SAFETY DATA SHEET

R454B · Difluoromethane / 2,3,3,3-Tetrafluoroprop-1-ene · Refrigerant Gas

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: REFRIGERANT 454B

OTHER NAME: 1,1-Difluoromethane and 2,3,3,3-Tetrafluoroprop-1-ene

USE: Refrigerant Gas

SUPPLIER / DISTRIBUTOR

SetPoint Exports Corporation
C. Diego de Almagro 18425, Panamá, Provincia de Panamá
Tel: +507 271-7940 (Monday–Friday, 8:00am–5:00pm)
In case of emergency call: SetPoint Exports Corporation — +507 271-7940

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: Contact with the rapidly evaporating liquid may cause frostbite.

Skin Contact: Contact with the rapidly evaporating 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-ene	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 breathing has stopped, give artificial respiration with a pocket mask equipped with a one-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 than 2% magnesium. Can react violently 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 burn under controlled conditions. Extinguish only if the 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 the leak position to the highest point of the container (should leak gas, not liquid). Water should never be put on the leak, nor should the 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 suffocating atmosphere. Capture material for recycling or destruction if suitable equipment is available.

Notify the applicable government authority if the 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 concentrations of vapor. Atmospheric levels should be controlled 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 away from incompatibles, open flames, hot surfaces, welding operations, and other heat sources.

Storage Temperature: Do not exceed 125°F (52°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 found by the user to be impervious under conditions of use, to prevent the skin from freezing on contact with liquid. The user should verify impermeability under normal conditions of use prior to general use. Additional protection such as an apron or arm covers may be needed 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 a NIOSH/MSHA-approved respirator for organic vapors. For high concentrations and oxygen-deficient atmospheres, use a positive-pressure air-supplied respirator.

OTHER PROTECTION

Shower and eyewash station.

EXPOSURE GUIDELINES

Ingredient Name	ACGIH TLV	OSHA PEL	Other Limit
Difluoromethane	None	None	*1000 ppm TWA (8hr)
2,3,3,3-Tetrafluoroprop-1-ene	None	None	*500 ppm TWA (8hr)

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

9. PHYSICAL AND CHEMICAL PROPERTIES

Property	Value
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°C)	15,856 hPa (25°C)
Flash Point	Not applicable
Evaporation Rate	>1 (CCl_4 = 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/cm³ at 77°F (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 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

Routes of Exposure: Inhalation, ingestion, eye, and skin contact.

Inhalation: Exposure to high vapor concentrations may cause abnormal heart rhythm and prove suddenly fatal. Very high atmospheric concentrations can cause anesthetic effects progressing from dizziness, weakness, and 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: No ingredients listed under NTP, ACGIH, IARC, or OSHA carcinogen lists.

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 the container when emptied of the original product. Do not weld or use a cutting torch on or near the container. Empty containers retain 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 require 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: September 2023

Reissued with SetPoint Exports Corporation branding: August 2026

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

REGULATORY STANDARDS

- OSHA regulations for compressed gases: 29 CFR 1910.101

- DOT classification per 49 CFR 172.101

DISCLAIMER

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