J004269 – Enviroking Chemical Storage Facilites Report

Prepared for:

Enviroking Investments Pty Ltd

December 2022

6/12/22

Attn to Rodney Lodge

Enviroking Investments Pty Ltd
843 John Renshaw Drive
Black Hill NSW 2322

Dear Sir/Madam,

SESL Australia has been engaged by Enviroking Investments Pty Ltd (the Client, Enviroking) to provide advice on any changes in chemical storage requirement when seeking a variation on their Environment Protection License (EPL); license number 11180. Enviroking intends to increase the acceptance of wastes, including grease trap waste (GTW) from 20,000 tonnes to 30,000 tonnes per annum.

Much of the chemical usage in treating waste at the plant are those used for treatment of GTW to meet the definition of Treated Grease Trap Wastes under the NSW EPA general resource recovery order and exemption; the Treated Grease Trap Waste Order 2014 (TGTW Order) and the Treated Grease Trap Waste Exemption 2014 (TGTW Exemption).

TGTW is defined under the TGTW Order and TGTW Exemption as grease trap waste that has undergone treatment according to the following:

- screening to remove physical contaminants;
- leaving the grease trap waste to settle by operation of gravity for at least 4 hours, so that the floating fats and oils, the aqueous liquid waste and the settleable portions of the grease trap waste separate; and
- the floating layer must either be removed or be incorporated into the bottom settled layer following saponification by the addition of lime.

The treatment of GTW requires the use of flocculants (often an aluminium compound) and organic polymers to separate solids from the water phase and to clean up the water sufficient for discharge to sewer. Other aspects in the plant's treatment types employs bleach for disinfection and BOD reduction.

In order to accommodate the proposed increase in treatment volumes, Enviroking will need to increase the volumes of the following chemicals to ensure the grease trap and other wastes are processed in line with the license and exemption order conditions:

- HydraClean® HC-6100 (active chemicals: sodium hypochlorite and sodium hydroxide): increase from 19,200 L to 28,800 L per annum. Chemical is stored in a 1000 L IBC.
- HydraBond® HB-2602 (active chemicals: distillates (petroleum), hydrotreated light and Isotridecanol, ethoxylated): increase from 160 L to 240 L per annum. Chemical is stored in 20 L drum containers.

- HydraPrime® HP-1420 (active chemicals: aluminium hydroxide chloride): increase from 4000 L to 6000 L per annum. Chemical is stored in a 1000 L IBC.
- Hydrated Lime (active chemicals: calcium hydroxide and magnesium hydroxide): increase from 25,920 kg to 38,880 kg per annum. Chemical is stored in 20 kg bags.

These are the annual amounts of chemicals to be used. At any one time only 2 IBC's of Hydraclean and Hydraprime, 2 x 20 L drums of Hydrabond and 2 tonnes of Hydrated lime are kept on the premises. The method of working is that one container is in use, one is for use when the working container is exhausted and only at that point is another second container ordered. There will be NO changes made to the volume of any chemicals stored on site; rather, to address the increase in production, the same volume of chemicals will be ordered on a more frequent basis.

The attached MSDS sheets for the four chemicals state the hazards and the handling methods and protections required.

All chemicals are stored indoors inside the bunded area of the treatment plant located several kilometres away from the nearest residential area. The chemicals are stored in intermediate bulk containers (IBC) on top of a metal platform approximately 40 cm above the intact concrete hardstand (Attachment A). All chemicals are stored in accordance with the guidance outlined in the following documents:

- Safe Work Australia 'Storing Hazardous Chemicals'
- The associated chemical Material Safety Data Sheets (Attachment B).
- Australian Standard AS/NZS 3833:2007 The Storage and Handling of Mixed Classes of Dangerous Goods, in Packages and Intermediate Bulk Containers (Appendix C).

No modification for this storage area is required. The volume of chemicals to be stored on-site at any one time will remain unchanged, and the additional volumes required for the grease trap waste and waste water treatment will be addressed by ordering chemicals more frequently as required.

Yours sincerely

Kane Snow
Graduate Environmental Scientist
B Sc (Chem)

Simon Leake
Principal Soil Scientist
B Sc (Ag) Hons, SSA, CPSS

Attachment A – Chemical storage photographs

Attachment B – Chemical material safety data sheets

Attachment C – AS/NZS 3833:2007

References

NSW Environmental Protection Authority 2014. The Treated Grease Trap Waste Order 2014. Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014

Safe Work Australia 'Storing Hazardous Chemicals' 2022. (https://www.safeworkaustralia.gov.au/safety-topic/hazards/chemicals/storing-hazardous-chemicals)

Attachment A

Plate 1: Chemical Storage Area

Plate 2: Chemical Storage (Alternate Angle)

Attachment B

Safety Data Sheet
Hydrated Lime

Section 1: Material and Supplier Information

Product Name: Hydrated Lime

Applicable In: Australia

Other Names: Hydrated Lime

Recommended Use: Hydrated Lime can be used as neutralizing agent in water and sewage treatment, a binder in mortars and renders, and soil stabilization.

Company Details: Independent Cement & Lime Pty Ltd
750 Lorimer Street
Port Melbourne, VIC 3207
ABN 49 005 829 550

Emergency contact details: Contact Person: Technical Manager
Telephone**:** Office hours 03 9676 0000 or Poison information center 13 11 26

Phone: VIC 03 9676 0000

Fax: VIC 03 9646 4954

This Safety Data Sheet (SDS) is issued by Independent Cement Pty Ltd in accordance with the Code and guidelines from the Australian Safety and Compensation Council (ASCC). The information in it must not be altered, deleted or added to. Independent Cement Pty Ltd will not accept any responsibility for any changes made to its SDS by any other person or organization. Independent Cement Pty Ltd will issue a new SDS when there is a change in product specifications and/ or ASCC standards, guidelines or regulations.

Section 2: Hazards Identification

Statement of This product is classified as HAZARDOUS according to Safe Work Australia criteria. Not Classified as a dangerous good by the criteria of the ADG code, IMDG or IATA.

GHS Classifications

Skin Corrosion/ Irritation	Criteria 2
Serious Eye Damage/Eye Irritation:	Criteria 1
Specific Target Organ Systematic Toxicity (Repeated Exposure):	Category 2

SIGNAL WORD **DANGER**

Pictograms

Hazard Statements

H315	Causes skin irritation
H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H373	May cause damage to lungs and respiratory tract through prolonged or repeated exposure.

Prevention Statements

P260	Do not breathe dust/fume/gas/mist/vapours/spray
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection

Response Statements

P302+P352	IF ON SKIN: Wash with plenty of soap and water
P304+P340	IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
P305+P351+P338+P321	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present. Continue rinsing. The use of Diphoterine® has been shown to significantly reduce the risk of permanent injury. It is essential that the Diphoterine is used as quickly as possible (ie. within 10 seconds of contact with lime) in order to obtain the maximum benefit from its absorbent and neutralising properties.
P333 + P313	If skin irritation or rash occurs get medical advice/attention.

Disposable Statements

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

UN No	None Allocated	**Hazchem Code**	None Allocated	**Pkg Group**	None Allocated
DG Class	None Allocated	**Subsidiary Risk(s)**	None Allocated	**EPG**	None Allocated

Section 3: Composition / Information on Ingredients

Ingredient	Formula	Proportion	CAS Number
Calcium hydroxide	$Ca(OH)_2$	85-95%	1305-62-0
Magnesium hydroxide	$Mg(OH)_2$	0.5-1.5%	1309-42-8

Crystalline silica (Quartz)	SiO_2	0.4-0.7%	14808-60-7
Aluminum Oxide	Al_2O_3	0-2%	1344-28-1

Section 4: First Aid Measures

Eye: If Hydrated Lime is splashed in to the eyes flush thoroughly with flowing water until advised to stop by a doctor If available, immediately flush eyes with Diphoterine solution

Inhalation: Remove from dusty area to fresh air. If symptoms persist, seek medical attention.

Skin: Remove heavily contaminated clothing immediately. Wash off skin thoroughly with water. A shower may be required. Seek medical attention for persistent irritation or burning of the skin. If available, immediately flush eyes with Diphoterine solution

Ingestion: Rinse mouth and lips with water. Do not induce vomiting. Give water to drink to dilute stomach contents. If symptoms persist, seek medical attention.

Advice to Doctor: Treat symptomatically.

First Aid Facilities Eye wash station.

Additional Information **Aggravated Medical Conditions**

Inhalation Over exposure resulting from prolonged and repeated inhalation of dust containing crystalline silica can cause bronchitis, silicosis (scarring of the lung). It may also increase the risk of scleroderma (a disease affecting the connective tissue of the skin, Joints, blood vessels and internal organs) and lung cancer. Epidemiological studies have shown that smoking increases the risk of bronchitis, silicosis (scaring of the lung) and lung cancer in persons exposed to crystalline silica.

Skin Prolonged and repeated skin contact with Hydrated Lime powder, hydrated lime in wet concrete, mortars and slurries may result in irritant dermatitis or alkaline burns.

Eye Irritating to the eye. If Hydrated Lime is splashed in to the eye, alkaline burns can cause permanent damage.

Section 5: Fire Fighting

Flammability: Not flammable. Does not support combustion of other materials.

Fire and Explosion: No fire or explosion hazard exists.

