



SRF LIMITED

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SAFETY DATA SHEET

Difluoromethane (R32)

SECTION 1: IDENTIFICATION OF SUBSTANCE OR MIXTURE AND COMPANY

- 1.1 Product Name** : Difluoromethane
- Trade Names / Synonyms** : Methylene fluoride; Carbon fluoride hydride (CF₂H₂); Difluoromethane; Freon 32, R32
- CAS Number** : 75-10-5
- 1.2 Manufacturer/supplier** : SRF Limited, D-2/1 GIDC Phase-II, PCPIR, Dahej, Tal. Vagra, Dist. Bharuch 392 130, Gujarat (India)
- Further information obtainable from:** : Prabhat Kumar
e-mail: Prabhat.Kumar2@srf.com
Mobile no.-+91-7069057087
- 1.3 Emergency Call**
- Emergency Contact** : Balwada Ashish +91-9099002602
- Primary Contact** : Prabhat Kumar +91-7069057087
- SDS Contact** : Sharma Anil Kumar +91-9687694067

Relevant Identified Uses Of The Substance Or Mixture And Uses Advised Against

- Identified Uses:** : Refrigerant
- Uses advised against:** : Do not use product for anything outside of the above specified uses

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification according to Regulation (EC) No 1272/2008

Physical Hazard

Flamable Gas	Catagory1	H220: Extremely flammable gas
Gases under pressure	Liquefied gas	H280: Contains gas under pressure; may explode if heated.

- Other hazards** : May displace oxygen and cause rapid suffocation
Rapid evaporation of the product may cause frostbite

Precautionary statement(s)

Prevention:	P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Response: P377: Leaking gas fire: Do not extinguish, unless leak can be stopped safely. P381: In case of leakage, eliminate all ignition sources. Storage. P403: Store in a well-ventilated place. Disposal: None.
Response	P377: Leaking gas fire: Do not extinguish, unless leak can be stopped safely. P381: In case of leakage, eliminate all ignition sources
Storage	P403: Store in a well-ventilated place. Disposal: None.
Disposal	None

Label elements

Labelling according Regulation (EC) No 1272/2008:

Pictogram



Signal Word

: Danger

Supplemental label information

: EIGA-0783: Contains fluorinated greenhouse gases covered by the Kyoto protocol.

EIGA-As: Asphyxiant in high concentrations

SECTION 3: COMPOSITION & INFORMATION ON INGREDIENTS

Chemical name	Common name and synonyms	Formula	CAS No.	EC No.	Concentration % (w/w)
Difluoromethane	Methylene fluoride; Carbon fluoride hydride (CF ₂ H ₂); Difluoromethane; Freon 32, R32	CH ₂ F ₂	75-10-5	200-839-4	>= 99.9 - <= 100

SECTION 4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice

: In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

- In the case of accident or if you feel unwell, seek medical advice immediately. When symptoms persist or in all cases of doubt seek medical advice
- Inhalation** : In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped. Get medical attention if symptoms occur.
- Skin contact** : Contact with evaporating liquid may cause frostbite or freezing of skin. Treat for frostbite if necessary, by gently warming affected area. Do not rub affected area. Get medical attention immediately.
- Eye contact:** : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately
- Ingestion:** : Ingestion is not considered a potential route of exposure.

4.2 Most Important Symptoms And Effects, Both Acute And Delayed:

Anaesthetic effects Light-headedness irregular heartbeat with a strange sensation in the chest, heart thumping, apprehension, feeling of fainting, dizziness or weakness.

4.3 Indication of any immediate medical attention and special treatment needed

- Hazards:** : Respiratory arrest. Contact with liquefied gas can cause damage (frostbite) due to rapid evaporative cooling.
- Treatment:** : Thaw frosted parts with lukewarm water. Do not rub affected area. Get immediate medical advice/attention
- Protection of first-aiders :** : If potential for exposure exists, refer to Section 8 for specific personal protective equipment.
- Notes to physician** : Treat symptomatically and supportively.
Because of possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, that may be used in situations of emergency life support should be used with special caution. Avoid administration of adrenaline or other simpatomimeticas similar, as it can produce a cardiac arrhythmia with possible later heart failure.

