spray.
Hand protection:	Wear protective gloves that are resistant to the product. Refer to Australian and New Zealand Standard AS/NZS 2161 for protective gloves.
Skin and body protection:	Use protective clothing. Remove any contaminated clothing to avoid prolonged contact with the skin. Wash work clothes regularly. Refer to Australian and New Zealand Standard AS/NZS 4501 for occupational protective clothing.
Eye protection:	Use safety goggles to protect eyes. Refer to AS/NZS 1336 for suitable eye and face protection.
Respiratory protection:	Where there is inadequate ventilation, and use results in the formation of dust, use a respirator with a particulate filter. Refer to AS/NZS 1715 and AS/NZS 1716 for suitable respiratory protection. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Other information:	PPE selected must be impervious to the substance. Do not eat, smoke or drink where material is handled, processed or stored. Wash hands carefully before eating, drinking or smoking. Handle in accordance with safe industrial hygiene practices.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Description:	Liquid	**Colour:**	Straw–coloured, clear
Odour:	Mild odour	**Odour Threshold:**	Not determined
pH (25°C):	2 – 4 (10% solution)	**Solubility (water, 25°C):**	Soluble
Melting/Freezing point:	–12°C (freezing)	**Boiling Point:**	105°C
Flammability:	Non–flammable	**Flash Point:**	Not applicable
UEL/LEL:	Not applicable	**Vapour Pressure (20°C):**	Not available
Decomposition Temp:	160°C	**Autoignition Temp:**	Not available
Relative Density:	1.2 g/cm^3	**Vapour Density:**	Not available
Partition Coefficient:	Not available	**Viscosity:**	Not applicable
n–octanol/water			

SECTION 10: STABILITY AND REACTIVITY

Stability:	Stable under normal storage conditions.
Reactivity:	Reacts with calcium hypochlorite, acids and alkalis. Slowly corrodes metals.
Conditions to Avoid:	Exposure to heat. Long term contact with metals such as carbon steel, zinc, aluminium and alloys.

Incompatibility:	Incompatible with strong alkalis, isocyanates, anhydrides, oxides and inorganic acids.
Hazardous Decomposition:	Decomposes on heating to form aluminium oxide and hydrogen chloride.

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Exposure

Acute Toxicity:	LD50 oral >300 to ≤ 2000 mg/kg LD50 dermal > 5000 mg/kg LC50 inhalation (mist/spray) > 5.0 mg/L
Inhalation:	Not expected to be a respiratory irritant, however, inhalation of mist/spray may cause respiratory irritation.
Ingestion:	Harmful if swallowed. May cause gastrointestinal irritation, nausea and vomiting.
Skin Contact:	Irritating to skin.
Eye Contact:	Irritating to eyes.
Sensitiser:	Not expected to be a respiratory or contact sensitiser.

Chronic Exposure

Mutagen, Carcinogen, or Reproductive Toxicant:	No chronic toxicity effects expected.
Specific Target Organ Systemic Toxicity:	No known toxic or harmful effects on human target organs or systems.
	Toxicity data is based on hazardous ingredient information and information in the EPA Chemical Classification and Identification Database.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity:	Harmful to terrestrial vertebrates (based on acute toxicity classification). Avoid losses of undiluted product to the environment wherever possible.
Persistence/degradability:	No data.
Bioaccumulation:	Product is not expected to be bioaccumulative.
Mobility:	Product is soluble in water.
	Ecotoxicity data is based on hazardous ingredient information and manufacturer's SDS.

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal:	Recycle and reuse wherever possible. Dispose of waste product via an approved waste disposal contractor.
Disposal of Packaging:	Packaging may contain product residues and should be treated as hazardous. Dispose of packaging via an approved waste disposal contractor.

SECTION 14: TRANSPORT INFORMATION

V-CHARGE 412 is not classified as a Dangerous Good for transport in accordance with NZS5433:2012, IMDG or IATA.

Ensure transportation methods prevent leakage from packages and collapsing loads.

SECTION 15: REGULATORY INFORMATION

Group Standard Allocation:	Water Treatment Chemicals (Subsidiary Hazard) Group Standard 2017
HSNO Approval Code:	HSR002684
HSNO Classifications:	6.1D oral – Acutely toxic
	6.3A – Skin irritant
	6.4A – Eye irritant
	9.3C – Harmful to terrestrial vertebrates
This substance triggers:	Compliance Certificate – N/A
	Certified Handler – N/A
	Emergency Response Plan – 1,000L
	Secondary Containment – 1,000L
	Signage – 10,000L
	This substance is not required to be Tracked.
	All workplace personnel handling this substance are required to be trained on the safe handling and PPE requirements for the hazards associated with this substance.

SECTION 16: OTHER INFORMATION

The information provided in this Safety Data Sheet relates only to the specific material designated herein. This Safety Data Sheet summarises our best knowledge of the health and safety hazard information of the product and how to safely handle the product in the workplace. Each user should read this SDS and consider the information in the context of how the product will be handled and used in the workplace including its use in conjunction with other products.

This substance is approved under HSNO for use as a water treatment chemical. All reasonable care has been taken to ensure that the information and advice contained herein are from sources believed to be reliable and to represent the most up-to-date knowledge available at the date given in Section 16. No liability is assumed for any damages related to the use or misuse of this substance.

All chemical materials may present unknown hazards as people have varying degrees of sensitivity to chemicals. Therefore, this product should be used with caution. The information herein is given in good faith, but no warranty, express or implied is made.

