** Section 1 - PRODUCT AND COMPANY IDENTIFICATION **

Material Name: TRIFLUOROMETHANE

Manufacturer Information

POLAR CRYOGENICS
2734 SE Raymond
Portland, OR 97202

General Information: (800) 426-0689
Emergency #: 1-800-424-9300 (CHEMTREC)
Outside the US: 703-527-3887 (Call collect)

Chemical Family

halogenated, aliphatic

Synonyms

MTG MSDS 42; TRIFLUOROMETHANE; CARBON TRIFLUORIDE; METHYL TRIFLUORIDE; ARCTON 1; FLUORYL; FREON 23; FREON F-23; GENETRON 23; PROPELLANT 23; REFRIGERANT 23; R23; UN 1984; CHF3; RTECS: PB6900000

** Section 2 - HAZARDS IDENTIFICATION **

EMERGENCY OVERVIEW

Color: colorless
Physical Form: gas
Odor: odorless

Health Hazards: central nervous system depression
Physical Hazards: Containers may rupture or explode if exposed to heat.

POTENTIAL HEALTH EFFECTS

Inhalation

Short Term: mild irritation, nausea, vomiting, difficulty breathing, irregular heartbeat, headache, drowsiness, dizziness, disorientation, loss of coordination, unconsciousness
Long Term: no information on significant adverse effects
Skin

Short Term: blisters, frostbite
Long Term: no information is available

Eye

Short Term: frostbite, blurred vision
Long Term: no information is available

Ingestion

Short Term: ingestion of a gas is unlikely
Long Term: ingestion of a gas is unlikely

** Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS **

<table>
<thead>
<tr>
<th>CAS</th>
<th>Component</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>75-46-7</td>
<td>TRIFLUOROMETHANE</td>
<td>100</td>
</tr>
</tbody>
</table>

Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Fluorides.

** Section 4 - FIRST AID MEASURES **

Inhalation

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

Skin

If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.

Eyes

Contact with liquid: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.
Ingestion

If a large amount is swallowed, get medical attention.

Note to Physicians

For inhalation, consider oxygen.

** Section 5 - FIRE FIGHTING MEASURES **

See Section 9 for Flammability Properties

**NFPA Ratings:**

Health: 2  Fire: 0  Reactivity: 0

Hazard Scale:  0 = Minimal  1 = Slight  2 = Moderate  3 = Serious  4 = Severe

**Flammable Properties**

Negligible fire hazard. Containers may rupture or explode if exposed to heat.

**Extinguishing Media**

- carbon dioxide, regular dry chemical

Large fires: Use regular foam or flood with fine water spray.

**Fire Fighting Measures**

Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck, evacuation radius: 800 meters (1/2 mile). Use extinguishing agents appropriate for surrounding fire. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Do not get water directly on material. Reduce vapors with water spray. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Consider downwind evacuation if material is leaking.

** Section 6 - ACCIDENTAL RELEASE MEASURES **

**Occupational spill/release**

Stop leak if possible without personal risk. Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.
**Section 7 - HANDLING AND STORAGE**

**Storage Procedures**


**Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Component Analysis**

TRIFLUOROMETHANE (75-46-7)

- **ACGIH:** 2.5 mg/m³ TWA (as F)
- **OSHA (final):** 2.5 mg/m³ TWA (as F)
- **OSHA (vacated):** 2.5 mg/m³ TWA

**Component Biological Limit Values**

TRIFLUOROMETHANE (75-46-7)

- **ACGIH:** Fluorides in urine: 3 mg/g creatinine, prior to shift (B,Ns); Fluorides in urine: 10 mg/g creatinine, end of shift (B,Ns)

**Ventilation**

Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

**PERSONAL PROTECTIVE EQUIPMENT**

**Eyes/Face**

For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

**Protective Clothing**

For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing.

**Glove Recommendations**

Wear insulated gloves.
Protective Materials

neoprene

Respiratory Protection

Under conditions of frequent use or heavy exposure, respiratory protection may be needed.

Respiratory protection is ranked in order from minimum to maximum.

Consider warning properties before use.

