

**MATERIAL SAFETY DATA SHEET**  
**Essentially Similar to U.S. Department of Labor Form OSHA**  
**Revised 03/20/12**  
**HMIS Health-1 Flammability-0 Reactivity-0**  
**SECTION I-Product Information**

**Manufacturer: Medite Inc**  
**24 Hour Emergency Phone Number: 800-424-9300**  
**Product Name: Cryo Spray 10 oz**  
**Product Number: 40-1111-00**

**SECTION II-Hazardous Identification**

Emergency Overview

Rapid evaporation of the liquid may cause frostbite.

Potential Health Effects

Skin

1,1,1,2-Tetrafluoroethane Contact with liquid or refrigerated gas can cause cold burns and frostbite.  
May cause skin irritation.  
May cause: Discomfort, itching, redness, or swelling.

Eyes

1,1,1,2-Tetrafluoroethane Contact with liquid or refrigerated gas can cause cold burns and frostbite.  
May cause eye irritation.  
May cause: tearing, Redness, Discomfort.

Inhalation

1,1,1,2-Tetrafluoroethane Misuse or intentional inhalation abuse may cause death without warning symptoms, due to cardiac effects.  
Other symptoms potentially related to misuse or inhalation heartbeat with strange sensation in the chest, heart thumping, apprehension, feeling of fainting, dizziness or weakness.  
Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing.

Carcinogenicity

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

**SECTION III-Composition on Ingredients**

Component	CAS #	Concentration
1,1,1,2-Tetrafluoroethane	811-97-2	100%

**SECTION IV-First Aid Measures**

**Skin:** In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Take off all contaminated clothing immediately. Wash contaminated clothing before re-use. Treat for frostbite if necessary by gently warming affected area.

**Eye contact:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Consult a physician if necessary.

**Inhalation:** Remove from exposure, lie down. Move to fresh air. Keep patient warm and rest. Artificial respiration and/or oxygen may be necessary. Consult a physician.

**Ingestion:** Is not considered a potential route of exposure.

**General advice:** Never give anything by mouth to an unconscious person. When symptoms persist or in all cases of doubt seek medical advice.

**Notes to Physician:** Because of possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, that may be used in situations of emergency life support should be used with special caution.

**SECTION V-Firefighting Measures**

Flammable Properties

Flash Point: does not flash  
Ignition: > 743 °C (< 1,369 °C (< 1,369 °F) at 1,013 hPa  
Lower explosion limit: Method: None per ASTM E681  
Upper explosion limit: Method: None per ASTM E681

Fire explosion Hazard: Hazardous thermal decomposition products:

Carbon oxides  
Hydrogen fluoride  
Carbonyl fluoride

Cylinders are equipped with pressure and temperature relief devices, but may still rupture under fire conditions. Decomposition may occur. Contact of welding or soldering torch flame with high concentrations of refrigerant can result in visible changes in the size and color of the torch flame. This flame effect will only occur in concentrations of product well above the recommended exposure limit.

Therefore stop all work and ventilate to disperse refrigerant vapors from the work area before using any open flames. This substance is not flammable in air at temperature up to 100 deg. C (212 deg. F) at atmospheric pressure. However, mixtures of this substance with high concentrations of air at elevated pressure and/or temperature can become combustible in the presence of an ignition source. This substance can also become combustible in an oxygen enriched environment (oxygen concentrations greater than that in air). Whether a mixture containing this substance and air, or this substance in oxygen enriched atmosphere become combustible depends on the inter-relationship of 1) the temperature 2) the pressure, and 3) the proportion of oxygen in the mixture. In general this substance should not be allowed to exist with air above atmospheric pressure or at high temperatures; or in an oxygen enriched environment. For example this substance should NOT be mixed with air under pressure for leak testing or other purposes.

Experimental data have also been reported which indicate combustibility of this substance in the presence of certain concentrations of chlorine.

Suitable

extinguishing media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Firefighting Instructions: In the event of fire, wear self-contained breathing apparatus. Cool containers / tanks with water spray. Water runoff should be contained and neutralized prior to release.

#### **SECTION VI-Accidental Release Measures**

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) section before proceeding with clean up. Use appropriate PERSONAL EQUIPMENT during clean-up.

Safeguards (Personnel): Evacuate personnel to safe areas. Ventilate area, especially low or enclosed places where heavy vapours might collect.

Spill Cleanup: Evaporates.

Accidental

Release Measures: Should not be released into the environment. Self-contained breathing apparatus (SCBA) is required if a large release occurs. Avoid open flames and high temperatures.

#### **SECTION VII-Handling and Storage**

Handling (Personnel): Use sufficient ventilation to keep employee exposure below recommended limits. For personal protection See section 8. Handle in accordance with good industrial hygiene and safety practice.

Handling

(Physical Aspects): The product should not be mixed with air for leak testing or used with air for any other purpose above atmospheric pressure. Contact with chlorine or other strong oxidizing agents should also be avoided.

Storage: Valve protection caps and valve outlet threaded plugs must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for Use a pressure reducing regulator when connecting cylinder to lower pressure (>3000 psig) piping or systems. Never attempt to lift cylinder by its cap. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder. Cylinders should be stored upright and

Firmly secured to prevent falling or being knocked over. Separate full containers from empty containers. Keep at temperature not exceeding 52°C. Do not store

Near combustible materials. Avoid area where salt or other corrosive are present.

Storage temperature: < 52 °C (< 126 °F)

### SECTION VIII-Exposure Controls/Personal Protection

Engineering Controls: 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 or enclosed places. Refrigerant concentration monitors may be necessary to determine vapor concentrations in work areas prior to use of torches or other open flames, or if employees are entering enclosed areas.