Extinguishing: Non-flammable; use suitable extinguishing agent for surrounding fire

Hazchem Code: None Allocated

Section 6: Accidental Release Measures

Spillage: If spill (bulk), contact emergency services if appropriate. Wear dust proof goggles, PVC/rubber gloves, a Class P2 respirator (where an inhalation risk exists), coveralls and rubber boots. Clear area of all unprotected personnel. Prevent spill entering drains or waterways. Collect and place in sealable containers for disposal or reuse. Avoid generating dust.

Emergency Procedures Follow safety requirements for personal protection under Section 8 Exposure Controls/Personal Protection.

Section 7: Handling and Storage

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

Storage: Store in a cool, dry, well ventilated area, removed from excessive moisture and heat.

Property/Environmental Refer to Section 13.

Section 8: Exposure Controls / Personal Protection

Ventilation Do not inhale dust/powder. Use with adequate ventilation. Where a dust inhalation hazard exists, mechanical extraction ventilation is recommended. Maintain dust levels below the recommended exposure standard.

Exposure Standards

Aluminum Oxide (1344-28-1)

ES-TWA: 10 mg/m^3 (Respirable Dust)

Calcium hydroxide (1305-62-0)

ES-TWA: 5 mg/m^3 (Respirable Dust)

Iron (III) oxide (1309-37-1)

Crystalline Silica (Quartz) (14808-60-7)

ES-TWA: 0.1 mg/m^3 (Respirable Dust)

PPE Wear dust proof goggles/safety glasses and rubber or PVC gloves. Where an inhalation risk exists, wear a clear P2 respirator. If there is potential for prolonged and/or excessive skin contact, wear a long sleeve shirt and full-length trouser. At high dust levels, wear a Class P3 respirator or a Powered Air Purifying Respirator (PAPR) with class P3 filter.

Section 9: Physical and Chemical Properties

Appearance	White	**Solubility (water)**	100 g/L.
Odor	Slight odor	**Specific Gravity**	2.1 – 2.3
pH (in water)	Approximately 12	**% Volatiles**	Not Available
Vapor Pressure	Not Available	**Flammability**	Non-Flammable
Vapor Density	Not Available	**Flash Point**	Not Relevant
Boiling Point	Not Available	**Upper Explosion Limit**	Not Relevant
Melting Point	> 580^{o}C	**Lower Explosion Limit**	Not Relevant
Evaporation Rate	Not Available	**Autoignition Temperature**	Not Available
Bulk Density	300 - 700 kg/m^3		
Particle Size	99% < 75 µm		

Section 10: Stability and Reactivity

Chemical Stability: Chemically Stable

Conditions to Avoid: Keep free of moisture

Incompatible Materials Incompatible with acid (e.g. hypochlorite), maleic anhydride, nitroethane, nitromethane, nitroparaffins, nitropropane and phosphorus.

Decomposition Products: May evolve calcium oxides when heated to decomposition

Hazardous Reactions: None

Section 11: Toxicological Information

Acute Toxicity No known toxicity data for this product.

Eyes Irritant upon contact with powder/dust. Over exposure may result in pain, redness, corneal burns and ulceration with possible permanent damage.

Inhalation Slightly corrosive. Irritating to the respiratory system, causing coughing and sneezing. Over exposure may result in severe mucous membrane irritation and bronchitis. Crystalline silica can cause silicosis (lung disease) with chronic over exposure, however due to low levels present and product application, adverse health effects are not anticipated.

Skin Irritating to the skin. Prolonged and repeated contact with powder or wetted form may result in skin rash, dermatitis and sensitisation.

Ingestion Slightly corrosive. Ingestion may result in burns to the mouth and throat, with vomiting and abdominal pain. Due to product form, ingestion is not considered a likely exposure route.

Mutagenicity Insufficient data available for this product to classify as a mutagen.

Carcinogenicity Hydrated Lime is not classified as a carcinogen by NOHSC.

Section 12: Ecological Information

Toxicity	The aquatic toxicity of calcium hydroxide is due to its alkalinity.
Persistence and Degradability	Neutralised to calcium carbonate by absorption of atmospheric carbon dioxide and is not degraded by oxidation.
Mobility in Soil	A low mobility would be expected in a landfill situation.

Section 13: Disposal Considerations

Waste Disposal	Neutralise with dilute acid (e.g. 3 mol/L hydrochloric acid) or similar. For small amounts, absorb with sand or similar and dispose of to an approved landfill site Contact the manufacturer for additional information.
Legislation	Dispose of in accordance with relevant local legislation. Keep out of sewer stormwater drains.

Section 14: Transport Information

Not classified as a dangerous good by the criteria of the ADG code.
Transport is by rail or road in bulk or bag form.
Drivers of trucks transporting bagged products should ensure that the bags are properly restrained.

Shipping Name	None Allocated				
UN No	None Allocated	**Hazchem Code**	None Allocated	**Pkg Group**	None Allocated
DG Class	None Allocated	**Subsidiary Risk(s)**	None Allocated	**EPG**	None Allocated

Section 15: Regulatory Information

Poison Schedule AICS	A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP). All chemicals listed on the Australian Inventory of Chemical Standards (AICS).

Section 16: Other Information

Additional Information	PERSONAL PROTECTIVE EQUIPMENT GUIDELINES: The Recommendation for protective equipment contained within this SDS report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the

availability of engineering controls should be considered before final selection of personal protective equipment is made.

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

ABBREVIATIONS:

mg/m^3 – Milligrams per cubic metre

ppm – Parts Per Million

ES-TWA – Exposure Standard - Time Weighted Average

CNS – Central Nervous System

NOS – Not Otherwise Specified

pH – relates to hydrogen ion concentration – this value will relate to a scale of 0 – 14, where 0 is highly acidic and 14 is highly alkaline.

CAS# - Chemical Abstract Service Number – used to uniquely identify chemical compounds.
IARC – International Agency for Research on Cancer.

Report Status

This document has been compiled by Independent Cement and Lime Pty Ltd the manufacturer of the product and serves as the manufacturer's Safety Data Sheet.

While the information in this Safety Data Sheet has been prepared in good faith, Building Product Supplies does not warrant that the information is accurate, complete or up to date.

Contact Point

For further information on this product contact:

Telephone: Office hours 03 9676 0000

Facsimile: 03 9646 4954

Web site: http://www.independentcement.com.au/

Advice Note

The information in this document is believed to be accurate. Please check the currency of this SDS by contacting:

03 9676 0000

Or

www.independentcement.com.au/

Each user of any information, or any product referred to, in this Safety Data Sheet must:

- determine whether the information or product is suitable for their purpose;
- assess and control any risks associated with the information or product; and
- obtain professional advice in relation to the use of the information or product.

To the extent permitted by law, Independent Cement and Lime Pty Ltd:

- excludes all representations, warranties and guarantees in relation to any information in this Safety Data Sheet; and

- will not be liable for any direct, indirect, consequential, incidental, special or economic loss (including but not limited to any loss of actual or anticipated profits, revenue, savings, production, business, opportunity, access to markets, goodwill, reputation, publicity, or use) arising from any use of or reliance on any information in this Safety Data Sheet.

SECTION 1 - IDENTIFICATION: PRODUCT IDENTIFIER AND COMPANY INFORMATION

Product name	HydraBond® HB-2602
Product code	HB-2602
Product use	Clarification and dewatering aid for water treatment
Company name	Hydroflux Utilities Pty Ltd Level 26, 44 Market Street SYDNEY NSW 2000 www.hydrofluxutilities.com.au e: info@hydrofluxutilities.com.au t: 61 2 9089 8833 f: 61 2 9089 8830
Emergency number	13 11 26 (Poison Information Hotline)

SECTION 2 - HAZARD IDENTIFICATION

HAZARDS

Hazard Class	Category*	Hazard Statement	Signal Word
Hazardous to the aquatic environment, short-term (Acute)	3	Harmful to aquatic life	-
Hazardous to the aquatic environment, long-term (Chronic)	3	Harmful to aquatic life with long lasting effects	-

* Hazard categories can range from 1–5, with 1 being the highest rated hazard.

LABEL ELEMENTS

Pictogram	Not required
Signal word	Not required

PRECAUTIONARY STATEMENTS - to accompany each hazard statement

Hazard Statement	Prevention	Response	Storage	Disposal
Harmful to aquatic life	Avoid release to the environment (if this is not the intended use).	-	-	Dispose of contents and container to an approved waste disposal plant.
Harmful to aquatic life with long lasting effects	Avoid release to the environment (if this is not the intended use).	-	-	Dispose of contents and container to an approved waste disposal plant.

SECTION 3 - COMPOSITION AND INFORMATION ON INGREDIENTS

DESCRIPTION Cationic acrylamide-based copolymer in emulsion.

INGREDIENTS

Chemical name	CAS No.	Proportion, %
Distillates (petroleum), hydrotreated light	64742-47-8	20–30
Isotridecanol, ethoxylated	69011-36-5	< 5
Other ingredients not deemed to be hazardous	-	to 100

SECTION 4 - FIRST AID MEASURES

GENERAL ADVICE

- Take appropriate precautions to ensure your own health and safety before providing first aid.
- If a doctor or paramedic is consulted, provide them with this Safety Data Sheet.

INHALED

- Immediately remove patient to fresh air.
- Lay patient down, keep warm and rested.
- If symptoms develop, seek medical advice.

SKIN

- Remove all contaminated clothing and footwear.
- With a clean cloth or paper towel, blot or wipe away any excess product before flushing with water.
- Flush affected skin area with large volumes of running water until it no longer feels greasy or slippery.
- If redness, irritation, swelling or blistering occurs, seek medical attention without delay.

