Safety Data Sheet

Liquid Chlorine

Version 1.00 Revision Date 06.07.2022

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

Product identifier

Trade name	Liquid Chlorine
EINECS-No.	231-959-5

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

Use	Industrial use.

Manufacturer or supplier's details

Company	Sasol Chemicals, a division of Sasol South Africa Ltd
Address	Sasol Place, 50 Katherine Street Sandton 2090 South Africa
Telephone	+27103445000
E-mail address	sasolchem.info.sa@sasol.com
Emergency telephone number	+44 (0)1235 239 670 (Europe, Israel, Africa, Americas) +44(0)1235 239 671 (Middle East, Arabic African countries) +65 3158 1074 (Asia Pacific) +86 400 120 6011 (China) +27 (0)17 610 4444 (South Africa) 0800 112 890 RSA-Local only +61 (2) 8014 4558 (Australia)

SECTION 2. Hazards identification

Classification of the substance or mixture

REGULATION (EC) No 1272/2008

Classification	Oxidizing gases	Category 1
	Gases under pressure	Liquefied gas
	Acute inhalation toxicity	Category 3
	Skin irritation	Category 2

Eye irritation	Category 2
Specific target organ toxicity - single exposure (Respiratory system)	Category 3
Short-term (acute) aquatic hazard	Category 1

Label elements

REGULATION (EC) No 1272/2008

When put on the market gases have to be classified as “Gases under pressure”, in one of the groups compressed gas, liquefied gas, refrigerated liquefied gas or dissolved gas. The group depends on the physical state in which the gas is packaged and therefore has to be assigned case by case. The following codes are assigned: Press. Gas (Comp.) Press. Gas (Liq.) Press. Gas (Ref. Liq.) Press. Gas (Diss.) Aerosols shall not be classified as gases under pressure (See Annex I, Part 2, Section 2.3.2.1, Note 2).

Hazard pictograms :

Signal word : Danger

Hazard statements :

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

Precautionary statements

Prevention	P220 Keep away from clothing and other combustible materials.
	P244 Keep valves and fittings free from oil and grease.
	P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
	P271 Use only outdoors or in a well-ventilated area.
	P264 Wash the contact area thoroughly after handling.
	P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
	P284 Wear respiratory protection.
	P273 Avoid release to the environment.
Response	P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
	P302 + P352 IF ON SKIN: Wash with plenty of water.
	P332 + P317 If skin irritation occurs: Get medical advice/ attention.
	P362 Take off contaminated clothing and wash before reuse.
	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 + P317 If eye irritation persists: Get medical advice/ attention.
	P370 + P376 In case of fire: Stop leak if safe to do so.
	P315 Get immediate medical advice/ attention.
	P391 Collect spillage.
Storage	P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
	P410 Protect from sunlight.
	P405 Store locked up.
Disposal	P501 Dispose of contents/ container to an approved waste disposal plant.

SECTION 3. Composition/information on ingredients

HAZARDOUS INGREDIENTS

Chlorine

Contents: 100.00 %W/W

CAS-No. 7782-50-5 **Index-No.** 017-001-00-7 **EC-No.** 231-959-5

Hazard statements *H331 H319 H315 H335 H400 H270 H280*

SECTION 4. First aid measures

Description of necessary first-aid measures

Inhalation

Move to fresh air in case of accidental inhalation of vapours. If breathing is irregular or stopped, administer artificial respiration. Monitor breathing ensure airways are clear and have qualified person, if breathing is difficult. if present. Seek immediate medical attention (consult a physician).

Skin contact

Remove and discard all contaminated clothing. Contact with liquid could cause frostbite. Flush the affected skin with large amounts of water for at least 15-20 minutes, and use soap or mild detergent for affected area. Rinsing with Diphoterine first aid solution can also be performed as the Diphoterine is more effective than water. Diphoterine first aid solution limits the chemical's penetration and chemical's aggresiveness. It halts the reaction between the chemical product and the skin tisues and minimise the lesions caused. Get medical attention immediately if irritation persists.

