Safety Data Sheet

Hazardous Substance, Dangerous Goods

1. MATERIAL AND SUPPLY COMPANY IDENTIFICATION

Product name: **CHLORINE**

Recommended use: Disinfection; water treatment; bleaching; metal recovery; neutralising agent; oxidant.

Supplier: DuluxGroup (PNG) Pte. Ltd.
Street Address: Air Corps Road
Lae Morobe Province
PNG
Telephone: 4723633

Emergency telephone number: **Australia – +613 9663 2130**

2. HAZARDS IDENTIFICATION

This material is hazardous according to criteria of Safe Work Australia.

Signal Word
Danger

Hazard Classification
Oxidising Gases – Category 1
Gases Under Pressure – Liquefied Gas
Acute Toxicity – Inhalation – Category 3
Skin Corrosion/Irritation – Category 2
Serious Eye Damage/Irritation – Category 2A
Specific Target Organ Toxicity (Single Exposure) – Category 3 – respiratory tract irritation.
Acute Hazard to the Aquatic Environment – Category 1

Hazard Statement(s)

H270	May cause or Intensify fire; oxidizer
H280	Contains gas under pressure; may explode if heated
H315	Causes skin irritation
H319	Causes serious eye irritation
H331	Toxic if inhaled
H335	May cause respiratory irritation
H400	Very toxic to aquatic life

Prevention Precautionary Statement(s)

P102	Keep out of reach of children.
P103	Read label before use.
P220	Keep/Store away from clothing/combustible materials.

P244	Keep reduction valves free from grease and oil.
P261	Avoid breathing gas/mist/vapours.
P264	Wash hands, face and all exposed skin thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection and a suitable respirator.

Response Precautionary Statement(s)

P101	If medical advice is needed, have product container or label at hand.
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 reuse.
P304+P340	IF INHALED: Remove victim 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.
P337+P313	If eye irritation persists: Get medical advice/attention.
P311	Call a POISON CENTER or doctor/physician.
P370+P376	In case of fire: Stop leak if safe to do so.

Storage Precautionary Statement(s)

P405	Store locked up.
P410+P403	Protect from sunlight. Store in a well-ventilated place.

Disposal Precautionary Statement(s)

P501	Dispose of contents/container in accordance with regional and national regulations

Poisons Schedule (Aust): S7

DANGEROUS GOODS CLASSIFICATION

Classified as Dangerous Goods by the criteria of the “Australian Code for the Transport of Dangerous Goods by Road & Rail” and the “New Zealand NZS5433: Transport of Dangerous Goods on Land”.

Class: 2.3 Toxic Gas

3. COMPOSITION INFORMATION

CHEMICAL ENTITY	CAS NO.	PROPORTION
Chlorine	7782-50-5	100%

4. FIRST AID MEASURES

If poisoning occurs, contact a doctor or Poisons Information Centre (Phone Australia 131 126, New Zealand 0800 764 766).

Inhalation: Remove victim from 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 breathing laboured and patient cyanotic (blue), ensure airways are clear and have a qualified person give oxygen through a facemask. If breathing has stopped apply artificial respiration at once. In the event of cardiac arrest, apply external cardiac massage. Seek immediate medical advice.
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Skin contact: For gross contamination, immediately drench with water and remove clothing. Continue to flush skin and hair with plenty of water (and soap if material is insoluble). For skin burns, cover with a clean, dry dressing until medical help is available. If blistering occurs, do NOT break blisters. If swelling, redness, blistering, or irritation occurs seek medical assistance.

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

Ingestion: Immediately rinse mouth with water. If swallowed, do NOT induce vomiting. Give a glass of water to drink. Never give anything by the mouth to an unconscious patient. If vomiting occurs give further water. Get to a doctor or hospital quickly.

PPE for First Aiders: Wear overalls, full-face shield, elbow-length impervious gloves, splash apron and rubber boots. Use with adequate ventilation. If inhalation risk exists, wear air-supplied mask meeting the requirements of AS/NZS 1715 and AS/NZS 1716. Available information suggests that gloves made from nitrile rubber should be suitable for intermittent contact. However, due to variations in glove construction and local conditions, the user should make a final assessment. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

Notes to physician: Treat symptomatically. Effects may be delayed. Delayed pulmonary oedema may result.

5. FIRE-FIGHTING MEASURES

Hazchem Code: 2XE

Suitable extinguishing media: Not combustible, however, if material is involved in a fire use water fog (or if unavailable fine water spray), foam, dry agent (carbon dioxide, dry chemical powder).

Specific hazards: Non-combustible, but will support combustion of other materials. Corrosive substance.

Fire fighting further advice: Non-combustible, but will support combustion of other materials. Heating can cause expansion or decomposition leading to violent rupture of containers. If safe to do so, remove containers from path of fire. Keep containers cool with water spray. Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to products of decomposition.

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILLS
Wear protective equipment to prevent skin and eye contamination. Avoid inhalation of vapours. Allow liquid to evaporate.

