



MATERIAL SAFETY DATA SHEET (CHLORINE)

I. PRODUCT IDENTIFICATION

Chemical Name : Chlorine
Trade Name : Liquid Chlorine
Synonyms : Liquefied chlorine gas, chlorine gas, chlor,
Molecular chlorine, diatomic chlorine, Cl

II. COMPOSITION / INGREDIENTS

Liquid Chlorine, % : 99.99 % by volume
Chemical Formula : Cl₂
Molecular Weight : 70.90 g/mole
CAS Registry No. : 7782-50-5

III. HAZARDS IDENTIFICATION

EXPOSURE TO THIS PRODUCT IS :

Highly toxic agent via inhalation and ingestion. Primarily an intense respiratory irritant and a major potential hazard upon contact to skin and eyes. Sufficient concentration of the gas irritates the mucous membranes. It can cause pulmonary edema. Liquid chlorine in contact with skin will cause frostbite, smarting of the skin and first-degree burns on short exposure; may cause secondary burns on long exposure. Vapors will cause severe irritation of eyes and throat and can cause eye and lung injury. Vapors cannot be tolerated even at low concentrations. In extreme cases, difficulty of breathing may increase to the point where death can occur from suffocation. The characteristic, penetrating odor of chlorine gas gives warning of its presence in the air.

IV. FIRST AID MEASURES

GENERAL:

Prompt treatment of anyone overcome or seriously exposed to chlorine, is of utmost importance. The patient should be removed from contaminated area. Obtain medical assistance as soon as possible.

CONTACT WITH SKIN OR MUCOUS MEMBRANES: Immediately wash contaminated skin and clothing with copious amounts of water for a minimum of 15 minutes. Contaminated clothing should be removed under the shower and the chlorine should be washed off with very large quantities of water. Skin areas should be washed with large quantities of soap and water. Never attempt to neutralize chlorine with chemicals. Salves and ointment should not be applied unless directed by a physician. Call or see a physician. (If victim has also inhaled chlorine, first aid for inhalation should be given first).

CONTACT WITH EYES: Immediately flush eyes with large amount of running water for at least 15 minutes even if minute quantities of liquid chlorine enter the eyes. Never attempt to neutralize with chemicals. The eyelids should be held apart during this period to ensure contact of water with accessible tissues of the eyes and lids. Call a physician, preferably and eye specialist, at once. If physician is not immediately available, the eye irrigation should be continued for a second period of 15 minutes. No oils or oily ointments, or any medications should be instilled unless ordered by the physician.

INHALATION: Remove victim from source of exposure. If breathing has not ceased, the patient should be placed in a comfortable position and be kept warm and remain at rest until medical help arrives. If breathing stops, administer artificial respiration. If available, oxygen should be administered. Call a physician.

INGESTION: Not pertinent, ingestion unlikely (chlorine is a gas above -34.5 °C).

V. FIRE FIGHTING MEASURES

Autoignition Point : Not Applicable

Flash Point : Not Flammable

Flammability/Explosive limits : Not Flammable

Fire/Explosion Hazards: Toxic products are generated when combustibles burn with chlorine, although gas is not flammable.

Fire Prevention/ Extinguishing Media : Not Applicable

VI. ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR RELEASE ;

Move people from the area. Move upwind. Avoid contact with acid. Stop leaks if safe to do so. Reposition container if this will reduce or stop leakage. If leak continues, remove leaking container from vehicle or move other materials from vehicle away from container. Never use water on a chlorine leak. Water will make the leak worst. If efforts to control leak fails, and the leakage continues, suitable provision should be available with all Chlorine from the leaking containers. Chlorine maybe absorbed in solution of caustic soda, soda ash or hydrated lime.



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VII. HANDLING AND STORAGE

Storage Requirements: Protect against physical damage.

Store outdoors or indoors in a well-ventilated, detached, or segregated area of noncombustible construction.

Incompatible Materials: Store away from heat. Separate from combustible, organic, or easily oxidizable materials and especially isolate from acetylene, ammonia, hydrogen, hydrocarbons, ether, turpentine, and finely divided metals.

Containers: 50Kg, 68Kg and 1 Ton cylinders

Use Instructions: Wear suitable protective clothing, gloves and eye/face protection. In case of insufficient ventilation, wear suitable respiratory equipment.

EMERGENCY PROCEDURE for all emergencies – Shut off vehicle engine and any electrical equipment. Move people from immediate area; keep upwind. Consider initial evacuation distance of 100 meters in all directions. Send messenger, notify fire brigade telling them location, material, quantity, UN number and emergency contact as well as condition of vehicles and damaged observed. Do not move vehicle if movement could cause spillage. Warn traffic.

