

Material Safety Data Sheet

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : R32

Product Use Description : Refrigerant

Company : M/s Kiro Refrigerants Pvt. Ltd.
F-646, RIICO Indl. Area
Kushkhera, Dist. Alwar
Rajastha

For more information call : 0120-4324234

SECTION 2. HAZARDS IDENTIFICATION Emergency

Overview

Form : Liquefied gas

Color : Colorless

Odor : slight sweet ether-like

Hazard Summary : Warning! Container under pressure. Flammable. Gas reduces oxygen available for breathing. Causes asphyxiation in high concentrations. The victim will not realize that he/she is suffocating. Inhalation may cause central nervous system effects. May cause cardiac arrhythmia. May cause drowsiness and dizziness. Do not breathe vapour. Irritating to eyes and skin. Avoid contact with skin, eyes and clothing. At higher temperatures, (>250 C), decomposition products may include hydrofluoric acid (HF) and carbonyl halides. The ACGIH Threshold Limit Values (2007) for Hydrogen Fluoride are TLVTWA 0.5 ppm and Ceiling Exposure Limit 2 ppm.

Potential Health Effects

Skin : Avoid skin contact with leaking liquid (danger of frostbite).
May cause frostbite. Irritating to skin.

Eyes : Causes serious eye irritation.

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May cause frostbite.

Ingestion : Unlikely route of exposure.
Effects due to ingestion may include:
Gastrointestinal discomfort

Inhalation : Gas reduces oxygen available for breathing.
Causes asphyxiation in high concentrations.
The victim will not realize that he/she is suffocating.
Inhalation may cause central nervous system effects.
May cause cardiac arrhythmia.
Vapours may cause drowsiness and dizziness.

Chronic Exposure : None known.

Carcinogenicity

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP, IARC, or OSHA.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

	Component	CAS-No.	Weight percent
Difluoromethane	75-10-5	100.00	

SECTION 4. FIRST AID MEASURES

Inhalation : Move to fresh air. If breathing is irregular or stopped, administer artificial respiration. Use oxygen as required, provided a qualified operator is present. Call a physician. Do not give drugs from adrenaline-ephedrine group.

Skin contact : After contact with skin, wash immediately with plenty of water. 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. If symptoms persist, call a physician.

Eye contact : Remove contact lenses. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Ingestion : Unlikely route of exposure. As this product is a gas, refer to the inhalation section. Do not induce vomiting without medical advice. Call a physician immediately.

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Notes to physician

Treatment : Because of the possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should be used with special caution and only in situations of emergency life support. Treatment of overexposure should be directed at the control of symptoms and the clinical conditions. Treat frostbitten areas as needed.

Treatment : Do not give adrenaline or similar drugs.

SECTION 5. FIRE-FIGHTING MEASURES

Flash point : not applicable

Ignition temperature : >750 °C (1,382 °F)

Lower explosion limit : 14.4 %(V)

Upper explosion limit : 33.4 %(V)

Suitable extinguishing : Use water spray, alcohol-resistant foam, dry chemical or media carbon dioxide.

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Specific hazards during fire
Flammable.

: Contents under pressure. Fighting
Flash back possible over considerable distance.
Container may rupture on heating.
Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses.
Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.
Rapid evaporation of the liquid may cause frostbite. In case of fire hazardous decomposition products may be produced such as: Hydrogen fluoride Carbon monoxide
Carbon dioxide (CO₂)
Carbonyl halides

Special protective
equipment for fire-fighters

: In the event of fire and/or explosion do not breathe fumes.
Wear self-contained breathing apparatus and protective suit.
No unprotected exposed skin areas.

