

**Safety Data Sheet**  
according to Regulation (EC) No 1907/2006



**R32**

Revision date: 15.05.2017

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**SECTION 1: Identification of the substance/mixture and of the company/undertaking**

**1.1. Product identifier**

R32

REACH Registration Number: 01-2119471312-47-XXXX

**1.2. Relevant identified uses of the substance or mixture and uses advised against**

**Use of the substance/mixture**

Coolant

Reserved for industrial and professional use.

**Uses advised against**

Only use for the intended purpose. In case of doubt please contact our responsible department.

**1.3. Details of the supplier of the safety data sheet**

Company name:	Arthur Friedrichs Kältemittel GmbH	
Street:	Bei den Kämpfen 22	
Place:	D-21220 Seevetal	
Telephone:	+49 (0)41 85 / 70 01-0	Telefax: +49 (0)41 85 / 70 01-22
Contact person:	Abteilung Technik	Telephone: +49 (0)41 85 / 70 01-16
e-mail:	service@afk-hh.de	
Internet:	www.afk-hh.de	

**1.4. Emergency telephone number:**

Poison Control Center (Mayence, GER):  
+49 (0)6131-19240 (24h - de, en)  
Emergency Action: In the event of a medical enquiry involving this product, please contact your doctor or local hospital accident and emergency department or the NHS enquiry service.

**SECTION 2: Hazards identification**

**2.1. Classification of the substance or mixture**

**Regulation (EC) No. 1272/2008**

Hazard categories:

Flammable gas: Flam. Gas 1

Gases under pressure: Liquefied gas

Hazard Statements:

Extremely flammable gas.

Contains gas under pressure; may explode if heated.

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**2.2. Label elements**

**Regulation (EC) No. 1272/2008**

**Signal word:** Danger

**Pictograms:**



**Hazard statements**

H220 Extremely flammable gas.  
H280 Contains gas under pressure; may explode if heated.

**Precautionary statements**

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P260 Do not breathe Gas.  
P280 Wear Protection gloves, Eye protection.  
P284 In case of inadequate ventilation wear respiratory protection.  
P308+P313 IF exposed or concerned: Get medical advice/attention.  
P410+P403 Protect from sunlight. Store in a well-ventilated place.

**2.3. Other hazards**

In case of insufficient ventilation and/or through use, explosive/highly flammable mixtures may develop. The vapour of the product is heavier than air and may accumulate below ground level, in pits, channels and basements in higher concentration.

As the gases are only slightly toxic, the emphasis is on burns in contact with escaping liquid gas. Inhalation of high concentrations of gases can have health impairing effects due to the reduced oxygen content. Suffocating in high concentrations.

Contains the following fluorinated greenhouse gas recorded in the Kyoto Protocol (chemical name):  
difluoromethane

This substance does not meet the criteria for classification as PBT or vPvB. An environmental hazard cannot be ruled out in case of improper handling or disposal.

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**SECTION 3: Composition/information on ingredients**

**3.1. Substances**

Sum formula: CH<sub>2</sub>F<sub>2</sub>  
Molecular weight: 52,02 g/mol

**Hazardous components**

CAS No	Chemical name	Quantity
	EC No	
	Index No	
	REACH No	
	Classification according to Regulation (EC) No. 1272/2008 [CLP]	
75-10-5	difluoromethane	100 %
	200-839-4	
	01-2119471312-47-XXXX	
	Flam. Gas 1, Liquefied gas; H220 H280	

Full text of H and EUH statements: see section 16.

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**SECTION 4: First aid measures**

**4.1. Description of first aid measures**

**General information**

First aider: Pay attention to self-protection!

**After inhalation**

Move victim to fresh air. Put victim at rest and keep warm. Call a physician immediately. In case of irregular breathing or respiratory arrest, perform artificial respiration.

**After contact with skin**

Wash with plenty of water. Change contaminated clothing. In the event of cold damage due to contact with liquid gas, cut open and carefully remove clothing. Leave clothing stuck to the skin for the moment. Rinse the cold-damaged areas with warm (not hot) water. Do not move (no rubbing). Sterile covering, protect against further heat loss. Call a physician immediately.