EYE

- Gently blot away excess material with clean cloth or paper towel then immediately wash out affected eye and surrounding area with fresh running water.
- Ensure complete irrigation of the eye - keep eyelids apart and away from eye, move eyes up, down and to either side while irrigating.
- Continue irrigating for at least 15 minutes. If the eye area still feels greasy or slippery, continue to irrigate until it no longer feels greasy or slippery.
- If irritation or discomfort occurs after complete irrigation, seek medical attention without delay.

SWALLOWED

- If swallowed do NOT induce vomiting.
- If conscious, washout mouth and give water to drink.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- If reflexive vomiting occurs, rinse mouth and repeat administration of water.
- If swallowed and patient begins to feel unwell, seek medical attention without delay.

NOTES TO DOCTOR OR PARAMEDIC

- This product may produce mildly acidic conditions (pH > 4.5) when moistened or mixed with water.
- This product will gel when moistened or mixed with water.
- Ingestion of this product may form a jelly-like mass which could result in an intestinal obstruction.
- Treat symptomatically.

SECTION 5 - FIREFIGHTING MEASURES

FIRE HAZARD

- This product is not combustible.
- This product may decompose under fire conditions to produce oxides of carbon and nitrogen.

HAZCHEM CODE

- None assigned.

EXTINGUISHING MEDIA

- Use extinguishing media suitable for burning materials in the surrounding fire.
- This product does not create any restrictions for type of extinguishers or firefighting agents.
- NOTE: water in contact with this product will cause the wet area to become very slippery. The wet area could then pose a serious slip hazard. Use grit, soil or sand to mitigate this hazard.

PRECAUTIONS FOR FIREFIGHTERS AND SPECIAL PROTECTIVE EQUIPMENT

- In case of fire, wear a liquid-tight chemical protective suit with breathing apparatus.
- Wear chemical resistant gloves and chemical resistant boots.
- Water in contact with this product will cause slippery floor conditions.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS

- Restrict access to area until clean-up operations are complete.
- Ventilate spill area if possible.
- Avoid contact with skin and eyes.
- Use personal protective equipment recommended in Section 8 of this Safety Data Sheet.
- Spills will make the floor very slippery, take care not to walk in spilled product.

MINOR SPILLS

- Prevent further leakage or spillage if safe to do so.
- Contain spill with sand, soil or inert material.
- Do not let product enter drains or waterways.
- Clean up all spills immediately.
- Slippery when wet - do not wash with water.
- Clean spill using a dry cloth or paper towel if the spill is dropwise; if the spill is larger then cover and absorb with sand, soil or inert material and shovel away.

MAJOR SPILLS

- Alert Fire Brigade and tell them the location and nature of hazard.
- Show this Safety Data Sheet to the Fire Crew in attendance.
- Contain and absorb spill with sand, soil or inert material.
- Prevent spillage from entering drains or water ways. Spilled product may pose a risk to the aquatic ecosystem if released. If contamination of drains or waterways occurs, advise Emergency Services.
- Slippery when wet - do not wash with water.

SECTION 7 - HANDLING AND STORAGE

HANDLING

- Eliminate personal contact. Do not get in eyes, on skin, or on clothing.
- Wear protective clothing recommended in Section 8 of this Safety Data Sheet when risk of exposure may occur.
- Use with adequate ventilation.
- Avoid generating splashes.
- Keep the containers tightly closed when not in use.
- Ensure all containers are labelled.
- Have emergency equipment (for fires, spills, etc.) readily available.

STORAGE CONDITIONS

- Store in original container.
- Store the containers tightly closed.
- Store in a dry, well-ventilated area.
- Do not store in direct sunlight.
- Store separately from oxidizers.
- Store at a temperature between 10–25°Celsius.
- Do not allow the product to freeze.

SECTION 8 - EXPOSURE CONTROLS AND PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE STANDARDS

The following table shows the workplace exposure standards for airborne contaminants (exposure standards).

The exposure standard for the component below is shown as if the component is 100% of the formulation (i.e. as if the component has not been diluted by being part of this product).

		mg/m³	
Component	CAS No.	TWA	STEL
Distillates (petroleum) hydrotreated light	64742-47-8	200	-

ENGINEERING MEASURES

- General ventilation is recommended.

EXPOSURE CONTROL MEASURES

- Wear personal protective equipment including gloves and safety glasses.

PERSONAL PROTECTION

We recommend as a minimum precaution the use of safety glasses with side-shields and work clothes protecting arms, legs and body, fully enclosed safety boots and gloves.

Respiratory Protection

- Respiratory protection is not normally needed. If prolonged exposure may occur, use a full-face respirator with multi-purpose cartridge that protects against chemical mists and vapours.

Hand Protection

- PVC gloves, rubber gloves.

Skin Protection

- Wear standard protective clothing and safety boots.

Eye Protection

- At a minimum wear safety glasses with side-shields.
- Tight-fitting safety goggles are recommended.

Hygiene Recommendations

- Use good work and personal hygiene practices to avoid exposure.
- Always wash and clean yourself thoroughly after handling this and other chemicals.

Hygiene Recommendations (continued)

- If clothing is contaminated, remove clothing and discard or launder. Launder contaminated clothing separately and before reuse.
- When handling this product never eat, drink or smoke.

ENVIRONMENTAL EXPOSURE CONTROL PRECAUTIONS

- Consider the provision of containment around storage vessels.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Form	Liquid (creamy emulsion)
Appearance	White to cream
Odour	Slight
pH	4–6 (1% solution)
Freezing point	< 5°C
Boiling point	> 100 °C
Flash point	Not flammable
Explosive limits	Not flammable
Specific gravity	1.02–1.06
Solubility in water	Dispersible, up to 15 g/L
Viscosity	1200 cP (neat), 1000–1400 cP (inverted: 1% solution)

SECTION 10 - STABILITY AND REACTIVITY

STABILITY

- Stable under normal conditions.
- Hazardous polymerization will not occur.

CONDITIONS TO AVOID

- Extremes of temperature.
- Direct sunlight.
- Temperatures < 5°C.

MATERIALS TO AVOID

- Addition of water results in gelling.
- Oxidising material.
  - » Contact with strong oxidizers (e.g. chlorine, hypochlorites, peroxides, chromates, nitric acid, perchlorates, permanganates etc.) may generate heat, fires, explosions, and toxic vapours.

HAZARDOUS DECOMPOSITION PRODUCTS

- Under fire conditions: Oxides of carbon and nitrogen.

SECTION 11 - TOXICOLOGICAL INFORMATION

Acute toxicity	LD_{50} Oral	rat	> 5,000 mg/kg
	LD_{50} Dermal	rat	> 5,000 mg/kg
	LC_{50} Inhalation	no information available	
Skin corrosion/irritation	Not classified as a skin irritant		
Serious eye damage/irritation	Not classified as an eye irritant		
Respiratory sensitisation	Not classified as a respiratory sensitiser		
Skin sensitisation	Not classified as a skin sensitiser		
Germ cell mutagenicity	Not classified as a mutagen		
Carcinogenicity	Not classified as a human carcinogen		
Reproductive toxicity	Not classified as a reproductive toxicant		
STOT - single exposure	No known effects		
STOT - repeated exposure	No known effects		
Aspiration hazard	Mitigated due to high product viscosity (> 20.5 mm^2/s @ 40°C)		

SECTION 12 - ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION

Acute Toxicity - Fish

Species	Exposure	LC_{50}
Danio rerio	96 hour	>10 mg/L

Acute Immobilisation - Invertebrate Species

Species	Exposure	EC_{50}
Daphnia magna	48 hour	>10 mg/L

- The immediate effects on aquatic organisms of this product are due to localised and non-systemic modes of action, e.g. suffocation or immobilization. These effects are quickly and significantly reduced by the presence of suspended and dissolved material in the aquatic environment.

PERSISTENCE AND DEGRADABILITY

- This product is inherently degradable, although not readily biodegradable. In the environment a combination of photolysis, hydrolysis and microbial activity will lead to the degradation of the cationic polyacrylamide over time periods expected to exceed 28 days.
  - » The 'backbone' structure of the copolymer is a polyacrylamide-based molecule that will degrade via photolysis (the action of UV light) to produce lower molecular weight molecules that are biodegradable. The ester group which forms part of the cationic monomer portion of the copolymer will degrade via hydrolysis (the action of water) to produce biodegradable products.

BIOACCUMULATION POTENTIAL

- The copolymers of this formulation are extremely large molecular structures that cannot transport across the cellular membrane, hence the potential to bioaccumulate is considered negligible.
- The petroleum (distillates) component of this formulation (CAS No. 64742-47-8) is not recognised as PBT (persistent, bioaccumulative and toxic) or vPvB (very persistent and very bioaccumulative).

MOBILITY IN SOIL

- The copolymers of this formulation are rapidly removed from the water phase via adsorption on suspended material.
- The petroleum (distillates) component of this formulation (CAS No. 64742-47-8) contains volatile constituents and these are expected to evaporate within 24 hours from water or soil surfaces.

SECTION 13 - DISPOSAL CONSIDERATIONS

- Dispose of in accordance with local, state and federal regulations.
- Dispose of wastes in an approved waste treatment plant in accordance with applicable regulations.
- Do not dispose of wastes in local sewer or with normal garbage.
- Do not reuse empty container for any purpose except to store this chemical.

SECTION 14 - TRANSPORT INFORMATION

Not classified as a dangerous good - Australian Code for the Transport of Dangerous Goods by Road & Rail.

