

SAFETY DATA SHEET**R-454B – Refrigerant blend R-454B****1. IDENTIFICATION**

Product Name:	R-454B
Chemical / Other Names:	Refrigerant blend R-454B; Opteon XL41; Puron Advance; blend of Difluoromethane and 2,3,3,3-Tetrafluoroprop-1-ene
Product Use:	Refrigerant gas
Restrictions on Use:	For use only by qualified / certified technicians in accordance with applicable regulations.
Distributor:	CRefri, 5160 Commerce Dr, Baldwin Park, CA 91706
For More Information Call:	(+1) 626-830-6001
In Case of Emergency Call:	(+1) 626-613-4419

2. HAZARD(S) IDENTIFICATION

GHS Classification: Flammable gases – Category 1; Gases under pressure – Liquefied gas. (ASHRAE 34 Safety Group: A2L (mildly flammable))

Signal Word: **DANGER**

Hazard Symbol(s): **Gas cylinder + Flame**

Hazard Statement(s):

- Flammable gas.
- Contains gas under pressure; may explode if heated.

Precautionary Statement(s):

- Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- Do not spray on an open flame or other ignition source. Leaking gas fire: do not extinguish unless leak can be stopped safely.
- Protect from sunlight. Store in a well-ventilated place.
- Do not puncture, drop, or expose cylinders to open flame or excessive heat.

Emergency Overview: Colorless, volatile liquefied gas with a faint ethereal odor. Flammable material. Overexposure may cause dizziness and loss of concentration. At higher levels, CNS depression and cardiac arrhythmia may result. Vapors displace air and can cause asphyxiation in confined spaces. At high temperatures (>250 °C), decomposition products may include Hydrofluoric Acid (HF).

Potential Health Hazards:

- **Skin:** Rapid evaporation of the liquid may cause frostbite. Defatting action may cause irritation.
- **Eyes:** Liquid contact can cause severe irritation and frostbite; mist may irritate.
- **Inhalation:** Low acute toxicity. When oxygen in air is reduced by displacement, symptoms of asphyxiation, loss of coordination, increased pulse rate and deeper respiration will occur. At high levels, cardiac arrhythmia may occur.
- **Ingestion:** Unlikely due to the low boiling point of the material.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient Name	CAS Number	Weight %
Difluoromethane	75-10-5	68.9
2,3,3,3-Tetrafluoropropene	754-12-1	31.1

R-454B is a mildly flammable (ASHRAE A2L) blend of difluoromethane (R-32) and 2,3,3,3-tetrafluoropropene (R-1234yf), developed as a lower-GWP replacement for R-410A. Leak detection is required by applicable UL/IEC codes; use only A2L-rated equipment.

4. FIRST-AID MEASURES

- **Skin:** Promptly flush skin with water until all chemical is removed. For frostbite, bathe (do not rub) with lukewarm (not hot) water. Get medical attention if symptoms persist.
- **Eyes:** Immediately flush with large amounts of water for at least 15 minutes, lifting eyelids occasionally. Get medical attention.
- **Inhalation:** Immediately move to fresh air. If breathing has stopped, give artificial respiration. Use oxygen as required. Get medical attention immediately. **DO NOT give epinephrine (adrenaline).**
- **Ingestion:** Unlikely; do not induce vomiting unless instructed by a physician.
- **Advice to Physician:** Because of possible disturbances of cardiac rhythm, catecholamine drugs such as epinephrine should be used with special caution and only in emergency life-support situations.

5. FIRE-FIGHTING MEASURES

Flash Point:	Flammable gas
Autoignition Temperature:	> 400 °C
Flammable Limits (vol% in air):	Lower (LFL): approx. 11.8% vol in air (ASHRAE A2L, burning velocity < 10 cm/s)
Extinguishing Media:	Use dry chemical, CO ₂ , or water spray appropriate to the surrounding fire. Stop the flow of gas before extinguishing; if the flame is extinguished while gas continues to escape, a re-ignition/explosion hazard exists.

Unusual Fire & Explosion Hazards: R-454B is a flammable gas and can form flammable or explosive mixtures with air within its flammability range. Vapors are heavier than air and may travel to a source of ignition and flash back. Cylinders may rupture and rocket if exposed to fire or heat.

Special Precautions: Firefighters should wear self-contained, NIOSH-approved breathing apparatus and full protective clothing. Use water spray to keep fire-exposed containers cool.

6. ACCIDENTAL RELEASE MEASURES

Evacuate unprotected personnel. Eliminate all ignition sources. Provide ventilation. Product dissipates upon release. Protected personnel should shut off the leak if without risk. Unprotected personnel should not return until air has been tested and determined safe, including low-lying areas (vapors are heavier than air).

Spills and releases may have to be reported to Federal and/or local authorities (see Section 15). Do not vent refrigerant to the atmosphere.

7. HANDLING AND STORAGE

Normal Handling: Avoid breathing vapors and liquid contact with eyes, skin, or clothing. Do not puncture or drop cylinders or expose them to open flame or excessive heat. Use authorized cylinders only. Follow standard safety precautions for handling compressed gas cylinders. Do not mix with air above atmospheric pressure for leak testing or any other purpose.

