

**1 Identification****GHS Product Identifier**

Product form:	Substance
Trade name:	Max Pro Freeze Spray
CAS No:	811-97-2
Product code:	7777
Formula:	C2H2F4

**Recommended use of the chemical and restriction on use**

Use of the substance/mixture:	Follow Label Directions
Use of the substance/mixture:	Electronic component freeze spray

**Supplier's details**

Max Pro  
P.O. Box 9962  
Ft. Lauderdale, FL 33310 USA

Tel.: 954-972-3338

**Emergency phone number**

CHEMTREC 24 Hour Emergency Response  
USA & Canada 800-424-9300

**2 Hazard(s) identification****Classification of the substance or mixture**

Compressed gas H280

**GHS label elements**

Warning



Contains gas under pressure; may explode if heated

Do not pierce or burn, even after use.

Protect from sunlight. Store in a well-ventilated place.

Do not expose to temperatures exceeding 50 °C/ 122 °F.

**Other hazards which do not result in classification**

Contains gas under pressure; may explode if heated. Intentional misuse and inhalation abuse may cause cardiac or central nervous systems effects. Warning. May Cause frostbite in contact with skin.

### 3 Composition/information on ingredients

Description	CAS Number	%	Note
1,1,1,2-tetrafluoroethane	811-97-2	100	

### 4 First-aid measures

#### Description of necessary first-aid measures

First-aid measures general:	Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with labored breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital.
First-aid measures after inhalation:	Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.
First-aid measures after skin contact:	Rinse with water. Take victim to a doctor if irritation persists. In case of frostbites: Wash immediately with lots of water (15 minutes)/shower. Do not apply (chemical) neutralizing agents. Remove clothing while washing. Do not remove clothing if it sticks to the skin. Cover wounds with sterile bandage. Consult a doctor/medical service. If burned surface > 10%: take victim to hospital.
First-aid measures after eye contact:	Rinse immediately with plenty of water for 15 minutes. Do not apply neutralizing agents. Take victim to an ophthalmologist.
First-aid measures after ingestion:	Not applicable.

#### Most important symptoms/effects, acute and delayed

Symptoms/injuries:	Not expected to present a significant hazard under anticipated conditions of normal use.
Symptoms/injuries after inhalation:	EXPOSURE TO HIGH CONCENTRATIONS: Accelerated heart action. Disturbances of heart rate. Coordination disorders. Feeling of weakness. Respiratory difficulties. Vomiting. Nausea. Disturbances of consciousness. Risk of lung edema. Respiratory collapse.
Symptoms/injuries after skin contact:	Red skin. Blisters. Frostbites.
Symptoms/injuries after eye contact:	Not applicable.
Symptoms/injuries after ingestion:	Not applicable.
Chronic symptoms:	No effects known.

#### Indication of immediate medical attention and special treatment needed, if necessary

No additional information available.

## 5 Fire-fighting measures

### Suitable extinguishing media

EXTINGUISHING MEDIA FOR SURROUNDING FIRES: Adapt extinguishing media to the environment.

Unsuitable extinguishing media: No unsuitable extinguishing media known.

### Specific hazards arising from the chemical

Fire hazard: DIRECT FIRE HAZARD. Non combustible.

Explosion hazard: INDIRECT EXPLOSION HAZARD. Heat may cause pressure rise in tanks/drums: explosion risk.

Reactivity: On burning: release of toxic and corrosive gases/vapors (hydrofluoric acid, carbon monoxide - carbon dioxide, carbonylfluoride). Reacts with (some) acids.

### Special protective actions for fire-fighters

Precautionary measures fire: Exposure to fire/heat: consider evacuation.

Firefighting instructions: Cool tanks/drums with water spray/remove them into safety. Physical explosion risk: cool from behind cover. Do not move the load if exposed to heat. After cooling: persistent risk of physical explosion. Dilute toxic gases with water spray.

Protection during firefighting: Heat/fire exposure: compressed air/oxygen apparatus.

Other information: NFPA Aerosol Level 1.

