



**Material Safety Data Sheet**

**IDENTIFICATION**

<b>Name:</b> MS-180 Freon <sup>®</sup> TF Solvent	<b>Chemical Family:</b> Hydrogenated Hydrocarbon
<b>Synonyms:</b>	<b>Formula:</b> CCl <sub>2</sub> FCClF <sub>2</sub> /CCl <sub>2</sub> F <sub>2</sub>
<b>CAS Name:</b> Trichlorotrifluoroethane Dichlorodifluoromethane	<b>CAS Registry No.</b> 76-13-1 75-71-8
<b>Manufacturer/Distributor:</b> Miller-Stephenson Chemical Co.	<b>Medical Emergency Phone:</b> (203) 797-2212
<b>Address:</b> George Washington Highway Danbury, Conn. 06810	<b>Transportation Emergency Phone:</b> (800) 424-9300

**PHYSICAL DATA (Propellant Free Basis)**

<b>Boiling Point (°F):</b> 118	<b>Percent Volatile by Volume:</b> 100
<b>Density:</b> 1.57 g/cc @77°F	<b>Vapor Pressure:</b> 334mm Hg @77°F
<b>Vapor Density (Air = 1):</b> 2.9 @77°F	<b>Solubility in H<sub>2</sub>O:</b> negligible
<b>pH Information:</b> Neutral	<b>Evaporation Rate (n-BuAc=1):</b> 1
<b>Form:</b> Liquid	<b>Appearance:</b> Clear
<b>Color:</b> Colorless	<b>Odor:</b> Faint Solvent Odor

**HAZARDOUS COMPONENTS**

<b>Material(s):</b> Trichlorotrifluoroethane Dichlorodifluoromethane	<b>Approximate % :</b> 80 20
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**HAZARDOUS REACTIVITY**

<b>Stability:</b> Material is stable. However, avoid spraying near open flames or red hot surfaces. Do not heat aerosol containers above 49°C/120°F.	<b>Decomposition:</b> This compound can be decomposed by high temperatures (open flames, glowing metal surfaces, etc.) forming hydrochloric and hydrofluoric acids - possible carbonyl halides.
<b>Incompatibility:</b> Alkali or alkaline earth metals - powdered Al, Zn, Be, etc.	<b>Polymerization:</b> Will not occur.

**FIRE AND EXPLOSION DATA**

<b>Flash Point:</b> None	<b>Method:</b> TOC
<b>Autoignition Temperature:</b> Not determined	<b>Flammable Limits in Air, % by Vol.</b> Lower: Non-flammable Upper: Non-flammable
<b>Autodecomposition Temperature:</b> Not determined	<b>Fire and Explosion:</b> Pressurized aerosol containers at elevated temperatures may vent, rupture, or burst and add to flying and falling debris. Decomposition may occur.

**FIRE AND EXPLOSION DATA**  
(Cont)

**Extinguishing Media:**  
Non-flammable

**Special Fire Fighting Instructions:**  
Self-contained breathing apparatus (SCBA) may be required if aerosols rupture and contents are spilled under fire conditions.

**HEALTH HAZARD INFORMATION**

**Principal Health Hazards:**

**Inhalation:** Vapor is heavier than air and can cause suffocation by reducing oxygen available for breathing. Breathing high concentrations of vapor may cause light-headedness, giddiness, shortness of breath, and may lead to narcosis, cardiac irregularities, unconsciousness or death. LC 50 Rats 52,000 ppm/4 hrs.

**Note:** In screening tests with experimental animals, exposure at approximately 5,000 ppm (v/v) and above, followed by a large intravenous epinephrine challenge, has induced serious cardiac irregularities.

**Skin:** Not a corrosive or irritant after single contact. However, repeated liquid contact can cause defatting of the skin resulting in irritation. This material is poorly absorbed through the skin (Rabbit ALD >11,000 mg/kg).

**Eye:** Liquid contact can cause discomfort, usually no extended effect.

**Oral:** Although oral toxicity is low (LD 50 Rats 43,000 mg/kg) ingestion of Freon<sup>®</sup> TF is to be avoided.

**Exposure Limits:**

<u>Material</u>	<u>TLV (ACGIH)</u>	<u>PEL (OSHA)</u>
Trichlorotrifluoroethane	1000 ppm	1000 ppm
Dichlorodifluoromethane	1000 ppm	1000 ppm
MS-180	1000 ppm (calc)	

**Safety Precautions:** Avoid breathing vapors and prolonged skin exposure. Use only in well-ventilated area.

**First Aid:**

**Inhalation:** Remove to fresh air, call a physician. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Do not give epinephrine or similar drugs.

**Note to Physician:** Because of possible increased risk of eliciting cardiac dysrhythmias, catecholamine drugs, such as epinephrine, should be considered only as a last resort in life threatening emergencies.

**Eye:** Immediately flush with plenty of water for at least 15 minutes. Call a physician.

**Skin:** Flush with water. Get medical attention if irritation is present.

**Oral:** No specific intervention is indicated as the compound is not likely to be hazardous by ingestion. However, consult a physician if necessary. Do not induce vomiting as the hazard of aspirating the material into the lungs is a greater hazard than allowing it to progress through the intestinal tract.

**Medical Conditions Possibly Aggravated by Exposure:**

**Cardiovascular Disease:** See Principal Health Hazards: Inhalation Section.

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**HEALTH HAZARD INFORMATION**

(Cont)

Other Health Hazards:

Freon\* TF is not listed as a carcinogen by IARC, NTP, or OSHA. Based on animal studies and human experiences, this mixture poses no hazard to man relative to systemic toxicity, carcinogenicity, mutagenicity, or teratogenicity when occupational exposures are below its recommended TLV.

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**PROTECTION INFORMATION**

Generally Applicable Control Measures:

Normal ventilation for standard manufacturing procedures is generally adequate. Local exhaust should be used when large amounts are released. Mechanical ventilation should be used in low places.

Personal Protective Equipment:

Butyl gloves should be used to avoid prolonged or repeated exposure. Chemical splash goggles should be available for use as needed to prevent eye contact. Under normal manufacturing conditions no respiratory protection is required when using this product. Self-contained breathing apparatus is required if a large spill occurs. Do not spray liquid on skin.

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**DISPOSAL INFORMATION**

Spill, Leak or Release:

Ventilate area. Remove open flames or red hot surfaces. Allow to evaporate.

Waste Disposal:

Allow to evaporate. Do not puncture or incinerate aerosol cans. Disposal service to landfill is appropriate.

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**SHIPPING INFORMATION**

Domestic - Other Than Air (DOT)

Proper Shipping Name: Not regulated  
Hazard Class:  
UN No.:  
DOT Label:  
DOT Placard:

International Water or Air (IMO/CAO)

Proper Shipping Name: Aerosol, Non-flammable, NOS  
Hazard Class: 2  
UN No.: 1950  
IMO/CAO Label: Green Non-flammable Gas

Other Information

Shipping Containers: Aerosol Cans

Storage Conditions: Do not store near sources of heat, in direct sunlight or where temperatures exceed 120°F. Do not puncture or damage containers. Rotate stock to shelf life of one year.

Date Revised: 1/89

Person Responsible:  
Janet Stephens,  
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George Washington Highway  
Danbury, Conn. 06810  
(203) 743-4447

\*Freon is DuPont's registered trademark for its fluorocarbon compounds.