Central Pollution Control Board
Ministry of Environment & Forests, Govt of India, Parivesh Bhawan, East Arjun Nagar, Delhi - 110032

MATERIAL SAFETY DATA SHEETS

119 **Chlorine**

1. CHEMICAL IDENTITY

Chemical Name : Chlorine

Chemical Classification: Toxic **Trade Name :**

Synonyms: Chlorgas, CLX, Bertholite

Formula : CL2 **CAS No:** 7782-50-5 **UN No:** 1017

Regulated Identification

Shipping Name : Chlorine **Hazchem Code :** 2XE

Codes / Label : Class 2.3, Toxic **Hazardous Waste ID No :** 17

HAZARDOUS INGREDIENTS	C.A.S. No.	HAZARDOUS INGREDIENTS	C.A.S. No.
1 Chlorine	7782-50-5	3	
2		4	

2. PHYSICAL / CHEMICAL DATA

Boiling Pt. °C: -34.04 **Physical State:** Gas **Appearance:** Greenish yellow

Melting Pt °C: -105.5 **Vapour Pressure @ 35°C mmHg:** 5.83X10+3 mm Hg @ 25 deg C **Odour:** Pungent suffocating odour.

Vapour Density(Air =1): 2.5 **Solubility in water at 30°C g/100ml:** 0.57 g/100 ml water @ 30 deg C **Others:** Soluble in alkalies, chlorides and alcohols.

Specific Gravity (Water =1): 1.4085 @ 20 deg C (at 5216 mmHg) **pH :**

3. FIRE / EXPLOSION HAZARD DATA

Flammability : No **LEL:** **Flash Point °C in OC:**

TDG Flammability: **UEL:** **Flash Point °C in CC:**

Autoignition Temperature °C :

Explosion sensitivity to impact: Stable

Explosion sensitivity to static Electricity: Stable

Hazardous Combustion Products : When heated, it emits highly toxic fumes.

Hazardous Polymerization : Will not occur.

Combustible Liquid: No **Explosive Material:** No **Corrosive Material** Yes

Flammable Material: No **Oxidiser :** Yes **Others:**

Pyrophoric Material: No **Organic Peroxide :** No

4. REACTIVITY DATA

Chemical Stability : Stable at normal temperatures and pressures.

Incompatibility with other material : Combustible substances, finely divided metals

Reactivity : Violent reaction with alcohols, explosive reaction with metals; potentially dangerous reaction with sulfides, trialkyl boranes. At normal temperatures dry chlorine does not attack steel, copper, bronze etc.

Moist chlorine is corrosive.

Hazardous Reaction Products : Toxic products are generated when combustibles burn in Chlorine.

5. HEALTH HAZARD DATA

Routes of entry: Inhalation, ingestion, skin and eyes

Effects of Exposure / Symptoms:

Inhalation: Feeling of burning and suffocation, coughing, choking, laryngeal edema hypoxia and, in high concentrations, syncope and almost immediate death may follow. Pulmonary edema is common after severe exposure. Skin: Dermal exposure may cause erythema, pain, irritation, and cutaneous burns. Eyes: Green hair, dental enamel erosion, inflammation of the eye, and nasal and throat irritation may occur. Anosmia is reported. Ingestion: Vomiting may occur following initial exposure. Others: Death may result from suffocation.

Emergency Treatment :

Inhalation: Remove the victim to fresh air area, support respiration, give oxygen, if necessary.

Skin: Remove contaminated clothing and wash exposed area thoroughly with soap and water. A physician should examine the area if irritation or pain persists.

Eyes: Flush with large amounts of water for at least 15 mins. Seek medical aid immediately.

Ingestion: Seek medical assistance.

