

MSDS CHLOROFORM

1. PRODUCT IDENTIFICATION

Chemical Name: Chloroform Synonyms: Methenyl chloride, Refrigerant 20, trichloroform, trichloromethane, methane trichloride NFPA Rating: Health = 2, Flammability = 0, Reactivity = 0 CAS #: 67-66-3 Appearance: clear, colorless.

2. HAZARDS IDENTIFICATION

Emergency overview:

WARNING! LIGHT SENSITIVE. CANCER SUSPECT AGENT. MAY CAUSE CENTRAL NERVOUS SYSTEM DEPRESSION. ASPIRATION HAZARD. MAY CAUSE EYE AND SKIN IRRITATION. MAY CAUSE RESPIRATORY AND DIGESTIVE TRACT IRRITATION. MAY CAUSE CARDIAC DISTURBANCES. MAY CAUSE REPRODUCTIVE AND FETAL 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. Contact produces irritation, tearing, and burning pain. May cause conjunctivitis. Causes redness and pain.

Skin: Causes irritation with burning pain, itching, and redness.

Ingestion: Aspiration hazard. May cause central nervous system depression, kidney damage, and liver damage. 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 Exposure: Over-exposure 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,

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bladder, colon, brain, and lymph node cancer. Toxicity may be increased by exposure to alcohol, steroids, and ketones.

4. FIRST AID MEASURES

Eyes: Immediately 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 keep eyes closed.

Skin: Get medical aid immediately. Immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Discard contaminated clothing in a manner which limits further exposure.

Ingestion: Do *not* induce vomiting. If victim is conscious and alert, give 2.4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Possible aspiration hazard. Get medical aid immediately.

Inhalation: Get medical aid immediately. Remove from exposure to fresh air immediately. If breathing is difficult, give oxygen.

Notes to Physician: Causes cardiac sensitization to endogenous catecholamines which may lead to cardiac arrhythmias. Do *not* use adrenaline-derivative agents such as epinephrine or pseudoepinephrine.

5. FIRE FIGHTING MEASURES

General Information: As in any fire, wear a self-contained breathing apparatus in pressuredemand, MSHA/NIOSH (approved or equivalent), and full protective gear. Substance is noncombustible.

Extinguishing Media: In case of fire, use water fog, dry chemical, carbon dioxide, or regular foam.

Autoignition Temperature: Not available.

Flash Point: Not available.

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



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.

7. HANDLING AND STORAGE

Handling: Wash thoroughly after handling. Use only in a well ventilated area. Avoid contact with eyes, skin, and clothing.

Avoid ingestion and inhalation.

Storage: Do not store in direct sunlight. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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

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 EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid
Appearance: Clear, colorless
Odor: Sweet.
pH: Not available.
Vapor Pressure: 160 mm Hg
Vapor Density: 4.12 (Air = 1)
Evaporation Rate: Not known

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Viscosity: mPas 20 °C (68° F) Boiling Point: 61 °C/142° F Freezing/Melting Point: -63 °C (.81.4° F) Decomposition Temperature: Not available. Solubility in water: Slightly soluble Specific Gravity/Density: 1.50 g/cm3 Molecular Formula: CHCl3 pH: Not applicable

10. STABILITY AND REACTIVITY

Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.

Conditions to Avoid: High temperatures, light.

Incompatibility with Other Materials: Acetone, alkalis, aluminum, disilane, lithium, magnesium, dinitrogen dioxide, nitrogen tetroxide, perchloric acid, phosphorus pentoxide, potassium, potassium hydroxide, methyl alcohol, potassium tert-butoxide, sodium, sodium hydroxide, sodium methylate, sodium-potassium alloy, triisopropylphosphine, calcium hydroxide, fluorine, and any strong oxidizers.

Hazardous Decomposition of Products: Hydrogen chloride, carbon monoxide, carbon dioxide, chlorine, phosgene gas.

Hazardous Polymerization: Has not been reported.

11. TOXICOLOGICAL INFORMATION

LD50/LC50 Information:

Inhalation, rat: LC50 = 47702 mg/m3/4HOral, mouse: LD50 = 36 mg/kgOral, rat: LD50 = 908 mg/kgSkin, rabbit: LD50 = >20 gm/kg

Carcinogenicity: ACGIH: A3 - Animal Carcinogen California: carcinogen - initial date 10/1/87 NIOSH: occupational carcinogen NTP: Suspect carcinogen

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OSHA: Possible Select carcinogen **IARC:** Group 2B carcinogen

Epidemiology: Please see IARC volume 20 for a detailed discussion.

Teratogenicity: Effects on newborn: Biochemical and Metabolic, Growth statistics (reduced weight gain), Oral-mouse, TDLo = 2177 mg/kg (male 3W pre) Embryo or Fetus: Death, Ihl-rat, TCLo = 20100 ug/m3/1H (female 7.14D post); Stunted fetus, Oral-rat, TDLo = 1260 mg/kg (6.15D preg), Developmental abnormalities: Craniofacial, Ihl-mouse, TCLo = 100 ppm/7H (female 6.15D post); Musculoskeletal, Oral-rat, TDLo = 1260 mg/kg (6.15D preg)

Reproductive Effects:

Fertility: Female index, Ihl-mouse, TCLo = 100 ppm/7H (female 1.7D post)

Neurotoxicity: No information available.

Mutagenicity:

DNA Damage: Mammal lymphocyte, 1 mmol/L Sister

Chromatid Exchange: Human lymphocyte, 10 mmol/L

12. ECOLOGICAL INFORMATION

Exotoxicity: Rainbow trout, LC50 = 2030 ug/L Bluegill, LC50 = 100,000 ug/L/96H Large mouth bass, LC50 = 51 ppm/96H Fish: 10 mg/l Fish-toxicity: LC50 : 162 mg/l Pseudomonas putida: 125 mg/l Scenedesmus quadricanda: 1100 mg/l Microcystis aeruginosa: 185 mg/l Entosiphonsulcatum: 6560 mg/l

Environmental Fate:

If released to land, most evaporates rapidly while some leaches to ground-water. If released to water, substance



evaporates rapidly.