SECTION 5. FIRE FIGHTING MEASURE

- General Fire Hazards : Heat may cause the containers to explode.
- 5.1 **Extinguishing media Suitable extinguishing media:** : Use an extinguishing agent suitable for the surrounding fire.
Apply water from a safe distance to cool container and protect surrounding area.
If involved in fire, shut off flow immediately if it can be done without risk. Contains gas under pressure. Extremely flammable liquefied gas. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.
- 5.2 **Special hazards arising from the substance or mixture** : Cylinders are equipped with pressure and temperature relief devices but may still rupture under fire conditions. Decomposition may occur. Contact of welding or soldering torch flame with high concentrations of this substance can result in visible changes in the size and colour of the torch flame. This flame effect will only occur in concentrations of this substance well above the recommended exposure limit. Therefore, stop all work and ventilate to disperse vapours from the work area through flame arrestor or flare before using any open flames.
- Hazardous Combustion Products:** : If involved in a fire the following toxic and/or corrosive fumes may be produced by thermal decomposition: carbon monoxide; Carbonyl difluoride; Hydrogen fluoride
- Advice for firefighters Special fire fighting procedures:** : In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment. Wear neoprene gloves during cleaning up work after a fire. Exposure to decomposition products may be a hazard to health.
: In case of fire: Stop leak if safe to do so. Continue water spray from protected position until container stays cool. Use extinguisher to contain the fire. Isolate the source of the fire or let it burn out. In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.
- Special protective equipment for firefighters:** : Fire-fighters must use standard protective equipment including flame retardant coat, helmet with face shield, Gloves, rubber boots, and in enclosed spaces, SCBA.

SECTION 6: ACCIDENTAL RELEASE MEASURES

- 6.1 Personal precautions, protective equipment and emergency procedures:** : Evacuate area. Provide adequate ventilation. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.
- 6.2 Environmental Precautions** : Prevent further leakage or spillage if safe to do so.
- 6.3 Methods and material for containment and cleaning up** : Provide adequate ventilation. Eliminate source of ignition. Avoid open flames and high temperatures.
- 6.4 Reference to other sections:** : Refer to sections 8 and 13

SECTION 7: HANDLING & STORAGE

- 7.1 Precautions for safe handling:** : Only experienced and properly instructed persons should handle gases under pressure
- Handle in accordance with good industrial hygiene and safety practice.
- Protect containers from physical damage; do not drag, roll, slide or drop. Do not remove or deface labels provided by the supplier for the identification of the container contents. When moving containers, even for short distances, use appropriate equipment eg. trolley, hand truck etc.
- Secure cylinders in an upright position at all times, close all valves when not in use. Provide adequate ventilation.
- Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.
- When using do not eat, drink or smoke.
- Use a pressure reducing regulator when connecting cylinder to lower pressure (<3000 psig) piping or systems. Never attempt to lift cylinder by its cap. Never use direct flame or electrical heating devices to raise the pressure of a container. Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use. Damaged valves should be reported immediately to the supplier Close container valve after each use and when empty, even if still connected to equipment. Never attempt to repair or modify

container valves or safety relief devices. Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment. Keep container valve outlets clean and free from contaminants particularly oil and water. If user experiences any difficulty operating container valve discontinue use and contact supplier. Never attempt to transfer gases from one container to another. Container valve guards or caps should be in place

The product should not be mixed with air for leak testing or used with air for any other purpose above atmospheric pressure. Contact with chlorine or other strong oxidizing agents should also be avoided

- 7.2 **Conditions for safe storage, including any incompatibilities:** : Observe all regulations and local requirements regarding storage of containers.
Protect from sunlight. Store in a well-ventilated place. Containers should not be stored in conditions likely to encourage corrosion. Stored containers should be periodically checked for general conditions and leakage. Container valve guards or caps should be in place. Store containers in location free from fire risk and away from sources of heat and ignition. Keep away from combustible material.
- 7.3 **Storage temperature** : Protect from sunlight. Store in a cool and well-ventilated place.
- 7.4 **Storage period:** : No data available

SECTION 8: EXPOSURE CONTROL / PERSONAL PROTECTION CONTROL PARAMETERS

8.1 **Emergency Limits**

Ingredient	Materail Name	TEEL-1	TEEL-2	TEEL-3
R32	Difluoromethane	3000 ppm	6500 ppm	39000 ppm

Ingredient	Original IDLH	Revised IDLH
R32	Not Available	Not Available

8.2 **Exposure controls**

- Engineering controls** : Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls canbe highly effective in protecng workers and will typically be independent of worker interactions to provide this high level of protection.
The basic types of engineering controls are:
Process controls, which involve changing the way a job activity or process is done to reduce the risk.