## 6 Accidental release measures

### Personal precautions, protective equipment and emergency procedures

#### 6.1.1. For non-emergency personnel

Protective equipment: Insulating gloves. Protective clothing. Large spills/in enclosed spaces: compressed air apparatus.

Emergency procedures: Keep upwind. Mark the danger area. Seal off low-lying areas. Close doors and windows of adjacent premises. No naked flames. Carry out specific temperature controls. Wash contaminated clothes. Large spills/in confined spaces: consider evacuation.

#### 6.1.2. For emergency responders

Protective equipment: Equip cleanup crew with proper protection.

Emergency procedures: Ventilate area.

### Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

### Methods and materials for containment and cleaning up

For containment: Contain released substance, pump into suitable containers. Plug the leak, cut off the supply. Tip the container on one side to stop the leakage. Do not spray water on unheated tank walls.

Methods for cleaning up: Damaged/cooled tanks must be emptied.

## 7 Handling and storage

### Precautions for safe handling

Additional hazards when processed: Pressurized container: Do not pierce or burn, even after use.

Precautions for safe handling: Comply with the legal requirements. Handle and open the container with care. Thoroughly clean/dry the installation before use. Keep away from

naked flames/heat.

Observe normal hygiene standards. Carry operations in the open/under local exhaust/ventilation or with respiratory protection. Measure the oxygen concentration in the air.

### Conditions for safe storage, including any incompatibilities

Storage conditions:	Keep only in the original container in a cool, well ventilated place away from naked flames/heat. Keep container closed when not in use.
Incompatible products:	Strong bases. Strong acids.
Incompatible materials:	Sources of ignition. Direct sunlight.
Storage temperature:	< 50 °C
Heat-ignition:	KEEP SUBSTANCE AWAY FROM: heat sources.
Prohibitions on mixed storage:	KEEP SUBSTANCE AWAY FROM: (strong) acids.
Storage area:	Store in a cool area. Keep out of direct sunlight. Ventilation at floor level. Above ground. Meet the legal requirements.
Special rules on packaging:	SPECIAL REQUIREMENTS: with pressure relief valve. clean. correctly labeled. meet the legal requirements.
Packaging materials:	SUITABLE MATERIAL: No data available. MATERIAL TO AVOID: No data available.

## 8 Exposure controls/personal protection

### Appropriate engineering controls

Personal protective equipment: Gloves. Safety glasses. Avoid all unnecessary exposure.



Materials for protective clothing:	GIVE GOOD RESISTANCE: neoprene. nitrile rubber. butyl rubber.
Hand protection:	Insulated gloves.
Eye protection:	Safety glasses.
Skin and body protection:	Protective clothing.
Respiratory protection:	High vapor/gas concentration: self-contained respirator.
Other information:	Do not eat, drink or smoke during use.

## 9 Physical and chemical properties

### Physical and chemical properties

Physical state:	Gas
Appearance:	Gas
Molecular mass:	102.03 g/mol
Color:	Colorless
Odor:	Ether-like odor
Odor threshold:	No data available
pH:	No data available
Relative evaporation rate (butyl acetate=1):	No data available
Melting point:	-101 °C
Freezing point:	No data available
Boiling point:	-26 °C

Flash point:	Not applicable
Critical temperature:	101 °C
Self ignition temperature:	> 743 °C
Decomposition temperature:	368 °C
Flammability (solid, gas):	No data available
Vapor pressure:	5720 hPa
Critical pressure:	40560 hPa
Relative vapor density at 20 °C:	3.52 (20 °C)
Relative density:	1.2 (-27 °C)
Density:	1206 kg/m <sup>3</sup> (-27 °C)
Solubility:	Poorly soluble in water. Soluble in ethanol. Soluble in ether. Soluble in hexane.
Water:	0.15 g/100ml (25 °C)
Log Pow:	1.06 (OECD 107: Partition Coefficient (n-octanol/water): Shake Flask Method)
Log Kow:	No data available
Viscosity, kinematic:	No data available
Viscosity, dynamic:	No data available
Explosive properties:	No data available
Oxidizing properties:	No data available
Explosive limits:	No data available
VOC content:	0 %
Gas group:	Compressed gas
Other properties:	Gas/vapor heavier than air at 20°C. Substance has neutral reaction. May generate electrostatic charges.