**After contact with eyes**

Rinse immediately carefully and thoroughly with eye-bath or water. In case of frostbite due to direct contact with liquid gas escaping from the pressure container, firstly leave any contact lenses worn. Consult an ophthalmologist.

**After ingestion**

Not considered as a possible means of exposure.

**4.2. Most important symptoms and effects, both acute and delayed**

Frostbite and burns through contact with liquefied product. On inhalation of the concentrated gas: oxygen deficiency. Misuse or intentional inhalation can be fatal as a result of effects on the heart, without alarming symptoms.

Symptoms in the event of large scale exposure: unconsciousness, difficulty in breathing, agitation, headache, nausea, drowsiness, dizziness, disordered cardiac rhythm.

**4.3. Indication of any immediate medical attention and special treatment needed**

Treat symptomatically. To supervise the blood circulation. Do not give adrenaline or other stimulants.

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## **SECTION 5: Firefighting measures**

### **5.1. Extinguishing media**

#### **Suitable extinguishing media**

Co-ordinate fire-fighting measures to the fire surroundings.  
Water fog, alcohol resistant foam, Dry extinguishing powder, Carbon dioxide.

#### **Unsuitable extinguishing media**

High power water jet.

### **5.2. Special hazards arising from the substance or mixture**

Extremely flammable. Vapours may form explosive mixtures with air. Heating causes rise in pressure with risk of bursting.

In case of fire may be liberated: Carbon dioxide, Carbon monoxide, Halogen hydride, Carbonyl halogenides, Pyrolysis products containing fluorine.

### **5.3. Advice for firefighters**

In case of fire: Wear self-contained breathing apparatus. Full protective suit.  
Fight fire from a distance due to the risk of explosion.

#### **Additional information**

Use water spray jet to protect personnel and to cool endangered containers.

## **SECTION 6: Accidental release measures**

### **6.1. Personal precautions, protective equipment and emergency procedures**

Remove all sources of ignition. Provide adequate ventilation.  
Clear the area. Keep away from unprotected people. Keep upwind.

### **6.2. Environmental precautions**

Do not allow uncontrolled discharge of product into the environment. Explosion hazard.  
If possible, stop the escape of gas. Remove all sources of ignition. Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil.

### **6.3. Methods and material for containment and cleaning up**

Ventilate affected area. Use only non-sparking tools.

### **6.4. Reference to other sections**

Personal protection equipment: see section 8  
Handling and storage: see section 7  
For waste disposal see section 13.

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**SECTION 7: Handling and storage**

**7.1. Precautions for safe handling**

**Advice on safe handling**

Use only in well-ventilated areas. Transfer and handle product only in closed systems. Take precautionary measures against static discharges. Ground and bond container and receiving equipment. Use only antistatically equipped (spark-free) tools. Protect pressurised gas bottles against overturning. The ventilation protection equipment, valve closing nut or the valve plug (if applicable) must be mounted correctly. Open valves slowly to avoid pressure surges. Prevent backflow into the gas container. No water in the gas container, allow access to valves, flange and other parts of equipment.

**Advice on protection against fire and explosion**

Combustible. Keep away from sources of ignition - No smoking. Take precautionary measures against static discharges. Vapours may form explosive mixtures with air.

**7.2. Conditions for safe storage, including any incompatibilities**

**Requirements for storage rooms and vessels**

Keep container tightly closed. Keep in a cool, well-ventilated place. Keep away from sources of ignition - No smoking. Avoid heating. Protect against direct sunlight.

**Advice on storage compatibility**

Do not store together with: self-igniting, flammable, explosive, infectious, radioactive, toxic, oxidising substances

**Further information on storage conditions**

Protect pressurised gas bottles against overturning. The ventilation protection equipment, valve closing nut or the valve plug (if applicable) must be mounted correctly.  
storage temperature: <50°C

**7.3. Specific end use(s)**

Coolant  
Reserved for industrial and professional use.

