

M A T E R I A L S A F E T Y D A T A S H E E T

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24-Hour Emergency Phone Number: 517-636-4400

Product: CHLORINE, GASEOUS H.P.

Product Code: 16276

Effective Date: 02/20/95 Date Printed: 03/07/95 MSD: 001122

The Dow Chemical Company, Midland, MI 48674

Customer Information Center: 800-258-2436

1. INGREDIENTS: (% w/w, unless otherwise noted)

Chlorine CAS# 007782-50-5 99.8%

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

2. PHYSICAL DATA:

BOILING POINT: -29.3F (-34C)
VAP. PRESS: 82 psig @ 68F, 20C
VAP. DENSITY: 2.49 @ 32F, 0C
SOL. IN WATER: 0.73g/100g H2O @ 20C
SP. GRAVITY: 1.47 @ 32F, 0C; 53.2 psia
APPEARANCE: Amber color; liquified gas under pressure;
 vaporizes to greenish - yellow gas.
ODOR: Pungent odor.

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: None
METHOD USED: Not applicable

FLAMMABLE LIMITS
LFL: Not applicable
UFL: Not applicable

EXTINGUISHING MEDIA: Chlorine will react or cause reducing materials to burn without oxygen. Water is effective only

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3. FIRE AND EXPLOSION HAZARD DATA: (CONTINUED)

as a cooling media to reduce the reaction rate, however, water should not be applied directly to the chlorine leak. Where practical attempts should be made to reduce the available reactants through the isolation of the reaction from the chemical supply. This should be attempted only by properly trained personnel using prescribed protective equipment.

FIRE & EXPLOSION HAZARDS: May react to cause fire and/or explosion upon contact with many organic compounds, ammonia, hydrogen, or many metals, and with all metals, including steel, at elevated temperatures.

FIRE-FIGHTING EQUIPMENT: A positive pressure self-contained breathing apparatus for respiratory protection and protective clothing.

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Avoid proximity to flammable materials including chemicals.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Many organic compounds, ammonia, hydrogen, moist or hot steel, and many metals. May react explosively with some organics under confinement.

HAZARDOUS DECOMPOSITION PRODUCTS: None.

HAZARDOUS POLYMERIZATION: Will not occur.

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Move unprotected personnel cross-wind to a clear area. Do not use water directly on a chlorine leak. A fog nozzle may be used to absorb gas. The leak should be isolated or controlled by trained personnel

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5. ENVIRONMENTAL AND DISPOSAL INFORMATION: (CONTINUED)

using prescribed protective equipment.

DISPOSAL METHOD: Prior to disposal, the active chlorine must be reduced or destroyed. Chlorine may be absorbed in dilute solutions of caustic (NaOH), soda ash (Na₂CO₃), or hydrated lime (Ca(OH)₂). For each 1 pound of chlorine, use approximately 3 pounds per gallon caustic or soda ash or 1 pound per gallon lime. Local, municipal or state authorities should be contacted for disposal of resultant product.

6. HEALTH HAZARD DATA:

EYE: May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness.

SKIN CONTACT: Short single exposure may cause severe skin burns.

SKIN ABSORPTION: The dermal LD₅₀ has not been determined.

INGESTION: Ingestion is unlikely due to physical state.

INHALATION: A single brief (minutes) inhalation exposure to easily attainable concentrations may cause serious adverse effects, even death. Excessive exposure may cause severe irritation to upper respiratory tract and lungs and may cause lung injury. The LC₅₀ for mice was 137 ppm and for rats 293 ppm for 1 hour.

SYSTEMIC & OTHER EFFECTS: Excessive exposure may cause liver, lung and kidney effects. Excessive exposure may cause severe irritation to upper respiratory tract and lungs. Excessive exposure may cause lung injury. Excessive exposure to chlorine gas has been known to also cause erosion of tooth enamel.

CANCER INFORMATION: Did not cause cancer in long-term animal studies.

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MATERIAL SAFETY DATA SHEET

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6. HEALTH HAZARD DATA: (CONTINUED)

TERATOLOGY (BIRTH DEFECTS): Limited data suggests that chlorine is not teratogenic but may be slightly embryotoxic when administered at high doses in drinking water to pregnant rats.

REPRODUCTIVE EFFECTS: In animal studies, has been shown not to interfere with reproduction.

MUTAGENICITY (EFFECTS ON GENETIC MATERIAL): Has been shown to have mutagenic activity in bacteria. Results of mutagenicity tests in animals have been negative.

7. FIRST AID:

EYES: Immediate and continuous irrigation with flowing water for at least 30 minutes is imperative. Prompt medical consultation is essential.

SKIN: Wash off in flowing water or shower.

INGESTION: No adverse effects anticipated by this route of exposure.

INHALATION: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

NOTE TO PHYSICIAN: Excellent warning properties force rapid escape from chlorine gas; thus most inhalations are mild to moderate. If escape is not possible, exposure to high concentrations for a very short time can result in dyspnea, hemoptysis and cyanosis with later complications being tracheobronchopneumonitis and pulmonary edema. Oxygen, intermittent positive pressure breathing and aerosolized bronchodilators are of therapeutic value in the light to

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7. FIRST AID: (CONTINUED)

moderate inhalation. A severe inhalation should be hospitalized and treated as a respiratory emergency. Any chlorine inhalation in an individual with compromised pulmonary function (COPD) should be regarded as a severe inhalation and a respiratory emergency. If a burn is present, treat as any thermal burn, after decontamination.

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): Chlorine: ACGIH TLV and OSHA PEL are 0.5 ppm TWA, 1 ppm STEL.

VENTILATION: Control airborne concentrations below the exposure guideline. Use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations. Lethal concentrations may exist in areas with poor ventilation.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air-purifying respirator.

SKIN PROTECTION: Use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, or full-body suit will depend on operation. Safety shower should be located in immediate work area. Remove contaminated clothing immediately and launder before reuse.

EYE PROTECTION: Use chemical goggles. If vapor exposure causes eye discomfort, use a full-face respirator. Eye wash fountain should be located in immediate work area.

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8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): Chlorine: ACGIH TLV and OSHA PEL are 0.5 ppm TWA, 1 ppm STEL.

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9. ADDITIONAL INFORMATION:

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: No attempt should be made to handle or store chlorine without a complete review of the Chlorine Manual, available from the Chlorine Institute, Inc., 2001 L Street N.W., Washington, DC 20036.

MSDS STATUS: Revised Canadian regulatory information.

For information regarding state/provincial and federal regulations see the Regulatory Information Section.

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