LARGE SPILLS
Clear area of all unprotected personnel. Chlorine is only visible at high concentrations. Prevent further leakage or spillage if safe to do so. Avoid accidents, clean up immediately. Wear protective equipment to prevent skin and eye contamination and the inhalation of vapours. Work up wind or increase ventilation. For gas leaks do NOT spray water onto the leak or the container. Use fire hoses equipped with fog nozzles to disperse gas downwind. For liquid, contain and 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 the gas cloud. If safe to do so, cover with a large plastic sheet. Where possible vapour knockdown water should be contained.

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. If safe to do so, isolate the leak. Small spills are allowed to evaporate provided there is adequate ventilation.

If contamination of sewers or waterways has occurred advise local emergency services.

Dangerous Goods – Initial Emergency Response Guide No: 12.

7. HANDLING AND STORAGE

Handling:
Avoid skin and eye contact and inhalation of vapour, mist or aerosols.

Storage: Store in a cool, dry, well-ventilated place and out of direct sunlight. Store away from foodstuffs. Store away from incompatible materials described in Section 10. Store away from sources of heat or ignition. Keep container standing upright. Keep containers closed when not in use - check regularly for leaks.

Keep containers closed when not in use - check regularly for spills.

This material is classified as a Dangerous Good Class 2.3 Toxic Gas as per the criteria of the Australian Dangerous Goods Code and must be stored in accordance with the relevant regulations.

This material is a Scheduled Poison S7 and must be stored, maintained and used in accordance with the relevant regulations.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

National occupational exposure limits:
No value assigned for this specific material by Safe Work Australia.

However for:

	TWA		STEL		CARCINOGEN	NOTICES
	ppm	mg/m3	ppm	mg/m3	CATEGORY	
Chlorine	1 (Peak Limitation)	3 (Peak Limitation)	-	-	-	-

As published by Safe Work Australia.

TWA - The time-weighted average airborne concentration over an eight-hour working day, for a five-day working week over an entire working life.

Peak Limitation - a ceiling concentration that should not be exceeded over a measurement period, which should be as short as possible, but not exceeding 15 minutes.

No Exposure Standards assigned to other constituents.

These Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept too as low a level as is workable. These 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.

If the directions for use on the product label are followed, exposure of individuals using the product should not exceed the above standard. The standard was created for workers who are routinely, potentially exposed during product manufacture.

Biological Limit Values:
As per the "National Model Regulations for the Control of Workplace Hazardous Substances (Safe Work Australia)" the ingredients in this material do not have a Biological Limit Allocated.

Engineering measures: Ensure ventilation is adequate to maintain air concentrations below Exposure Standards. Use only in well ventilated areas. Use with local exhaust ventilation or while wearing air supplied mask. Vapour heavier than air - prevent concentration in hollows or sumps. DO NOT enter confined spaces where vapour may have collected. Keep containers closed when not in use.

Personal protection equipment: OVERALLS, RUBBER BOOTS, FACE SHIELD OR AIR MASK, GLOVES AND APRON.

Wear overalls, full-face shield, elbow-length impervious gloves, splash apron and rubber boots. Use with adequate ventilation. If inhalation risk exists, wear air-supplied mask meeting the requirements of AS/NZS 1715 and AS/NZS 1716. Available information suggests that gloves made from butyl rubber/leather/natural rubber/neoprene/nitrile rubber/polyethylene/polyvinyl alcohol (PVA)/polyvinyl chloride (PVC)/teflon should be suitable for intermittent contact. However, due to variations in glove construction and local conditions, the user should make a final assessment. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

Hygiene measures: Keep away from food, drink and animal feeding stuffs. When using do not eat, drink or smoke. Avoid skin and eye contact and inhalation of vapour, mist or aerosols. Ensure that eyewash stations and safety showers are close to the workstation location.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form / Colour / Odour: Gas / liquid, greenish-yellow at high concentrations, clear at low concentrations. Pungent odour.

Solubility:	Soluble in water
Specific Gravity (20 °C):	1.468 (liquid), 1.56 @ -35°C
Relative Vapour Density (air=1):	2.4
Vapour Pressure (20 °C):	666 kPa
Flash Point (°C):	N App
Odour Threshold:	Approx. 1 ppm
Flammability Limits (%):	N App
Autoignition Temperature (°C):	N App
Freezing Point/Range (°C):	-101
Boiling Point/Range (°C):	-34
pH:	N App

(Typical values only - consult specification sheet)
N Av = Not available N App = Not applicable

10. STABILITY AND REACTIVITY

Reactivity: Reacts violently with many silicones, finely divided metals and organic chemicals, e.g. greases, mineral oils hydrocarbons. Forms explosive mixtures with alcohols, glycols, ammonia and its compounds as well as hydrogen over a wide range of concentrations.

Chemical stability: Reactive chemical. Corrosive in the presence of moisture.

Hazardous reactions: Oxidising agent. Supports combustion of other materials and increases intensity of a fire. Corrosive to some metals (brass, copper, lead, nickel, steel, stainless steel) in the presence of moisture. Can react with acids and some nitrogen and phosphorus compounds.

Conditions to avoid: Elevated temperatures, sources of ignition and open flames. Avoid contact with combustible materials. Do not allow water to come into contact with liquid chlorine.

