



# Material Safety Data Sheet

## 1. Product and Company Identification

Product name : **1,1,1,2-Tetrafluoroethane**

Chemical formula : CF<sub>3</sub>CH<sub>2</sub>F

Synonyms : Ethane,1,1,1,2-Tetrafluoro-; 1,2,2,2-Tetrafluoroethane; R 134A; Quickfreeze; E-Series(R) Freez-It(R) 2000

Company : Med Tech Gases, Inc.  
20 Hall Street  
Medford, MA 02155

Telephone : 800-FINE-GAS

Emergency : 800-424-9300

## 2. Composition/Information on Ingredients

Components	CAS Number	% Volume
1,1,1,2-Tetrafluoroethane	811-97-2	100%

## 3. Hazards Identification

### Emergency Overview

Containers may rupture or explode if exposed to heat.

### Potential Health Effects

Inhalation : Frostbite.

Eye contact : No information on significant adverse effects.

Skin contact : Frostbite.

Ingestion : No information on significant adverse effects.

Chronic Health Hazard : None known.

## 4. First Aid Measures

General advice : None.

Eye contact : Flush eyes with plenty of water.

Skin contact : If frostbite occurs, flush affected area with lukewarm water.

Ingestion : If a large amount is swallowed, get medical attention.

Inhalation : Immediately remove victim to fresh air. If breathing is difficult, give oxygen. If breathing has stopped, give artificial respiration.

Note to physicians : For inhalation, consider oxygen.

## 5. Fire-Fighting Measures

Suitable extinguishing media : Carbon dioxide, regular dry chemical.  
Large fires: Use regular foam or flood with fine water spray.

- Specific hazards : Negligible fire hazard. Containers may rupture or explode if exposed to heat.
- Fire fighting : 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.

## 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.
- Additional advice : None.

## 7. Handling and Storage

### Handling

Secure cylinder when using to protect from falling. Use suitable hand truck to move cylinders.

### Storage

Store in accordance with all current regulations and standards. Subject to storage regulation: U.S. OSHA 29 CFR 1910.101. Keep separated from incompatible substances. Avoid contact with light. Store below 49°C. Do not puncture or burn containers, even when empty. Shelf life is 1 year.

## 8. Exposure Controls / Personal Protection

### Exposure limits

1000 ppm TWA

### Engineering measures/Ventilation

Provide local exhaust ventilation system. Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Ensure compliance with applicable exposure limits.

### Personal protective equipment

- 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.  
Any supplied-air respirator with a full-facepiece that is operated in a 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.  
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.
- Hand protection : Wear insulated gloves.
- Eye protection : For the gas: Eye protection is 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.  
Skin and body protection : Wear appropriate chemical resistant clothing.

## 9. Physical and Chemical Properties

Form : Gas.  
Color : Colorless.  
Odor : Sweet odor.  
Vapor pressure : 4963 mmHg @ 25°C  
Vapor density : 3.18 (air = 1)  
Boiling point : -27°C  
Melting point : Not available  
Water solubility : 0.15% @ 25°C  
Specific gravity : Not available

## 10. Stability and Reactivity

Stability : Stable under normal conditions.  
Conditions to avoid : Protect from physical damage and heat. Containers may rupture or explode if exposed to heat.  
Materials to avoid : Metals, oxidizing materials.  
Hazardous decomposition products : Thermal decomposition products: halogenated compounds, oxides of carbon.

## 11. Toxicological Information

The components of this material have been reviewed in various sources and the following endpoints are published:

1,1,1,2- : Inhalation LC50 Rat: 1500 g/m<sup>3</sup>/4H  
TETRAFLUOROETHANE  
(811-97-2)

### Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, NTP, OSHA or DFG.

### Medical Conditions Aggravated by Exposure

Heart or cardiovascular disorders, heart problems, immune system disorders or allergies, respiratory disorders, skin disorders and allergies.

### Additional Data

Stimulants such as epinephrine may induce ventricular fibrillation.

## 12. Ecological Information

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

## 13. Disposal Considerations

Waste from residues / unused products : Dispose in accordance with all applicable regulations.  
Contaminated packaging : Return cylinder to supplier.

#### 14. Transport Information

##### DOT (US only)

Proper shipping name : Compressed gas, n.o.s. (Contains: 1,1,1,2-Tetrafluoroethane)  
Class : 2.2  
UN/ID No. : UN1956  
Labeling : Nonflammable gas

#### 15. Regulatory Information

##### U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Section 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

1,1,1,2-TETRAFLUOROETHANE (811-97-2) : TSCA 12b: Section 5, 1%

##### SARA 311/312

Acute: No  
Chronic: No  
Fire: No  
Reactive: No  
Pressure: Yes

##### U.S. State Regulations

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

Component	CAS	CA	MA	MN	NJ	PA	RI
1,1,1,2-TETRAFLUOROETHANE	811-97-2	No	No	Yes	No	No	No

Not regulated under California Proposition 65.