## 10 Stability and reactivity

### Reactivity

On burning: release of toxic and corrosive gases/vapours (hydrofluoric acid, carbon monoxide - carbon dioxide, carbonylfluoride). Reacts with (some) acids.

### Chemical stability

Stable under normal conditions.

### Possibility of hazardous reactions

Not established.

### Conditions to avoid

Direct sunlight. Extremely high or low temperatures.

### Incompatible materials

Strong acids. Strong bases.

### Hazardous decomposition products

Fume. Carbon monoxide. Carbon dioxide.

## 11 Toxicological information

### Toxicological (health) effects

Acute toxicity: Not classified

134a (811-97-2)	
LC50 inhalation rat (mg/l)	> 200 mg/l (Rat)
LC50 inhalation rat (ppm)	> 359300 ppm/4h (Rat)

Skin corrosion/irritation:	Not classified
Serious eye damage/irritation:	Not classified
Respiratory or skin sensitization:	Not classified
Germ cell mutagenicity:	Not classified based on available data, the classification criteria are not met
Carcinogenicity:	Not classified
Reproductive toxicity:	Not classified based on available data, the classification criteria are not met
Specific target organ toxicity (single exposure):	Not classified
Specific target organ toxicity (Repeated exposure):	Not classified based on available data, the classification criteria are not met
Aspiration hazard:	Not classified based on available data, the classification criteria are not met
Potential Adverse human health effects:	Based on available data, the classification criteria are not met.
Symptoms/injuries after inhalation:	EXPOSURE TO HIGH CONCENTRATIONS: Accelerated heart action. Disturbances of heart rate. Coordination disorders. Feeling of weakness. Respiratory difficulties. Vomiting. Nausea. Disturbances of consciousness. Risk of lung oedema. Respiratory collapse.
Symptoms/injuries after skin contact:	Red skin. Blisters. Frostbites.
Symptoms/injuries after eye contact:	Not applicable.
Symptoms/injuries after ingestion:	Not applicable.
Chronic symptoms:	No effects known.

## 12 Ecological information

### Toxicity

Ecology - general:	No environmental hazard.
Ecology - air:	TA-LuftKlasse 5.2.5.
Ecology - water:	Mild water pollutant (surface water). Maximum concentration in drinking water: 1.5 mg/l (fluoride) (Directive 98/83/EC). Slightly harmful to fishes (LC50(96h) 100-1000 mg/l). Slightly harmful to invertebrates (Daphnia) (EC50 (48h): 100 - 1000 mg/l).

134a (811-97-2)	
LC50 fish 1	450 mg/l 96 h; Salmogairdneri (Oncorhynchus mykiss)
EC50 Daphnia 1	980 mg/l (48 h; Daphnia magna)

## Bioaccumulative potential

134a (811-97-2)	
BCF other aquatic organisms 1	5 - 58 (Estimated value)
Log Pow	1.06 (OECD 107: Partition Coefficient (n-octanol/water): Shake Flask Method)
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).

## Mobility in soil

No additional information available

## Other adverse effects

Other information: Avoid release to the environment.

## 13 Disposal considerations

### Disposal methods

Waste disposal recommendations: Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Refer to manufacturer/supplier for information on recovery/recycling.

Additional information: LWCA (the Netherlands): KGA category 06. Hazardous waste according to Directive 2008/98/EC.

Ecology - waste materials: Avoid release to the environment.

## 14 Transport information

### UN Number

In accordance with ADR /RID / ADN / IMDG / ICAO / IATA

US DOT (ground): UN3159, 1,1,1,2-Tetrafluoroethane, 2.2, Limited Quantity

ICAO/IATA (air): UN3159, 1,1,1,2-Tetrafluoroethane, 2.2, Limited Quantity

IMO/IMDG (water): UN3159, 1,1,1,2-Tetrafluoroethane, 2, Limited Quantity

Special Provisions: DOT-SP 10232: In accordance with this special permit, the product container is marked with DOT-SP10232 instead of 2Q. This packaging is approved for shipping as a Consumer Commodity.