SDS Issued:	14/03/2019
Reason for Revision:	Update to New Zealand regulatory requirements.
References:	EPA NZ Chemical Classification and Information Database
	EPA Guide: Assigning a Hazardous Substance to a Group Standard, 2014

END OF SAFETY DATA SHEET

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Safety Data Sheet

V-GUARD 230
Alkalinity Builder

Classified as: Hazardous according to the EPA Hazardous Substances (Minimum Degrees of Hazard) Notice 2017.

SECTION 1: SUBSTANCE AND SUPPLIER DETAILS

Product Name:	V-GUARD 230
Supplier:	Visentia Ltd 119 Carbine Road Mt Wellington Auckland 1060 New Zealand
Telephone:	+64 9 216 9824
Recommended Use:	Water Treatment Chemical
In Case of Emergency Contact:	0800 CHEMCALL (243 622)

SECTION 2: HAZARDS IDENTIFICATION

V-GUARD 230 is classified as a Dangerous Good for Transport.

V-GUARD 230 is classified as hazardous according to criteria in the EPA Hazardous Substances (Minimum Degrees of Hazards) Notice 2017.

Classified under the group standard “Water Treatment Chemicals (Corrosive) Group Standard 2017”

HSNO Approval Number: HSR002681

HSNO Classifications:
6.1D oral – Acutely toxic
6.1E dermal – Acutely toxic
8.1A – Corrosive to metals
8.2B – Skin corrosive
8.3A – Corrosive to eyes
9.1D (chronic) – Slightly harmful in the aquatic environment

GHS Classification:
Acute toxicity: oral – Category 4
Acute toxicity: dermal – Category 5
Corrosive to metals – Category 1
Skin corrosion/irritation – Category 1B
Serious eye damage/eye irritation - Category 1
Aquatic toxicity: chronic – Category 4

Hazard Statements: H290 – May be corrosive to metals

H302 – Harmful if swallowed

H313 – May be harmful in contact with skin

H314 – Causes severe skin burns and eye damage

H318 – Causes serious eye damage

H413 – May cause long lasting harmful effects to aquatic life

GHS Pictograms:

Signal Word: DANGER

Prevention Statements:

P234 – Keep only in original container.

P260 – Do not breathe mist/vapours/spray.

P264 – Wash hands, exposed skin, thoroughly after handling.

P270 – Do not eat, drink or smoke when using this product.

P273 – Avoid release to the environment.

P280 – Wear protective gloves, protective clothing, eye protection, face protection.

Response Statements:

P301 + P330 + P331 – IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303 + P361 + P353 – IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P363 – Wash contaminated clothing before re-use.

P304 + P340 – IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.

P305 + P351 + P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 – Immediately call a POISON CENTER or doctor/physician.

P321 – Specific treatment (see first aid panel on this label).

P390 – Absorb spillage to prevent material damage.

Storage:

P405 – Store locked up.

P406 – Store in corrosive resistant container with a resistant inner liner.

Disposal:

P501 - In accordance with the EPA Hazardous Substances (Disposal) Notice 2017. Refer to Section 13 of this SDS.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Main Component	CAS Number	Concentration

Sodium hydroxide	1310-73-2	30-60%

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

SECTION 4: FIRST AID MEASURES

Workplace Facilities Required: Eye wash and safety shower facilities should be provided.

If Inhaled: Remove to fresh air. Lie patient down and keep warm and at rest. Apply artificial respiration if not breathing. Seek immediate medical attention.

In Contact with Eye: Hold eyes open, flush with water for at least 15 minutes. Seek immediate medical attention.

In Contact with Skin: Wash skin with plenty of water, while removing contaminated clothing and shoes. Wash contaminated clothing before re-use. Seek immediate medical attention.

If Swallowed: DO NOT INDUCE VOMITING. Rinse mouth. Give small quantities of water. Never give anything by mouth to an unconscious person. Seek immediate medical attention. If vomiting occurs, keep head below hips to prevent aspiration to lungs.

Advice to Doctor: Treat symptomatically. Substance is alkaline and may continue to cause damage several hours after exposure.

SECTION 5: FIRE FIGHTING MEASURES

Fire/Explosion Hazard: Product is not flammable or combustible.

Suitable Extinguishing Media: Use water spray or fog, foam, dry chemical powder or carbon dioxide. Remove containers from path of fire if safe to do so. Cool exposed containers with water spray from a safe location.

Precautions in Connection with Fire: May give off toxic and corrosive fumes in a fire.

Advice for firefighters: Wear full firefighting gear and self-contained breathing apparatus. Prevent spills from entering drains and water courses.

SECTION 6: ACCIDENTAL RELEASE MEASURES

An emergency response plan is required under Part 5 of the Health and Safety at Work (Hazardous Substances) Regulations 2017 when held in quantities greater than 1,000L.

Precautions: Clear area of all unprotected personnel. Keep unnecessary and unprotected personnel from entering area. Avoid generating mist/spray.

Suitable Protective Equipment: Emergency responders must use personal protective equipment, including gloves, protective overalls and footwear, safety goggles or face shield. Respiratory protection may be required if there is a risk of exposure to mist/spray. Avoid release to the environment. If spill does enter waterways inform the relevant authority (e.g. Local Council Pollution hotline).