VIII. EXPOSURE CONTROLS AND PROTECTION

Ventilation: Use only in well-ventilated areas.

Protective Equipment for the eyes and skin :

Splash proof and face shield goggles, disposable latex/ rubber apron, PVC rain suits, rubber boots with pant legs over boots.

Respiratory Protection Requirements: NIOSH/MSHA approved respirator should be used.

Precautionary Hygiene/health/control measures :

Chlorine is not a serious industrial hazard if workers are adequately instructed and supervised in proper means of handling it. Avoid contact with skin, eyes, and clothing. Do not breathe mist or vapor. Wash thoroughly after handling. Safety showers and eye wash fountains should be available in storage and handling area. Any protective clothing contaminated with hydrochloric acid should be removed immediately and thoroughly laundered before wearing again.

IX. PHYSICAL AND CHEMICAL PROPERTIES

STATE	: Gas at normal condition, liquefied compressed gas (as shipped)
APPEARANCE	: Greenish yellow gas, amber liquid in pressured container
ODOR	: characteristic choking/ pungent
BOILING POINT	: -34 °C = -29 °F at 1 atmosphere
FREEZING POINT	: - 101°C = -150°F
SPECIFIC GRAVITY	: Liquid = 1.467 at 0°C, 1.424 at 15°C Vapor (Gas) = 2.4
CRITICAL PRESSURE	: 76.05 atm = 1118 psia
CRITICAL TEMPERATURE	: 144°C = 291°F
SOLUBILITY IN WATER	: slightly soluble

X. STABILITY AND REACTIVITY

Stability: Stable.

Hazardous polymerization will not occur.

Hazardous decomposition product: will not decompose.

Reactivity with water: Forms a corrosive solution. Weak solutions of hydrochloric acid and hypochlorous acids are formed. Highly corrosive in the presence of moisture.

Reactivity with metals: Reacts vigorously with most metals at high temperature. Copper may burn spontaneously.

Reactions with other elements: Unites with most elements under specific conditions. These reactions may be extremely rapid.

Reactions with Inorganic Compounds: Forms soda and lime bleaches (hypochlorites). Reacts with hydrogen sulfide, ammonia or ammonium compounds.

Reactions with Organic Compounds: May form chlorinated derivatives and hydrogen chloride.

XI. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY: When a sufficient concentration of chlorine gas is present, it will irritate the mucous membranes, the respiratory system and the skin. Large amounts cause irritation of eyes, coughing and labored breathing. If the duration of exposure or the concentration of chlorine is excessive, general excitement of the person affected, accompanied by restlessness, throat irritation, and sneezing and copious salivation results. The symptoms of exposure to high concentrations are retching and vomiting, followed by difficult breathing. Chlorine produces no systemic effect. All symptoms and signs result directly or indirectly from the local irritant action.

CHRONIC TOXICITY: Low concentrations of chlorine gas in the air may have a minor irritating effect or may produce slight symptoms after several hours exposure, but careful examination of persons repeatedly exposed to such conditions reportedly have shown no chronic effect.

Reproductive Effects/Cancer Information: No data available

XII. ECOLOGICAL INFORMATION

ECOTOXICITY DATA: Combination of chlorine with ammonia, organic matter, and cyanide maybe detrimental to fish life.

WATER-POLLUTION RISK CLASSIFICATION: Harmful to aquatic life in very low concentrations

XIII. DISPOSAL CONSIDERATIONS

Add to large volume of concentrated reducer (hypo, a bisulfite, or a ferrous salt and acidify with 3M H₂SO₄). When reduction is complete, add soda ash or dilute HCl to neutralize.

Dispose of in accordance with all Government and Local regulations regarding health and safety.



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XIV. TRANSPORT INFORMATION

Transportation of Dangerous Goods

TDG Classification: Do not ship by air.

DOT Hazard Classification: Nonflammable gas;

Label : Nonflammable gas and poison

DOT Shipping Name : Liquefied Chlorine Gas ID: UN 1017

XV. REGULATORY INFORMATION

No data available

XVI. OTHER INFORMATION

References:

1. Manufacturing Chemists' Association, 1825 Connecticut Avenue, N.W. Washington, D.C. 20009
Chemical Safety Data Sheet No. SD 80 "Chlorine" (1970)
2. Dangerous Properties of Industrial Material Report, Vol. 9, No. 4, 1989 "Chlorine"
3. "Chlorine Manual" Mabuhay Vinyl Corporation, Iligan City

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