Flammability precautions: Keep away from heat, sparks, open flames, and all ignition sources — No smoking. Use non-sparking tools and explosion-proof electrical equipment. Ground and bond containers during transfer. Install leak detection where required.

Storage: Store in a cool, well-ventilated area of low fire risk, out of direct sunlight. Protect cylinders and fittings from physical damage. Avoid subsurface storage. Close valve tightly after use and when empty.

Incompatibilities: Freshly abraded aluminum surfaces; reactive metals such as potassium, calcium, powdered aluminum, magnesium, and zinc.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls:	Provide local ventilation at filling zones and areas where leakage is probable. General mechanical ventilation may be adequate for other areas. Use gas detection where flammable concentrations are possible.
Exposure Guideline:	R-32: 1,000 ppm; R-1234yf: 500 ppm (8-hr TWA, manufacturer AEL)
OSHA PEL / ACGIH TLV:	None established for the principal ingredient(s).
Decomposition Limit:	Hydrogen Fluoride: ACGIH TLV 2 ppm ceiling, 0.5 ppm TLV-TWA.
Skin: General work gloves; insulated PVA, neoprene or butyl-rubber gloves where liquid contact is anticipated. Eyes: Safety glasses; chemical goggles where liquid contact is likely. Respiratory: None generally required for adequately ventilated areas; for confined-space or non-ventilated release above the exposure limit, use a self-contained or supplied-air respirator.	

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear, colorless liquefied gas
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Physical State:	Gas at ambient temperature
Odor:	Faint ethereal odor
Molecular Weight:	62.6 (avg.)
Chemical Formula:	HFC/HFO blend (R-32 / R-1234yf)
Boiling Point:	-50.9 °C (-59.6 °F) bubble point
Freezing / Melting Point:	Not determined
Vapor Pressure:	220 psig @ 70 °F (21 °C, approx.) — high-pressure refrigerant
Vapor Density (air = 1):	2.2 (air = 1)
Specific Gravity / Relative Density:	1.01 @ 25 °C (water = 1)
Solubility in Water:	Slightly soluble
Flammability:	Flammable gas – Lower (LFL): approx. 11.8% vol in air (ASHRAE A2L, burning velocity < 10 cm/s)
Autoignition Temperature:	> 400 °C
Decomposition Temperature:	> 250 °C
% Volatiles:	100

10. STABILITY AND REACTIVITY

Chemical Stability:	Stable under normal conditions of use and storage.
Conditions to Avoid:	Heat, sparks, open flame and all ignition sources; high temperatures; do not mix with air/oxygen above atmospheric pressure.
Incompatible Materials:	Freshly abraded aluminum; reactive metals (potassium, calcium, powdered aluminum, magnesium, zinc).
Hazardous Decomposition Products:	Hydrofluoric acid (HF), carbonyl fluoride, and other toxic/corrosive fluorinated species.
Hazardous Polymerization:	Will not occur.

11. TOXICOLOGICAL INFORMATION

Acute Effects: Low acute inhalation toxicity. Cardiac sensitization is the principal acute hazard at very high airborne concentrations. Rapid evaporation of the liquid may cause frostbite.

Chronic Effects: No significant chronic effects are expected under recommended handling conditions. Vapors are heavier than air and can displace oxygen, causing difficulty breathing or suffocation.

Carcinogenicity: Not listed by NTP, IARC, or OSHA for the principal ingredient(s).

12. ECOLOGICAL INFORMATION

Ozone Depletion Potential (ODP):	0
Global Warming Potential (GWP):	466 (IPCC AR4)
Degradability:	A gas at room temperature; unlikely to remain in water.

Do not vent to the atmosphere.

13. DISPOSAL CONSIDERATIONS

Recover, reclaim, or recycle in accordance with U.S. EPA Clean Air Act Section 608 (40 CFR Part 82) and applicable state/local regulations. The unused product, as shipped, is not defined as a RCRA hazardous waste. Do not vent to the atmosphere. Disposal must comply with federal, state, and local laws.

14. TRANSPORT INFORMATION

UN / ID Number:	UN3161
Proper Shipping Name:	Liquefied gas, flammable, n.o.s. (Refrigerant gas R 454B)
Hazard Class (US DOT):	2.1 (Flammable Gas)
Packing Group:	Not applicable
Marine Pollutant:	No

For additional information on shipping regulations affecting this material, contact the information number in Section 1.

15. REGULATORY INFORMATION

TSCA Inventory Status:	All ingredients are listed on, or exempt from, the U.S. TSCA inventory.
SARA 311/312 Hazard Class:	Fire Hazard; Sudden Release of Pressure
SARA 313:	Not listed for the principal ingredient(s).
RCRA:	Unused product is not a hazardous waste.

R-454B contains a hydrofluorocarbon (R-32) subject to phasedown under the U.S. AIM Act (40 CFR Part 84). Do not vent to the atmosphere; recover residual refrigerant.

WARNING: DO NOT vent to the atmosphere. To comply with the U.S. Clean Air Act, any residual must be recovered. Contains a greenhouse gas which may contribute to global warming.

16. OTHER INFORMATION

Current Issue Date:	July 2026
HMIS Ratings (H / F / R):	1 / 4 / 0
NFPA Ratings (H / F / R):	1 / 4 / 0
ANSI/ASHRAE 34 Safety Group:	A2L (mildly flammable)

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