Spill or Leak Procedures: Stop leak if safe to do so. Contain the spill. Spills may be neutralised with a suitable dilute acid. Use inert material such as sand, earth or vermiculite to absorb spill. Collect

	spilled material and place in a suitable, clean, chemical waste container. Ensure waste container is properly labelled.
Waste Disposal Methods:	Dispose of as per Section 13.
Emergency Preparation:	Ensure there is appropriate and adequate personal protective equipment, trained personnel and clean up materials for management of accidental release.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling:	Avoid contact with skin and eyes. Do not breathe mist/vapour/spray. Use in a well-ventilated area. Do not eat, drink or smoke when using this product. Remove contaminated clothing and wash hands and face before entering eating areas.
Storage:	Keep container tightly closed when not in use. Store in original container in a cool, dry, well-ventilated area. Keep away from food, drink and animal feed. Ensure storage area has suitable secondary containment.
Site Storage Requirements:	Site Signage will be required when quantities exceed 250L.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Workplace Exposure Standards NZ:	No Workplace Exposure Standards have been established for this product. For sodium hydroxide: Ceiling 2 mg/m^3
Engineering Controls:	Eyewash facilities and safety showers should be provided in the work area where there is a risk of exposure to eyes and skin. Use in a well-ventilated area. If natural ventilation is insufficient consider engineering controls such as local exhaust ventilation to ensure workers are not exposed to levels exceeding the exposure standards.
Personal Protective Equipment:	Avoid contact with the skin and eyes. Avoid inhaling mist/vapours/spray.
Hand protection:	Wear protective gloves that are resistant to the product, e.g. PVC. Gloves should be elbow length. Refer to Australian and New Zealand Standard AS/NZS 2161 for protective gloves.
Skin and body protection:	Use protective overalls and PVC apron. Remove any contaminated clothing to avoid prolonged contact with the skin. Wash work clothes regularly. Refer to Australian and New Zealand Standard AS/NZS 4501 for occupational protective clothing.
Eye protection:	Use chemical safety goggles to protect eyes. When handling bulk quantities where there may be a risk of splashing, a face shield may also be used along with eye protection to protect the face. Refer to AS/NZS 1336 for suitable eye and face protection.
Respiratory protection:	Where there is inadequate ventilation and use results in the formation of mist/vapours/spray, use a respirator. Refer to AS/NZS 1715 and AS/NZS 1716 for suitable respiratory protection.
Other information:	PPE selected must be impervious to the substance. Do not eat, smoke or drink where material is handled, processed or stored. Wash hands carefully before eating, drinking or smoking. Handle in accordance with safe industrial hygiene practices.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Description:	Liquid	**Colour:**	Colourless, slightly hazy
Odour:	Not available	**Odour Threshold:**	Not available

pH (25°C):	>14	**Solubility (water, 25°C):**	Miscible
Melting/Freezing point:	Not available	**Boiling Point:**	> 100°C
Flammability:	Non-flammable	**Flash Point:**	Not applicable
UEL/LEL:	Not applicable	**Vapour Pressure (20°C):**	Not available
Decomposition Temp:	Not available	**Autoignition Temp:**	Not available
Relative Density:	1.51 – 1.53	**Vapour Density:**	Not available
Partition Coefficient:	Not available	**Viscosity:**	Not available
n-octanol/water			

SECTION 10: STABILITY AND REACTIVITY

Stability:	Stable under normal cool, dry storage conditions.
Reactivity:	Reacts exothermically with acids. May produce toxic gases on contact with acids.
Conditions to Avoid:	Excessive heat.
Incompatibility:	Incompatible with strong acids, acid chlorides, acid anhydrides, chloroformates and strong oxidisers. Avoid contact with copper, aluminium and their alloys.
Hazardous Decomposition:	Decomposition may result in formation of corrosive fumes.

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Exposure

Acute Toxicity:	LD50 oral > 300 - ≤ 2000 mg/kg. LD50 dermal > 2000 - ≤ 5000 mg/kg. LC50 inhalation > 5 mg/L (dust or mist)
Inhalation:	Not an expected route of exposure under normal operating conditions. Inhalation of large volumes of mist/spray may cause irritation/corrosion to mucous membranes.
Ingestion:	Harmful if swallowed. Ingestion may cause chemical burns to mouth and gastrointestinal tract and may cause nausea, diarrhoea and vomiting.
Skin Contact:	Corrosive to skin. May cause skin burns.
Eye Contact:	Corrosive to eyes. May cause corneal damage and permanent injury.
Sensitiser:	Not expected to be a respiratory or contact sensitiser.

Chronic Exposure

Mutagen, Carcinogen, or Reproductive Toxicant:	No known effects.
Specific Target Organ Systemic Toxicity:	No known effects.
	Toxicity data is based on hazardous ingredient information and information in the EPA Chemical Classification and Identification Database.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity: LC/EC_{50} > 1 but ≤ 100 mg/kg

Product is not classified as ecotoxic.

Persistence/degradability: Rapidly degradable.

Bio-accumulation: Not bio-accumulative.

Mobility: Product is miscible in water.

Ecotoxicity data is based on hazardous ingredient information.

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal: Do not allow product to enter drains or waterways. Recycle and reuse wherever possible. Waste product may be treated with dilute acid prior to disposal so it is no longer hazardous. Treat and neutralise at an approved treatment plant. Dispose of waste product via an approved waste disposal contractor.

Disposal of Packaging: Packaging may contain product residues and should be treated as hazardous. Where possible return to supplier for reuse/recycling. Dispose of packaging via an approved waste disposal contractor.

SECTION 14: TRANSPORT INFORMATION

V-GUARD 230 is classified as a Dangerous Good for transport in accordance with NZS5433:2012, IMDG or IATA.