Bioaccumulation: Substance photodegrades with T1/2 of 80 days.

13. DISPOSAL CONSIDERATIONS

Dispose of in a manner consistent with federal, state, and local regulations. **RCRA D-Series Maximum Concentration of Contaminants: CAS# 67-66-3:** waste number D022; regulatory level = 6.0 mg/L. **RCRA D-Series Chronic Toxicity References Levels: CAS# 67-66-3:** chronic toxicity reference level = 0.06 mg/L. **RCRA F-Series:** None listed. **RCRA P-Series:** None listed. **RCRA U-Series:** CAS# 67-66-3: waste numberU044.

14. TRANSPORT INFORMATION

US DOT Hazard Class: Shipping Name: Chloroform Hazard Class: 6.1 UN Number: UN1888 Packing Group: III IATA (for international shipments) Shipping Name: Chloroform Hazard Class: 6.1 UN Number: UN1888 Packing Group: III **RID/ADR** Shipping Name: Chloroform Hazard Class: 6.1 (15C) UN Number: UN1888 Packing Group: N/A IMO Shipping Name: Chloroform Hazard Class: 6.1 UN Number: UN1888 Packing Group: III **Canada TDG** Shipping Name: Chloroform Hazard Class: 6.1 (9.2) UN Number: UN1888

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Packing Group: II

15. REGULATORY INFORMATION

US FEDERAL

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

Health & Safety Reporting List: CAS# 67-66-3: Effective Date: June 1, 1987; Sunset Date: June 1, 1997

Chemical Test Rules: None of the chemicals in this product are under a Chemical Test Rule. **Section 12b:** None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule: None of the chemicals in this material have a SNUR under TSCA.

SARA

Section 302 (RQ): CAS #67-66-3: final RQ = 10 pounds (4.54 kg)

Section 302 (TPQ): CAS# 67-66-3: TPQ = 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 313: 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 373.

Clean Air Act: CAS #67-66-3 is listed as a hazardous air pollutant (HAP). This material does not contain any Class 1

Ozone depletors. This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

CAS #67-66-3 is listed as a Hazardous Substance under the CWA.

CAS #67-66-3 is listed as a Priority Pollutant under the Clean Water Act.

CAS #67-66-3 is listed as a Toxic Pollutant under the Clean Water Act.

OSHA: None of the chemicals in this product are considered highly hazardous by OSHA.

STATE BY STATE IN THE USA:

CAS #67-66-3 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.

California No Significant Risk Level:

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CAS #67-66-3: ingestion: no significant risk level = 20 ug/day inhalation: no significant risk level = 40 ug/day

EUROPEAN/INTERNATIONAL REGULATIONS

European Labeling in Accordance with EC Directives Hazard Symbols: XN

Risk Phrases:

R 22 Harmful if swallowed.

R 38 Irritating to skin.

R 40 Possible risks of irreversible effects.

R 48/20/22 Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.

Safety Phrases: S 36/37 Wear suitable protective clothing and 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 does not have a WHMIS classification.

CAS #67-66-3 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits

CAS #67-66-3: OEL-ARAB Republic of Egypt: TWA 10 ppm (50 mg/m3) OEL- AUSTRALIA: TWA 10 ppm (50 mg/m3); Carcinogen OEL-AUSTRIA: TWA 10 ppm (50 mg/m3) OEL-BELGIUM: TWA 10 ppm (49 mg/m3); Carcinogen JAN9 OEL-CZECHO SLOVAKIA: TWA 10 mg/m3; STEL 20 mg/m3 OEL-DENMARK: TWA 2 ppm (10 mg/m3); Carcinogen OEL-FINLAND: TWA 10 ppm (50 mg/m3); STEL 20 ppm; Skin; CAR OE L-FRANCE: TWA 5 ppm (25 mg/m3); STEL 50 ppm (250 mg/m3); CAR OEL-GERMANY: TWA 10 ppm (50 mg/m3); Carcinogen JAN9 OEL-HUNGARY: STEL 10 mg/m3 OEL - INDIA: TWA 10 ppm (50 mg/m3); Carcinogen OEL-JAPAN:TWA 50 ppm (240 mg/m3); Carcinogen OEL-THE NETHERLANDS: TWA 10 ppm (50 mg/m3) OEL-THE PHI LIPPINES: TWA 50 ppm (240 mg/m3) OEL-POLAND: TWA 50 mg/m3 OEL-RUSSIA: T WA 50 ppm OEL-SWEDEN: TWA 2 ppm (10 mg/m3); STEL 5 ppm (25 mg/m3); CAR OEL-SWITZERLAND: TWA 10 ppm (50 mg/m3); STEL 20 ppm (100 mg/m3) OEL-THA ILAND: TWA 50 ppm (240 mg/m3) OEL-TURKEY: TWA 50 ppm (240 mg/m3) OEL-UNITED KINGDOM: TWA 10 ppm (50 mg/m3); STEL 50 ppm (225 mg/m3) OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV OEL IN NEW ZEALAND, S INGAPORE, VIETNAM check ACGI TLV California Prop. 65:

Proposition 65 requires manufacturers or distributors of consumer products into the State of California to provide a warning statement if the product contains ingredients for which the State has found to cause cancer, birth defects or other reproductive harm. If this product contains an

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ingredient listed by the State of California to cause cancer or reproductive toxicity, it will be listed below:

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