Eye contact

Immediately wash the eye(s) with clean water or a neutral saline solution, including under the eyelids, for at least 5 to 15minutes. Take care not to rinse the contaminated water into the unaffected eye. Flushing and rinsing with Diphoterine first aid solution can also be performed as the Diphoterine is more effective than water. Diphoterine first aid solution limits the chemical's penetration and chemical's aggresiveness. Get medical attention immediately

Ingestion

This is an unlikely route of intake; If swallowed, DO NOT induce vomiting. If the patient is conscious, give very large amounts of water to drink and repeat if vomiting occurs. If vomiting occurs, keep head lower than the hips to help prevent aspiration. Never give anything by mouth to an unconscious person. Maintain airway and respiration and observe/treat as

for inhalation. Get medical attention immediately

Most important symptoms/effects, acute and delayed

Refer to SECTION 11

SECTION 5. Firefighting measures

Suitable extinguishing media

Water spray.

Special hazards arising from the substance or mixture

Although non-combustible, this oxidizing agent may assist combustion. Clear area of unprotected persons Containers are under pressure and may explode in heat of fire. Move containers from fire area and shut off source of gas if possible without risk. Contain fire and allow to burn. Use water spray to cool fire exposed storage containers, until well after fire has been extinguished. Stay away from ends of fire exposed storage tanks. Never allow gas or liquid chlorine to come into contact with organic materials such as mineral oils and greases. Chlorine gas, which is heavier than air and will accumulate in depressions, excavations and other confined spaces.

Special protective equipment for firefighters

An approved positive pressure self-contained breathing apparatus must be worn. Although it will provide little or no thermal protection, chemical protective clothing must be worn when handling this substance.

SECTION 6. Accidental release measures

Personal precautions

The greenish-yellow colour of chlorine gas only becomes visible at levels many times greater than the danger level. Do not assume that you are safe because you can not see any gas. Ensure fully encapsulating, vapour-protective clothing during removal of spillage. This includes a chemical suit, a chemical protection suit hood (pulled over the head), PVC gloves and gumboots which are tapped to the chemical suit.

	Cordon off the area and deny entry to non-protected persons and the public. Evacuate to an area away from and upwind of the incident, if possible, to higher ground. Always work upwind of any spill. Do not touch or walk through spilled material. Chlorine gas, which is heavier than air and will accumulate in depressions, excavations and other confined spaces.
Environmental precautions	Do not allow product/runoff from fire or spillage control to enter sewers, drains or watercourses. Spillage, uncontrolled discharges into watercourses must be reported to the regulatory bodies.
Methods for cleaning up	Isolate a leak or spill area for at least 1.1km during day, 4.5km during night in all directions in order to take protective action. Stop leaks if you can do so without risk. If the source of the leak is a gas cylinder, turn the cylinder until the leak is uppermost and in the gas phase. move the cylinder to a safe place in the open air and allow to empty if leak cannot be repaired. Keep area well ventilated.
Reference to other sections	Refer to section 8 and 13

SECTION 7. Handling and storage

Safe handling advice	Never work alone with Liquid Chlorine. Avoid contact with skin and eyes. Use only in cool, well-ventilated areas and keep container closed. Do not eat, drink or smoke when using this product. Always wash hands before after use, before eating, drinking and or smoking. Have available emergency self-contained breathing apparatus or a full-face airline respirator. Always wear chemical protective clothing when working with this substance. Protect containers against physical damage during handling.
Advice on protection against fire and explosion	No data available.

Requirements for storage areas and containers	Store on a hard, well-drained surface in a contained area that can be ventilated under controlled conditions.Store in tightly closed, designated containers, away from heat and sources of heat.Use containers on a first-in, first out basis and store empty containers in a separate area, but still treat them as full.Keep area free from oiliness and cloth waste.Keep containers secured against a solid structure, tightly closed and upright when not in use.Protect containers against physical damage during handling.Separate from combustible, organic or easily oxidised materials.Isolate from acetylene, ammonia, hydrogen, hydrocarbons, ether, turpentine and finely divided metals.
Advice on common storage	No data available.