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## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### DNEL/DMEL values

CAS No	Substance	Exposure route	Effect	Value
75-10-5	difluoromethane			
Consumer DNEL, long-term		inhalation	systemic	750 mg/m <sup>3</sup>
Worker DNEL, long-term		inhalation	systemic	7035 mg/m <sup>3</sup>

#### PNEC values

CAS No	Substance	Value
75-10-5	difluoromethane	
Freshwater		0,142 mg/l
Freshwater (intermittent releases)		1,42 mg/l
Freshwater sediment		0,534 mg/kg

### 8.2. Exposure controls

#### Appropriate engineering controls

Provide adequate ventilation as well as local exhaust at critical locations. If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn.  
Transfer and handle product only in closed systems.

#### Protective and hygiene measures

Change contaminated clothing. Wash hands before breaks and after work. When using do not eat or drink.  
When using do not smoke.

#### Eye/face protection

Tightly fitting safety glasses with side shields. Wear additional facial protection if facial contact with this substance is possible through splashing, spraying or material in the air.

#### Hand protection

Use leather gloves to protect against injuries in handling compressed gas cylinders and against frostbite from rapidly expanding gas.

#### Skin protection

Safety boots with steel toecap. Work clothing covering the entire body.

#### Respiratory protection

Only required in exceptional situations, e.g. in case of inadvertent release of substances, for maintenance work in storage containers or in case of fire: Protective respiration apparatus not using surrounding air (breathing apparatus) (DIN EN 133).

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**SECTION 9: Physical and chemical properties**

**9.1. Information on basic physical and chemical properties**

Physical state:	gaseous, pressure liquefied
Colour:	colourless
Odour:	like: Ether

**Test method**

pH-Value:	not applicable
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**Changes in the physical state**

Melting point:	-136 °C
Initial boiling point and boiling range:	-51,6 °C
Sublimation point:	No data available
Softening point:	No data available
Flash point:	not applicable

**Flammability**

Solid:	not applicable
Gas:	flammable

**Explosive properties**

No data available

Lower explosion limits:	12,7 vol. %
Upper explosion limits:	33,4 vol. %
Ignition temperature:	648 °C

**Auto-ignition temperature**

Solid:	not applicable
Gas:	530 °C

Decomposition temperature:	not determined
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**Oxidizing properties**

No data available

Vapour pressure: (at 25 °C)	17010 hPa
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Density (at 25 °C):	0,959 g/cm <sup>3</sup>
Bulk density:	not applicable

Water solubility: (at 25 °C)	1,68 g/L
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**Solubility in other solvents**

No data available

Partition coefficient: 0,21

Viscosity / dynamic: not determined

Vapour density: 1,82

Evaporation rate: not determined

**9.2. Other information**

Vapours are heavier than air and will spread at floor level.

**SECTION 10: Stability and reactivity**

**10.1. Reactivity**

No dangerous reactivity under regular conditions.

**10.2. Chemical stability**

The product is stable under regular conditions.

**10.3. Possibility of hazardous reactions**

May react violently with oxidizing agents.

**10.4. Conditions to avoid**

Avoid having contact with excessive heat, open flames, sparks or sources of ignition.

Formation of explosive gas mixtures with air.

**10.5. Incompatible materials**

Alkali metals. Alkaline earth metals. Strong oxidizing agents.

**10.6. Hazardous decomposition products**

Carbon monoxide Fluorhydric acid. Fluorines-carbon-hydrogens. Carbonyl difluoride.

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**SECTION 11: Toxicological information**

**11.1. Information on toxicological effects**

**Acute toxicity**

Based on available data, the classification criteria are not met.

CAS No	Chemical name				
	Exposure route	Dose	Species	Source	Method
75-10-5	difluoromethane				
	inhalative (4 h) gas	LC50 ppm	>520000 Rat		

**Irritation and corrosivity**

Based on available data, the classification criteria are not met.

**Sensitising effects**

Based on available data, the classification criteria are not met.

**Carcinogenic/mutagenic/toxic effects for reproduction**

Based on available data, the classification criteria are not met.