Hazchem Code: 2R

NZS5433:2012

UN No: 1824

Proper Shipping Name: Sodium hydroxide solution

Class: 8

Packing Group: II

Environmental hazard: No

Limited Quantity: 1L

IMDG:

UN No: 1824

Proper Shipping Name: Sodium hydroxide solution

Class: 8

Packing Group: II

Marine Pollutant: No

EmS: F-A, S-B

Limited Quantity: 1L

IATA:

UN No: 1824

Proper Shipping Name: Sodium hydroxide solution

Class: 8

Packing Group: II

Environmental hazard: No

ERG Code: 8L

Special Provisions: A3, A803

Cargo Only: Packing Instructions – 855, Maximum Quantity/Pack – 30L

Passenger and Cargo: Packing Instructions – 851, Maximum Quantity/Pack – 1L

Passenger and Cargo Limited Quantity: Packing Instructions – Y840, Maximum Quantity/Pack – 0.5L

Ensure transportation methods prevent leakage from packages and collapsing loads.

SECTION 15: REGULATORY INFORMATION

Group Standard Allocation:	Water Treatment Chemicals (Corrosive) Group Standard 2017
HSNO Approval Code:	HSR002681
HSNO Classifications:	6.1D oral Acutely toxic
	6.1E dermal – Acutely toxic
	8.1A – Corrosive to metals
	8.2B – Skin corrosive
	8.3A – Eye corrosive
	9.1D (chronic) – Slightly harmful in the aquatic environment
This substance triggers:	Compliance Certificate – 250L
	Certified Handler – N/A
	Quantity to be secured when unattended – N/A
	Emergency Response Plan – 1,000L
	Secondary Containment – 1,000L
	Signage – 250L
	This substance is not required to be Tracked.
	All workplace personnel handling this substance are required to be trained on the safe handling and PPE requirements for the hazards associated with this substance.

SECTION 16: OTHER INFORMATION

The information provided in this Safety Data Sheet relates only to the specific material designated herein. This Safety Data Sheet summarises our best knowledge of the health and safety hazard information of the product and how to safely handle the product in the workplace. Each user should read this SDS and consider the information in the context of how the product will be handled and used in the workplace including its use in conjunction with other products.

This substance is approved under HSNO for use as a water treatment chemical. All reasonable care has been taken to ensure that the information and advice contained herein are from sources believed to be reliable and to represent the most up-to-date knowledge available at the date given in Section 16. No liability is assumed for any damages related to the use or misuse of this substance.

All chemical materials may present unknown hazards as people have varying degrees of sensitivity to chemicals. Therefore, this product should be used with caution. The information herein is given in good faith, but no warranty, express or implied is made.

SDS Issued:	13/03/2019
Reason for Revision:	Update to New Zealand regulatory requirements.
References:	EPA NZ Chemical Classification and Information Database
	EPA Guide: Assigning a Hazardous Substance to a Group Standard, 2014

END OF SAFETY DATA SHEET

Visentia
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Safety Data Sheet

V-GUARD 231
Scale Inhibitor

Classified as: Hazardous according to the EPA Hazardous Substances (Minimum Degrees of Hazard) Notice 2017.

SECTION 1: SUBSTANCE AND SUPPLIER DETAILS

Product Name:	V-GUARD 231
Supplier:	Visentia Ltd 119 Carbine Road Mt Wellington Auckland 1060 New Zealand
Telephone:	+64 9 216 9824
Recommended Use:	Water Treatment Chemical
In Case of Emergency Contact:	0800 CHEMCALL (243 622)

SECTION 2: HAZARDS IDENTIFICATION

V-GUARD 231 is classified as a Dangerous Good for Transport.

V-GUARD 231 is classified as hazardous according to criteria in the EPA Hazardous Substances (Minimum Degrees of Hazards) Notice 2017.

Classified under the group standard "Water Treatment Chemicals (Corrosive) Group Standard 2017".

HSNO Approval Number: HSR002681

HSNO Classifications:
6.1E oral – Acutely toxic
8.1A – Corrosive to metals
8.2C – Skin corrosive
8.3A – Corrosive to eyes

GHS Classification:
Acute toxicity: oral – Category 5
Corrosive to metals – Category 1
Skin corrosion/irritation – Category 1C
Serious eye damage/eye irritation – Category 1

Hazard Statements:
H290 May be corrosive to metals
H303 May be harmful if swallowed
H314 Causes severe skin burns and eye damage
H318 Causes serious eye damage

GHS Pictograms:

Signal Word: DANGER

Prevention Statements:

P234 – Keep only in original container.

P260 – Do not breathe mist/vapours/spray.

P264 – Wash hands, exposed skin, thoroughly after handling.

P280 – Wear protective gloves, protective clothing, eye protection, face protection.

Response Statements:

P301 + P330 + P331 – IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303 + P361 + P353 – IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P363 – Wash contaminated clothing before re-use.

P304 + P340 – IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.

P305 + P351 + P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 – Immediately call a POISON CENTER or doctor/physician.

P321 – Specific treatment (see first aid panel on this label).

P390 – Absorb spillage to prevent material damage.

Storage:

P405 – Store locked up.

P406 – Store in corrosive resistant container with a resistant inner liner.

Disposal:

P501 – In accordance with the EPA Hazardous Substances (Disposal) Notice 2017. Refer to Section 13 of this SDS.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Main Component	CAS Number	Concentration
Sodium hydroxide	1310-73-2	1-5%

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

SECTION 4: FIRST AID MEASURES

Workplace Facilities Required:	Eye wash and safety shower facilities should be provided.
If Inhaled:	Remove to fresh air. Lie patient down and keep warm and at rest. Apply artificial respiration if not breathing. Seek immediate medical attention.
In Contact with Eye:	Hold eyes open, flush with water for at least 15 minutes. Seek immediate medical attention. Continue flushing.
In Contact with Skin:	Wash skin with plenty of water, while removing contaminated clothing and shoes. Wash contaminated clothing before re-use. Seek immediate medical attention.
If Swallowed:	DO NOT INDUCE VOMITING. Rinse mouth. Give small quantities of water. Never give anything by mouth to an unconscious person. Seek immediate medical attention. If vomiting occurs, keep head below hips to prevent aspiration to lungs.
Advice to Doctor:	Treat symptomatically. Substance is alkaline and may continue to cause damage several hours after exposure.

