

MATERIAL SAFETY DATA SHEET

(In compliance with 29 CFR 1910.1200)

Effective Date: November 2011
Product Name: MIL-C-81302 Type II
24 Hour Emergency #: 800-392-7701

Section A: General Information

Trade Name: Trichlorotrifluoroethane
CAS No.: 76-13-1
Chemical Name: 1,1,2-trichloro-1,2,2-trifluoroethane

Formula: CCl_2FCClF_2
Molecular Weight: 187.38
Contact: MACH-DYNAMICS
494 Main Street
Susquehanna, PA 18847
Phone: (775) 278-9308

Composition/Information on Ingredients:

Materials: *1,1,2-trichloro-1,2,2-trifluoroethane

* Disclosure as a toxic chemical is required under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Section B: First Aid Measures

Inhalation: If high concentrations are inhaled, immediately remove persons to fresh air; keep them calm. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Eye Contact: Immediately flush eyes with plenty of water for 15 minutes. Call a physician.

Skin Contact: Flush skin with plenty of water for 15 minutes. Get medical attention if irritation is present.

Ingestion: If swallowed, no specific intervention is indicated, as the compound is not likely to be hazardous by ingestion. Do not induce vomiting. However, consult a physician if necessary.

Note to Physicians: Activated charcoal slurry may be administered. To prepare activated charcoal slurry suspend 50 g activated charcoal in 400 ml water in plastic bottle and shake well. Administer 5 ml/kg, or 350 ml for an average adult.

Because of a possible increased risk of eliciting cardiac dysrhythmias, catecholamine drugs, such as epinephrine, should be used with special caution in situations of emergency life support.

Because of the danger of aspiration, emesis or gastric lavage should not be employed unless the risk is justified by the presence of additional toxic substances. Activated charcoal may induce vomiting, but may be given after emesis or lavage to absorb toxic additives. Steroid therapy in mild to moderate cases does not improve outcome. Bacterial pneumonia often occurs after exposure, but prophylactic antibiotics are not indicated and should be reserved for documented bacterial pneumonia.

Section C: Hazards Information

Potential Health Effects: In acute toxicity testing in animals, was of very low toxicity by inhalation. However, life-threatening exposures may occur if handled carelessly. Vapors are heavier than air posing a hazard of asphyxiation if they are trapped in enclosed or low places. At flame temperatures, this fluorocarbon may decompose to hydrogen fluoride, which may be lethal at low concentrations. poses a hazard of fatal heart irregularities if inhaled at high concentrations. Skin or eye contact may cause irritation. Prolonged skin contact may cause drying of the skin. Inhalation or ingestion may cause dizziness, headache, confusion, incoordination and loss of consciousness.

Animal Data: Inhalation 4 hour LC50: 52,500 ppm in rats

Skin absorption ALD: >11,000 mg/kg in rabbits

Oral LD50: 43,000 mg/kg in rats

The liquid is a mild skin irritant and a slight eye irritant. The compound has produced a weak allergic skin reaction (sensitization) in guinea pigs.

Inhalation: The effects in animals from high single exposures include anesthetic effects such as tremors, dizziness, incoordination, and loss of consciousness, and irregular heartbeat (cardiac arrhythmias) due to the heart being made more sensitive to adrenalin (cardiac sensitization). Repeated exposure at high concentrations also produced central nervous system effects during exposure but no evidence of other systemic toxicity.

Ingestion: High, single oral administration of the liquid, at or near lethal doses, produced lethargy within several minutes. Survivors have shown no apparent toxic effects.

Skin: Repeated exposure to high doses of the liquid maintained in close contact with the skin caused severe local irritation in rabbits. This reaction is typically seen when defatting agents are tested under similar conditions.

There is no evidence of carcinogenicity or teratogenicity in animal testing. In a reproductive toxicity study in rats, no adverse effects on reproductive performance were seen at concentrations of 500 ppm, and only minimal effects (slight decrease in corpora lutea) were observed at 12,500 ppm.

Hazard Identification: This compound does not produce genetic damage in bacterial or mammalian cell cultures. It does not produce heritable genetic damage in male animals (dominant lethal test).

Human Health Effects: Skin contact may initially include: mild skin irritation, mainly due to rapid evaporation, with possible discomfort or rash. Prolonged skin contact may cause temporary tingling, numbness, coldness, or drying of skin. There are no reports of human skin sensitization. Significant skin permeation, and systemic toxicity, after contact appears unlikely.

Eye contact may initially include: mild eye irritation with discomfort, tearing or blurring of vision.

The major ingestion hazard is aspiration (liquid entering the lungs during ingestion or vomiting), which may result in "chemical pneumonia". Symptoms include coughing, gasping, choking, shortness of breath, bluish discoloration of the skin, rapid breathing and heart rate, and fever. Pulmonary edema or bleeding, drowsiness, confusion, coma and seizures may occur in more serious cases. Symptoms may develop immediately or as late as 24 hours after the exposure, depending on how many chemicals entered the lungs.