DOT-SP 15146: In accordance with this special permit, the product container is marked with DOT-SP15146 instead of 2Q. This packaging is approved for shipping as a Consumer Commodity.

### UN Proper Shipping Name

DOT Proper Shipping Name: 1,1,1,2-Tetrafluoroethane

Department of Transportation  
(DOT) Classes Hazard: 2.2 - Class 2.2 - Non-flammable compressed gas 49 CFR 173.115

Hazard labels (DOT): 2.2 - Non-flammable gas



DOT Special Provisions  
(49 CFR 172.102):

DOT-SP 10232: In accordance with this special permit, the product container is marked with DOT-SP10232 instead of 2Q. This packaging is approved for shipping as a Consumer Commodity.

DOT-SP 15146: In accordance with this special permit, the product container is marked with DOT-SP15146 instead of 2Q. This packaging is approved for shipping as a Consumer Commodity.

Transportation Canada:  
DOT Packaging Exceptions  
(49 CFR 173.xxx):

TC-SU 11282

306

DOT Packaging Non Bulk  
(49 CFR 173.xxx)  
:

304

DOT Packaging Bulk  
(49 CFR 173.xxx):

314;315

**Transport hazard class(es)**

Other information:  
State during transport (ADR-RID):

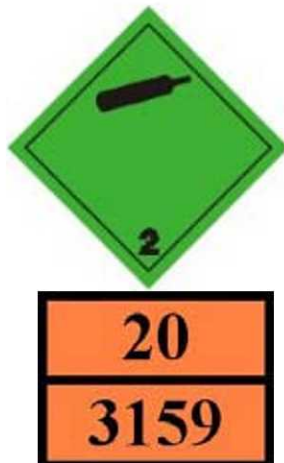
No supplementary information available.  
As liquefied gas, under pressure.

Overland transport  
Class (ADR):  
Hazard identification number  
(Kemler No.):  
Classification code (ADR):

2 - Gases

20

2A



Danger labels (ADR):  
Orange plates

2.2 - Non-flammable compressed gas



Tunnel restriction code:	C/E
Transport by sea	
DOT Vessel Stowage Location:	A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.
EmS-No. (1):	F-C
EmS-No. (2) Air transport:	S-V
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27):	75 kg
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75):	150kg

## 15 Regulatory information

### Safety, health and environmental regulations specific for the product in question

134a (811-97-2)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
SARA Section 311/312 Hazard Classes	Sudden release of pressure hazard

### CANADA

134a (811-97-2)	
WHMIS Classification	Class A - Compressed Gas

### EU-Regulations

No additional information available

### Classification according to Regulation (EC) No. 1272/2008 [CLP]

Press. Gas

Full text of H-phrases: see section 16

### Classification according to Directive 67/548/EEC or 1999/45/EC

Not classified

### 15.2.2. National regulations

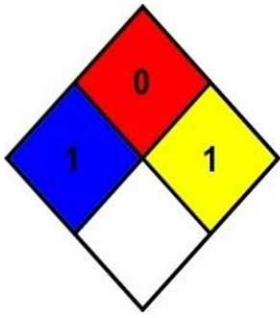
No additional information available

## 16 Other information

### Other information

Indication of changes:	Revision - See : *.
Other information:	None
Full text of H-phrases:	See section 16

Compressed gas	Gases under pressure Compressed gas
H280	Contains gas under pressure; may explode if heated



NFPA health hazard:

NFPA fire hazard:

NFPA reactivity:

1 - Exposure could cause irritation but only minor residual injury even if no treatment is given.

0 - Materials that will not burn.

1 - Normally stable, but can become unstable at elevated temperatures and pressures or may react with water with some release of energy, but not violently.

### HMIS III Rating

Health:

Flammability:

Physical:

Personal Protection:

1 Slight Hazard - Irritation or minor reversible injury possible

0 Minimal Hazard

1 Slight Hazard

B