NATIONAL REFRIGERANTS, INC.

R454B

Safety Data Sheet

R454B

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: R454B
OTHER NAME: 1,1- Difluoromethane and 2,3,3,3-Tetrafluoroprop-1-EN
USE: Refrigerant Gas
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: **Flammable Gas, Gas under pressure, Compressed Gas**
SIGNAL WORD: **DANGER**
HAZARD STATEMENT(S): **Extremely flammable gas, contains gas under pressure, may explode if heated**
SYMBOL(S): **Flames, Gas Cylinder**



PRECAUTIONARY STATEMENT(S):

Prevention: Keep away from heat, sparks, open flame, and hot surfaces. No Smoking
Response: Leaking gas fire: Do not extinguish unless leak can be stopped immediately. Eliminate all ignition sources if safe to do so.
Storage: Protect from sunlight, store in a well-ventilated place.

EMERGENCY OVERVIEW:
Flammable gas. Liquid under high pressure.

POTENTIAL HEALTH EFFECTS:
Effects of Overexposure:

Eye Contact
Eye Contact with the rapidly evaporation liquid my cause frostbite.

Skin Contact
Skin contact with the rapidly evaporation liquid may cause frostbite. Frostbite effects are a change in color of the skin to

grey or white, followed by blistering.

Inhalation
Vapor is heavier than air and can cause suffocation by reducing oxygen available for breathing. Inhalation of high vapor concentration may cause dizziness, disorientation, incoordination, narcosis, nausea or vomiting, leading to unconsciousness, cardiac irregularities, or death.

Ingestion
Not an expected route of exposure.

OTHER EFFECTS OF OVEREXPOSURE: None Expected.

3. COMPOSITION / INFORMATION ON INGREDIENTS

INGREDIENT NAME	CAS NUMBER	WEIGHT %
1,1-Difluoromethane	75-10-5	68.9
2,3,3,3-Tetrafluoroprop-1-EN	754-12-1	31.1

COMMON NAME and SYNONYMS
R454B

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

4. FIRST AID MEASURES

SKIN:
Immediately wash with plenty of warm water (do not rub). Thaw affected area with water. Remove contaminated clothing. Caution: clothing may adhere to the skin in case of freeze burns. If symptoms (irritation or blistering) develop, get medical attention.

EYES:
Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Hold eyelids open during flushing. Have eyes examined and treated by medical personnel.

INHALATION:
Move victim to fresh air. Keep warm and at rest. If breathing is labored, give oxygen. If only breathing has stopped, give artificial respiration with a pocket mask equipped with a on-way valve to prevent exposure to product or body fluids. If breathing has stopped and there is no pulse, give cardiopulmonary resuscitation (CPR). Get immediate medical attention.

INGESTION:
Highly unlikely, but should this occur, freeze burns will result. Do not induce vomiting unless instructed to do so by a physician.

ADVICE TO PHYSICIAN:
Symptomatic and supportive therapy, as indicated. Administration of epinephrine or similar sympathomimetic drugs should be with special caution and only in situations of emergency life support as cardiac arrhythmias may result.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT:	Not applicable
AUTOIGNITION TEMPERATURE:	496 °C
UPPER FLAME LIMIT:	23.6% **(% v/v)**
LOWER FLAME LIMIT:	11.3% **(% v/v)**

HAZARDOUS REACTIONS:

Reacts with finely divided metals such as aluminum, zinc, magnesium, and alloys containing more the 2% magnesium. Can react violently if in contact with alkali metals and alkaline earth metals such as sodium, potassium, or barium.

During a fire the product can form toxic and corrosive gases such as hydrogen fluoride.

EXTINGUISHING MEDIA:

Suitable extinguishing medium is dry powder. Allow escaping gas to urn under controlled conditions. Extinguish only if escape of gas can be rapidly stopped as it may form a flammable vapor cloud.

FIRE AND EXPLOSION HAZARDS:

Flammable liquefied gas. Container may burst under intense heat. Ruptured cylinders may rocket or fragment. Heavy vapor may suffocate.

Certain mixtures of R454B and chlorine may be flammable under some conditions.

FIRE FIGHTING PROCEDURES:

Water spray should be used to cool containers.

FIRE FIGHTING PROTECTIVE EQUIPMENT:

Use self-contained breathing apparatus with a full-face piece and special protective clothing.

