Safety Data Sheet

R1234yf Leak Stop

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: R1234yf Leak Stop
Part# 008R1234yfLS
OTHER NAME: 2,3,3,3-Tetrfluoroprop-1-ene
USE: Refrigerant gas with lubricant
DISTRIBUTOR: National Refrigerants, Inc.
661 Kenyon Avenue
Bridgeton, New Jersey 08302

FOR MORE INFORMATION CALL:
(Monday-Friday, 8:00am-5:00pm)
1-800-262-0012

IN CASE OF EMERGENCY CALL:
CHEMTREC: 1-800-424-9300

2. HAZARDS IDENTIFICATION

CLASSIFICATION: **Gases under pressure, Extremely flammable liquefied gas**
SIGNAL WORD: **Danger**
HAZARD STATEMENT: **Extremely flammable gas**
Contains gas under pressure, may explode if heated.
May displace oxygen and cause rapid suffocation
SYMBOL(S): **Gas Cylinder, Flammable Gas**

PRECAUTIONARY STATEMENTS: **Storage: Protect from sunlight, store in a well-ventilated place. Do not eat or smoke when using this product.**
Prevention: Keep away from heat, sparks, open flames, hot surfaces.
Response: Leaking gas fire; Do not extinguish unless leak can be stopped safely.

EMERGENCY OVERVIEW: Colorless, volatile liquid with ethereal and faint odor. Overexposure may cause dizziness and loss of concentration. At higher levels, CNS depression and cardiac arrhythmia may result from exposure. Vapors displace air and can cause asphyxiation in confined spaces. At higher temperatures, (>250°C), decomposition products may include Hydrofluoric Acid (HF) and carbonyl halides.

POTENTIAL HEALTH HAZARDS

SKIN: Irritation would result from a defatting action on tissue. Liquid contact could cause frostbite.

EYES: Liquid contact can cause severe irritation and frostbite. Mist may irritate.

INHALATION: R-1234yf is low in acute toxicity in animals. When oxygen levels in air are reduced to 12-14% by displacement, symptoms of asphyxiation, loss of coordination, increased pulse rate and deeper respiration will occur. At high levels, cardiac arrhythmia may occur.

INGESTION: Ingestion is unlikely because of the low boiling point of the material. Should it occur, discomfort in the gastrointestinal tract from rapid evaporation of the material and consequent evolution of gas would result. Some effects of inhalation and skin exposure would be expected.

DELAYED EFFECTS: None Known

Ingredients found on one of the OSHA designated carcinogen lists are listed below.

INGREDIENT NAME	NTP STATUS	IARC STATUS	OSHA LIST
No ingredients listed in this section			

3. COMPOSITION / INFORMATION ON INGREDIENTS

INGREDIENT NAME	CAS NUMBER	WEIGHT %
2,3,3,3-Tetrafluoroprop-1-ene	754-12-1	87.5%
Proprietary Lubricant	NA	12.5%

COMMON NAME AND SYNONYMS
R-1234yf

There are no impurities or stabilizers that contribute to the classification of the material identified in Section 2

4. FIRST AID MEASURES

SKIN: Promptly flush skin with water until all chemical is removed. If there is evidence of frostbite, bathe (do not rub) with lukewarm (not hot) water. If water is not available, cover with a clean, soft cloth or similar covering. Get medical attention if symptoms persist.

EYES: Immediately flush eyes with large amounts of water for at least 15 minutes (in case of frostbite, water should be lukewarm, not hot) lifting eyelids occasionally to facilitate irrigation. Get medical attention if symptoms persist.

INHALATION: Immediately move to fresh air. If breathing has stopped, give artificial respiration. Use oxygen as required, provided a qualified operator is available. Get medical attention immediately. DO NOT give epinephrine (adrenaline).

INGESTION: Ingestion is unlikely because of the physical properties and is not expected to be hazardous. DO NOT induce vomiting unless instructed to do so by a physician.

ADVICE TO PHYSICIAN: Treat frost-bitten areas as needed. Treat symptomatically.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT: Gas, not applicable per DOT regulations
FLASH POINT METHOD: Not applicable
AUTOIGNITION TEMPERATURE: 405°C

UPPER FLAME LIMIT (volume % in air): 12.3%
LOWER FLAME LIMIT (volume % in air): 6.2%
*Based on ASTM E681-04
FLAME PROPAGATION RATE (solids): Not applicable
OSHA FLAMMABILITY CLASS: Category 1

EXTINGUISHING MEDIA:

Use any standard agent – choose the one most appropriate for type of surrounding fire (material itself is not flammable).