UN number	-
Proper shipping name	-
Transport hazard class	-
Subsidiary hazard	-
Packing group number	-
Hazchem code	-
EPG	-

SECTION 15 - REGULATORY INFORMATION

Safe Work Australia	»	This Safety Data Sheet (SDS) has been prepared in accordance with the Model Work Health and Safety Regulations 2021 (Safe Work Australia).
GHS	»	The hazards of this product (Section 2 of this SDS) are classified in accordance with the Globally Harmonised System of Classification and Labelling of Chemicals (GHS).
AICIS	»	All ingredients in this product comply as per the Australian Industrial Chemicals Introduction Scheme (AICIS).
AIIC	»	All ingredients in this product are either listed or are exempt from listing in the Australian Inventory of Industrial Chemicals (AIIC).
POISON Schedule	»	Not scheduled as part of the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

SECTION 16 - OTHER RELEVANT INFORMATION

Revision date	24 February 2022
Revision number	6.8 (Minor update to Section 12)
Information sources	» Preparation of Safety Data Sheets for Hazardous Chemicals Code of Practice, July 2020 (Safe Work Australia). » Australian Code for the Transport of Dangerous Goods by Road & Rail, Edition 7.7. 2020. » Safety Data Sheets from our suppliers of raw material. » Poisons Standard June 2021 - Australian Government *Therapeutic Goods Act 1989.* » Model Work Health and Safety Regulations, January 2021 (Safe Work Australia). » Hazardous Substance Information System (Safe Work Australia). » Globally Harmonised System of Classification and Labelling of Chemicals (GHS) 7th Edition, United Nations 2017.

Acronyms and abbreviations

AICIS	Australian Industrial Chemicals Introduction Scheme.
AIIC	Australian Inventory of Industrial Chemicals.
CAS No.	Chemical Abstracts Service registration number (sometimes referred to as CASRN).
cP	Centipoise (dynamic viscosity).
°C	Degrees Celsius.
EC_{50}	Half maximal effective concentration. A statistically derived value giving the median concentration of material in an environment expected to cause 50% of the test population to experience the given effect being monitored (i.e. immobilisation, imbalance etc.).
EPG	Emergency Procedure Guide - Transport: Australian Standards AS 1678 (series).
GHS	Globally Harmonised System of Classification and Labelling of Chemicals (United Nations).
g/cm^3	Grams per cubic centimetre.
g/L	Grams per litre.
Hazchem code	Hazchem Emergency Action Code (also known as an Emergency Action Code or EAC). A British Fire Service code system to provide immediate action advice to emergency services when attending an incident involving dangerous goods.
LC_{50}	Lethal concentration, 50%. The concentration of material (in air or water) that will cause 50% of the test population to perish.
LD_{50}	Lethal dose, 50%. The quantity of material when administered all at once that will cause 50% of the test population to perish.
mg/kg	Milligrams per kilogram.
mg/L	Milligrams per litre.
mg/m^3	Milligrams per cubic metre.
mm^2/s	Millimetres squared per second. A unit of measurement for kinematic viscosity which is a measure of the restrictive flow of a fluid under the influence of gravity. 1 mm^2/s = 1 centistoke.
PBT	Persistent, bioaccumulative and toxic.
pH	A scale used to express the acidity or basicity of dilute water solutions. pH is defined as the negative logarithm of the hydronium ion (H_3O^+) activity in water-based solutions. Practical application of pH best suited to aqueous solutions with an ionic strength < 0.1 moles/kilogram and a pH between 1–13.
PVC	Polyvinyl chloride.
Rev	Revision.
SDS	Safety Data Sheet.
STEL	Short term exposure limit. The 15-minute time-weighted average airborne concentration of the substance under consideration.
STOT	Specific target organ toxicity.
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons (Poisons Standard - Australia).

Acronyms and abbreviations

TWA	Time-weighted average. The 8-hour time-weighted average airborne concentration of the substance under consideration.
UN	United Nations (number). United Nations Committee of Experts on the Transport of Dangerous Goods.
UV	Ultraviolet (light or radiation). A part of the spectrum of electromagnetic radiation emitted by the sun that can cause chemical bonds to break through ionisation.
vPvB	Very persistent and very bioaccumulative.

The information contained in this Safety Data Sheet is based on our best present knowledge and experience. It is intended to convey information about the chemical health and safety hazards of our product for health and safety reasons only. The data is not a guarantee of specific properties of this product.

This product is to be used in applications consistent with our product literature.

Individuals handling this product should be informed of the recommended safety precautions and should have access to this information.

For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to ensure safe workplace operations.

SECTION 1 - IDENTIFICATION: PRODUCT IDENTIFIER AND COMPANY INFORMATION

Product name	HydraClean® HC-6100
Product code	HC-6100
Product use	Sanitising agent, water treatment
Company name	Hydroflux Utilities Pty Ltd Level 26, 44 Market Street SYDNEY NSW 2000 www.hydrofluxutilities.com.au e: info@hydrofluxutilities.com.au t: 61 2 9089 8833 f: 61 2 9089 8830
Emergency number	13 11 26 (Poison Information Hotline)

SECTION 2 - HAZARD IDENTIFICATION

HAZARDS

Hazard Class	Category*	Hazard Statement	Signal Word
Skin corrosion/irritation	1	Causes severe skin burns and eye damage	Danger
Serious eye damage/eye irritation	1	Causes serious eye damage	Danger
Hazardous to the aquatic environment, short-term (Acute)	1	Very toxic to aquatic life	Warning

* Hazard categories can range from 1–5, with 1 being the highest rated hazard.

ADDITIONAL NON-GHS HAZARD STATEMENT

- Contact with acids liberates toxic gas

LABEL ELEMENTS

Pictogram

Signal word Danger

PRECAUTIONARY STATEMENTS - to accompany each hazard statement

Hazard Statement	Prevention	Response	Storage	Disposal
Causes severe skin burns and eye damage	Do not breathe dusts or mists. Wash hands thoroughly after handling. Wear protective gloves, protective clothing and eye protection.	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water (or shower). Wash contaminated clothing before reuse. IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTRE or doctor. Specific treatment: see Section 4 - First Aid Measures on this Safety Data Sheet. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.	Store locked up.	Dispose of contents and container to an approved waste disposal plant.
Causes serious eye damage	Wear eye protection and protective gloves.	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do so. Continue rinsing. Immediately call a POISON CENTRE or doctor.	-	-
Very toxic to aquatic life	Avoid release to the environment.	Collect spillage	-	Dispose of contents and container to an approved waste disposal plant.

SECTION 3 - COMPOSITION AND INFORMATION ON INGREDIENTS

DESCRIPTION Sanitising and/or bleaching solution.

INGREDIENTS

Chemical name	CAS No.	Proportion, %
Sodium hypochlorite	7681-52-9	10–15
Sodium hydroxide	1310-73-2	< 1

SECTION 4 - FIRST AID MEASURES

GENERAL ADVICE

- Take appropriate precautions to ensure your own health and safety before providing first aid.
- If a doctor or paramedic is consulted, provide them with this Safety Data Sheet.

SKIN

- Remove all contaminated clothing and footwear.
- Flush affected skin area with large amounts of running water.
- If redness or irritation, swelling or blistering occurs, seek medical attention without delay.

EYE

- Immediately wash out affected eye and surrounding area with fresh running water.
- Ensure complete irrigation of the eye - keep eyelids apart and away from eye, move eyes up, down and to either side while irrigating.
- Continue irrigating for at least 15 minutes.
- If irritation or discomfort occurs after complete irrigation, seek medical attention without delay.

SWALLOWED

- If swallowed do NOT induce vomiting.
- If conscious, washout mouth and give water to drink.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- If reflexive vomiting occurs, rinse mouth and repeat administration of water.
- If swallowed and patient begins to feel unwell, seek medical attention without delay.

INHALED

- Immediately remove patient to fresh air.
- Lay patient down, keep warm and rested.
- If symptoms develop, seek medical attention without delay.

NOTES TO DOCTOR OR PARAMEDIC

- Treat symptomatically.
- This product is an alkali base (corrosive) and can cause skin damage and corneal burns.
- Corrosive substances may cause lung damage.

SECTION 5 - FIREFIGHTING MEASURES

FIRE HAZARD

- This product is not combustible.
- May react with some metals to produce flammable hydrogen gas.
- Decomposes on heating emitting chlorine based toxic fumes that may include chlorine gas and hydrogen chloride gas.

HAZCHEM CODE

- 2X

EXTINGUISHING MEDIA

- Water fog or fine water spray, foam, carbon dioxide, dry powder.

PRECAUTIONS FOR FIREFIGHTERS AND SPECIAL PROTECTIVE EQUIPMENT

- In case of fire, wear a liquid-tight chemical protective suit with breathing apparatus.
- Wear chemical resistant gloves and chemical resistant boots.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS

- Restrict access to area until clean-up operations are complete.
- Use personal protective equipment recommended in Section 8 of this Safety Data Sheet.
- Avoid walking through spilled product.
- Ventilate spill area if possible.

MINOR SPILLS

- Prevent further leakage or spillage if safe to do so.
- Contain spill with sand, soil or inert material.
- Do not let product enter drains or waterways.
- Clean up all spills immediately.
- Clean spill using a moist cloth or paper towel if the spill is dropwise; if the spill is larger then cover and absorb with sand, soil or inert material and shovel away.