SECTION 5: FIRE FIGHTING MEASURES

Fire/Explosion Hazard:	Product is not flammable or combustible.
Suitable Extinguishing Media:	Use water spray or fog, foam, dry chemical powder or carbon dioxide. Remove containers from path of fire if safe to do so. Cool exposed containers with water spray from a safe location.
Precautions in Connection with Fire:	May give off toxic and corrosive fumes in a fire.
Advice for firefighters:	Wear full firefighting gear and self-contained breathing apparatus.

SECTION 6: ACCIDENTAL RELEASE MEASURES

An emergency response plan is required under Part 5 of the Health and Safety at Work (Hazardous Substances) Regulations 2017 when held in quantities greater than 10,000L.

Precautions:	Clear area of all unprotected personnel. Keep unnecessary and unprotected personnel from entering area. Avoid generating mist/spray.
Suitable Protective Equipment:	Emergency responders must use personal protective equipment, including gloves, protective overalls and footwear, safety goggles or face shield. Respiratory protection may be required if there is a risk of exposure to mist/spray.
Spill or Leak Procedures:	Stop leak if safe to do so. Contain the spill. Spills may be neutralised with a suitable dilute acid. Use inert material such as sand, earth or vermiculite to absorb spill. Collect spilled material and place in a suitable, clean, chemical waste container. Ensure waste container is properly labelled.
Waste Disposal Methods:	Dispose of as per Section 13.
Emergency Preparation:	Ensure there is appropriate and adequate personal protective equipment, trained personnel and clean up materials for management of accidental release.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling:	Avoid contact with skin and eyes. Do not breathe mist/vapour/spray. Use in a well-ventilated area. Do not eat, drink or smoke when using this product. Remove contaminated clothing and wash hands and face before entering eating areas.

Storage:	Keep container tightly closed when not in use. Store in original container in a cool, dry, well-ventilated area. Keep away from food, drink and animal feed. Ensure storage area has suitable secondary containment.
Site Storage Requirements:	Site Signage will be required when quantities exceed 1,000L.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Workplace Exposure Standards NZ:	No Workplace Exposure Standards have been established for this product. For sodium hydroxide: Ceiling 2 mg/m^3
Engineering Controls:	Eyewash facilities and safety showers should be provided in the work area where there is a risk of exposure to eyes and skin. Use in a well-ventilated area. If natural ventilation is insufficient consider engineering controls such as local exhaust ventilation to ensure workers are not exposed to levels exceeding the exposure standards.
Personal Protective Equipment:	Avoid contact with the skin and eyes. Avoid inhaling mist/spray.
Hand protection:	Wear protective gloves that are resistant to the product, e.g. PVC. Gloves should be elbow length. Refer to Australian and New Zealand Standard AS/NZS 2161 for protective gloves.
Skin and body protection:	Use protective overalls and PVC apron. Remove any contaminated clothing to avoid prolonged contact with the skin. Wash work clothes regularly. Refer to Australian and New Zealand Standard AS/NZS 4501 for occupational protective clothing.
Eye protection:	Use chemical safety goggles to protect eyes. When handling bulk quantities where there may be a risk of splashing, a face shield may also be used along with eye protection to protect the face. Refer to AS/NZS 1336 for suitable eye and face protection.
Respiratory protection:	Where there is inadequate ventilation and use results in the formation of mist/vapours/spray, use a respirator. Refer to AS/NZS 1715 and AS/NZS 1716 for suitable respiratory protection.
Other information:	PPE selected must be impervious to the substance. Do not eat, smoke or drink where material is handled, processed or stored. Wash hands carefully before eating, drinking or smoking. Handle in accordance with safe industrial hygiene practices.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Description:	Liquid	**Colour:**	Brown
Odour:	Not available	**Odour Threshold:**	Not available
pH (25°C):	12.6	**Solubility (water, 25°C):**	Miscible
Melting/Freezing point:	-1.1°C (freezing)	**Boiling Point:**	> 100°C
Flammability:	Non-flammable	**Flash Point:**	Not applicable
UEL/LEL:	Not applicable	**Vapour Pressure (20°C):**	Not available
Decomposition Temp:	Not available	**Autoignition Temp:**	Not available
Relative Density:	Not available	**Vapour Density:**	Not available
Partition Coefficient: n-octanol/water	Not available	**Viscosity:**	Not available

SECTION 10: STABILITY AND REACTIVITY

Stability:	Stable under normal cool, dry storage conditions.
Reactivity:	Reacts exothermically with acids. May produce toxic gases on contact with acids.
Conditions to Avoid:	Excessive heat.
Incompatibility:	Incompatible with strong acids, acid chlorides, acid anhydrides, chloroformates and strong oxidisers.
Hazardous Decomposition:	Decomposition may result in formation of corrosive fumes.

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Exposure

Acute Toxicity:	LD50 oral > 2000 – ≤ 5000 mg/kg.
	LD50 dermal > 5000 mg/kg
	LC50 inhalation > 5 mg/L (dust or mist)
Inhalation:	Not an expected route of exposure under normal operating conditions. Inhalation of large volumes of mist/spray may cause irritation to mucous membranes.
Ingestion:	May be harmful if swallowed. Ingestion may cause chemical burns to mouth and gastrointestinal tract and may cause nausea, diarrhoea and vomiting.
Skin Contact:	Corrosive to skin. May cause skin burns.
Eye Contact:	Corrosive to eyes. May cause corneal damage and permanent injury.
Sensitiser:	Not expected to be a respiratory or contact sensitiser.

