

**MATERIAL SAFETY DATA SHEET (MSDS)**

**1 Identification of the substance/preparation and of the company/undertaking**

Product Name: Refrigerant Charge L4-001  
 Datasheet Number: CRC 2.0.1

Product Use: Refrigeration Unit Mixture  
 Name of Supplier: Thermonics  
 Address of Supplier: 1288 Reamwood Ave.  
 Sunnyvale, CA 94089

Telephone: (408) 542-5900  
 Fax: (408) 542-5910

U.S Emergency Phone: (800) 424-9300

Int'l. Emergency Phone (collect): (703) 527-3887

**2 Composition/information on ingredients**

Chemical Name	Common Name	Concentration	CAS Number	EC Number	R Phrases	Symbols
1,1,1,3,3-pentafluoropropane	HFC-245fa	10-30%	460-73-1	419-170-6	None	None
1,1,1,3,3,3-hexafluoropropane	HFC-236fa	30-60%	690-39-1	425-320-1	None	None
Tetrafluoromethane	R-14	10-30%	75-73-0	200-896-5	None	None
Trifluoromethane	R-23	10-30%	75-46-7	200-872-4	None	None

Note: Total refrigerant weight is 914g. Individual material quantities have been withheld for proprietary reasons.

**3 Hazards identification**

- Odor: Sweet ether-like odor
- Appearance: Gas, colorless
- Contact with eyes: May cause irritation
- Contact with skin: May cause frostbite
- Inhalation: May cause dizziness, confusion, headache or stupor, May cause weakness, May cause shortness of breath, May cause unconsciousness
- Ingestion: Ingestion is not considered a potential route of exposure

**4 First aid measures**

Contact with skin

- In case of contact with liquid, thaw frosted parts with water, remove clothing carefully and wash with soap & water
- Seek medical attention if irritation persists

Contact with eyes

- If substance has got into eyes, immediately wash out with plenty of water for at least 15 minutes
- Seek medical attention

Ingestion

- Not applicable

#### **4 First aid measures (....)**

##### Notes to Physicians

- Because of possible disturbances of cardiac rhythm, catecholamine drugs such as epinephrine, should only be used with special caution in situations of emergency life support. Do not administer adrenaline due to the sensitizing effect of fluorocarbons on the myocardium. Treatment of overexposure should be directed at the control of symptoms and clinical condition. Exposure to fluorocarbon pyrolysis products should be considered in the diagnostic evaluation of occupationally related fever of short duration and unknown origin. Signs of exposure include tachycardia, hyperpnoea, and pharyngeal congestion; investigation may reveal pulmonary edema and leucocytes.

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#### **5 Fire-fighting measures**

- Auto-ignition point - not known
  - Non-combustible
  - Toxic and irritant fumes may be formed
  - Substance evolves toxic fumes, wear self-contained breathing apparatus
  - Keep container(s) exposed to fire cool, by spraying with water
  - Not flammable. In case of fire use extinguishing media appropriate to surrounding conditions
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#### **6 Accidental release measures**

##### Immediate Actions

- Evacuate the area and keep personnel upwind

##### Clean Up Actions

- Ventilate area
  - Allow product to evaporate
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#### **7 Handling and storage**

##### Handling

- Ensure adequate ventilation
- Do not breathe gas (S23)
- Avoid contact with alkaline earth metals
- Wear suitable gloves (S37)

##### Storage

- Keep in a cool, dry place
  - Keep only in the original container at a temperature not exceeding 50 °C (S47/49)
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#### **8 Exposure controls/personal protection**

##### Engineering controls

- Engineering controls should be provided which maintain airborne concentrations as low as practicable

##### Precautionary measures

- Use only in well ventilated areas (S51)

##### Personal protection

- Wear goggles giving complete eye protection
- Wear neoprene gloves
- Respiratory protection may be required under exceptional circumstances when excessive air contamination exists

## **8 Exposure controls/personal protection (....)**

### Exposure Limits

- 300 ppm, 8 Hr. TWA
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## **9 Physical and chemical properties**

- Odor: Sweet ether-like odor
  - Appearance: Gas, colorless
  - Boiling point < -100 °C
  - Vapor pressure 80 psig
  - Vapor density (air = 1) –3.4
  - Slightly soluble in water
  - Specific gravity 1.4 g/cm<sup>3</sup>
  - Non-combustible
  - Auto-ignition point - not known
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## **10 Stability and reactivity**

- Stable
  - Keep away from heat and sources of ignition, Avoid contact with zinc, Avoid contact with aluminum
  - Incompatible with alkaline earth metals
  - Decomposition products may include hydrochloric acid and hydrofluoric acid
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## **11 Toxicological information**

### Toxicological information

- Asphyxiate
- May disturb the central nervous system
- Inhalation of vapors may give rise to nausea, headaches and dizziness
- May cause unconsciousness
- May cause frost-bite

### Carcinogenicity

- Only limited animal evidence - not classified as a carcinogen

### Teratogenicity

- No evidence of reproductive effects

### Mutagenicity

- No evidence of mutagenic effects
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## **12 Ecological information**

### Ecotoxicology

- Presents no hazard to the environment
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**12 Ecological information (....)**

## Environmental Fate

- No information available

## Environmental Hazard Values

- No information available

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**13 Disposal considerations**

## Disposal considerations

- Disposal should be in accordance with local, state or national legislation
  - Do not reuse empty containers
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**14 Transport information**

Proper Shipping Name: Compressed Gas, N.O.S.

## Emergency Action Code

Proper Shipping Name	: Compressed Gas , N.O.S.
EAC	: 2TE

## UN

Proper Shipping Name	: Compressed Gas, N.O.S.
UN No.	: 1956

Hazard Class	: 2.2	Packing Group	: #
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## Road/Rail (ADR/RID)

Proper Shipping Name	: Compressed Gas, N.O.S.
ADR UN No.	: 1956

ADR Hazard Class	: 2	ADR Item No.	: IA
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ADR/RID No.	: 20	Tremcard	: 20GIA
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## Sea (IMDG)

Proper Shipping Name	: Compressed Gas, N.O.S.
IMDG UN No.	: 1956

IMDG Hazard Class.	: 2.2	IMDG Page No.	
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IMDG Pack Group.	: #	IMDG EmS	: F-D, S-U
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IMDG MFAG

## Air (ICAO/IATA)

Proper Shipping Name	: Compressed Gas, N.O.S.
ICAO Un No.	: 1956

ICAO Hazard Class.	: 2.2	ICAO Packing Group.	: #
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#### 14 Transport information (....)

DOT / CFR (US Department of Transportation

DOT Proper Shipping Name

Hazardous Material

Hazard Class

Identification Number

Product RQ (lbs)

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#### 15 Regulatory information

Classification and labeling

- This Safety Data Sheet does not constitute a workplace risk assessment

Applicable Laws

- This Safety Data Sheet is provided in compliance with The Safety Data Sheets Directive (2001/58/EC)
- Not hazardous according to current CHIP Regulations

Risk Phrases

- Not applicable

Safety Phrases

- Not applicable
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#### 16 Other information