MAJOR SPILLS

- Alert Fire Brigade and tell them the location and nature of hazard.
- Show this Safety Data Sheet to the Fire Crew in attendance.
- Contain and absorb spill with sand, soil or inert material.
- Prevent spillage from entering drains or water ways. Spilled product may pose a risk to the aquatic ecosystem if released. If contamination of drains or waterways occurs, advise Emergency Services.
- Use retention basins for storage and neutralisation of pH and chlorine residual before discharge or disposal. Be aware that any neutralisation process may evolve toxic gases including chlorine gas.
  - » For pH neutralisation use water or very dilute acids.
  - » To reduce chlorine residuals, use dilute solutions of mild reducing agents such as sodium metabisulfite, sodium thiosulfate or sodium sulfite.

SECTION 7 - HANDLING AND STORAGE

HANDLING

- Eliminate personal contact. Do not get in eyes, on skin, or on clothing.
- Wear protective clothing recommended in Section 8 of this Safety Data Sheet when risk of exposure may occur.
- Avoid inhalation of vapours or mist.
- Use with adequate ventilation.
- Avoid generating splashes.
- Keep the containers tightly closed when not in use.
- Ensure all containers are labelled.
- Have emergency equipment (for fires, spills, etc.) readily available.
- Do not use incompatible material for product transfer or dosing equipment (see Section 10 - “Materials To Avoid” on this Safety Data Sheet).

STORAGE CONDITIONS

- Store in original container.
- Store the containers tightly closed.
- Store separately from acids.
- Store in a cool, dry, well-ventilated area out of direct sunlight.
- Store away from incompatible materials (see Section 10 - “Materials To Avoid” on this Safety Data Sheet).
- Do not use incompatible material for bunding and containment (see Section 10 - “Materials To Avoid” on this Safety Data Sheet).

SECTION 8 - EXPOSURE CONTROLS AND PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE STANDARDS

The following table shows the workplace exposure standards for airborne contaminants (exposure standards).

The exposure standard for each component below is shown as if the component is 100% of the formulation (i.e. as if the component has not been diluted by being part of this product).

		ppm			mg/m³		
Component	CAS No.	TWA	STEL	Peak Limitation	TWA	STEL	Peak Limitation
Chlorine	7782-50-5	1	-	1	3	-	3
Sodium hydroxide	1310-73-2	-	-	-	2	-	2

ENGINEERING MEASURES

- General ventilation is recommended.
- Use local exhaust ventilation if necessary to control vapours or mist.

EXPOSURE CONTROL MEASURES

- Wear personal protective clothing including gloves and safety glasses.
- Keep an eye wash fountain available. Where practicable, have a safety shower available.

PERSONAL PROTECTION

We recommend as a minimum precaution the use of tight-fitting safety goggles, protective gloves and work clothes protecting arms, legs and body as well as fully enclosed safety boots/gumboots.

Respiratory Protection

- Respiratory protection is not normally needed. If prolonged exposure may occur, use a full-face respirator with multi-purpose cartridge that protects against chemical mists and vapours.

Hand Protection

- Elbow length impervious nitrile gloves.

Skin Protection

- Standard protective clothing, splash apron, protective gloves and rubber boots.

Eye Protection

- Tight-fitting safety goggles and a full-face shield are recommended.

Hygiene Recommendations

- Use good work and personal hygiene practices to avoid exposure.
- If clothing is contaminated, remove clothing and discard or launder. Launder contaminated clothing separately and before reuse.
- Always wash and clean yourself thoroughly after handling chemicals.
- When handling this product never eat, drink or smoke.

ENVIRONMENTAL EXPOSURE CONTROL PRECAUTIONS

- Local exhaust ventilation.
- Consider the provision of containment around storage vessels.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Form	Liquid
Appearance	Slight yellow to light green colour
Odour	Pungent chlorine
pH	12–13
Freezing point	-18°C
Boiling point	> 100°C. Decomposes prior to boiling
Flash point	Not flammable
Explosive limits	Not flammable
Specific gravity	1.15–1.18
Solubility in water	Miscible
Viscosity	1 cP @ 20°C

SECTION 10 - STABILITY AND REACTIVITY

STABILITY

- Stable under recommended storage conditions.
- Contact with metal ions may cause decomposition and loss of available chlorine.
- Hazardous polymerization will not occur.

CONDITIONS TO AVOID

- Avoid direct sunlight or heat.

MATERIALS TO AVOID

- Acidic material.
  - » Contact with acidic material generates a violent reaction, heat and/or toxic vapours.
- Metals.
  - » Not compatible with most metals including stainless steel, galvanised metals, aluminium, tin, zinc, brass, copper, bronze, nickel (i.e. from Hastelloy®).
  - » Contact with powdered metals may cause violent decomposition.
  - » Contamination of the product with metal ions (from fittings, pipework, storage & transport vessels, etc.) can significantly increase the rate of product decomposition; this can then lead to pressure build-up in enclosed piping or systems.
- Do not mix with ammonia, alcohols, ethers or hydrocarbons.
- May react vigorously in contact with organic materials.
- Nylon.
  - » The use of nylon is not recommended. Do not use fittings, O-rings, gaskets, dosing lines or chemical bunding material made from or containing nylon.

HAZARDOUS DECOMPOSITION PRODUCTS

- Under high temperatures or fire: hypochlorous acid, sodium oxide, chlorine gas, sodium chlorate and oxygen.

SECTION 11 - TOXICOLOGICAL INFORMATION

Acute toxicity	LD_{50} Oral	rat	> 2,000 mg/kg
	LD_{50} Dermal	rat	> 2,000 mg/kg
	LC_{50} Inhalation	rat	> 10.5 mg/L (1 hour) as available chlorine
Skin corrosion/irritation	Causes severe skins burns		
Serious eye damage/irritation	Causes serious eye damage		
Respiratory sensitisation	Not classified as a respiratory sensitiser		
Skin sensitisation	Not classified as a skin sensitiser		
Germ cell mutagenicity	No information available		
Carcinogenicity	Not listed as a human carcinogen (IARC)		
Reproductive toxicity	Not classified as a reproductive toxicant		
STOT - single exposure	Not classified as being a specific target organ toxicant		
STOT - repeated exposure	Not classified as being a specific target organ toxicant		
Aspiration hazard	No information available		

SECTION 12 - ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION

Acute Toxicity - Fish

Species	Exposure	LC_{50}
Bluegill	96 hour	2.9 mg/L
Rainbow trout	0.5 hour	0.9 mg/L

PERSISTENCE AND DEGRADABILITY

- No information available.
- This product consists of inorganic compounds only. Degrades slowly to sodium chloride, sodium chlorate and oxygen.

BIOACCUMULATION POTENTIAL

- No information available.

MOBILITY IN SOIL

- No information available.
- This product is miscible with water.

SECTION 13 - DISPOSAL CONSIDERATIONS

- Dispose of in accordance with local, state and federal regulations.
- Dispose of wastes in an approved waste treatment plant in accordance with applicable regulations.
- Do not dispose of wastes in local sewer or with normal garbage.
- Do not reuse empty container for any purpose except to store this chemical.

SECTION 14 - TRANSPORT INFORMATION

Classified as a dangerous good - Australian Code for the Transport of Dangerous Goods by Road & Rail.

UN number	1791
Proper shipping name	HYPOCHLORITE SOLUTION
Transport hazard class	8
Subsidiary hazard	-
Packing group number	III
Hazchem code	2X
EPG	8A1

SECTION 15 - REGULATORY INFORMATION

Safe Work Australia	»	This Safety Data Sheet (SDS) has been prepared in accordance with the Model Work Health and Safety Regulations 2021 (Safe Work Australia).
GHS	»	The hazards of this product (Section 2 of this SDS) are classified in accordance with the Globally Harmonised System of Classification and Labelling of Chemicals (GHS).
AICIS	»	All ingredients in this product comply as per the Australian Industrial Chemicals Introduction Scheme (AICIS).
AIIC	»	All ingredients in this product are either listed or are exempt from listing in the Australian Inventory of Industrial Chemicals (AIIC).
POISON Schedule	»	Schedule 5 - Caution. Substances with a low potential for causing harm, the extent of which can be reduced through the use of appropriate packaging with simple warnings and safety directions on the label.

SECTION 16 - OTHER RELEVANT INFORMATION

Revision date	15 February 2022
Revision number	6.2 (Minor update to Sections 12 and 16)
Information sources	» Preparation of Safety Data Sheets for Hazardous Chemicals Code of Practice, July 2020 (Safe Work Australia). » Australian Code for the Transport of Dangerous Goods by Road & Rail, Edition 7.7. 2020. » Safety Data Sheets from our suppliers of raw material. » Poisons Standard June 2021 - Australian Government *Therapeutic Goods Act 1989.* » Model Work Health and Safety Regulations, January 2021 (Safe Work Australia). » Hazardous Substance Information System (Safe Work Australia). » Globally Harmonised System of Classification and Labelling of Chemicals (GHS) 7th Edition, United Nations 2017. » Regulation (EU) No 528/2012 Assessment Report. Active chlorine released from sodium hypochlorite, Product-type 2. January 2017. The European Chemicals Agency (ECHA).

Acronyms and abbreviations

AICIS	Australian Industrial Chemicals Introduction Scheme.
AIIC	Australian Inventory of Industrial Chemicals.
CAS No.	Chemical Abstracts Service registration number (sometimes referred to as CASRN).
cP	Centipoise (dynamic viscosity).
°C	Degrees Celsius.