Chronic Exposure

Mutagen, Carcinogen, or Reproductive Toxicant:	No known effects.
Specific Target Organ Systemic Toxicity:	No known effects.
	Toxicity data is based on hazardous ingredient information and information in the EPA Chemical Classification and Identification Database.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity:	LC/EC_{50} > 100 mg/kg
	Product is not classified as ecotoxic.
Persistence/degradability:	No data.
Bioaccumulation:	No data.
Mobility:	Product is miscible in water.
	Ecotoxicity data is based on hazardous ingredient information.

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal: Recycle and reuse wherever possible. Waste product may be treated with dilute acid prior to disposal so it is no longer hazardous. Dispose of waste product via an approved waste disposal contractor.

Disposal of Packaging: Packaging may contain product residues and should be treated as hazardous. Where possible return to supplier for reuse/recycling. Dispose of packaging via an approved waste disposal contractor.

SECTION 14: TRANSPORT INFORMATION

V-GUARD 231 is classified as a Dangerous Good for transport in accordance with NZS5433:2012, IMDG or IATA.

Hazchem Code: 2X

NZS5433:2012

UN No: 1719

Proper Shipping Name: Caustic alkali liquid, n.o.s. (contains sodium hydroxide)

Class: 8

Packing Group: III

Environmental hazard: No

Limited Quantity: 5L

IMDG:

UN No: 1719

Proper Shipping Name: Caustic alkali liquid, n.o.s. (contains sodium hydroxide)

Class: 8

Packing Group: III

Marine Pollutant: No

EmS: F-A, S-B

Limited Quantity: 5L

IATA:

UN No: 1719

Proper Shipping Name: Caustic alkali liquid, n.o.s. (contains sodium hydroxide)

Class: 8

Packing Group: III

Environmental hazard: No

ERG Code: 8L

Special Provisions: A3, A803

Cargo Only: Packing Instructions – 856, Maximum Quantity/Pack – 60L

Passenger and Cargo: Packing Instructions – 852, Maximum Quantity/Pack – 5L

Passenger and Cargo Limited Quantity: Packing Instructions – Y841, Maximum Quantity/Pack – 1L

Ensure transportation methods prevent leakage from packages and collapsing loads.

SECTION 15: REGULATORY INFORMATION

Group Standard Allocation:	Water Treatment Chemicals (Corrosive) Group Standard 2017
HSNO Approval Code:	HSR002681
HSNO Classifications:	6.1E oral – Acutely toxic
	8.1A – Corrosive to metals
	8.2C – Skin corrosive
	8.3A – Eye corrosive
This substance triggers:	Compliance Certificate – N/A
	Certified Handler – N/A
	Quantity to be secured when unattended – N/A
	Emergency Response Plan – 10,000L
	Secondary Containment – 10,000L
	Signage – 1,000L
	This substance is not required to be Tracked. All workplace personnel handling this substance are required to be trained on the safe handling and PPE requirements for the hazards associated with this substance.

SECTION 16: OTHER INFORMATION

The information provided in this Safety Data Sheet relates only to the specific material designated herein. This Safety Data Sheet summarises our best knowledge of the health and safety hazard information of the product and how to safely handle the product in the workplace. Each user should read this SDS and consider the information in the context of how the product will be handled and used in the workplace including its use in conjunction with other products.

This substance is approved under HSNO for use as a water treatment chemical. All reasonable care has been taken to ensure that the information and advice contained herein are from sources believed to be reliable and to represent the most up-to-date knowledge available at the date given in Section 16. No liability is assumed for any damages related to the use or misuse of this substance.

All chemical materials may present unknown hazards as people have varying degrees of sensitivity to chemicals. Therefore, this product should be used with caution. The information herein is given in good faith, but no warranty, express or implied is made.

SDS Issued:	13/03/2019
Reason for Revision:	Update to New Zealand regulatory requirements.
References:	EPA NZ Chemical Classification and Information Database
	EPA Guide: Assigning a Hazardous Substance to a Group Standard, 2014

END OF SAFETY DATA SHEET

Visentia
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Safety Data Sheet

VISENTIA 210
Dechlorination Agent

Classified as: Hazardous according to the EPA Hazardous Substances (Minimum Degrees of Hazard) Notice 2017.

SECTION 1: SUBSTANCE AND SUPPLIER DETAILS

Product Name:	VISENTIA 210
Supplier:	Visentia Ltd
	119 Carbine Road
	Mt Wellington
	Auckland 1060
	New Zealand
Telephone:	+64 9 216 9824
Recommended Use:	Water Treatment Chemical
In Case of Emergency Contact:	0800 CHEMCALL (243 622)

SECTION 2: HAZARDS IDENTIFICATION

VISENTIA 210 is not classified as a Dangerous Good for Transport.

VISENTIA 210 is classified as hazardous according to criteria in the EPA Hazardous Substances (Minimum Degrees of Hazards) Notice 2017.

Classified under the group standard "Water Treatment Chemicals (Subsidiary Hazard) Group Standard 2017".

HSNO Approval Number: HSR002684

HSNO Classifications:
6.1E – Acutely toxic, oral
6.3A – Irritating to skin
6.5A – Respiratory sensitiser
6.5B – Contact sensitiser
8.3A – Corrosive to eyes
9.1D – Slightly harmful in the aquatic environment
9.2B – Toxic in the soil environment
9.3C – Harmful to terrestrial vertebrates

GHS Classification:
Acute toxicity oral – Category 5
Skin corrosion/irritation – Category 2
Serious eye damage/eye irritation – Category 1
Respiratory sensitisation – Category 1
Skin sensitisation – Category 1

Aquatic toxicity (chronic) – Category 4

Notes: There is no GHS equivalent for ecotoxicity in the soil environment or to terrestrial vertebrates.