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Flammable Gas

SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:

Firefighters should wear self-contained, NIOSH-approved breathing apparatus for protection against possible toxic decomposition products. Proper eye and skin protection should be provided. Use water spray to keep fire-exposed containers cool.

6. ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR OTHER RELEASE: (Always wear recommended personal protective equipment.)

Evacuate unprotected personnel. Product dissipates upon release. Protected personnel should remove ignition sources and shut off leak, if without risk, and provide ventilation. Unprotected personnel should not return to the affected area until air has been tested and determined safe, including low-lying areas. Use explosion proof equipment. Non-sparking tools should be used.

Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting requirements.

7. HANDLING AND STORAGE

NORMAL HANDLING: (Always wear recommended personal protective equipment.)

Avoid breathing vapors and liquid contact with eyes, skin or clothing. Do not puncture or drop cylinders, expose them to open flame, excessive heat, or sources of ignition. Use authorized cylinders only. Non-sparking tools should be used. Follow all standard safety precautions for handling and use of compressed gas cylinders.

STORAGE RECOMMENDATIONS:

Store in a cool, well-ventilated area of low fire risk and out of direct sunlight. Protect cylinder and its fittings from physical damage. Storage in subsurface locations should be avoided. Close valve tightly after use and when empty.

INCOMPATIBILITIES:

Freshly abraded aluminum surfaces at specific temperatures and pressures may cause a strong exothermic reaction. Chemically reactive metals: potassium, calcium, powdered aluminum, magnesium, and zinc. Strong acids and strong bases.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS:

Provide local ventilation at filling zones and areas where leakage is probable. Mechanical (general) ventilation may be adequate for other operating and storage areas.

PERSONAL PROTECTIVE EQUIPMENT

SKIN PROTECTION:

Skin contact with refrigerant may cause frostbite. General work clothing and impermeable gloves should provide adequate protection. If prolonged contact with liquid or gas is anticipated, insulated gloves constructed of PVA, neoprene or butyl rubber should be used. Any contaminated clothing should be promptly removed and washed before reuse.

EYE PROTECTION:

For normal conditions, wear safety glasses. Where there is reasonable probability of liquid contact, wear chemical safety goggles. Ensure eye wash stations are close to the work station when possible.

RESPIRATORY PROTECTION:

None generally required for adequately ventilated work situations. For accidental release or non-ventilated situations, or release into confined space, where the concentration may be above exposure limits use a self-contained, NIOSH approved breathing apparatus or supplied air respirator. For escape: use the former or a NIOSH approved respirator.

ADDITIONAL RECOMMENDATIONS:

Where contact with liquid is likely, such as in a spill or leak, impervious boots and clothing should be worn. High dose-level warning signs are recommended for areas of principle exposure. Provide eyewash stations and quick-drench shower facilities at convenient locations. For tank cleaning operations, see OSHA regulations, 29 CFR 1910.132 and 29 CFR 1910.133.

EXPOSURE GUIDELINES

INGREDIENT NAME	ACGIH TLV	OSHA PEL	OTHER LIMIT
1,3,3,3-Tetrafluoroprop-1-ene	None	None	*500 ppm TWA/*1500 ppm STEL
Proprietary Lubricant	NE	NE	NE

* = Workplace Environmental Exposure Level (AIHA)/Honeywell Limit
NE = None Established

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:
Hydrogen Fluoride: ACGIH TLV: 2 ppm ceiling, 0.5 ppm TLV-TWA

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Clear liquid and vapor
PHYSICAL STATE:	Liquefied Gas
ODOR:	Faint odor
SPECIFIC GRAVITY (water = 1.0):	<1.22
SOLUBILITY IN WATER (weight %):	0.15 wt%
pH:	Not applicable
BOILING POINT:	-29.4°C
VAPOR PRESSURE:	6067 hPa @ 70°F 14203 hPa @ 130°F
VAPOR DENSITY (air = 1.0):	4
EVAPORATION RATE:	Not applicable
% VOLATILES:	100
ODOR THRESHHOLD:	Not established
FLAMMABILITY:	Flammable
LEL/UEL:	6.2% V/12.3% V
RELATIVE DENSITY:	1.1g/cm^3 at 25˚C
PARTITION COEFF (n-octanol/water)	Log Pow: 2.15
AUTO IGNITION TEMP:	405˚C

VISCOSITY: Not applicable
FLASH POINT: Not applicable
(Flash point method and additional flammability data are found in Section 5.)