Acronyms and abbreviations

EPG	Emergency Procedure Guide - Transport: Australian Standards AS 1678 (series).
GHS	Globally Harmonised System of Classification and Labelling of Chemicals (United Nations).
Hazchem code	Hazchem Emergency Action Code (also known as an Emergency Action Code or EAC). A British Fire Service code system to provide immediate action advice to emergency services when attending an incident involving dangerous goods.
LC_{50}	Lethal concentration, 50%. The concentration of material (in air or water) that will cause 50% of the test population to perish.
LD_{50}	Lethal dose, 50%. The quantity of material when administered all at once that will cause 50% of the test population to perish.
mg/kg	Milligrams per kilogram.
mg/L	Milligrams per litre
mg/m^3	Milligrams per cubic metre.
pH	A scale used to express the acidity or basicity of dilute water solutions. pH is defined as the negative logarithm of the hydronium ion (H_3O^+) activity in water-based solutions. Practical application of pH best suited to aqueous solutions with an ionic strength < 0.1 moles/kilogram and a pH between 1–13.
ppm	Parts per million.
PVC	Polyvinyl chloride.
Rev	Revision.
SDS	Safety Data Sheet.
STEL	Short term exposure limit. The 15-minute time-weighted average airborne concentration of the substance under consideration.
STOT	Specific target organ toxicity.
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons (Poisons Standard - Australia).
TWA	Time-weighted average. The 8-hour time-weighted average airborne concentration of the substance under consideration.
UN	United Nations (number). United Nations Committee of Experts on the Transport of Dangerous Goods.

SECTION 1 - IDENTIFICATION: PRODUCT IDENTIFIER AND COMPANY INFORMATION

Product name	HydraPrime® HP-1420
Product code	HP-1420
Product use	Clarification aid for water treatment
Company name	Hydroflux Utilities Pty Ltd Level 26, 44 Market Street SYDNEY NSW 2000 www.hydrofluxutilities.com.au e: info@hydrofluxutilities.com.au t: 61 2 9089 8833 f: 61 2 9089 8830
Emergency number	13 11 26 (Poison Information Hotline)

SECTION 2 - HAZARD IDENTIFICATION

HAZARDS

Hazard Class	Category*	Hazard Statement	Signal Word
Serious eye damage/eye irritation	2	Causes serious eye irritation	Warning

* Hazard categories can range from 1–5, with 1 being the highest rated hazard.

LABEL ELEMENTS

Pictogram

Signal word Warning

PRECAUTIONARY STATEMENTS - to accompany each hazard statement.

Hazard Statement	Prevention	Response	Storage	Disposal
Causes serious eye irritation	Wash hands thoroughly after handling. Wear eye protection and protective gloves.	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice.	-	-

SECTION 3 - COMPOSITION AND INFORMATION ON INGREDIENTS

DESCRIPTION Polynuclear (polymerised) aluminium salts in water.

INGREDIENTS

Chemical name	CAS No.	Proportion, %
Aluminium hydroxide chloride	12042-91-0	40–60

SECTION 4 - FIRST AID MEASURES

GENERAL ADVICE

- Take appropriate precautions to ensure your own health and safety before providing first aid.
- If a doctor or paramedic is consulted, provide them with this Safety Data Sheet.

SKIN

- Remove all contaminated clothing and footwear.
- With a clean cloth or paper towel, blot or wipe away any excess product before flushing with water.
- Flush affected skin area with large volumes of running water until it no longer feels greasy or slippery.
- If redness, irritation, swelling or blistering occurs, seek medical attention without delay.

EYE

- Immediately wash out affected eye and surrounding area with fresh running water.
- Ensure complete irrigation of the eye - keep eyelids apart and away from eye, move eyes up, down and to either side while irrigating.
- Continue irrigating for at least 15 minutes. If the eye feels as though it still contains grit/dust or a foreign object, continue to irrigate.
- If irritation or discomfort occurs after complete irrigation, seek medical attention without delay.

SWALLOWED

- If swallowed do NOT induce vomiting.
- If conscious, washout mouth and give water to drink.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- If reflexive vomiting occurs, rinse mouth and repeat administration of water.
- If swallowed and patient begins to feel unwell, seek medical attention without delay.

INHALED

- Immediately remove patient to fresh air, lay patient down, keep warm and rested.
- If symptoms develop, seek medical advice.

NOTES TO DOCTOR OR PARAMEDIC

- This product is mildly acidic (corrosive) by nature, treat symptomatically.

SECTION 5 - FIREFIGHTING MEASURES

FIRE HAZARD

- This product is not combustible.
- This product may decompose under fire conditions to produce hydrogen chloride gas and other toxic fumes.

HAZCHEM CODE

- None assigned.

EXTINGUISHING MEDIA

- This product does not create any restrictions for extinguishing media to be used on a surrounding fire.
- Use extinguishing media suitable for burning materials in the surrounding fire.
- NOTE: water in contact with this product may become mildly acidic. The pH is expected to be > 4 under any dilution and is more likely to be > 6 due to a high rate of dilution by fire water.

PRECAUTIONS FOR FIREFIGHTERS AND SPECIAL PROTECTIVE EQUIPMENT

- In case of fire, wear a liquid-tight chemical protective suit with breathing apparatus.
- Wear chemical resistant gloves and chemical resistant boots.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS

- Restrict access to area until clean-up operations are complete.
- Ventilate spill area if possible.
- Avoid contact with skin and eyes.
- Use personal protective equipment recommended in Section 8 of this Safety Data Sheet.

MINOR SPILLS

- Prevent further leakage or spillage if safe to do so.
- Contain spill with sand, soil or inert material.
- Do not let product enter drains or waterways.
- Clean up all spills immediately.
- Clean spill using a moist cloth or paper towel if the spill is dropwise; if the spill is larger then cover and absorb with sand, soil or inert material and shovel away.

MAJOR SPILLS

- Alert Fire Brigade and tell them the location and nature of hazard.
- Show this Safety Data Sheet to the Fire Crew in attendance.
- Contain and absorb spill with sand, soil or inert material.
- Prevent spillage from entering drains or water ways. Spilled product may pose a risk to the aquatic ecosystem if released. If contamination of drains or waterways occurs, advise Emergency Services.
- Use retention basins for storage and pH adjustment before discharge or disposal.

SECTION 7 - HANDLING AND STORAGE

HANDLING

- Eliminate personal contact. Do not get in eyes, on skin, or on clothing.
- Wear protective clothing recommended in Section 8 of this Safety Data Sheet when risk of exposure may occur.
- Use with adequate ventilation.
- Avoid generating splashes.
- Keep the containers tightly closed when not in use.
- Ensure all containers are labelled.
- Have emergency equipment (for fires, spills, etc.) readily available.
- Do not use incompatible material for product transfer or dosing equipment (see Section 10 - "Materials To Avoid" on this Safety Data Sheet).

STORAGE CONDITIONS

- Store in original container.
- Store the containers tightly closed.
- Store in a cool, dry, well-ventilated area. Avoid storage in direct sunlight.
- Store away from incompatible materials (see Section 10 - "Materials To Avoid" on this Safety Data Sheet).
- Do not use incompatible material for bunding and containment (see Section 10 - "Materials To Avoid" on this Safety Data Sheet).

SECTION 8 - EXPOSURE CONTROLS AND PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE STANDARDS

The following table shows the workplace exposure standards for airborne contaminants (exposure standards).

The exposure standard for aluminium shown below is for 100% elemental aluminium (CAS No. 7429-90-5). This product (HP-1420) contains < 15% as elemental aluminium.

		mg/m³	
Component	CAS No.	TWA	STEL
Aluminium, soluble salts (as Al)	7429-90-5	2	-

ENGINEERING MEASURES

- General ventilation is recommended.

EXPOSURE CONTROL MEASURES

- Wear standard protective clothing and protective gloves.

PERSONAL PROTECTION

We recommend as a minimum precaution the use of safety glasses with side-shields and work clothes protecting arms, legs and body, fully enclosed safety boots/gumboots and gloves.

Respiratory Protection

- Respiratory protection is not normally needed.

Hand Protection

- Gloves made from Viton, polyvinyl chloride (PVC), natural rubber, neoprene.

Skin Protection

- Wear standard protective clothing and protective gloves.

Eye Protection

- At a minimum wear safety glasses with side-shields.
- Tight-fitting safety goggles are recommended.

Hygiene Recommendations

- Use good work and personal hygiene practices to avoid exposure.
- Always wash and clean yourself thoroughly after handling this and other chemicals.
- If clothing is contaminated, remove clothing and discard or launder. Launder contaminated clothing separately and before reuse.
- When handling this product never eat, drink or smoke.

ENVIRONMENTAL EXPOSURE CONTROL PRECAUTIONS

- Consider the provision of containment around storage vessels.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Form	Liquid
Appearance	Colourless
Odour	Nil
pH	3.5–4.5
Freezing point	< 0°C
Boiling point	> 100°C
Flash point	Not flammable
Explosive limits	Not flammable
Specific gravity	1.32–1.36
Solubility in water	Miscible (complete)
Viscosity	15–30 cP @ 20°C

SECTION 10 - STABILITY AND REACTIVITY

STABILITY

- Stable under normal conditions.
- Hazardous polymerization will not occur.

CONDITIONS TO AVOID

- Extremes of temperature.

