**MATERIAL SAFETY DATA SHEET**

**Chloroform**

**SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

**MSDS Name:** Chloroform

**CAS Numbers:**
- 75-09-2
- 126-87-3

**Hazard Statements:**
- Xn: Risk Phrases: 22 38 40 41/20/22

**SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS**

Chemical Name | CAS# | % EINECS/ELINCS
--- | --- | ---
Chloroform | 75-09-2 | 67-68-3 (Chloroform)

**SECTION 3 - HAZARDS IDENTIFICATION**

**EMERGENCY OVERVIEW**

- **Appearance:** Clear, colorless.
- **Warning:** May cause central nervous system depression, eye irritation, and skin irritation. May cause respiratory and digestive tract irritation. May cause cardiac disturbances. May cause reproductive and developmental effects. May cause cancer based on animal studies.
- **Target Organs:** Kidneys, heart, central nervous system, liver, gastrointestinal system, excretory system.
- **Potential Health Effects**
  - **Eye:** Contact with liquid or vapor causes severe burns and possible irreversible eye damage. Vapors may cause eye irritation.
  - **Skin:** May cause irritation with burning pain, itching, and redness.
  - **Ingestion:** May cause central nervous system depression, eye irritation, and skin irritation. May cause gastrointestinal irritation with nausea, vomiting, and diarrhea. May cause cardiac disturbances. Aspiration of material into the lungs may cause chemical pneumonitis, which may be fatal.
  - **Inhalation:** Inhalation of high concentrations may cause central nervous system effects characterized by headache, dizziness, unconsciousness, and coma. Causes respiratory tract irritation. May cause liver and kidney damage. May cause cardiac sensitization and possible failure.
  - **Chronic:** Overexposure may cause delayed kidney injury. Possible cancer hazard based on tests with laboratory animals. Chronic ingestion may cause liver damage. Prolonged or repeated skin contact may cause dermatitis. Prolonged or repeated exposure may cause adverse reproductive effects. May cause fetal effects. Chronic exposure has been associated with an increased incidence of kidney, liver, rectal, bladder, colon, brain, and lymph node cancer. Toxicity may be increased by exposure to alcohol, steroids, and ketones.

**SECTION 4 - FIRST AID MEASURES**

- **Eyes:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Get medical aid immediately. Do not allow victim to rub or open eyes.
- **Skin:** Get medical aid. Rinse area with large amounts of water for at least 15 minutes. Remove contaminated clothing and shoes.
- **Ingestion:** Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cups of milk or water. Possible aspiration hazard. Get medical aid immediately.

**Inhalation:** Get medical aid immediately. Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

**Note to Physician:** Causes cardiac sensitization to endogenous catecholamines which may lead to cardiac arrhythmias. Do NOT use adrenergic agents such as epinephrine or pseudoprophine.

**Antidote:** No specific antidote exists.

**SECTION 5 - FIRE FIGHTING MEASURES**

- **General Information:** As in any fire, use a self-contained breathing apparatus in pressure-demand, self-contained breathing apparatus (SCBA) approved (or equivalent), and full protective gear. Substance is nonflammable.

**Extinguishing Media:** Use water spray, dry chemical, or foam. Use extinguishing media most appropriate for the surrounding fire.

**Autoignition Temperature:** Not available.

**Flash Point:** Not available.

**NFPA Rating:** Not published.

**Explosion Limits:** Lower: Not available. Upper: Not available.

**SECTION 6 - ACCIDENTAL RELEASE MEASURES**

- **General Information:** Use proper personal protective equipment as indicated in Section 8.

- **Spills/Leaks:** Absorb spill with inert material, e.g., dry sand or earth, then place into a chemical waste container. Avoid runoff into storm sewers and ditches which lead to waterways.

**SECTION 7 - HANDLING AND STORAGE**

- **Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Do not get on skin or in eyes. Avoid ingestion and inhalation.

- **Storage:** Do not store in direct sunlight. Store in a cool, dry, ventilated area away from incompatible substances. Keep away from acids. Do not store near alkaline substances.

**SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION**

- **Engineering Controls:** Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

- **Exposure Limits**
  - **Chemical Name:**
    - ACIGH: 10 ppm
    - NIOSH: 49 mg/m3
    - OSHA: 49 mg/m3
  - **Occupational:** 49 mg/m3
  - **Carcinogenicity:**
    - Appendix A: non-carcinogenic

**OSHA Vacated PELs:**
- Chloroform: 2 ppm TWA; 9.78 mg/m3 TWA

**Personal Protective Equipment**

- **Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN 166.
- **Skin:** Wear appropriate protective clothing to prevent skin exposure.
- **Respirators:** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.
*** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ***

Physical State: Liquid
Appearance: clear, colorless
Odor: sweet, fruity odor
pH: Not available.
Vapor Pressure: 160 mm Hg
Vapor Density: 4.12 (Air=1)
Evaporation Rate: 31.6 (Butyl acetate=1)
Viscosity: 0.86P @ 20C
Boiling Point: 143 deg F
Freezing/Melting Point: -85 deg F
Decomposition Temperature: Not available.
Solubility: Insoluble in water (0.5% at 77F).
Specific Gravity/Density: 1.5 (Water=1)
Molecular Formula: C3H3
Molecular Weight: 118.386

*** SECTION 10 - STABILITY AND REACTIVITY ***

Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
Conditions to Avoid: High temperatures, incompatible materials, light.
Incompatibilities with Other Materials:
- Acetic, alkali, aluminum, disulfane, lithium, magnesium, dimethyl ether, hydrogen, chlorine, carbon dioxide, chlorine, phosphogase.
Hazardous Polymerization: Has not been reported.

*** SECTION 11 - TOXICOLOGICAL INFORMATION ***

RTECS:
CAS# 67-66-3: FS0100000
LD50 (LD50): CAS# 67-66-3, Inhalation, rat: LC50 = 47702 mg/m3/4H: Oral, mouse: LD50 = 36 mg/kg; Oral, rat: LD50 = 908 mg/kg; Skin, rabbit: LD50 = 20 mg/kg.
Carcinogenicity:
- Chloroform: A3 - Animal Carcinogen
- California: carcinogen - initial date 10/1/87
- NTP: Suspect carcinogen
- OSHA: Possible Select carcinogen
- IARC: Group 2B carcinogen

Epidemiology:
- Non available.

Teratogenicity:
- Non available.

Reproductive Effects:
- Non available.

Neurotoxicity:
- Non available.

Mutagenicity:
- Non available.

Other Studies:
- None.

*** SECTION 12 - ECOLOGICAL INFORMATION ***

Ecotoxicity:
- Rainbow trout, LC50=2030 mg/L Blugill, LC50=100,000 mg/L/96H
- Largemouth bass, LC50=51 ppm/96H

Environmental Fate:
- If released to land, most evaporates rapidly while some leaches to groundwater. If released to water, substance evaporates rapidly.
- Physical/Chemical: Substance photodegrades with T1/2 of 0.03 days.

Other:
- None.

*** SECTION 13 - DISPOSAL CONSIDERATIONS ***

Disposal of in a manner consistent with federal, state, and local regulations.
RCRA D-Series: Maximum Concentration of Contaminants:
CAS# 67-66-3: waste number DG22, regulatory level 5.0 mg/L.
RCRA D-Series Chronic Toxicity Reference Levels: CAS# 67-66-3: chronic toxicity reference level = 0.06 mg/L.
RCRA P-Series: None listed.

RCRA P-Series: None listed.

*** SECTION 14 - TRANSPORT INFORMATION ***

US DOT:
- Shipping Name: Chloroform
- Hazards Class: 6.1
- UN Number: UN1888
- Packing Group: III
- IMDG: No information available.
- AIT: No information available.
- RID: No information available.
- Canadian TDG:
  - Shipping Name: Chloroform
  - Hazards Class: 8.1(M)
  - UN Number: UN1888

*** SECTION 15 - REGULATORY INFORMATION ***

US FEDERAL:
TSCA:
- CAS# 67-66-3 is listed on the TSCA inventory.