10. STABILITY AND REACTIVITY

NORMALLY STABLE: (CONDITIONS TO AVOID):

The product is stable under normal conditions.

Do not mix with oxygen or air above atmospheric pressure. Any source of high temperatures, such as lighted cigarettes, flames, hot spots or welding may yield toxic and/or corrosive decomposition products. Keep away from heat and sources of ignition.

INCOMPATIBILITIES:

(Under specific conditions: e.g. very high temperatures and/or appropriate pressures) – Freshly abraded aluminum surfaces (may cause strong exothermic reaction). Chemically reactive metals: potassium, calcium, powdered aluminum, magnesium, and zinc. Strong acid and strong bases.

HAZARDOUS DECOMPOSITION PRODUCTS:

Halogens, halogen acids and possibly carbonyl halides.

HAZARDOUS POLYMERIZATION:

Will not occur.

11. TOXICOLOGICAL INFORMATION

IMMEDIATE (ACUTE) EFFECTS:

LC_{50}: Inhalation 4 hr. (rat) - > 400,000 ppm

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:

Not mutagenic in four tests
Teratogenic NOAEL (rat and rabbit) – 50,000 ppm
Subchronic inhalation (rat) NOAEL – 50,000 ppm
Chronic NOAEL – 10,000 ppm

REPEATED DOSE TOXICITY:

No observable adverse effect which result in classification as a specific target organ toxicant.

FURTHER INFORMATION:

Acute effects of rapid evaporation of the liquid may cause frostbite. Vapors are heavier than air and can displace oxygen causing difficulty breathing or suffocation. May cause cardiac arrhythmia.

OTHER DATA:

Not classified as a human carcinogen based on available data.

12. ECOLOGICAL INFORMATION

Degradability (BOD): R1234yf is a gas at room temperature; therefore, it is unlikely to remain in water.

13. DISPOSAL CONSIDERATIONS

Disposal must comply with federal, state, and local disposal or discharge laws

14. TRANSPORT INFORMATION

US DOT ID NUMBER:	UN3161
US DOT PROPER SHIPPING NAME:	Liquefied gas, flammable, n.o.s. (1,3,3,3-Tetrafluoroprop-1-ene)
US DOT HAZARD CLASS:	2.1
US DOT SPECIAL PERMIT(S):	DOT-SP15507/DOT-SP10232
US DOT PACKING GROUP:	Not applicable

15. REGULATORY INFORMATION

Inventories

US. Toxic Substances Control Act: On TSCA Inventory

Australia. Industrial Chemical (Notification and Assessment) Act: On the inventory, or in compliance with the inventory

Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL): All components of this product are on the Canadian DSL

Japan. Kashin-Hou Law List: On the inventory, or in compliance with the inventory

Korea. Existing Chemicals Inventory (KECI): On the inventory, or in compliance with the inventory

Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act: On the inventory, or in compliance with the inventory : 2,3,3,3-Tetrafluoroprop-1-ene 754-12-1

China. Inventory of Existing Chemical Substances: On the inventory, or in compliance with the inventory

New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand: On the inventory, or in compliance with the inventory

TSCA 12B : US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpart D) 2,3,3,3-Tetrafluoroprop-1-ene 754-12-1 required.

US regulatory information

US. Toxic Substances Control Act (TSCA) Section: Issued. Update Date: 07/05/2023 **The US EPA has established a Significant New Use Rule (SNUR) for one of the components in this product. SEE 40CFR § 721.10182** 5(a)(2) Final Significant New Use Rules (SNURs) (40 CFR 721, Subpart E) - Update 07/05/2023.

SARA 302 Components: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302

SARA 313 Components: 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.

SARA 311/312 Hazards: Fire Hazard Sudden Release of Pressure Hazard Acute Health Hazard

California Prop. 65: This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

CURRENT ISSUE DATE: October 2024
PREVIOUS ISSUE DATE: N/A

OTHER INFORMATION: HMIS Classification: Health – 0, Flammability – 2, Physical Hazard – 2
NFPA Classification: Health – 2, Flammability – 2, Instability – 0

ANSI/ASHRAE 34 Safety Group – A2L

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