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SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions : Immediately evacuate personnel to safe areas.
Keep people away from and upwind of spill/leak.
Wear personal protective equipment. Unprotected persons must be kept away.
Remove all sources of ignition.
Avoid skin contact with leaking liquid (danger of frostbite).
Ventilate the area.
After release, disperses into the air.
Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing. Avoid accumulation of vapours in low areas.
Unprotected personnel should not return until air has been tested and determined safe.
Ensure that the oxygen content is $\geq 19.5\%$.
- Environmental precautions : Prevent further leakage or spillage if safe to do so.
The product evaporates readily.
- Methods for cleaning up : Ventilate the area.

SECTION 7. HANDLING AND STORAGE

- Handling : Handle with care.
- Avoid inhalation of vapour or mist.
Do not get in eyes, on skin, or on clothing.
Wear personal protective equipment.
Use only in well-ventilated areas.
Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50 °C.
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Follow all standard safety precautions for handling and use of compressed gas cylinders.
Protect cylinders from physical damage.
Do not puncture or drop cylinders, expose them to open flame or excessive heat.
Do not pierce or burn, even after use. Do not spray on a naked flame or any incandescent material.
Do not remove screw cap until immediately ready for use.
Always replace cap after use.
- Handling : Open drum carefully as content may be under pressure.
The product should only be used in areas from which all naked lights and other sources of ignition have been excluded.

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Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50 °C.
Do not pierce or burn, even after use. Do not spray on a naked flame or any incandescent material.
Do not use in areas without adequate ventilation.
Contaminated equipment (brushes, rags) must be cleaned immediately with water.

Advice on protection against fire and explosion : Vapours may form explosive mixture with air.
Container hazardous when empty.
Keep product and empty container away from heat and sources of ignition.
The heavy vapours can overcome a considerable distance up to the source of ignition.
Take measures to prevent the build up of electrostatic charge. Electrical equipment should be protected to the appropriate standard.

Storage

Requirements for storage and containers place. : Keep containers tightly closed in a dry, cool and well-ventilated areas
Pressurized container: Protect from sunlight and do not expose to temperatures exceeding 50 °C. Do not pierce or burn, even after use. Keep away from heat and sources of ignition.
Protect cylinders from physical damage.
Store away from incompatible substances.
Storage rooms must be properly ventilated.
Ensure adequate ventilation, especially in confined areas.

Further information on storage conditions : Store in original container.
Keep containers tightly closed in a cool, well-ventilated place.
Keep away from direct sunlight.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Protective measures : Do not breathe vapour.
Avoid contact with skin, eyes and clothing.
Ensure that eyewash stations and safety showers are close to the workstation location.

Engineering measures : General room ventilation is adequate for storage and handling.
Perform filling operations only at stations with exhaust ventilation facilities.

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Eye protection	:	Do not wear contact lenses. Wear as appropriate: Safety glasses with side-shields If splashes are likely to occur, wear: Goggles or face shield, giving complete protection to eyes
Hand protection	:	Leather gloves In case of contact through splashing: Protective gloves Neoprene gloves Polyvinyl alcohol or nitrile- butyl-rubber gloves
Skin and body protection	:	Avoid skin contact with leaking liquid (danger of frostbite). Wear cold insulating gloves/face shield/eye protection.
Respiratory protection	:	In case of insufficient ventilation wear suitable respiratory equipment. Wear a positive-pressure supplied-air respirator. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing. For rescue and maintenance work in storage tanks use selfcontained breathing apparatus.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Ensure adequate ventilation, especially in confined areas. Avoid contact with skin, eyes and clothing. Remove and wash contaminated clothing before re-use. Keep working clothes separately.

