

Material Safety Data Sheet (MSDS) – Liquid chlorine



1-Material Specifications

Material Name	Liquid Chlorine/Cloro Liquido
Chemical name	Chlorine
Common Name/ Chemical Family	--
Use of the substance/mixture	Chlorinating agent, water treatment chemicals, plastics manufacturing
CAS NO.	7782-50-5
EU NO.	231-959-5
NFPA Rating	0 and 4
Manufacturing origin	Pars chemia chlor

2- Physical and Chemical Properties

	Chemical name	Structural Formula	Molar Mass	Melting Point	Boiling Point	Density
1	Liquid Chlorine	Cl ₂	70.09 (gmol ⁻¹)	-101.5°C	-34.04°C	3.21 kg/m ³ at 0 °C

	Purity	pH	Solubility in Water	Appearance /Odor	Vapor Density (Air=1)	Vapor Pressure (mmHg)	VOC%
2	Min: 99.5%	Strongly acidic in the presence of water	Chlorine is stable under normal conditions	amber	2.49	4788 mmHg at 20°C	No datat

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3- Hazardous Ingredients

Chemical Name	Cas Number	TLV	PEL
Chlorine	7782-50-5	0.5 ppm	1ppm

4- Hazards of Contact


Damage organs	Eyes, respiratory system, skin
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	Ways of exposure	Inhalation, skin contact, eye contact
	Eye	Contact with liquefied gas can cause damage (frostbite) due to rapid evaporative cooling. Can cause blurred vision, redness, pain, severe tissue burns and eye damage.
	Skin	Contact with liquefied gas can cause damage (frostbite) due to rapid evaporative cooling.
	Inhalation	Irritating to respiratory system, can be fatal if inhaled
	Swallow	Ingestion is not a typical route of exposure for liquefied gasses.
	Ingestion	Causes digestive tract burns

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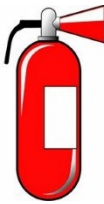
5- Health and First Aids

	measures after Eye contact	Rinse thoroughly with plenty of water for at least 15 minutes. Remove contact lenses if present and easy to do. Get medical attention immediately.
	measures after skin contact	Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Contact with liquid form may cause frostbite. Chemical burns must be treated by a physician. Get medical attention immediately.
	Inhalation	If breathed in, move person into fresh air. If breathing is difficult, give humidified air. Give oxygen but only by a certified physician. If breathing stops, provide artificial respiration. Get medical attention immediately.
	Swallow	Ingestion is not a typical route of exposure for liquefied gasses. Get medical attention immediately.

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6- Fire /Fighting Measures

	Flash Point	None.
	Auto Ignition	N/A
	Extinguishing Media	Use extinguishable media appropriate for surrounding media.
	Flammable Limits	No data
	Fire Fighting Procedures	Wear NIOSH approved positive-pressure self-contained breathing apparatus operated in pressure demand mode. Keep unnecessary people away, keep area isolated. Deny entry. Do not direct water directly at the source of the leak or at safety devices; icing may occur. Remove containers from fire zone if possible, except if chlorine is leaking. For large fires, and fires involving tanks and tank cars, fight the fire from a maximum distance. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of escalating leakage.
	Unusual Fire and Explosion Hazards	Chlorine is not combustible, but it enhances the combustion of other substances. Most combustibles will burn in this material, producing irritating corrosive and/or toxic gases. Contact with reactive metals like aluminum, zinc and tin may generate flammable hydrogen gas. It may react to cause fire and/or explosion on contact with organics such as oils or lubricants. May react with steel at high temperature.


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7- Stability and Reactivity

	Stability	Chlorine is stable under normal conditions
	Conditions to Avoid	Moisture in chlorine handling systems. Excessive heat or fire in storage areas, above 485°F
	Incompatibility	Chlorine reacts with water to produce hypochloric acid and hypochlorous acid. Chlorine reacts as an oxidizer with most organic materials (except those fully halogenated) at room temperature. It reacts with many metals at elevated temperatures. Dry chlorine will react with titanium and aluminum. Wet chlorine is corrosive to most metals except titanium. Chlorine will combine with carbon monoxide and sulfur dioxide to form phosgene and sulfuryl chloride respectively.
	Hazardous Decomposition Products	Cannot decompose
	Hazardous Polymerization	Hazardous polymerization WILL NOT occur


8- Storage and Handling

	Precautions to be taken	Do not attempt to handle, store or use chlorine without proper training. Avoid heat, sparks, open flames and other ignition sources. Use only chlorine-compatible lubricants. Keep dry as much as possible. Close valves when not in use. Store in well-ventilated areas.
	Other Precautions	Equipment: Purge free of any contained chlorine.

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9- personal Protective Equipments

	Eye protection	Splash goggles or full-face gas mask.
	Skin and body protection	For exposure to high concentrations of liquid chlorine, full body protection, Class A or B, is required as well as rubber chemical protectant boots.
	Hand protection	Non-porous, i.e. neoprene, butyl or Viton.
	Respiratory protection	acid gas chemical cartridge respirator or full face with canister–within allowable limits. For unknown concentrations, use approved self-contained breathing apparatus.

10- Accidental Release Measures

Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so. Reduce vapors with water spray.

11- Disposal Considerations

Due to its inherent properties, hazardous conditions may result if the material is managed improperly. It is recommended that any containerized waste chlorine be managed as hazardous waste in accordance with all applicable health and environmental laws and regulations.


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12- Transportation

Proper Shipping Name	Hazard Class	UN Number	Packaging Group
Steel tank cars, tank trucks, ton containers, 100- and 150- pound cylinders.	2.3	1017	I

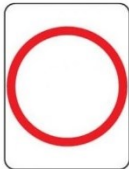
13- Toxicology

	Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA
	Mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
	Reproductive	Not classified
	Sensitization	Not classified

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14- Regulatory

	CERCLA-RQ	1500 Lbs
	SARA 311/312	Yes
	EPCRA 313	Yes
	FIFRA	Registered pesticide under 40 CFR 152.10, Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). EPA Reg. No: 62531-3 (ASHTA14-01) It is a violation of federal law to use this product in a manner inconsistent with its labeling. Use as a disinfectant must be carried out in accordance with all regulations.
	SARA 302 - TPQ	100 lbs
	TSCA	Listed

15- Other Information

The information contained on this Material Safety Data Sheet is considered accurate as of the date of publication. It is not necessarily all inclusive nor fully adequate in every circumstance. The suggestions should not be confused with, nor followed in violation of applicable laws, regulations, rules or insurance requirements. No warranty, express or implied, of merchantability, fitness, accuracy of data, or the results to be obtained from the use thereof is made. The vendor assumes no responsibility for injury or damages resulting from the inappropriate use of this product.