

# ORAFON R-32

SPECIFICATION

ORAFON R-32

## SPECIFICATION

**PRODUCT NAME :** ORAFON R-32 (HFC-32)

**PACKING SIZE :**

**DAC** : 9 KGS

**TANK** : 710KGS & 720KGS

The above product conforms to the following specifications:

TEST ITEM	REPORTING UNITS	SPECIFICATION
Appearance	-	Colorless and clearness
Odor	-	Odorless
Purity	% by weight	99.8 % min.
Moisture	ppm by weight	20 ppm max.
Acidity	ppm by weight	1 ppm max.
Chlorineion Test		pass
High Boiling Residue	ppm by weight	100 ppm max.
None Condensable	% by volume	1.5 % max.

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# ORAFON R-32

MATERIAL SAFETY DATA SHEET (MSDS)

ORAFON R-32

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name** : ORAFON R-32  
**Synonyms** : HFC-32, Refrigerant Gas (R-32, Difluoromethane HFC-32)  
**Formula** : CH<sub>2</sub>F<sub>2</sub>  
**Molecular Weight** : 52

**Supplier** : K.M. CHEMICAL CORPORATION LTD.  
**Address** : 89 Moo 12, Soi Raikhing 42, Phutthamonthon Sai 5 Road., Tambol Raikhing, Ampur Sampran, Nakhonpathom 73210 Thailand

**Emergency Phone** : Tel : +66 (0) 2105 0477 (Auto) Fax : +66 (0) 2105 0470

## 2. HAZARDS IDENTIFICATION

### EMERGENCY OVERVIEW

Colorless, volatile liquid with ethereal and faint sweetish odor. Non-flammable material. Overexposure may cause dizziness and loss of concentration. At higher levels, CNS depression and cardiac arrhythmia may result from exposure. Vapors displace air and can cause asphyxiation in confined spaces. At higher temperatures, (>250°C), decomposition products may include Hydrochloric Acid (HCl), Hydrofluoric Acid (HF) and carbonyl halides.

### POTENTIAL HEALTH HAZARDS

**SKIN** Irritation would result from a defatting action on tissue. Liquid contact could cause frostbite.

**EYES** Liquid contact can cause severe irritation and frostbite. Mist may irritate.

**INHALATION** R-32 is low in acute toxicity in animals. When oxygen levels in air are reduced to 12-14% by displacement, symptoms of asphyxiation, loss of coordination, increased pulse rate and deeper respiration will occur. At high levels, cardiac arrhythmia may occur.

**INGESTION** Ingestion is unlikely because of the low boiling point of the material. Should it occur, discomfort in the gastrointestinal tract from rapid evaporation of the material and consequent evolution of gas would result. Some effects of inhalation and skin exposure would be expected.

**DELAYED EFFECTS** None Known

- Classification of the substance or mixture
- Classification according to Regulation (EC) No 1272/2008



GHS02 flame

Flam. Gas 1 H220 Extremely flammable gas.



GHS04 gas cylinder

Flam. Gas 1 H220 Extremely flammable gas.

- **Signal word** Danger

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

Material	CAS Number	Weight
Difluoromethane	75-10-5	100%

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### 4. FIRST AID MEASURES

- SKIN** Promptly flush skin with water until all chemical is removed. 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. Get medical attention if symptoms persist.
- EYES** Immediately flush eyes with large amounts of water for at least 15 minutes (in case of frostbite, water should be lukewarm, not hot) lifting eyelids occasionally to facilitate irrigation. Get medical attention if symptoms persist.
- INHALATION** Immediately remove to fresh air. If breathing has stopped, give artificial respiration. Use oxygen as required, provided a qualified operator is available. Get medical attention immediately. DO NOT give epinephrine (adrenaline).
- INGESTION** Ingestion is unlikely because of the physical properties and is not expected to be hazardous. DO NOT induce vomiting unless instructed to do so by a physician.