SECTION 8. Exposure controls/personal protection

Components with workplace control parameters

NATIONAL OCCUPATIONAL EXPOSURE LIMITS

Components	Type	Control parameters	Update	Basis
	TWA	1.5 mg/m3	1995	South Africa RELs
	TWA	0.5 ppm	1995	South Africa RELs
	STEL	3 mg/m3	1995	South Africa RELs
	STEL	1 ppm	1995	South Africa RELs

Exposure controls

Engineering measures

Mechanical ventilation is recommended for all indoor situations to control fugitive emissions.
A contained area that can be ventilated under controlled conditions is essential when storing this substance.
Consideration should be given to provide "make up air"; to balance the air exhausted
Ensure eye wash fountains and quick drench showers are provided within the iimediate work area for emergency use.

Personal protective equipment

Respiratory protection	For conditions where exposure to any form of chlorine is aparent, from chlorine mist to high concentrations of chlorine, a full-face self-contained breathing apparatus with positive pressure or airline mask is essential. Cannister type respirators is part of normal plant PPE and must be worn by all chlorine plant personnel. In case of an emergency, which can happen at any time in a chlorine plant, the respirator must be available to enable a person to flee the area (escape respirator).
Hand protection	Gloves suitable for permanent contact: Material: butyl-rubber Break through time: 4 h Material thickness: 0.5 mm
Eye protection	Wear full-face respiratory protection if there is a potential of contact with the liquid state of the product.
Skin and body protection	Wear suitable impervious gloves. A one-piece suit with hood and rubber boots should be worn. In situations where this substance is handled inside a ventilation hood, an impervious apron may be worn.
Hygiene measures	Wash hands before breaks and immediately after handling the product. Showering is necessary after the removal of contaminated protective clothing.

SECTION 9. Physical and chemical properties

Information on basic physical and chemical properties

Form	Liquid
State of matter	Liquid; at 20 ° C; 1,013 hPa
Colour	Amber
Odour	Pungent
Odour Threshold	No data available.
pH	Not applicable.
Melting point/range	-101 ° C
Boiling point/boiling range	-34.5 ° C
Flash point	Not applicable.

Evaporation rate	No data available.
Flammability (solid, gas)	No data available.
Auto-ignition temperature	No data available.
Decomposition Temperature	No data available.
Lower explosion limit	No data available.
Upper explosion limit	No data available.
Vapour pressure	759 hPa
Relative vapour density	2.486(Air = 1.0)
Density	1.467 g/cm3
Water solubility	Partly soluble
Partition coefficient: n-octanol/water	No data available.
Viscosity, kinematic	No data available.

SECTION 10. Stability and reactivity

Reactivity	Chlorine is stable under normal conditions. At pressures above 375kPa, liquifaction may occur. Liquid chlorine has a high coefficient of thermal expansion.
Chemical stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	Chlorine is incompatible with finely divided metals and reacts violently with many organic materials such mineral oils and greases. Chlorine attacks caesium nitride and corrodes some metals in the presence of moisture. Forms explosive compounds or mixtures with alcohols, alkyl isothiourea salts, calcium chlorite, dimethyl phosphoramidate, etc. Forms explosive, ignition or incandescent reactions with acetylene, antimony, benzene, bromine pentaflouride, carbon disulphide, etc
Conditions to avoid	Exposure to air. Extremes of temperature and direct sunlight.
Materials to avoid	Chlorine reacts with most materials, especially combustible materials, other reducing agents and nearly all metals.
Hazardous decomposition products	Toxic and corrosive fumes and in the presence of water, Hydrochloric acid will be produced.

SECTION 11. Toxicological information

Acute inhalation toxicity	Toxic by inhalation. Irritating to respiratory system. Atmospheric concentrations in excess of the occupational exposure limit may lead to immediate and severe irritation of the upper- respiratory airways, intense coughing, choking and bronchospasm at levels of 14-20ppm. Shortness of breath, chest pain, possible nausea and vomiting can occur at a 30ppm level of exposure. There is some evidence that such exposure may cause bronchial hyperactivity in susceptible individuals. Chemical trachea-brochitis and pulmonary oedema may appear up to 48 hours after exposure to levels above 40ppm. Unconsciousness and death may occur following exposure to concentrations of above 50ppm, dependant upon exposure duration.
Skin irritation	Contact with liquid chlorine may cause frost burns, blistering and tissue destruction. High vapour concentrations may irritate the skin and cause a burning and prickling sensation, inflammation and vesicle formation. Repeated skin contact can cause dermatitis. Prolonged skin exposure may also cause destruction of the dermis with impairement of the skin at side of contact to regenerate.
Eye irritation	Direct eye contact can cause redness, pain, blurred vision (impairement of vision or corneal damage) and watering. Repeated and prolonged exposure can cause conjunctivitis.
Carcinogenicity	Chlorine is an irritant gas but not classified as human carcinogen.
Further Information	Ingestion will cause ulceration of and damage to the gastrointestinal tract.