LD50 (oral-rat) mg/kg:		**STEL:**	1 ppm
LC50 (rat) mg/kg:	260-344 ppm/1 hr	**Odour Threshold:**	0.0020 mg/l (water), 0.31 ppm (air)
Permissible Exposure Limit:	1 ppm (3 mg/m3)	**TLV (ACGIH) :**	0.5 ppm

NFPA Hazard Signals	Health	Flammability	Reactivity	Special
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6. PREVENTIVE MEASURES

Personal Protective Equipment : Provide PVC gloves, gumboots, rubber overcoat, head mask, self-contained breathing apparatus.

Handling : Keep locked up and out of the reach of children (if sold to general public). Keep container in a well ventilated place. Containers of this material may be hazardous when emptied.

Storage : Store in a cool, dry, relatively isolated, well ventilated place. Store in steel pressure cylinders in a cool, dry area outdoors or in well-ventilated, detached or segregated areas of noncombustible construction. Keep out of direct sunlight and away from heat and ignition sources. Cylinder temperatures should never exceed 51°C. Isolate from incompatible materials. Store cylinders upright on a level floor secured in position and protected from physical damage. Use corrosion resistant lighting and ventilation systems in the storage area. Keep cylinder valve cover on. Label empty cylinders. Store full cylinders separately from empty cylinders. Avoid storing cylinders for more than six months. Comply with applicable regulations for the storage and handling of compressed gases.

Precautions : Avoid contact with liquid or vapours.

7. EMERGENCY / FIRST AID MEASURES

FIRE:

Fire Extinguishing Media : Dry chemical, carbon dioxide, water spray, fog or foam.

Special Procedure : Keep the containers cool by spraying water if exposed to heat or

flame. Wear self-contained breathing apparatus. Shut off gas supply. If not possible, let the fire burn.

Unusual Hazards : Container may explode in heat of fire. Poisonous gases are produced in fire.

EXPOSURE: First Aid Measures:

Inhalation: Remove the victim to fresh air area, support respiration, give oxygen, if necessary.

Skin: Remove contaminated clothing and wash exposed area thoroughly with soap and water. A physician should examine the area if irritation or pain persists.

Eyes: Flush with large amounts of water for at least 15 mins. Seek medical aid immediately.

Ingestion: Seek medical assistance.

Antidotes / Dosages: Oxygen

SPILLS :

Steps To Be Taken : Shut off leaks if without risk. Allow the gas to burn under control. Neutralize with dilute caustic soda (NaOH) or soda ash (Na2CO3).

Waste Disposal Method: Refer 'Additional Information'

8. ADDITIONAL INFORMATION / REFERENCES

Spillage control: Keep material out of water sources and sewers. Attempt to stop leak if without undue personnel hazard. Do not apply water to point of leak in tank car or container. Apply water spray or mist to knock down vapors. Vapor knockdown water is corrosive or toxic and should be diked for containment. Land spill: Dig a pit, pond, lagoon, holding area to contain liquid or solid material. Dike surface flow using soil, sand bags, foamed polyurethane, or foamed concrete. Absorb bulk liquid with fly ash or cement powder. Neutralize with dilute caustic soda (NaOH) or soda ash (Na2CO3). Water spill: Add dilute caustic soda (NaOH). If dissolved, in region of 10 ppm or greater concentration, apply activated carbon at ten times the spilled amount. Use mechanical dredges or lifts to remove immobilized masses of pollutants and precipitates.

Incase of large gas escapes, the presence of cloud can be marked with ammonia with which it will turn into a mist. Run away from the gas clouds in a direction perpendicular to the wind direction. Avoid liquid chlorine from leaking and body contact. Persons with pulmonary diseases should avoid the exposure. Bring the leaking portion of the cylinder to the uppermost position, so that only the gas escapes and not the liquid.

9. MANUFACTURERS / SUPPLIERS DATA

NAME OF FIRM :
MAILING ADDRESS :
TELEPHONE / TELEX NOS :
TELEGRAPHIC ADDRESS :
OTHERS :

Contact person in Emergency :
Local Bodies involved :
Standard Packing :
Trem Card Details / Ref :

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