Hazard Statements:

H303 – May be harmful if swallowed

H315 – Causes skin irritation

H318 – Causes serious eye damage

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

H317 – May cause an allergic skin reaction

H413 – May cause long lasting harmful effects to aquatic life

H422 – Toxic to the soil environment

H433 – Harmful to terrestrial vertebrates

GHS Pictograms:

DANGER

Prevention Statements:

P261 – Avoid breathing mist/vapour/spray.

P264 – Wash hands, exposed skin, thoroughly after handling.

P272 – Contaminated work clothing should not be allowed out of the workplace.

P273 – Avoid release to the environment.

P280 – Wear protective gloves, protective clothing, eye protection, face protection.

P285 – In case of inadequate ventilation wear respiratory protection.

Response Statements:

P312 – Call a POISON CENTER or doctor/physician if you feel unwell.

P302 + P352 – IF ON SKIN: Wash with plenty of soap and water.

P333 + P313 – If skin irritation or rash occurs: Get medical advice/attention.

P321 – Specific treatment (see first aid instructions on this label).

P362 – Take off contaminated clothing and wash before re-use.

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.

P304 + P341 – IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing.

P342 + P311 – If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.

P391 – Collect spillage.

Storage:

Disposal: P501 – In accordance with the EPA Hazardous Substances (Disposal) Notice 2017. Refer to Section 13 of this SDS.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Main Component	CAS Number	Concentration
Sodium metabisulfite	7681-57-4	30-40%

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

SECTION 4: FIRST AID MEASURES

Workplace Facilities Required: Eye wash and safety shower facilities should be provided.

If Inhaled: Remove to fresh air. Seek medical attention if symptoms persist. Asthma-like symptoms may develop, and an extreme asthmatic reaction may be life-threatening.

In Contact with Eye: Hold eyes open, flush with water for at least 15 minutes. Seek immediate medical attention.

In Contact with Skin: Wash skin with plenty of water, while removing contaminated clothing and shoes. Wash contaminated clothing before re-use. Seek medical attention if skin irritation develops and persists.

If Swallowed: DO NOT INDUCE VOMITING. Rinse mouth. Give small quantities of water. Never give anything by mouth to an unconscious person. Seek immediate medical attention. If vomiting occurs, keep head below hips to prevent aspiration to lungs.

Advice to Doctor: Treat symptomatically.

SECTION 5: FIRE FIGHTING MEASURES

Fire/Explosion Hazard: Product is not flammable or combustible.

Suitable Extinguishing Media: Use an extinguishing agent suitable for surrounding fire.

Precautions in Connection with Fire: May give off noxious fumes in a fire containing sulphur oxides and metal oxides.

Advice for firefighters: Wear full firefighting gear and self-contained breathing apparatus.

SECTION 6: ACCIDENTAL RELEASE MEASURES

An emergency response plan is required under Part 5 of the Health and Safety at Work (Hazardous Substances) Regulations 2017 when held in quantities greater than 1,000L.

Precautions: Clear area of all unprotected personnel. Keep unnecessary and unprotected personnel from entering area. Avoid generating mist/vapour/spray. Avoid release to the environment.

Suitable Protective Equipment:	Emergency responders must use personal protective equipment, including gloves, protective overalls and footwear, safety goggles or face shield and respiratory protection if there is a risk of inhaling mist/spray or if product is reacting and emitting sulphur dioxide.
Spill or Leak Procedures:	Contain the spill. Absorb with inert material such as sand, earth or vermiculite. Collect spilled material and place in a suitable, closable chemical waste container. Ensure waste container is properly labelled. If collected spilled material is giving off sulphur dioxide gas do not seal the container until no more gas is being released.
Waste Disposal Methods:	Dispose of as per Section 13.
Emergency Preparation:	Ensure there is appropriate and adequate personal protective equipment, trained personnel and clean up materials for management of accidental release.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling:	Avoid contact with skin and eyes. Do not breathe mist/vapour/spray. Do not eat drink or smoke when using this product. Remove contaminated clothing and wash hands and face before entering eating areas.
Storage:	Keep in original container or a suitable alternative made of compatible material. Keep container tightly closed when not in use. Store in a cool, dry, well-ventilated area. Store in a contained area where any spill cannot seep into the ground or be dispersed outside the area.
Site Storage Requirements:	Site Signage will be required when quantities exceed 1,000L.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Workplace Exposure Standards NZ:	No Workplace Exposure Standards have been established for this product. For sodium metabisulphite: TWA 5 mg/m^3
Engineering Controls:	Eyewash facilities and safety showers should be provided in the work area where there is a risk of exposure to eyes and skin. If use generates mist/vapour/spray, use engineering controls such as local exhaust ventilation to ensure workers are not exposed to levels exceeding the exposure standards.
Personal Protective Equipment:	Avoid contact with the skin and eyes. Avoid inhaling mist/vapour/spray.
Hand protection:	Wear protective gloves that are resistant to the product. Refer to Australian and New Zealand Standard AS/NZS 2161 for protective gloves.
Skin and body protection:	Use protective clothing. Remove any contaminated clothing to avoid prolonged contact with the skin. Wash work clothes regularly. Refer to Australian and New Zealand Standard AS/NZS 4501 for occupational protective clothing.
Eye protection:	Use safety glasses with side shields or safety goggles to protect eyes. Refer to AS/NZS 1336 for suitable eye and face protection.
Respiratory protection:	Where there is inadequate ventilation, use a respirator. Refer to AS/NZS 1715 and AS/NZS 1716 for suitable respiratory protection. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Other information:	PPE selected must be impervious to the substance. Do not eat, smoke or drink where material is handled, processed or stored. Wash hands carefully before eating, drinking or smoking. Handle in accordance with safe industrial hygiene practices.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Description:	Liquid	**Colour:**	Colourless, clear
Odour:	Characteristic odour	**Odour Threshold:**	Not available
pH (25°C):	3.5 – 5.0	**Solubility (water, 25°C):**	Completely soluble
Melting/Freezing point:	~0°C (freezing)	**Boiling Point:**	~100°C
Flammability:	Non-flammable	**Flash Point:**	Not applicable
UEL/LEL:	Not applicable	**Vapour Pressure (20°C):**	2.37 kPa
Decomposition Temp:	Not available	**Autoignition Temp:**	Not applicable
Relative Density:	1.3 (25°C)	**Vapour Density:**	Not available
Partition Coefficient:	Not available	**Viscosity:**	Not available
n-octanol/water			