SECTION 12. Ecological information

Toxicity to algae	Toxic to aquatic organisms and causes severe damage to aquatic plants.
Toxicity to bacteria	Highly toxic to sewage micro-organisms, Causes mutation in micro-organisms (e.g. in bacteria).

Bioaccumulation	The product has low potential for bioaccumulation.

SECTION 13. Disposal considerations

Product	Disposal should be in accordance with local, regional and national legislations.
Packaging	Dispose of spent product packaging responsibly and lawfully with due consideration for health, safety and the environment.

SECTION 14. Transport information

DG Pictogram

ADR

UN number:	1017
Class:	2, (5.1, 8) 2TC;
Proper shipping name:	CHLORINE

RID

UN number:	1017
Class:	2, (5.1, 8) 2TC
Proper shipping name:	CHLORINE

ADNR

UN number:	1017
Class:	2, (5.1, 8) 2TC
Proper shipping name:	CHLORINE

IMDG

UN number:	1017
Class:	2.3, (5.1, 8)
EmS:	F-C, S-U
Proper shipping name:	CHLORINE
Marine pollutant	Marine pollutant
ICAO/IATA	
UN number :	1017
Class:	2.3
Proper shipping name:	CHLORINE

SECTION 15. Regulatory information

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

USA TSCA Inventory	All chemical constituents are listed in: USA TSCA Inventory (See chapter 3)
Canadian Domestic Substances List (DSL)	All chemical constituents are listed in: Canadian Domestic Substances List (DSL) (See chapter 3)
Australian Inv. of Chem. Substances (AICS)	All chemical constituents are listed in: Australian Inv. of Chem. Substances (AICS) (See chapter 3)
New Zealand Inventory of Chemicals (NZIoC)	All chemical constituents are listed in: New Zealand Inventory of Chemicals (NZIoC) (See chapter 3)
Jap. Inv. of Exist. & New Chemicals (ENCS)	All chemical constituents are listed in: Jap. Inv. of Exist. & New Chemicals (ENCS) (See chapter 3)
Japan. Industrial Safety & Health Law (ISHL)	All chemical constituents are listed in: Japan. Industrial Safety & Health Law (ISHL) (See chapter 3)
Korea. Existing Chemicals Inventory (KECI)	All chemical constituents are listed in: Korea. Existing Chemicals Inventory (KECI) (See chapter 3)
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	All chemical constituents are listed in: Philippines Inventory of Chemicals and Chemical Substances (PICCS) (See chapter 3)
China Inv. Existing Chemical Substances	All chemical constituents are listed in: China Inv. Existing

(IECSC)	Chemical Substances (IECSC) (See chapter 3)

SECTION 16. Other information

Full text of H-Statements

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.

All reasonable efforts were exercised to compile this SDS in accordance with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS). The SDS only provides information regarding the health, safety and environmental hazards at the date of issue, to facilitate the safe receipt, use and handling of this product in the workplace and does not replace any product information or product specifications. Since Sasol and its subsidiaries cannot anticipate or control all conditions under which this product may be handled, used and received in the workplace, it remains the obligation of each user, receiver or handler to, prior to usage, review this SDS in the context within which this product will be received, handled or used in the workplace. The user, handler or receiver must ensure that the necessary mitigating measures are in place with respect to health and safety. This does not substitute the need or requirement for any relevant risk assessments to be conducted. It further remains the responsibility of the receiver, handler or user to communicate such information to all relevant parties that may be involved in the receipt, use or handling of this product.
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