6. ACCIDENTAL RELEASE MEASURES

This product is a flammable, liquefied gas, which exits the container at temperatures capable of causing freeze burns (frostbite). Contents under pressure. Ruptured cylinder may rocket or fragment.

Precautions should take into account the severity of the leak or spill.

Move unprotected personnel upwind of leaking container. Remove ignition sources and ventilate the spill area. Use recommended personal protection and shut off the leak, if without risk. If possible, elevate leak position to highest point of container (should leak gas, not liquid). Water should never be put on leak nor should cylinder be immersed. If possible, dike and contain spillage. Prevent liquid from entering sewers sumps, or pit areas since vapor is heavier than air and can create a suffocation atmosphere. Capture material for recycle or destruction if suitable equipment is available.

Notify applicable government authority if release is reportable or could adversely affect the environment.

7. HANDLING AND STORAGE

HANDLING:

Wear appropriate personal protective equipment. A safety shower and eyewash station should be nearby and ready for use.

This product is a flammable, liquefied gas, which exits the container at temperatures capable of causing freeze burns (frostbite). Ensure personnel are trained in handling and storing cylinders. Secure containers at all times. Keep containers closed when not in use.

Ensure there is adequate ventilation or use proper respiratory protection in poorly ventilated or confined areas. Avoid causing and inhaling high concentration or vapor. Atmospheric levels should be controlled to below the occupational exposure limit and kept as low as practicable.

Prevent liquid or vapor from entering sumps or sewers since vapor is heavier than air and may form suffocating atmospheres.

Do not put mixtures of HFC-32 with air or oxygen under pressure; do not use such mixtures for leak or pressure testing. Do not heat containers.

Liquid transfers between containers may generate static electricity. Ensure adequate grounding.

Avoid trapping liquid between closed valves or overfilling containers as high pressures can develop with an increase in temperature.

Avoid R454B contact with flames or very hot surfaces.

STORAGE RECOMMENDATIONS:

Keep containers tightly closed, in a cool, well-ventilated place. Keep containers dry. Keep from incompatibles, open flames, hot surfaces, welding operations, and other heat sources.

STORAGE TEMPERATURE:

Store at temperature not exceeding 125 deg. F. (52deg. C).

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.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS:

Use ventilation to maintain safe levels. Where appropriate engineering controls are not in place or are inadequate, wear suitable respiratory equipment.

PERSONAL PROTECTIVE EQUIPMENT

SKIN PROTECTION:

Take all precautions to prevent skin contact. Use gloves and protective clothing made of material that has been found by user to be impervious under conditions of use to prevent the skin from becoming frozen for contact with liquid. User should verify impermeability under normal conditions of use prior to general use. Additional protection such as an apron, arm covers, may be need depending on conditions of use.

EYE PROTECTION:
Use chemical safety goggles or safety glasses and a face shield when there is potential for eye contact.

RESPIRATORY PROTECTION:
Not normally needed if controls are adequate. If needed, use NIOSH/MSHA approved respirator for organic vapors. For high concentrations and oxygen-deficient atmospheres, use positive pressure air-supplied respirator.

OTHER PROTECTION:
Shower and eye wash station.

EXPOSURE GUIDELINES

INGREDIENT NAME	ACGIH TLV	OSHA PEL	OTHER LIMIT
Difluoromethane	None	None	*1000 ppm TWA (8hr)
2,3,3,3-Tetrafluoroprop-1-EN	None	None	*500 ppm TWA (8hr)

* = Workplace Environmental Exposure Level (AIHA)
Minimize exposure in accordance with good hygiene practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Liquefied gas
PHYSICAL STATE:	Gas at ambient temperature
ODOR:	Slight ether-like
SOLUBILITY IN WATER (weight %):	No Data Available
BOILING POINT:	-50.9°C (-59.62°F)
VAPOR PRESSURE (mmHg at 20 deg. C):	15,856 hPa (25 °C)
FLASH POINT:	Not Applicable
EVAPORATION RATE	>1 (CCL4=1.0)
FLAMMABILITY:	Flammable
LEL/UEL:	11.3% / 23.6%
PARTITION COEFF (n-octanol/water)	Not applicable
AUTO IGNITION TEMP:	496˚C / 924.8˚F
DECOMPOSITION TEMPERATURE:	No data available
VISCOSITY:	Not applicable
VAPOR DENSITY (air = 1.0):	2.2 at normal boiling point
% VOLATILES BY VOLUME	100 WT%
DENSITY:	0.98 g/cm^3 at 77F (25˚C)
pH:	No Data Available
MELTING POINT:	No Data Available
SPECIFIC GRAVITY (water = 1.0):	Not Available
MOLECULAR FORMULA:	Not Available
MOLECULAR WEIGHT:	Not Available

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY:
Stable under normal conditions.

