

MATERIAL SAFETY DATA SHEET



SECTION I : MATERIAL IDENTIFICATION & USE : CHLORINE, used in bleaching Powder, water treatment.

Material - Name/Identifier : CHLORINE/GREENISH YELLOW (GAS) & CLEAR AMBER (LIQUID)



Manufacturer's Name	CENTURY CHEMICALS	Manufacturer's Name	CENTURY CHEMICALS
Street Address	MURBAD ROAD	Street Address	MURBAD ROAD
City	KALYAN Dist Thane	City	KALYAN Dist Thane
State	MAHARASHTRA	State	MAHARASHTRA
Postal Code	421 103	Postal Code	421 103
Emergency Tel No	0251-2733670-79 Ulhasnagar	Emergency Tel No	0251-2733670-79 Ulhasnagar
Chemical Name	CHLORINE	Chemical Identity	Gas & Liquid
Trade Name & Synonyms	LIQUID CHLORINE	PRODUCT Use	Bleaching, water Treatment & Chlorides

SECTION II : HAZARDOUS INGREDIENTS OF MATERIAL

Hazardous Ingredients	Approximate Conc - %	CAS or UN Number	LD50 (Specify Species & Route)	LC50 (Specify Species & Routes)
CHLORINE GAS & LIQUID.	0.2 to 1000 ppm in air	UN Number 1017	100 ppm	Inhalation, Ingestion skin absorption

SECTION III : PHYSICAL DATA FOR MATERIAL

Physical State Gas/Liquid/Solid	Odour & Appearance	Odour threshold (ppm)
Gas & Liquid under Pressure	Pungent & suffocating	1 ppm = 3 mg/m ³
Specific Gravity Water = 1 1.4 at 20°C	Vapour pressure (mm) 6.3 kg/m at 20°C	Vapour density (Air - 1) 2.49 at 20°C and 4800 mm mercury
Evaporation Rate	Boiling Point (°C) -34.5°C	Freezing Point (°C) -
Solubility in Water (20°C) Slightly soluble	PH Nil	Density (g/ml) -
Coefficient of water/oil distribution	Melting Point -101°C	Molecular Wt : 70.914

SECTION IV : FIRE AND EXPLOSION HAZARD OF MATERIAL

Flammability - Yes/No NO	Means of Extinction Not applicable	Special Procedures -
Flash Point (°C) and method : NIL	Upper Explosive limit (% by vol) : NIL	Lower Explosive limit (% by vol) : NIL
Auto-ignition temp (°C)	TDG flammability Class 2	Hazardous combustion Product. Halides of organic chemicals
Explosion data - sensitivity to chemical impact Sensitivity to hydrogen and organic chemicals.		Sensitivity to static discharge

SECTION V : REACTIVITY DATA

Chemical Stability Yes/No - If No under what condition	Yes
Incompatibility with other substances - Yes/No. If yes, which ones	With hydrogen gas, it reacts explosively. With nitrogen it forms nitrogen trichloride
Reactivity under what conditions	Has affinity for hydrogen. With water it gives corrosive solutions. HCL and HOCL. With caustic soda and lime it forms bleaching powder
Hazardous decomposition Products	Evolution of chlorine
Material - Name/Identifier	Chlorine/Greenish yellow gas. Amber colour liquid .

SECTION VI : TOXICOLOGICAL PROPERTIES OF MATERIAL (route of entry)

Skin contact Burning sensation	Skin absorption Chemical burns	Eye contact Irritation - wash with plenty of water for 15-20 minutes.
Inhalation acute Pulmonary oedema	Inhalation chronic Damage to mucous membrane nose, throat.	Ingestion Vomitting, nausea

EFFECTS OF ACUTE EXPOSURE TO MATERIAL

0.2 - 0.5 ppm	No long term effect
0.5 ppm	Slight odour
1.0 - 3.0 ppm	Definite odour. Eyes nose irritation
6.0 ppm	Irritation to throat
30 ppm	Intense cough, fits
40 - 60 ppm	Effects respiratory damage
100 ppm	Lethal dose
1000 ppm	Danger to life

<u>Effects of Chronic exposure to material</u>	<u>Exposure limit (s)</u>	<u>Irritancy of material</u>
Suffers from "ACNE" tooth enamel damage tuberculosis, damage to pulmonary function	1 ppm) (TWA) 3 mg/m ³) 3 ppm) 9 mg/m ³) STEL	Causes damage to mucous membrane

SENSITIZATION TO MATERIAL : (Carcinogenically, Reproductive Effects, Tetratogenically Mutagenicity)

Tuberculosis of LUNGS

SYNERGISTIC MATERIALS : When inhaled in small quantities, it affects mucous membrane, causes cough. In large quantity exposure, pulmonary oedema is caused.

SECTION VII : PREVENTIVE MEASURES

- 1 Leakages to be detected with liquid gas ammonia - it gives white cloud.
- 2 Handling of chlorine should be done by Pipelines
- 3 In emergency of chlorine gas leakage, use gas mask, evacuate the area
- 4 Spillage should be contained by making bunds of sand, absorb chlorine in alkaline solution such as caustic soda, soda ash or lime
- 5 Pin hole damages in the tonners/cylinders to be blocked by driving hard wood plug or metal pin
- 6 Do not expose cylinders to direct sunlight and avoid exposure to heat source. Temperature over 70°C is likely to result in inside pressure building up to dangerous proportions and create damage/explosion
- 7 If cutting or welding operation is to be undertaken on cylinders or pipeline, it is necessary to ensure complete purging of chlorine, as iron/steel will ignite in chlorine at about 480°F (250°C)

PERSONAL PROTECTIVE EQUIPMENT

Gloves (Specify)	Rubber or PVC
Respiratory (Specify)	Gas mask, oxygen cylinder supply with gas mask, self contained breathing apparatus
Eyes (Specify)	Face shield of acrylic
Footwear (Specify)	Gumboots, rubber or PVC
Clothing (Specify)	Apron PVC or rubber, overall PVC suit with hood
Other (Specify)	-