#### ADVICE TO PHYSICIAN

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.

### 5. FIRE-FIGHTING MEASURES

#### FLAMMABLE PROPERTIES

FLASH POINT	: Gas, not applicable per DOT regulations
FLASH POINT METHOD	: Not applicable
AUTOIGNITION TEMPERATURE	: Unknown
UPPER FLAME LIMIT (volume % in air)	: 33.4%
LOWER FLAME LIMIT (volume % in air)	: 12.7%
FLAME PROPAGATION RATE (solids)	: Not applicable
OSHA FLAMMABILITY CLASS	: Not applicable

#### EXTINGUISHING MEDIA

Use any standard agent - choose the one most appropriate for type of surrounding fire.

#### UNUSUAL FIRE AND EXPLOSION HAZARDS

Contact with certain reactive metals may result in formation of explosive or exothermic reactions under specific conditions (e.g. very high temperatures and/or appropriate pressures).

#### SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS

Firefighters should wear self-contained, NIOSH-approved breathing apparatus for protection against possible toxic decomposition products. Proper eye and skin protection should be provided. Use water spray to keep fire-exposed containers cool.

### 6. ACCIDENTAL RELEASE MEASURES

#### IN CASE OF SPILL OR OTHER RELEASE

(Always wear recommended personal protective equipment.)

Evacuate unprotected personnel. Protected personnel should remove ignition sources and shut off leak, if without risk, and provide ventilation. Unprotected personnel should not return until air has been tested and determined safe, including low-lying areas.

Spills and releases may have to be reported to Federal and/or local authorities.

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## 7. HANDLING AND STORAGE

### NORMAL HANDLING

(Always wear recommended personal protective equipment.)

Avoid breathing vapors and liquid contact with eyes, skin or clothing. Do not puncture or drop cylinders, expose them to open flame or excessive heat. Use authorized cylinders only. Follow standard safety precautions for handling and use of compressed gas cylinders.

### STORAGE RECOMMENDATIONS

Store in a cool, well-ventilated area of low fire risk and out of direct sunlight. Protect cylinder and its fittings from physical damage. Storage in subsurface locations should be avoided. Close valve tightly after use and when empty.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### ENGINEERING CONTROLS

Provide local ventilation at filling zones and areas where leakage is probable. Mechanical (general) ventilation may be adequate for other operating and storage areas.

### PERSONAL PROTECTIVE EQUIPMENT

#### SKIN PROTECTION

Skin contact with refrigerant may cause frostbite. General work clothing and gloves (leather) should provide adequate protection. If prolonged contact with liquid or gas is anticipated, insulated gloves constructed of PVA, neoprene or butyl rubber should be used. Any contaminated clothing should be promptly removed and washed before reuse.

#### EYE PROTECTION

For normal conditions, wear safety glasses. Where there is reasonable probability of liquid contact, wear chemical safety goggles.

#### RESPIRATORY PROTECTION

None generally required for adequately ventilated work situations. For accidental release or non-ventilated situations, or release into confined space, where the concentration may be above the PEL of 1,000 ppm, use a self-contained, NIOSH approved breathing apparatus or supplied air respirator. For escape: use the former or a NIOSH approved gas mask with organic vapor canister.

#### ADDITIONAL RECOMMENDATIONS

Where contact with liquid is likely, such as in a spill or leak, impervious boots and clothing should be worn. High dose-level warning signs are recommended for areas of principle exposure. Provide eyewash stations and quick drench shower facilities at convenient locations. For tank cleaning operations, see OSHA regulations, 29 CFR 1910.132 and 29 CFR 1910.133.

### EXPOSURE GUIDELINES

INGREDIENT NAME	ACGIH TLV	OSHA PEL	OTHER LIMIT
Difluoromethane	none	none	**1000 ppm TWA (8hr)

\* = Limit established by National Refrigerants, Inc.