MATERIALS TO AVOID

- Alkaline material.
  - » Contact with alkaline material may generate heat, localised boiling and/or toxic vapours.
- Oxidising material.
  - » Contact with strong oxidizers (e.g. chlorine, hypochlorites, peroxides, chromates, nitric acid, perchlorates, permanganates etc.) may generate heat, fires, explosions, and toxic vapours.
- Metals.
  - » Not compatible with some metals including iron, cast iron, galvanised metals, steel, carbon steel, mild steel, stainless steel, aluminium, copper, tin, zinc, bronze, brass.
- Nylon.
  - » Not compatible with nylon. Do not use fittings, O-rings, gaskets, dosing lines or chemical bunding material made from or containing nylon.

HAZARDOUS DECOMPOSITION PRODUCTS

- Under fire conditions: hydrogen chloride gas.

SECTION 11 - TOXICOLOGICAL INFORMATION

Acute toxicity	LD_{50} Oral	rat	> 2,500 mg/kg
	LD_{50} Dermal	no information available	
	LC_{50} Inhalation	no information available	
Skin corrosion/irritation	No information available		
Serious eye damage/irritation	Causes serious eye irritation		
Respiratory sensitisation	No information available		
Skin sensitisation	No information available		
Germ cell mutagenicity	No information available		
Carcinogenicity	Not listed as a human carcinogen (IARC)		
Reproductive toxicity	No information available		
STOT - single exposure	No information available		
STOT - repeated exposure	No information available		
Aspiration hazard	No information available		

SECTION 12 - ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION

Acute Toxicity - Fish

Species	Exposure	LC_{50}
Fathead minnow	96 hour	> 360 mg/L

Acute Toxicity - Invertebrate Species

Species	Exposure	EC_{50}
Daphnia magna	48 hour	> 200 mg/L

Chronic Toxicity - Fish

Species	ACR*	LC_{50}
Fathead minnow	10.64	> 30 mg/L

Chronic Toxicity - Invertebrate Species

Species	ACR	EC_{50}
Daphnia magna	51.27	> 3 mg/L

*ACR = Acute-Chronic Ratio

The ecological toxicity data for HP-1420 has been derived by extrapolating the LC_{50} or EC_{50} values provided by the U.S. EPA document EPA 440/5-86-008 for the aluminium ion based on the test material of aluminium chloride. The aluminium chloride test material produces mononuclear aluminium hydroxide species.

The toxic effect of inorganic aluminium salts on fish and invertebrates is considered to be due (mainly) to soluble mononuclear aluminium hydroxide species such as $AlOH^{2+}$ and $Al(OH)_2^+$. The toxic effects of these species are maximised at pH 5.0–5.2 (ANZECC 2000).

For the aluminium ion to be bioavailable, it must be in a soluble (dissolved) form. As the pH increases above pH 6.0, aluminium ions tend to precipitate as an aluminium hydroxide solid, thus rendering the aluminium in a solid form. This in turn means that at pH's > 6.0, the aluminium ion is less bioavailable and hence its toxic effect is mitigated.

At the nominal pH of 6.5–8.0 for natural freshwaters, aluminium is predominantly insoluble, hence the bioavailable aluminium species responsible for acute toxicity are not present in any significant quantities.

The bioavailability of dissolved aluminium species in natural waters is reduced by interaction of the aluminium ions with complexing agents often present in these natural water bodies; these agents include natural organic matter (humic substances for instance), fluoride, citrates and phosphates. This interaction is rapid (milliseconds), and results in lower toxicity because less dissolved aluminium species are bioavailable.

This product (HP-1420) contains mostly polynuclear (polymerised) aluminium species at values expected to be greater than 90% of the total aluminium content. Regardless of pH, polynuclear aluminium species tend not to produce the dissolved mononuclear aluminium hydroxide species considered responsible for the toxic effect of aluminium ions on aquatic life. This means that HP-1420 is most likely less toxic to aquatic life than the above LC_{50} and EC_{50} values indicate.

PERSISTENCE AND DEGRADABILITY

- No information available.
- This product consists of inorganic compounds only and will degrade via hydrolysis.

BIOACCUMULATION POTENTIAL

- No information available.

MOBILITY IN SOIL

- No information available.

SECTION 13 - DISPOSAL CONSIDERATIONS

- Dispose of this product and its container in accordance with local, state and federal regulations.
- Dispose of any wastes in an approved waste treatment plant in accordance with applicable regulations.
- Do not dispose of this product or wastes in drains, waterways, sewers or with normal garbage.
- Do not reuse empty container for any purpose except to store this chemical.
- Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14 - TRANSPORT INFORMATION

Not classified as a dangerous good - Australian Code for the Transport of Dangerous Goods by Road & Rail.

UN number	-
Proper shipping name	-
Transport hazard class	-
Subsidiary hazard	-
Packing group number	-
Hazchem code	-
EPG	-

SECTION 15 - REGULATORY INFORMATION

Safe Work Australia	»	This Safety Data Sheet (SDS) has been prepared in accordance with the Model Work Health and Safety Regulations 2021 (Safe Work Australia).
GHS	»	The hazards of this product (Section 2 of this SDS) are classified in accordance with the Globally Harmonised System of Classification and Labelling of Chemicals (GHS).
AICIS	»	All ingredients in this product comply as per the Australian Industrial Chemicals Introduction Scheme (AICIS).
AIIC	»	All ingredients in this product are either listed or are exempt from listing in the Australian Inventory of Industrial Chemicals (AIIC).
POISON Schedule	»	Not scheduled as part of the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

SECTION 16 - OTHER RELEVANT INFORMATION

Revision date	8 September 2022
Revision number	5.5 (Minor update to Sections 13 and 16)
Information sources	» Preparation of Safety Data Sheets for Hazardous Chemicals Code of Practice, July 2020 (Safe Work Australia). » Australian Code for the Transport of Dangerous Goods by Road & Rail, Edition 7.7. 2020. » Safety Data Sheets from our suppliers of raw material. » Poisons Standard June 2022 - Australian Government *Therapeutic Goods Act 1989.* » Model Work Health and Safety Regulations, January 2021 (Safe Work Australia). » Hazardous Substance Information System (Safe Work Australia). » Globally Harmonised System of Classification and Labelling of Chemicals (GHS) 7th Edition, United Nations 2017. » EPA 440/5-86-008. Ambient Water Quality Criteria for Aluminium - 1988. United States Environmental Protection Agency, Washington, D.C. » ANZECC 2000. National Water Quality Management Strategy. Document 4 - Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000. » National Institutes of Health (NIH), U.S. Department of Health and Human Services (HHS). TOXNET (Toxicology Data Network) Hazardous Substance Data Bank (HSDB), U.S. National Library of Medicine (NLM). » User Guide for Thresholds and Classifications - January 2012. Thresholds and Classifications Under the Hazardous Substances and New Organisms Act 1996. Environmental Protection Authority, New Zealand Government. » Agents Classified by the *IARC Monographs*, Volumes 1–120. World Health Organisation (WHO) International Agency for Research on Cancer (IARC).

Acronyms and abbreviations

ACR	Acute-Chronic Ratio - used to relate acute and chronic ecotoxicity values for aquatic species.
AICIS	Australian Industrial Chemicals Introduction Scheme.
AIIC	Australian Inventory of Industrial Chemicals.
Al	Chemical symbol for aluminium.
ANZECC	Australian and New Zealand Environment and Conservation Council.
CAS No.	Chemical Abstracts Service registration number (sometimes referred to as CASRN).
cP	Centipoise (dynamic viscosity).
°C	Degrees Celsius.
EC_{50}	Effective concentration, 50%. The concentration of substance that will cause 50% of the test population to experience the given effect being monitored. For daphnids (daphnia magna) this effect is either immobilisation or death.
EPA	Environmental Protection Agency.

Acronyms and abbreviations

EPG	Emergency Procedure Guide - Transport: Australian Standards AS 1678 (series).
GHS	Global Harmonised System (of Classification and Labelling of Chemicals - United Nations).
Hazchem code	Hazchem Emergency Action Code (also known as an Emergency Action Code or EAC). A British Fire Service code system to provide immediate action advice to emergency services when attending an incident involving dangerous goods.
HSDB	Hazardous Substance Data Bank, United States National Library of Medicine.
IARC	International Agency for Research on Cancer. A specialised cancer agency of the World Health Organisation (WHO) that provides a global reference for cancer information.
LC_{50}	Lethal concentration, 50%. The concentration of material (in air or water) that will cause 50% of the test population to perish.
LD_{50}	Lethal dose, 50%. The quantity of material when administered all at once that will cause 50% of the test population to perish.
mg/kg	Milligrams per kilogram.
mg/L	Milligrams per litre.
mg/m^3	Milligrams per cubic metre.
pH	A scale used to express the acidity or basicity of dilute water solutions. pH is defined as the negative logarithm of the hydronium ion (H_3O^+) activity in water-based solutions. Practical application of pH best suited to aqueous solutions with an ionic strength < 0.1 moles/kilogram and a pH between 1–13.
PVC	Polyvinyl chloride.
Rev	Revision.
SDS	Safety Data Sheet.
STEL	Short term exposure limit. The 15-minute time-weighted average airborne concentration of the substance under consideration.
STOT	Specific target organ toxicity.
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons (Poisons Standard - Australia).
TWA	Time-weighted average. The 8-hour time-weighted average airborne concentration of the substance under consideration.
UN	United Nations (number). United Nations Committee of Experts on the Transport of Dangerous Goods.
U.S. EPA	United States Environmental Protection Agency, Washington, D.C.
>	Greater than.
<	Less than.

The information contained in this Safety Data Sheet is based on our best present knowledge and experience. It is intended to convey information about the chemical health and safety hazards of our product for health and safety reasons only. The data is not a guarantee of specific properties of this product.