Human Health Effects: Inhalation or ingestion may include: temporary nervous system depression with anesthetic effects such as dizziness, headache, confusion, incoordination, and loss of consciousness. Higher exposures may cause temporary alteration of the heart's electrical activity with irregular pulse, palpitations, or inadequate circulation. Fatality may occur from gross overexposure. One report cites two cases where workers who were repeatedly overexposed to the compound experienced liver damage; however, it was not proven that the compound actually caused the damage. Another study evaluated 50 workers exposed for an average of over 2 years to 46 – 4700 ppm. No adverse effects were found except for 1 case of dry skin.

Carcinogenicity Information: None of the components present in this material at concentrations equal to or greater than 0.1% is listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

Section D: Precautions / Procedures

Flash Point: Will not burn

Auto Decomposition: 300° C (572° F)

Fire Extinguishing Instructions: Use water spray or fog to cool container. Self-contained breathing apparatus (SCBA) is required if drums rupture and contents are spilled under fire conditions.

Fire & Explosion Hazards: Drums may rupture under fire conditions. Decomposition may occur.

Extinguishing Media: As appropriate for combustibles in area.

Safeguards: Note: Review fire fighting measures and handling (personnel) sections before proceeding with clean up. Use appropriate personal protective equipment during clean up.

Accidental Release Measures: Ventilate area. Do not flush into sewers. Dike spill. Collect on absorbent material and transfer to steel drums for recovery and disposal. Use self-contained breathing apparatus (SCBA for large spills. Comply with Federal, state and local regulations on reporting releases.

Handling: Avoid breathing vapors and prolonged skin exposure. Use with sufficient ventilation to keep employee exposure below recommended limits.

Storage: Clean, dry area. Do not heat above 125°F.

Section E: Exposure Controls / Personal Protection

Engineering Controls: Normal ventilation for standard use procedures is generally adequate. Local exhaust should be used when large amounts are released. Mechanical ventilation should be used in low or enclosed places.

Protective Equipment: Impervious gloves should be used to avoid prolonged or repeated exposure. Chemical splash goggles should be worn as needed to prevent eye contact. Under normal use conditions, no respiratory protection is required when using this product. Self-contained breathing apparatus (SCBA) is required if a large spill occurs.

Exposure Guidelines: PEL (OSHA) 1,000 ppm, 7,600 mg/m³, 8 Hr. TWA
TLV (ACGIH) 1,000 ppm, 7,670 mg.m³, 8 Hr. TWA, A4
STEL 1,250 ppm, 9,590 mg.m³, A4

Section F: Physical and Chemical Properties

Boiling Point: 48°C (118°F)

Vapor Pressure: 6.46 psia at 25° C (77°F)

Vapor Density: 2.9 (Air = 1.0) at 25°C (77°F)

% Volatiles: 100 WT%

Evaporation Rate: (CC14 = 1) Greater than 1

Solubility in Water: 0.02 WT% @ 25°C (77°F)

pH: Neutral

Odor / Color: Slight ethereal, clear and colorless

Form: Liquid

Density: 1.57 g/cc at 25°C (77°F) - liquid

Section G: Reactivity Data

Stability: Material is stable. However, avoid open flames and high temperatures.

Incompatibility with Other Materials: Incompatible with alkali or alkaline earth metals, powdered Al, Zn, Be, etc.

Polymerization: Will not occur.

Decomposition: Decomposition products are hazardous. This compound can be decomposed by high temperatures (open flames, glowing metal surfaces, etc.) forming hydrochloric and hydrofluoric acids and possible carbonyl halides.

Section H: Environmental

Aquatic Toxicity: 96 hour LC50, rainbow trout: 7.4 mg/L

Waste Disposal: Comply with Federal, State and local regulations. Remove to a permitted waste disposal facility. EPA Hazardous Waste Nos. F001 and F002 may apply to waste materials.

Section I: Transportation Information

Shipping Containers: Tank cars, tank trucks.

Drums: Not regulated as a hazardous material by DOT or IMO.

Section J: Regulatory Information

TSCA Inventory Status: Reported

Title III Hazard Classifications Sections 311, 312

Acute: Yes

Chronic: No

Fire: No

Reactivity: No

Pressure: No

Hazardous Chemical Lists SARA Extremely

Hazardous Substance: No

CERCLA Hazardous Substance No

SARA Toxic Chemical See Components Section

Section K: Other Information: NFPA, NPCA-HMIS

NPCA-HMIS Rating

Health: 1

Flammability: 0

Reactivity: 1

Personal protection rating to be supplied by user depending on use conditions.

This product safety data sheet is offered solely for your information, consideration and investigation.

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