For Unknown Concentrations or Immediately Dangerous to Life or Health -

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

* * * Section 9 - PHYSICAL AND CHEMICAL PROPERTIES * * *

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<th>Physical State:</th>
<th>Gas</th>
<th>Appearance:</th>
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<td>Color:</td>
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<td>Physical Form:</td>
<td>gas</td>
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<tr>
<td>Odor:</td>
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</tr>
<tr>
<td>Melting/Freezing Point:</td>
<td>-160 °C</td>
<td>Boiling Point:</td>
<td>-84.4 °C</td>
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<tr>
<td>Decomposition:</td>
<td>&gt;260 °C</td>
<td>Vapor Pressure:</td>
<td>33592 mmHg @ 21 °C</td>
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<tr>
<td>Henry's Law Constant:</td>
<td>0.0952</td>
<td>Vapor Density (air = 1):</td>
<td>2.417 @ 25 °C</td>
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<tr>
<td>Density:</td>
<td>2.86 kg/m3</td>
<td>Specific Gravity (water=1):</td>
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<tr>
<td>Water Solubility:</td>
<td>0.1 % @ 25 °C</td>
<td>KOW:</td>
<td>0.64</td>
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<tr>
<td>KOC:</td>
<td>53 (estimated)</td>
<td>Viscosity:</td>
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<tr>
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<td>Molecular Formula:</td>
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</table>

Solvent Solubility

**Soluble:** alcohol, acetone, benzene, hydrocarbons, chlorinated solvents, ketones, esters, organic acids
**Section 10 - STABILITY AND REACTIVITY**

**Chemical Stability**

Stable at normal temperatures and pressure.

**Conditions to Avoid**

Protect from physical damage and heat. Containers may rupture or explode if exposed to heat.

**Materials to Avoid**

metals

**Decomposition Products**

halogenated compounds, oxides of carbon, hydrogen fluoride

**Possibility of Hazardous Reactions**

Will not polymerize.

**Section 11 - TOXICOLOGICAL INFORMATION**

**Component Analysis - LD50/LC50**

The components of this material have been reviewed in various sources and no selected endpoints have been identified.

**Component Carcinogenicity**

TRIFLUOROMETHANE (75-46-7)

ACGIH: A4 - Not Classifiable as a Human Carcinogen

**Target Organs**

TRIFLUOROMETHANE (75-46-7)

central nervous system.

**Additional Data**

Stimulants such as epinephrine may induce ventricular fibrillation.
** Section 12 - ECOLOGICAL INFORMATION **

Component Analysis - Aquatic Toxicity

No LOLI ecotoxicity data are available for this product's components.

** Section 13 - DISPOSAL CONSIDERATIONS **

Disposal Methods

Dispose in accordance with all applicable regulations.

Component Waste Numbers

The U.S. EPA has not published waste numbers for this product's components.

** Section 14 - TRANSPORT INFORMATION **

US DOT Information

Shipping Name: Trifluoromethane

UN/NA #: UN1984  Hazard Class: 2.2

Required Label(s): 2.2

TDG Information

Shipping Name: Trifluoromethane

UN #: UN1984  Hazard Class: 2.2

Required Label(s): 2.2

** Section 15 - REGULATORY INFORMATION **

U.S. Federal Regulations

None of this product's components are listed under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 311/312 (40 CFR 370.21), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

SARA 311/312
Acute Health: Yes  Chronic Health: No  Fire: No  Pressure: Yes  Reactive: No

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

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<thead>
<tr>
<th>Component</th>
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<th>CA</th>
<th>MA</th>
<th>MN</th>
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<tr>
<td>TRIFLUOROMETHANE (related to: Fluorides)</td>
<td>75-46-7</td>
<td>No</td>
<td>No</td>
<td>Yes¹</td>
<td>Yes</td>
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Not regulated under California Proposition 65

Component Analysis - Inventory

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<tr>
<th>Component</th>
<th>CAS</th>
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<tr>
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<td>75-46-7</td>
<td>Yes</td>
<td>DSL</td>
<td>EIN</td>
<td>Yes</td>
<td>Yes</td>
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<td>Yes</td>
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</table>

* * * Section 16 - OTHER INFORMATION * * *

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of Lists™ - ChemADVISOR’s Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States
Other Information

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