Material Safety Data Sheet

R - 32

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **Refrigerant 32**
OTHER GENERIC : R - 32

2. COMPOSITION / INFORMATION ON INGREDIENTS

INGREDIENT NAME	CAS NUMBER	WEIGHT %
Difluoromethane	75-10-5	100

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: This product is a flammable, liquefied gas. Contents under pressure. Cylinders may rupture and rocket under fire conditions. Thermal decomposition can produce toxic and corrosive gases. Vapours are heavier than air. May cause asphyxia. Liquid splashes or spray may cause freeze burns (frostbite). High vapor concentrations may cause dizziness or more severe anesthetic effects. Very high exposures can cause potentially fatal abnormal heart rhythm. Read the entire MSDS for a more thorough evaluation of the hazards.

POTENTIAL HEALTH HAZARDS

SKIN: Liquid splashes or spray may cause freeze burns.

SKIN ABSORPTION: This product will probably not be absorbed through human skin.

EYES: Liquid splashes or spray may cause freeze burns.

INHALATION: Exposure to high vapor concentrations can induce aesthetic effects progressing from dizziness, weakness, nausea, to unconsciousness. Very high exposures can cause abnormal heart rhythm, which is potentially fatal. It can act as an asphyxiant by limiting available oxygen.

INGESTION: Extremely unlikely to occur in use.
OTHER EFFECTS OF OVEREXPOSURE: None Expected

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 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: Not available
UPPER FLAME LIMIT: 31% (% v/v)
LOWER FLAME LIMIT: 14% (% 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 HFC-32 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 HFC-32 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).

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, or full body suit 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)

* = Workplace Environmental Exposure Level (AIHA)

Minimize exposure in accordance with good hygiene practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Colourless liquefied gas
ODOR:	Faint ethereal odour
SPECIFIC GRAVITY (water = 1.0):	0.98 at 20 deg. C
SOLUBILITY IN WATER (weight %):	Insoluble

pH:	Not applicable
BOILING POINT:	-51.7°C (-61.1°F)
VAPOR PRESSURE (mmHg at 20 deg. C):	10,319
VAPOR DENSITY (air = 1.0):	1.86 at normal boiling point
% VOLATILES:	100

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions.

INCOMPATIBILITIES: Reacts with finely divided metals such as aluminium, zinc, magnesium, and alloys containing more then 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:

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

ANIMAL DATA: LC50 4 hr., (rat inhalation) - > 520,000 ppm

Because of its volatility this compound has not been tested for skin or eye irritancy or skin sensitization.

No cardiac sensitization (arrhythmias) occurred in dogs pretreated with epinephrine at 350,000 ppm. In an earlier cardiac sensitization study, a no observed effect level (NOEL) of 200,000 ppm and threshold of 250,000 ppm were established.

No teratogenic effects were seen in rats or rabbits at dose levels up to 50,000 ppm.

No adverse effects were seen at the highest dose level of 50,000 ppm in a 90-day inhalation.

No genotoxicity was observed in a range of in vitro tests or an in vivo mouse micronucleus assay.

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:
Discarded product is not a hazardous waste under RCRA, 40 CFR 261. However, HFC-32 should be recycled, reclaimed, or destroyed whenever possible.

CONTAINER DISPOSAL: May contain explosive vapours. 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.

REFRIGERATION APPLICATION: Subject to "no venting" regulations of Section 608 of the Clean Air Act during the service or disposal of equipment.

14. TRANSPORT INFORMATION

US DOT HAZARD CLASS:	US DOT PROPER SHIPPING NAME: Difluoromethane
	US DOT HAZARD CLASS: 2.1
	US DOT PACKING GROUP: Not applicable
US DOT ID NUMBER:	UN3252

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15. REGULATORY INFORMATION

TSCA (TOXIC SUBSTANCES CONTROL ACT) REGULATIONS, 40 CFR 710: All ingredients are on the TSCA Chemical Substances Inventory.

CERCLA and SARA REGULATIONS:
40 CFR 372: This product does not contain any chemicals subject to reporting requirements of SARA Section 313.

40 CFR 355: This product does not contain any "extremely hazardous chemical" subject to the requirements of SARA Section 312.

40 CFR 370: Hazardous properties as defined under the Hazard Communication Standard (29 CFR 1910.1200).

Health: Acute effects (CNS depression, cardiac sensitization).
Physical: Flammable liquefied gas.

(Actions may be necessary under SARA Section 311 – consult regulations for applicability).

16. OTHER INFORMATION

CURRENT ISSUE DATE : JULY 2018

PREVIOUS ISSUE DATE:

OTHER INFORMATION: HMIS Classification: Health – 1, Flammability – 4, Reactivity – 1

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