



TULSTAR PRODUCTS, INC.

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MATERIAL SAFETY DATA SHEET

COMPANY INFORMATION

Company Name: **TULSTAR PRODUCTS, INC.**
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Tulsa, OK 74105
Phone Number: (918) 749-9060
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Email Address: tulstar@tulstar.com
Emergency Number: CHEMTREC 800-424-9300 (24 hours)

PRODUCT INFORMATION

Chemical Name: HFC 134a
CAS Number: 811-97-2
Synonyms: 1,1,1,2-Tetrafluoroethane
Formula: $\text{CF}_3\text{-CH}_2\text{F}$

DANGEROUS GOODS CLASSIFICATION

Dangerous Goods: YES
Hazardous Components: 1,1,1,2-TETRAFLUOROETHANE
Product Class: 2.2
Product Sub-risk: N/A
U.N. Number: 3159

PHYSICAL DESCRIPTION

Appearance/odor: Colorless, liquefied gas/ slightly ether-like odor.
Boiling point: -26.2°C
Vapor Pressure @ 20C (mm HG): 4281
Specific Gravity at 20°C (H₂O=1): 1.226
Flash point: None
Flammability Limits (% volume in air): None
Solubility in Water (G/L) @ 20°C: 1.93

OTHER PROPERTIES

Evaporation Rate (n-Butyl Acetate=1): No data
Percentage Volatile (by volume): 100
pH (concentrate): n/a
pH (10 g/l water): n/a
Vapor Density (air=1): 3.3
Auto-ignition temperature (C): None

HEALTH EFFECTS OF ACUTE OVEREXPOSURE

- If Swallowed: May cause irritation to gastro-intestinal tract.
- If in Eyes: The material should not be allowed to contact the eyes. May cause tissue injury. Contact with the eyes will cause irritation.
- If on Skin: The material should not be allowed to come into contact with the skin. Frostbite can occur on contact with the skin.
- If Inhaled: Avoid breathing concentrated vapor. Avoid the inhalation of any decomposition products. May cause anesthesia.

HEALTH EFFECTS OF CHRONIC OVEREXPOSURE

Can act as asphyxiant. Acute inhalation LC50 (rat)- >80% (15 minutes) from CA. 20 volume % in respiration air, risk of suffocation from lack of oxygen. Inhalation of decomposition products can cause lung odema.

FIRST AID

- If swallowed: Seek medical attention immediately. Do not induce vomiting if the patient is unconscious.
- If in Eyes: Seek medical attention. Immediately rinse eyes thoroughly, including under eyelids, with running water for at least 15 minutes.
- If on Skin: Seek immediate medical attention if the skin is contaminated by large quantities of chemical. Remove all contaminated clothing and footwear. Wash the skin thoroughly with warm water. Treat for frostbite.
- If Inhaled: Seek medical attention. Remove from the source of vapor/dust/spray/fumes. Remove to open space or fresh air. Keep warm and at rest. If breathing stops, start artificial respiration. Provide oxygen if required.

ADVICE TO DOCTOR

Symptomatic and supportive therapy as indicated. Do not administer any preparations of the adrenaline-ephedrine group.

EXPOSURE STANDARDS

Recommendation: 1000 ppm (v/v) –8 hour TWA value

ENGINEERING CONTROLS

The product vapor is heavier than air, hence vapors will collect at low levels and in confined spaces (sewers, basements, pits). Ventilate by extraction at low levels. Use local or general exhaust ventilation to meet exposure standard requirements.

PERSONAL PROTECTION

- Corrosivity Hazard: N/A
- Handling & Storage Precautions: Store in accordance with regulations for liquefied gases under pressure. Protect the product from moisture. Store in a cool, well ventilated, low-fire risk area, away from sources of heat or ignition.

SPILLS AND DISPOSAL

- Spillage or Leak Procedures: Consider evacuation taking all relevant factors into account. In case of doubt, evacuate immediate vicinity and request emergency service assistance. Ventilate the spillage area thoroughly. Personnel involved in clean up should wear full-body protective clothing, with self-contained breathing apparatus. If safe, attempt to stop further leakage. Allow products/solvents to evaporate into a hood or outside away from people and buildings.
- Waste Disposal Methods: In accordance with government regulations for the disposal of special waste. Small quantities may be incinerated. Return the product to the manufacturer for reprocessing.

FIRE/EXPLOSION HAZARD

- Extinguishing Media: Use extinguishing media suitable to the environment. Water fog, fine water spray, foam or dry agent.
- Special Fire Fighting Procedures: Fire fighters should wear full body protective clothing with self-contained breathing apparatus. Consider evacuation, taking all relevant factors into account. In case of doubt, evacuate immediate vicinity and request emergency services assistance. Use water spray to cool fire-exposed containers.

Reactivity Hazards: The material is stable under normal conditions. Exposure to heat/fire should be avoided to prevent the liberation of toxic gases. Incompatible with alkali metals (eg. sodium, potassium) and alkaline-earth metals (eg. magnesium, calcium).

FIRE/EXPLOSION/DECOMPOSITION HAZARDS

On contact with fire and glowing objects, escaping vapors may form decomposition products (hydrogen fluoride and traces of carbonyl fluoride). In powdered form aluminum and zinc catalyze decomposition.

OTHER INFORMATION TOXICOLOGY

Oral LD50 (mg/kg): No Data
Dermal LD50 (mg/kg): No Data
Inhalation LC50 (mg/l): >50 vol % (species-rat, 4 hours)

ENVIRONMENTAL/ECOLOGICAL EFFECTS

Biological Elimination (%): No Data
Fish Toxicity: No Data
Toxicity to Bacteria in Effluent: No Data
Aquatic, Air or soil
Environmental Hazards: Avoid entry of any liquid and/or vapors into the subsoil.

SPECIAL PRECAUTIONS/COMMENTS

At high pressures and high air-content ignitable mixtures can form. Incompatible with magnesium and alloy with >2% freezing point, -101°C.