

MATERIAL SAFETY DATA SHEET
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EMERGENCY PHONE NO.: CHEMTREC (FOR SPILL, LEAK,
FIRE, EXPOSURE OR ACCIDENT): 1-800-535-5053

***** SUPER FREEZE 13109, 13119*****

SECTION I - PRODUCT IDENTIFICATION

PRODUCT NAME: Super Freeze (*Self-pressurized*)
PRODUCT DESCRIPTION: An inert, 100% pure liquified gas circuit refrigerant used to locate thermal intermittents (defective resistors, transistors, capacitors, etc.), and to protect electronic components during soldering and de-soldering processes. Does not deplete ozone, cools to -60 degrees F. (-51 degrees C.).
RESTRICTIONS: Non-restricted

SECTION II - HAZARDOUS INGREDIENTS

INGREDIENT NAME(S)	CAS #	OCCUPATIONAL EXPOSURE LIMITS	
		TLV OR PEL	ORAL LD-50
1,1,1,2-Tetrafluoroethane	811-97-2	4240 mg/m3	N.E.

Carcinogenic: OSHA = no NTP = no IARC = no

SECTION III - PHYSICAL DATA

APPEARANCE: Colorless, liquified gas
ODOR: Faint ethereal odor
BOILING POINT: -15 degrees F. (-26.2 degrees C.)
VAPOR DENSITY (Air = 1): 3.18
VAPOR PRESSURE (mmHg at 20 degrees C.): 4268
SOLUBILITY IN WATER: Very low (0.15% by weight)
SPECIFIC GRAVITY: 1.27 at 20 degrees C.
EVAPORATION RATE (Ether = 1): >1

SECTION IV - FIRE AND EXPLOSION DATA

HMIS RATING: Health - 1, Fire - 0, Reactivity - 1
FLASH POINT: None
FLAMMABLE LIMITS: LEL: N.A UEL: N.A.
EXTINGUISHING MEDIA: As appropriate for surrounding combustibles.
UNUSUAL FIRE AND EXPLOSION HAZARDS: Decomposition may occur with high temperature or open flames. Heated containers may over-pressurize and fail explosively.
SPECIAL FIRE FIGHTING PROCEDURES: Fire fighters should wear self-contained breathing apparatus. Cool fire-exposed containers with water fog.

SECTION V - HEALTH HAZARD DATA

EMERGENCY AND FIRST AID PROCEDURES:
Eye Contact: Flush eyes with water for at least 15 minutes. Consult a physician; freeze burns can occur. Skin Contact: Rinse affected area with tepid water. If frostbite occurs or skin irritation persists, consult a physician promptly. Inhalation: Remove to fresh air, administer oxygen if necessary. If victim has stopped breathing begin CPR. Get medical attention. Ingestion: If liquid is swallowed, get immediate medical attention; liquid can freeze mucous membranes, eye tissues and skin.
MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: Cardiovascular disease

PRIMARY ROUTES OF ENTRY: Inhalation, skin and eye contact.
HEALTH HAZARDS (acute and chronic) / EFFECTS OF OVEREXPOSURE:

1. Acute skin contact may result in freeze burns to exposed tissues.
2. Contact of eye tissues with liquid may result in freeze burns.
3. Excessive inhalation of vapors may cause dizziness, weakness, fatigue, nausea, headache, unconsciousness, possible asphyxiation.
4. Swallowing this material is expected to cause headache, nausea, vomiting, stomach cramps and diarrhea.
5. LC-50 for 1,1,1,2-Tetrafluoroethane (rats) is 4 HR >500,000 ppm.

SECTION VI - REACTIVITY DATA

STABILITY: Stable under normal use and storage conditions.
HAZARDOUS POLYMERIZATION: Will not occur.
HAZARDOUS DECOMPOSITION PRODUCTS (under fire conditions): Hydrofluoric acids, possibly carbonyl halides.
INCOMPATIBILITY: Avoid alkali or alkaline earth metals, powdered Al, Zn, Be, etc.
CONDITIONS TO AVOID: Contact with incompatible materials, open flames.

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Ventilate area. Contents are rapidly absorbed into air.
WASTE DISPOSAL: Dispose of waste or unwanted product in accordance with existing Federal, State and Local environmental regulations. May be reclaimed or incinerated by permitted facilities.

SECTION VIII - SAFE HANDLING AND USE INFORMATION

RESPIRATORY PROTECTION: Not normally required; mechanical (general) ventilation is generally adequate. A NIOSH approved respirator for organic vapors may be worn in nuisance-level vapor concentrations, a positive pressure, air-supplied respirator is recommended in high vapor concentrations or oxygen-deficient atmospheres.
PROTECTIVE GLOVES: PVA or neoprene gloves
EYE PROTECTION: Safety glasses, splash goggles, face shield.
OTHER PROTECTIVE EQUIPMENT: Eye wash station.

SECTION IX - SPECIAL PRECAUTIONS AND STORAGE DATA

PRECAUTIONS TO BE TAKEN IN HANDLING: Avoid eye and skin contact with liquid. Avoid excessive inhalation of vapors. Use in a well-ventilated environment. Intentional inhalation of contents is harmful and may be fatal.
PRECAUTIONS TO BE TAKEN IN STORING: Store containers below 120°F (48°C) and away from heat sources, open flame, out of direct sunlight.

SECTION X - SHIPPING DATA

U.N. / N.A. NUMBER: UN3159
DOT/IATA SHIPPING NAME: 1,1,1,2-Tetrafluoroethane
DOT/IATA HAZARD CLASS: 2.2
DOT/IATA REQUIRED LABELS: 2, non-flammable gas (air shipment and vessel shipments)
DOT EXCEPTION (Domestic shipments only): DOT-E 10232 (6th revision) excepts this product from Code 49 regulation(s) 173.304(a) and 173.306(a). Modified "2Q" specification containers of capacity not exceeding 33 cubic inches (18.5

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fluid ounces) filled with 1,1,1,2-Tetrafluoroethane and meeting

Section 171.8 definition "consumer commodity" are permitted reclassified as ORM-D, renamed "Consumer commodity" when shipped via ground mode, domestically. *Copy of DOT-E 10232 is periodically revised by DOT and is always available upon request by telephoning DOT at (202) 366-4510. Copy of DOT-E 10232 must accompany air and vessel shipments of this material.*

TECHNICAL SHIPPING NAME: Refrigerant gas R-134a

IMDG SHIPPING NAME: 1,1,1,2-Tetrafluoroethane

FREIGHT CLASS: NMFC 86150

LTL: 70

TL: 40

MW: 30

T.S.C.A. STATUS: Listed

PREPARED BY: Roger Hanson

DATE PREPARED: 12-19-00

SUPERSEDES: 03-22-00

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N.E. = NOT ESTABLISHED

N.A. = NOT APPLICABLE