\*\* = Workplace Environmental Exposure Level (AIHA)

\*\*\* = Biological Exposure Index (ACGIH)

#### OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS

Hydrogen Fluoride: ACGIH TLV = 3ppm ceiling

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### 9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	: Clear, colorless liquid and vapor
PHYSICAL STATE	: Gas at ambient temperatures
MOLECULAR WEIGHT	: 52
CHEMICAL FORMULA	: CH <sub>2</sub> F <sub>2</sub>
ODOR	: Faint ethereal odor
SPECIFIC GRAVITY (water = 1.0)	: 1.002 @ 26.7°C (80°F)
SOLUBILITY IN WATER (weight %)	: unknown
PH	: Neutral
BOILING POINT	: -51.7°C (-61°F)
FREEZING POINT	: -136°C (-212°F)
VAPOR PRESSURE	: 220.3 psia @ 70°F 504.8 psia @ 130°F
VAPOR DENSITY (air = 1.0)	: 1.8
EVAPORATION RATE	: >1 COMPARED TO: CC14 = 1
% VOLATILES	: 100
FLASH POINT	: Not applicable

(Flash point method and additional flammability data are found in Section 5.)

### 10. STABILITY AND REACTIVITY

#### **NORMALLY STABLE? (CONDITIONS TO AVOID):**

The product is stable under normal conditions. Explosions may result if in the flammable range. Any source of high temperatures, such as lighted cigarettes, flames, hot spots or welding may yield toxic and/or corrosive decomposition products.

#### **INCOMPATIBILITIES**

(Under specific conditions: e.g. very high temperatures and/or appropriate pressures) - Freshly abraded aluminum surfaces (may cause strong exothermic reaction). Chemically reactive metals: potassium, calcium, powdered aluminum, magnesium, and zinc.

#### **HAZARDOUS DECOMPOSITION PRODUCTS**

Halogens, halogen acids and possibly carbonyl halides.

#### **HAZARDOUS POLYMERIZATION:**

Will not occur.

### 11. TOXICOLOGICAL INFORMATION

#### **IMMEDIATE (ACUTE) EFFECTS**

LC50: 4 hr. (rat) - > 520,000 ppm / Cardiac Sensitization NOEL -350,000 ppm

#### **DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:**

Teratogenic NOEL (rat and rabbit)- 50,000 ppm

Subchronic inhalation (rat) NOEL - 50,000 ppm

#### **OTHER DATA**

Not active in four genetic tests.

### 12. ECOLOGICAL INFORMATION

#### **Degradability (BOD)**

R-32 is a gas at room temperature; therefore, it is unlikely to remain in water.

#### **Octanol Water Partition Coefficient**

Not applicable

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## 13. DISPOSABLE CONSIDERATIONS

### RCRA

Is the unused product a RCRA hazardous waste if discarded? Not a hazardous waste  
If yes, the RCRA ID number is: Not applicable

### OTHER DISPOSAL CONSIDERATIONS

Disposal must comply with federal, state, and local disposal or discharge laws. R-32 is subject to U.S. Environmental Protection Agency Clean Air Act Regulations Section 608 in 40 CFR Part 82 regarding refrigerant recycling.

The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

## 14. TRANSPORTATION INFORMATION

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

## 15. REGULATORY INFORMATION

### TOXIC SUBSTANCES CONTROL ACT (TSCA)

TSCA INVENTORY STATUS : Listed on the TSCA inventory  
OTHER TSCA ISSUES : None

### ADDITIONAL REGULATORY INFORMATION

R-32 is subject to U.S. Environmental Protection Agency Clean Air Act Regulations at 40 CFR Part 82.

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

## 16. OTHER INFORMATION

The information given corresponds to the current state of our knowledge and experience of the product, and is not exhaustive. This applies to product that conforms to the specification, unless otherwise stated. In the case of combinations and mixtures one must make sure that no new dangers can arise. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and protection of human welfare and environment.

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