INCOMPATIBILITIES:

Reacts with finely divided metals such as aluminum, zinc, magnesium, and alloys containing more than 2% magnesium. Can react violently if in contact with alkali metals and alkaline earth metals such as sodium, potassium, or barium.

HAZARDOUS DECOMPOSITION PRODUCTS:

Hydrogen fluoride by thermal decomposition and hydrolysis.

CONDITIONS TO AVOID:

Keep away from heat, sparks, and flame. Avoid high temperatures.

HAZARDOUS POLYMERIZATION:

Will not occur.

11. TOXICOLOGICAL INFORMATION

POSSIBLE HUMAN HEALTH EFFECTS:

Routes of Exposure:

Inhalation, ingestion, eye, and skin contact.

Inhalation: Exposure to high vapor concentrations may cause and abnormal heart rhythm and prove suddenly fatal. Very high atmospheric concentrations can cause anesthetic effects progressing from dizziness, weakness, nausea, to unconsciousness. It can act as an asphyxiant by limiting available oxygen.

Ingestion: Highly unlikely, but should this occur, freeze burns will result.

Eye Contact: Liquid splashes or spray may cause freeze burns.

Skin Contact: Liquid splashes or spray may cause freeze burns.

Other Effects: None anticipated.

Carcinogenicity: See Below

Ingredient Name	NTP STATUS	ACGIH	IARC STATUS	OSHA LIST
No ingredients listed in this section				

12. ECOLOGICAL INFORMATION

PERSISTENCE AND DEGRADATION:

Decomposes comparatively rapidly in the lower atmosphere (troposphere). Atmospheric lifetime is 4.9 years. Products of decomposition will be highly dispersed and hence will have a very low concentration. It is not considered an ozone-depleting chemical.

EFFECT ON EFFLUENT TREATMENT:

Discharges of the product will enter the atmosphere and will not result in long-term aqueous contamination.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD:

Dispose of in accordance with Federal, State, and local regulations

CONTAINER DISPOSAL:

May contain explosive vapors. Do not distribute, make available, furnish, or reuse container when emptied of the original product. Do not weld or use cutting torch on or near container. Empty container retains product residue. Return containers to supplier.

14. TRANSPORT INFORMATION

US DOT ID NUMBER: UN 3161
US DOT PROPER SHIPPING NAME: LIQUEFIED GAS, FLAMMABLE, N.O.S
(Difluoromethane, 2,3,3,3-Tetrafluoropropene)
US DOT HAZARD CLASS: 2.1
US DOT PACKING GROUP: Not applicable

15. REGULATORY INFORMATION

CERCLA Reportable Quantity
This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity
This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards
: Gases under pressure
Flammable (gases, aerosols, liquids, or solids)
Simple Asphyxiant

SARA 313
: 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.

US State Regulations
Pennsylvania Right To Know
Difluoromethane 75-10-5
2,3,3,3-Tetrafluoropropene 754-12-1

California List of Hazardous Substances
Difluoromethane 75-10-5

International Regulations
Montreal Protocol : Difluoromethane

Additional regulatory information
2,3,3,3-Tetrafluoropropene 754-12-1
The United States Environmental Protection Agency (USEPA) has established a Significant New Use

Rule (SNUR) for one of the components in this product.
See 40 CFR § 721.10182
This material contains one or more substances which requires export notification under TSCA Section 12(b) and 40 CFR Part 707 Subpart D:

16. OTHER INFORMATION

CURRENT ISSUE DATE: January, 2024
PREVIOUS ISSUE DATE: October, 2023

OTHER INFORMATION: HMIS Classification: Health – 1, Flammability – 4, Physical Hazard – 3

Regulatory Standards:
1. OSHA regulations for compressed gases: 29 CFR 1910.101
2. DOT classification per 49 CFR 172.101

DISCLAIMER:

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