Personal protective equipment Respiratory protection	: Enclosure and/or isolation of emission source, which keeps a selected hazard "physically" away from the worker, and ventilation that strategically "adds" and "removes" air in the work environment. : For rescue and maintenance work in storage, tanks use self-contained breathing apparatus. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.
Hand protection	: Additional protection: Wear approved gloves that are suitable for the task and have been shown to be impervious for the duration of their use
Eye protection	: Wear safety glasses with side shields. Additionally, wear a face shield where the possibility exists for face contact due to splashing, spraying or airborne contact with this material.
Protective measures	: When using do not smoke. Self-contained breathing apparatus (SCBA) is required if a large release occurs
Other exposure limits for potential decomposition products	: Hydrogen Fluoride: ACGIH TLV: 2 ppm ceiling

SECTION 9: PHYSICAL & CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	: Clear, colourless liquified gas
Physical state	: Liquified gas
Colour	: Colourless
Odor	: Sweet
Molecular Weight	52
pH (15 aqueous solution)	: Neutral
Melting point/freezing point	: -136.7°C (-214°F) freezing point
Initial boiling point and boiling range	: -51.7 °C (-61.06 °F)
Flash point	: None (Does not Flash)
Flammability (solid, gas)	: No data available
Upper/lower flammability or explosive limits	: Does not flash
Ozone Depletion Potential	: Nil (Source: as per schedule- 1 of ozone legislation, Ozone cell- Management of environment forest & climate change)
Global Warming Potential	: 675 (Source: IPCC-AR4 Report)
Vapour pressure	: 1700 mmHg @ 25°C

Vapour density	:	1.86 at 25°C (Air = 1.0)
Relative density	:	1.1 (water)
Flammability Range	:	14-31% in air
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available

SECTION 10: STABILITY & REACTIVITY

10.1	:	Decomposes on heating.
10.2 Chemical stability	:	Stable under recommended storage conditions
10.3 Possibility of hazardous reactions	:	Polymerization will not occur
10.4 Conditions to avoid:	:	The product is not flammable in air under ambient conditions of temperature and pressure. When pressurised with air or oxygen, the mixture may become flammable. Protect from physical damage and heat. Containers may rupture or explode if exposed to heat.
10.5 Incompatible materials:	:	Alkali metals Alkaline earth metals, Powdered metals, Powdered metal salts
10.6 Hazardous decomposition products:	:	Decomposition products are hazardous., This material can be decomposed by high temperatures (open flames, glowing metal surfaces, etc.) forming hydrofluoric acid and possibly carbonyl fluoride., These materials are toxic and irritating., Avoid contact with decomposition products

SECTION 11 : TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Inhalation 4 h LC50 (rat)	:	>760000 ppm/4H
Oral (rat) LD-50	:	1890 mg/kg
Carcinogenicity	:	No data available
Mutagenicity	:	No data available
Reproductive toxicity	:	No Data available
Teratogenicity	:	No data available

12. ECOLOGICAL INFORMATION




No LOEL ecotoxicity data are available for this product's components. When discharged in large quantities may contribute to the greenhouse effect.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods

- Product** : Dispose in accordance with all applicable regulations. Comply with applicable Federal, State/Provincial and Local Regulations
- Contaminated packaging** : Evaporate or incinerate residue at an approved site. Return empty containers to supplier. Ensure damaged or non-returnable cylinders are gas-free before disposal.

SECTION 14: TRANSPORT INFORMATION

ITEM	ADR	IMDG	IATA
UN number	3252	3252	3252
Proper shipping name	DIFLUOROMETHANE (REFRIGERANT GAS R 32)	DIFLUOROMETHANE (REFRIGERANT GAS R 32)	DIFLUOROMETHANE (REFRIGERANT GAS R 32)
Transport hazard class(es)/ Labelling Number	 2.1	 2.1	 2.1
Packaging Instruction	P 200	P 200	P 200
Environmental hazards	No	No	No
Special precautions for user	No data is available on this product.		

15. REGULATORY INFORMATION

R32(75-10-5) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Inventory of Chemical Substances (AICS)	International Air Transport Association (IATA) Dangerous Goods Regulations - Prohibited List Passenger and Cargo Aircraft
National Inventory	Status
Australia - AICS	Y
Canada - DSL	Y
Canada - NDSL	N (R32)
China - IECSC	N (R32)

Europe - EINEC / ELINCS / NLP	Y
Japan - ENCS	Y
Korea - KECI	Y
New Zealand - NZIoC	Y
Philippines	Y
USA TSCA	Y
Legend	Y = All ingredients are on the inventory N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing (see specific ingredients in brackets)

SECTION 16: OTHER INFORMATION

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. SRF Limited-Chemical business shall not be held liable for any damage resulting from handling or from contact with the above product.