Exposure Guidelines

Difluoromethane 75-10-5 WEEL TWA 1,000 ppm 2,200 mg/m3

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Form	:	Liquefied gas
Color	:	Colorless
Odor	:	slight sweet ether-like

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Molecular Weight	: 52 g/mol
pH	: neutral
Freezing point	: -136 °C (-213 °F)
Boiling point/boiling range	: -51.7 °C (-61.1 °F)
Vapor pressure	: 15,189 hPa at 21.1 °C (70.0 °F)
Vapor pressure	: 34,804 hPa at 54.4 °C (129.9 °F)
Relative vapour density	: 1.8 (Air = 1.0)
Density	: 1.002 g/cm ³ at 26.7 °C (80.1 °F)
Water solubility	: insoluble
Partition coefficient: n- log Pow:	0.21 octanol/water

SECTION 10. STABILITY AND REACTIVITY

Conditions to avoid	: Protect from heat/overheating. Decomposes under high temperature. Contains gas under pressure; may explode if heated. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep away from direct sunlight. Some risk may be expected of corrosive and toxic decomposition products.
Materials to avoid	: Finely divided aluminium Potassium Calcium Powdered metals Aluminium Magnesium Zinc
Hazardous decomposition products	: Halogenated compounds Hydrogen fluoride Carbonyl halides Carbon oxides

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Thermal decomposition : >250 °C
To avoid thermal decomposition, do not overheat.

Hazardous reactions : Hazardous polymerisation does not occur.
Stable under normal conditions

SECTION 11. TOXICOLOGICAL INFORMATION

Acute inhalation toxicity : LC50 rat
Dose: > 520000 ppm
Exposure time: 4 h

Sensitisation : Cardiac sensitization dogs
No-observed-effect level
>350,000 ppm

Repeated dose toxicity : Inhalation rat Subchronic toxicity NOEL:
50,000 ppm

Genotoxicity in vitro : Ames test negative

Genotoxicity in vitro : Human lymphocytes negative
Mutagenicity (in vitro mammalian cytogenetic test)

Genotoxicity in vitro : Chromosome aberration test in vitro negative

Genotoxicity in vivo : Species: mouse
Cell type: Bone marrow
Mutagenicity (micronucleus test) negative

Teratogenicity : rat
NOEL - 50,000 ppm

Teratogenicity : rabbit
NOEL - 50,000 ppm

SECTION 12. ECOLOGICAL INFORMATION

Biodegradability : Minimal

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Additional ecological information : This product contains greenhouse gases which may contribute to global warming. Do NOT vent to the atmosphere.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste Information: Observe Statue all Federal, and Local Environmental regulations.

SECTION 14. TRANSPORT INFORMATION

DOT UN-Number : 3252
Proper shipping name : DIFLUOROMETHANE
Class 2.1
Packing group
Hazard Labels 2.1

IATA UN Number 3252
Description of the goods : DIFLUOROMETHANE
Class : 2.1
Hazard Labels : 2.1
Packing instruction (cargo aircraft) 200

IMDG Substance No. : UN 3252
Description of the goods : DIFLUOROMETHANE
Class : 2.1
Hazard Labels : 2.1
EmS Number : F-D
Marine pollutant : no

SECTION 15. REGULATORY INFORMATION

Inventories

1907/2006 (EU) : This mixture contains only ingredients which have been subject to a pre-registration according to Regulation (EC) No. 1907/2006 (REACH).

US. Toxic Substances : On TSCA Inventory

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Control Act

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

Canada. Canadian : All components of this product are on the Canadian DSL list. Environmental Protection Act (CEPA). Domestic Substances List (DSL). (Can. Gaz. Part II, Vol. 133)

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

Korea. Toxic Chemical : On the inventory, or in compliance with the inventory Control Law (TCCL) List

Philippines. The Toxic : On the inventory, or in compliance with the inventory Substances and Hazardous and Nuclear Waste Control Act

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

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

National regulatory information

Hazards : Fire Hazard

Acute Health Hazard
Sudden Release of Pressure Hazard

CAS Number Dichloromethane 75-09-2

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: WARNING! This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.
Chloromethane 74-87-3

WHMIS Classification : A
This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

Global warming potential : 550

SECTION 16. OTHER INFORMATION

		HMIS III	NFPA
Health hazard	: 1	2	4
Physical Hazard	0		
Instability	: 0		

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. Final determination of suitability of any material is the sole responsibility of the user. This information should not constitute a guarantee for any specific product properties.

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