This product is to be used in applications consistent with our product literature.

Individuals handling this product should be informed of the recommended safety precautions and should have access to this information.

For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to ensure safe workplace operations.

Attachment C

ABN	WEBSITE	PHONE	EMAIL	HEAD OFFICE/LAB
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AS/NZS 3833:2007

Australian/New Zealand Standard™

The storage and handling of mixed classes of dangerous goods, in packages and intermediate bulk containers

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee CH-009, Safe Handling of Chemicals. It was approved on behalf of the Council of Standards Australia on 8 March 2007 and on behalf of the Council of Standards New Zealand on 11 May 2007.
This Standard was published on 30 May 2007.

The following are represented on Committee CH-009:

ACCORD Australia
Agsafe
Australasian Fire Authorities Council
Australian Institute of Petroleum
Australian Paint Manufacturers' Federation
Consumers' Federation of Australia
Department of the Premier and Cabinet, SA
Department of Consumer and Employment Protection, WA
Department of Emergency Services, Qld
Department of Environment and Conservation, NSW
Engineers Australia
New Zealand Chemical Industry Council
Plastics and Chemicals Industries Association
Tranz Rail (New Zealand)
Victorian WorkCover Authority

Additional Interests:

Country Fire Authority, Victoria
New South Wales Fire Brigades
Retailers and suppliers of dangerous goods
Manufacturers and suppliers of agricultural chemicals

Keeping Standards up-to-date

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about joint Australian/New Zealand Standards can be found by visiting the Standards Web Shop at www.standards.com.au or Standards New Zealand web site at www.standards.co.nz and looking up the relevant Standard in the on-line catalogue.

Alternatively, both organizations publish an annual printed Catalogue with full details of all current Standards. For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of either Standards Australia or Standards New Zealand at the address shown on the back cover.

This Standard was issued in draft form for comment as DR 06448.

Australian/New Zealand Standard™

The storage and handling of mixed classes of dangerous goods, in packages and intermediate bulk containers

Originated as AS/NZS 3833:1998.
Second edition 2007.

Jointly published by Standards Australia, GPO Box 476, Sydney, NSW 2001 and Standards New Zealand, Private Bag 2439, Wellington 6020

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PREFACE

This Standard was prepared by Joint Standards Australia/Standards New Zealand Committee CH-009, Safe Handling of Chemicals, to supersede AS/NZS 3833:1998. Revision of this Standard was commenced following the committee's agreement that the series of Standards relating to the storage and handling of dangerous goods be reviewed and updated to reflect changed regulatory requirements and control philosophies that have been refined since the publication of the 1998 edition, taking into particular account the current (2004) edition of AS 1940, *The storage and handling of flammable and combustible liquids*.

The purpose of this Standard is to provide minimum acceptable safety requirements for installations where more than one class of dangerous goods is stored and handled, whether in packages or intermediate bulk containers (IBCs) of up to 1.6 m^3 capacity.

This Standard addresses the storage and handling of mixed classes of dangerous goods of Classes and Divisions 1.4S (as consumer commodities), 2 (as consumer commodities or aerosols of UN 1950), 3, 4.1, 4.3, 5.1, 5.2, 6.1, 8 and 9, and combustible liquids when stored with the dangerous goods, in packages and IBCs as described above.

The terms 'normative' and 'informative' have been used in this Standard to indicate the application of each appendix. A normative appendix is an integral part of the Standard, whereas an informative appendix provides information and guidance.

Statements expressed in mandatory terms in notes to tables and figures are requirements of this Standard. Notes that appear in the main text are intended to provide information and recommendations only.

Australian and New Zealand references are separated by a slash (/) or parentheses. Australian references apply in Australia, and New Zealand references apply in New Zealand. Joint Standards apply in both Australia and New Zealand.

The series of Standards covering the storage, handling and transport of dangerous goods currently comprises the following publications:

HB 76	Dangerous goods—Initial emergency response guide
AS	
1216	Class labels for dangerous goods
1678	Emergency procedure guide—Transport (series)
1894	The storage and handling of non-flammable cryogenic and refrigerated liquids
1940	The storage and handling of flammable and combustible liquids
2187	Explosives—Storage, transport and use (series)
2507	The storage and handling of agricultural and veterinary chemicals
2508	Safe storage and handling information card (series)
2714	The storage and handling of hazardous chemical materials—Class 5.2 substances (organic peroxides)
2809	Road tank vehicles for dangerous goods (series)
3780	The storage and handling of corrosive substances
3846	The handling and transport of dangerous cargoes in port areas
4326	The storage and handling of oxidizing agents
4332	The storage and handling of gases in cylinders

AS/NZS	
1596	The storage and handling of LP Gas
2022	Anhydrous ammonia—Storage and handling
2927	The storage and handling of liquefied chlorine gas
4081	The storage and handling of liquid and liquefied polyfunctional isocyanates
4452	The storage and handling of toxic substances
4681	The storage and handling of Class 9 (miscellaneous) dangerous goods and articles
NZS	
5433	Transport of dangerous goods on land

CONTENTS

FOREWORD

This Standard provides requirements and recommendations for the storage and handling of more than one class of dangerous goods within the same storage area, without the need for segregating walls. It may be applied where the dangerous goods are kept in packages and intermediate bulk containers (IBCs) of up to 1.6 m^3 capacity.

Features of this Standard

This Standard is different from many of the other Australian or Joint Standards for the storage and handling of dangerous goods, in that it allows more than one class of dangerous goods to be stored together, without the need for segregating walls between the different classes. To achieve this storage, certain assumptions have been made and requirements added. These are outlined below, with further information given in the body of the Standard.

Prohibition of certain dangerous goods

This Standard prohibits certain types and classes of dangerous goods from the mixed class store because of their special requirements, their hazards, or the additional risk they could present. These dangerous goods are excluded from this Standard. The dangerous goods that may be included in the mixed class store, and those that are excluded, are described in Section 1, Scope and Application.

Where it is necessary to store any of the dangerous goods that are excluded from this Standard, the relevant Australian or Joint Standard for those dangerous goods needs to be used.

Hazard assessment

A written hazard assessment is necessary. This assessment needs to identify the dangerous goods that are to be stored, address all of the relevant requirements clause-by-clause, and record in detail how compliance with the requirements will be achieved.

The hazard assessment needs to identify the compatibility or otherwise of all of the dangerous goods that are to be stored. Some goods might react dangerously, and this also needs to be identified. If goods that are not dangerous goods are to be kept in the same store, their compatibility may also need to be investigated. This information is necessary so that the goods can be suitably segregated within the store.

The hazard assessment also needs to provide for ongoing store management and housekeeping.

It may be necessary to obtain expert advice when planning the store. It is usually best to contact the relevant regulatory authority for the storage and handling of dangerous goods at an early stage.

Segregation within the dangerous goods store

Any incompatible goods, and goods which might react dangerously, will need to be segregated within the store. Segregation is described in Section 6. It may also be necessary to segregate dangerous goods from any foodstuffs or food ingredients in the store.

Retail storage

Many dangerous goods are packed in small packages for retail sale. Requirements for such dangerous goods in retail shops and retail distribution centres is given in Section 3 of this Standard.

Management and housekeeping

The standard of management and housekeeping in the store needs to be consistently high. This is to ensure safe storage and effective management of any emergencies that could arise. It is important that the segregation of goods is maintained at all times.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard

The storage and handling of mixed classes of dangerous goods, in packages and intermediate bulk containers

S E C T I O N 1 S C O P E A N D G E N E R A L

1.1 SCOPE AND OBJECTIVE

1.1.1 Scope

This Standard sets out requirements and recommendations for the safe storage and handling of dangerous goods, in packages and intermediate bulk containers (IBCs) of up to 1.6 m^3 capacity, where dangerous goods of more than one class are kept within the same store, without the need for segregating walls.

NOTES:

1 Dangerous goods are classified as such and listed in the *UN Recommendations on the Transport of Dangerous Goods—Model Regulations.* They are also listed in the *Australian Dangerous Goods Code* (ADG Code) and NZS 5433.

2 An outline of the classes and divisions of dangerous goods is provided in Appendix A.

3 To achieve storage conditions comparable in safety to those for individual class storages, the various Australian or Joint Standards for the storage and handling of individual classes of dangerous goods have been reviewed and additional requirements and recommendations introduced as necessary. The resulting conditions for mixed class storage are intended to provide an equivalent level of safety as that which would be achieved by applying the relevant Australian Standard for each individual class or division of dangerous goods being kept.

1.1.2 Objective

The objective of this Standard is to provide minimum acceptable safety requirements for storage areas, operating procedures, emergency planning and fire protection. It provides technical guidance that may assist in the storage and handling of dangerous goods in accordance with regulatory requirements.

NOTES:

1 In Australia, this would be in accordance with the risk management requirements of NOHSC:1015 and regulations based on that document. In New Zealand, this would be with the HSNO Act.

2 AS/NZS 4360 should also be consulted regarding risk management.

1.2 APPLICATION

1.2.1 Which Standard should be used?

The various Australian or Joint Standards for the storage and handling of dangerous goods provide requirements and guidance in accordance with the risk management principles of NOHSC:1015 and regulations that draw upon that document. As a result, it may be necessary to consider several Standards:

(a) The relevant Australian or Joint Standard for each class of dangerous goods being stored.

(b) Any industry-specific Standard for the storage and handling of the dangerous goods being stored, e.g. AS 2507.

The remainder of this document is available for purchase online at

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