Personal protective equipment

Respiratory protection: For rescue and maintenance work in storage tanks use self-contained breathing apparatus. Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing.

Hand protection: Additional protection: Impervious gloves

Eye protection: Wear safety glasses with side shields. Additionally wear a face shield where the possibility exists for face contact due to splashing, spraying or airborne contact with this material.

Protective measures: Self-contained breathing apparatus (SCBA) is required if a large release occurs.

Exposure Guidelines

Exposure Limit Values

1,1,1,2-Tetrafluoroethane

AEL \* 1,000 ppm 8 & 12 hr. TWA

\* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

### SECTION IX-Physical and Chemical Properties

Form: Liquefied gas  
Color: colorless  
Odor: slight, ether-like  
Boiling point/  
boiling range: -26.1 °C (-15.0 °F) at 1,013 hPa  
% Volatile: 100 %  
Vapour Pressure: 6,661 hPa at 25 °C (77 °F)  
Density : 1.21 g/cm<sup>3</sup> at 25 °C (77 °F) (as liquid)  
Specific gravity: 1.208 at 25 °C (77 °F)  
Water solubility: 1.5 g/l at 25 °C (77 °F) at 1,013 hPa  
Vapour density: 3.6 at 25°C (77°F) and 1013 hPa (Air = 1.0)  
Evaporation rate: > 1 (CCL4=1.0)

### SECTION X-Stability and Reactivity

Stability: Stable under recommended storage conditions.  
Conditions to avoid: The product is not flammable in air under ambient conditions of temperature and pressure. When pressurized with air or oxygen, the mixture may become flammable. Certain mixtures of HCFCs or HFCs with chlorine may become flammable or reactive under certain conditions.  
Incompatibility: Alkali metals Alkaline earth metals, powdered metals, powdered metal salts  
Hazardous decomposition Products: Decomposition products are hazardous. This material can be decomposed by high temperatures (open flames, glowing metal surfaces, etc.) forming hydrofluoric acid and possibly carbonyl fluoride. These materials are toxic and irritating. Avoid contact with decomposition products.  
Hazardous reactions: Polymerization will not occur.

### SECTION XI-Toxicological Information

134a propellant

Further information Cardiac sensitisation threshold limit: 312975 mg/m<sup>3</sup>  
Anaesthetic effects threshold limit: 834600 mg/m<sup>3</sup>  
Did not show carcinogenic or teratogenic effects in animal

experiments. Inhalation of decomposition products in high concentration may cause shortness of breath (lung oedema). Rapid evaporation of the liquid may cause frostbite.

#### 1,1,1,2-Tetrafluoroethane

Dermal:	not applicable
Oral:	not applicable
Inhalation 4 h LC50:	567000 ppm, rat
Inhalation Low Observed:	75000 ppm, dog
Adverse Effect Concentration (LOAEC)	Cardiac sensitization
Skin irritation	slight irritation, rabbit Not expected to cause skin irritation based on expert review of the properties of the substance. No skin irritation, human
Eye irritation	slight irritation, rabbit Not expected to cause eye irritation based on expert review of the properties of the substance. No eye irritation, human
Skin sensitization	Did not cause sensitization on laboratory animals, guinea pig Not expected to cause sensitization based on expert review of the properties of the substance. Did not cause sensitization on laboratory animals. There are no reports of human respiratory sensitization.
Repeated dose toxicity	Inhalation rat No toxicologically significant effects were found.
Carcinogenicity:	Overall weight of evidence indicates that the substance is not carcinogenic. An increased incidence of benign tumours was observed in laboratory animals.
Mutagenicity:	Did not cause genetic damage in animals. Did not cause genetic damage in cultured mammalian cells. Did not cause genetic damage in cultured bacterial cells.
Reproductive toxicity:	Animal testing showed no reproductive toxicity.
Teratogenicity:	Animal testing showed effects on embryo-fetal development at levels equal to or above those causing maternal toxicity.

### SECTION X11-Ecological Information

#### Aquatic Toxicity

##### 1,1,1,2-Tetrafluoroethane

96 h LC50:	Oncorhynchus mykiss (rainbow trout) 450 mg/l
72 h EC50:	Algae > 118 mg/l
48 h EC50:	Information given is based on data obtained from similar substances. Daphnia magna (Water flea) 980 mg/l

### SECTION X11-Disposal Considerations

Waste Disposal:	Can be used after re-conditioning. Recover by distillation or remove to a permitted waste disposal facility. Comply with applicable Federal, State/Provincial and Local Regulations.
Environmental Hazards:	Empty pressure vessels should be returned to the supplier.

### SECTION X1V-Transport Information

DOT	UN number	3159
	Proper shipping name	1,1,1,2-Tetrafluoroethane
	Class	2.2
	Labelling No.	2.2
IATA_C	UN number	3159
	Proper shipping name	1,1,2-Tetrafluoroethane
	Class	2.2
	Labelling No.	2.2
IMDG	UN number	3159
	Proper shipping name	1,1,1,2-Tetrafluoroethane
	Class	2.2
	Labelling No.	2.2

#### SECTION XIV-Regulatory Information

TSCA Status	Listed.
SARA 313 Regulated Chemical(s)	SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
California Prop. 65	Chemicals known to the State of California to cause cancer, birth defects or any other harm: none known

#### SECTION XVI-Other Information

	HMIS
Health	1
Flammability	0
Reactivity/Physical hazard	1
PPE	Personal Protection rating to be supplied by user depending on use conditions.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. Significant change from previous version is denoted with a double bar.