Incompatible materials: Incompatible with combustible materials and reducing agents.

Hazardous decomposition products: Chlorine and oxides of 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:

Acute Effects

Inhalation: Material is an irritant to mucous membranes and respiratory tract. May cause coughing and shortness of breath. May cause adverse lung effects if high concentrations are inhaled. Inhalation of vapours may cause sever 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.

Skin contact: Liquid chlorine is corrosive to skin - may cause skin burns. Liquid splashes or spray may cause freeze burns.

Ingestion: Swallowing liquid chlorine 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. Liquid splashes or spray may cause freeze burns to the eye.

Acute toxicity

Inhalation: This material has been classified a category 3 Hazard.

Skin contact: This material has been classified as non-hazardous.

Ingestion: This material has been classified as non-hazardous.

Corrosion/Irritancy: Eye: this material has been classified as a Category 2A Hazard (reversible effects to eyes).
Skin: this material has been classified as a Category 2 Hazard (irritant to skin).

Sensitisation: Inhalation: this material has been classified as not a respiratory sensitiser.
Skin: this material has been classified as not a skin sensitiser.

Aspiration hazard: This material has been classified as non-hazardous.

Specific target organ toxicity (single exposure): This material has been classified as a Category 3 Hazard. Exposure via inhalation may result in respiratory irritation.

Chronic Toxicity

Mutagenicity: This material has been classified as non-hazardous.

Carcinogenicity: This material has been classified as non-hazardous.

Reproductive toxicity (including via lactation): This material has been classified as non-hazardous.

Specific target organ toxicity (repeat exposure): This material has been classified as non-hazardous.

12. ECOLOGICAL INFORMATION

Avoid contaminating waterways.

Acute aquatic hazard: This material has been classified as a Category Acute 1 Hazard.
Acute toxicity estimate (based on ingredients): <1 mg/L

Long-term aquatic hazard: No information is available to complete an assessment.

Ecotoxicity: No information available.

Persistence and degradability: No information available.

Bioaccumulative potential: No information available.

Mobility: No information available.

13. DISPOSAL CONSIDERATIONS

Persons conducting disposal, recycling or reclamation activities should ensure that appropriate personal protection equipment is used, see “Section 8. Exposure Controls and Personal Protection” of this SDS.

If possible material and its container should be recycled. If material or container cannot be recycled, dispose in accordance with local, regional, national and international Regulations.

14. TRANSPORT INFORMATION

ROAD AND RAIL TRANSPORT
Classified as Dangerous Goods by the criteria of the “Australian Code for the Transport of Dangerous Goods by Road & Rail” and the “New Zealand NZS5433: Transport of Dangerous Goods on Land”.

UN No:	1017
Dangerous Goods Class:	2.3
Subrisk 1:	5.1
Subrisk 2:	8
Hazchem Code:	2XE
Emergency Response Guide No:	12

Proper Shipping Name: CHLORINE

Segregation Dangerous Goods: Not to be loaded with explosives (Class 1), flammable liquids (Class 3), spontaneously combustible substances (Class 4.2), oxidising agents (Class 5.1), organic peroxides (Class 5.2), food and food packaging in any quantity, however exemptions may apply.

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

This material is classified as a Marine Pollutant (P) according to the International Maritime Dangerous Goods Code.

UN No:	1017
Dangerous Goods Class:	2.3
Subrisk 1:	5.1
Subrisk 2:	8

Proper Shipping Name: CHLORINE

AIR TRANSPORT
TRANSPORT PROHIBITED under the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air in passenger and cargo aircraft.

15. REGULATORY INFORMATION

This material is not subject to the following international agreements:

Montreal Protocol (Ozone depleting substances)
The Stockholm Convention (Persistent Organic Pollutants)
The Rotterdam Convention (Prior Informed Consent)
Basel Convention (Hazardous Waste)

This material is subject to the following international agreements:

International Convention for the Prevention of Pollution from Ships (MARPOL)

- Annex III - Harmful Substances carried in Packaged Form

This material/constituent(s) is covered by the following requirements:

- The Standard for the *Uniform Scheduling of Medicines and Poisons (SUSMP*) established under the *Therapeutic Goods Act (Commonwealth*).
- All the constituents of this material are listed on the *Australian Inventory of Chemical Substances (AICS)*.

16. OTHER INFORMATION

Literary reference

This Safety Data Sheet has been prepared by Chemical Data Services Pty Ltd (chemdata.com.au) on behalf of its client.

Reason(s) For Issue: First Issue

Safety Data Sheets are updated frequently. Please ensure that you have a current copy.

This SDS summarises at the date of issue our best knowledge of the health and safety hazard information of the product, and in particular how to safely handle and use the product in the workplace. Since DuluxGroup (Australia) Pty Ltd and DuluxGroup (New Zealand) Pty Ltd cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, review this SDS in the context of how the user intends to handle and use the product in the workplace.

If clarification or further information is needed to ensure that an appropriate assessment can be made, the user should contact this company.

Our responsibility for product as sold is subject to our standard terms and conditions, a copy of which is sent to our customers and is also available upon request.