SARA:
- Section 302 (RD):
  - CAS# 67-66-3: final RQ = 10 pounds (4.54 kg)
- Section 307 (TDR):
  - CAS# 67-66-3 TDR = 10,000 pounds; RQ = 10 pounds (does not meet toxicity criteria but because of high production volume and recognized toxicity is considered a chemical of concern)
- SARA Codes:
  - CAS# 67-66-3: acute, chronic.
- Section 311:
  - This material contains Chloroform (CAS# 67-66-3, 99%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 372.
  - Clean Air Act:
    - CAS# 67-66-3 is listed as a hazardous air pollutant (HAP).
    - This material does not contain any Class I ozone depletors.
    - This material does not contain any Class 2 ozone depletors.
- Clean Water Act:
- CAS# 67-66-3 is listed as a Hazardous Subsstance under the CWA.
- CAS# 67-66-3 is listed as a Priority Pollutant under the Clean Water Act.
- OSHA:
- None of the chemicals in this product are considered highly hazardous by OSHA.

STATE:
Chloroform can be found on the following state right to know lists:
- California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.
The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:
WARNING: This product contains Chloroform, a chemical known to the state of California to cause cancer.

European/international Regulations:
European, etc., actions in accordance with EC Directives:

Hazard Symbols: YK
- Risk Phrases:
  - R21 Harmful if swallowed.
  - R26 Irritating to skin.
  - R40 Possible risk of irreversible effects.
  - R46/20/22 Harmful: danger of serious damage to health by prolonged exposure though inhalation and if swallowed.

Safety Phrases:
- S36/37 Wear suitable protective clothing and protective gloves.

WGK (Water Danger/Protection):
- CAS# 67-66-3: 3
- Canada:
  - CAS# 67-66-3 is listed on Canada’s DSL/NDSL List.
This product has a WHMIS classification of D1A, D2A.
CASA 67-66-3 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits:
CASA-ARAB Republic of Egypt:TWA 10 ppm (50 mg/m3); OEL: AUSTRALIA: TWA 10 ppm (50 mg/m3); Carcinogenic: OEL-AUSTRIA: TWA 10 ppm (50 mg/m3); OEL-BELGIUM: TWA 10 ppm (48 mg/m3); Carcinogenic: JAPAN: OEL-CZECH REPUBLIC: TWA 10 ppm (50 mg/m3); STEL 30 mg/m3; OEL: DENMARK: TWA 2 ppm (10 mg/m3); Carcinogenic: OEL-FINLAND: TWA 10 ppm (50 mg/m3); STEL 20 ppm; Skin: CAR: OEL-FRANCE: TWA 5 ppm (25 mg/m3); STEL 50 ppm (250 mg/m3); CAR: OEL-GERMANY: TWA 10 ppm (50 mg/m3); Carcinogenic: Italy: STEL 10 mg/m3; Carcinogenic: OEL-JAPAN: TWA 50 ppm (240 mg/m3); Carcinogenic: OEL-IRELAND: TWA 10 ppm (50 mg/m3); STEL 10 ppm (50 mg/m3); OEL-ITALY: TWA 5 ppm (25 mg/m3); STEL 10 ppm (50 mg/m3); Carcinogenic: OEL-LUXEMBOURG: STEL 20 ppm (100 mg/m3); OEL-MEXICO: TWA 10 ppm (50 mg/m3); STEL 20 ppm (100 mg/m3); OEL-NETHERLANDS: TWA 10 ppm (50 mg/m3); OEL-POLAND: TWA 10 ppm (50 mg/m3); OEL-PORTUGAL: STEL 10 ppm (50 mg/m3); OEL-SWITZERLAND: TWA 10 ppm (50 mg/m3); STEL 20 ppm (100 mg/m3); OEL-TURKEY: TWA 10 ppm (240 mg/m3); OEL-U KRAINE: TWA 50 ppm (240 mg/m3); OEL-UNITED KINGDOM: TWA 10 ppm (50 mg/m3); STEL 50 ppm (250 mg/m3); OEL IN BU DGARIA: STEL 20 ppm (100 mg/m3); OEL IN JORDAN: KOREA check AGCH TLY; OEL IN NEW ZEALAND: 5 INGAPORE, VIETNAM check AGCH TLY

*** SECTION 16 - ADDITIONAL INFORMATION ***

MSDS Creation Date: 12/16/1994 Revision #12 Date: 4/28/1998

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