SECTION 10: STABILITY AND REACTIVITY

Stability:	Stable under normal dry storage conditions.
Reactivity:	Reacts with acids to produce toxic fumes including Sulphur Dioxide. Sulphur Dioxide can react with water to form an acidic solution which may corrode metals and some plastics, rubbers and polymer coatings.
Conditions to Avoid:	Formation of mist/vapour/spray. Uncontrolled formation of sulphur dioxide.
Incompatibility:	Incompatible with acids, strong oxidisers. May also react with reducing agents.
Hazardous Decomposition:	Decomposes to form sulphur oxides and metal oxides.

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Exposure

Acute Toxicity:	LD50 oral ~ 3200 mg/kg. LD50 dermal > 5000 mg/kg LC50 inhalation > 5 mg/L (dust or mist)
Inhalation:	Not expected to cause adverse acute toxic effects under normal conditions of use. However, if use results in formation of sulphur dioxide then inhalation could cause shortness of breath, wheezing and asthma like symptoms.
Ingestion:	May be harmful if swallowed. May cause gastrointestinal irritation, nausea, vomiting, abdominal pain and diarrhoea.
Skin Contact:	Irritating to skin.
Eye Contact:	Corrosive to eyes.
Sensitiser:	Product is both a respiratory and contact sensitiser. May cause asthmatic like symptoms and eczema or contact dermatitis.

Chronic Exposure

Mutagen, Carcinogen, or Reproductive Toxicant:	No chronic toxicity effects expected.

Specific Target Organ Systemic Toxicity:	No known toxic or harmful effects on human target organs or systems. Toxicity data is based on hazardous ingredient information and information in the EPA Chemical Classification and Identification Database.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity:	Product is slightly harmful in the aquatic environment, toxic in the soil environment and harmful to terrestrial vertebrates. Avoid losses of undiluted product to the environment wherever possible.
Persistence/degradability:	No data
Bio-accumulation:	No data
Mobility:	Product is soluble in water. Ecotoxicity data is based on hazardous ingredient information.

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal:	Recycle and reuse wherever possible. Dispose of waste product via an approved waste disposal contractor.
Disposal of Packaging:	Packaging may contain product residues and should be treated as hazardous. Dispose of packaging via an approved waste disposal contractor.

SECTION 14: TRANSPORT INFORMATION

VISENTIA 210 is not classified as a Dangerous Good for transport in accordance with NZS5433:2012, IMDG or IATA.

Ensure transportation methods prevent leakage from packages and collapsing loads.

SECTION 15: REGULATORY INFORMATION

Group Standard Allocation:	Water Treatment Chemicals (Subsidiary Hazard) Group Standard 2017
HSNO Approval Code:	HSR002684
HSNO Classifications:	6.1E oral – Acutely toxic 6.3A – Skin irritant 6.5A – Respiratory sensitiser 6.5B – Contact sensitiser 8.3A – Eye corrosive 9.1D – Slightly harmful in the aquatic environment 9.2B – Toxic in the soil environment 9.3C – Harmful to terrestrial vertebrates
This substance triggers:	Compliance Certificate – N/A Certified Handler – N/A Emergency Response Plan – 1,000L

Secondary Containment – 1,000L

Signage – 1,000L

This substance is not required to be Tracked. All workplace personnel handling this substance are required to be trained on the safe handling and PPE requirements for the hazards associated with this substance.

SECTION 16: OTHER INFORMATION

The information provided in this Safety Data Sheet relates only to the specific material designated herein. This Safety Data Sheet summarises our best knowledge of the health and safety hazard information of the product and how to safely handle the product in the workplace. Each user should read this SDS and consider the information in the context of how the product will be handled and used in the workplace including its use in conjunction with other products.

This substance is approved under HSNO for use as a water treatment chemical. All reasonable care has been taken to ensure that the information and advice contained herein are from sources believed to be reliable and to represent the most up-to-date knowledge available at the date given in Section 16. No liability is assumed for any damages related to the use or misuse of this substance.

All chemical materials may present unknown hazards as people have varying degrees of sensitivity to chemicals. Therefore, this product should be used with caution. The information herein is given in good faith, but no warranty, express or implied is made.

SDS Issued:	18/03/2019
Reason for Revision:	Update to New Zealand regulatory requirements.
References:	EPA NZ Chemical Classification and Information Database
	EPA Guide: Assigning a Hazardous Substance to a Group Standard, 2014

END OF SAFETY DATA SHEET