Germ cell mutagenicity (inhalative): NOAEL: 150000 ppm (6h; Species: Mouse) Reproductive toxicity (inhalative): NOAEL: 49600 ppm (Species: Rat)

**STOT-single exposure**

Based on available data, the classification criteria are not met.

**STOT-repeated exposure**

Based on available data, the classification criteria are not met.  
subchronic inhalation toxicity: NOAEL: 49100 ppm (91d; Species: Rat)

**Aspiration hazard**

Based on available data, the classification criteria are not met.

**Additional information on tests**

No experimental references for genotoxicity in vitro known. No experimental references for genotoxicity in vivo known.

**Further information**

Can cause frostbite. Suffocating in high concentrations. Inhalation causes narcotic effects/intoxication.

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**SECTION 12: Ecological information**

**12.1. Toxicity**

CAS No	Chemical name					
	Aquatic toxicity	Dose	[h]   [d]	Species	Source	Method
75-10-5	difluoromethane					
	Acute fish toxicity	LC50 mg/l	1507	96 h	fish	
	Acute algae toxicity	ErC50	142 mg/l	96 h	algae	
	Acute crustacea toxicity	EC50	652 mg/l	48 h	Daphnia magna (Big water flea)	
	Fish toxicity	NOEC mg/l	65,8	30 d	fish	

**12.2. Persistence and degradability**

Product is not easily biodegradable.

**12.3. Bioaccumulative potential**

Based on the n-octanol/water partition coefficient accumulation in organisms is not expected.

**12.4. Mobility in soil**

high mobility. No adsorption in soil or sediment.

**12.5. Results of PBT and vPvB assessment**

This substance does not meet the criteria for classification as PBT or vPvB.

**12.6. Other adverse effects**

Global Warming potential (GWP): 675  
The product does not decompose ozone.

**Further information**

An environmental hazard cannot be ruled out in case of improper handling or disposal. Avoid release to the environment.

**SECTION 13: Disposal considerations**

**13.1. Waste treatment methods**

**Advice on disposal**

Dispose of waste according to applicable legislation.  
Reclaim and reprocess.

**Waste disposal number of waste from residues/unused products**

160504 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; gases in pressure containers and discarded chemicals; gases in pressure containers (including halons) containing hazardous substances; hazardous waste

**Contaminated packaging**

Transportable pressure equipment (empty, residual pressure): return to the supplier/manufacturer.

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**SECTION 14: Transport information**

**Land transport (ADR/RID)**

<b>14.1. UN number:</b>	UN 3252
<b>14.2. UN proper shipping name:</b>	DIFLUOROMETHANE (REFRIGERANT GAS R 32)
<b>14.3. Transport hazard class(es):</b>	2
<b>14.4. Packing group:</b>	-
Hazard label:	2.1



Classification code:	2F
Special Provisions:	662
Limited quantity:	0
Excepted quantity:	E0
Transport category:	2
Hazard No:	23
Tunnel restriction code:	B/D

**Inland waterways transport (ADN)**

<b>14.1. UN number:</b>	UN 3252
<b>14.2. UN proper shipping name:</b>	DIFLUOROMETHANE (REFRIGERANT GAS R 32)
<b>14.3. Transport hazard class(es):</b>	2
<b>14.4. Packing group:</b>	-
Hazard label:	2.1



Classification code:	2F
Special Provisions:	662
Limited quantity:	0
Excepted quantity:	E0

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## Marine transport (IMDG)

**14.1. UN number:** UN 3252  
**14.2. UN proper shipping name:** DIFLUOROMETHANE (REFRIGERANT GAS R 32)  
**14.3. Transport hazard class(es):** 2.1  
**14.4. Packing group:** -  
Hazard label: 2.1



Special Provisions: -  
Limited quantity: 0  
Excepted quantity: E0  
EmS: F-D, S-U

## Air transport (ICAO-TI/IATA-DGR)

**14.1. UN number:** UN 3252  
**14.2. UN proper shipping name:** DIFLUOROMETHANE (REFRIGERANT GAS R 32)  
**14.3. Transport hazard class(es):** 2.1  
**14.4. Packing group:** -  
Hazard label: 2.1



Special Provisions: A1  
Limited quantity Passenger: Forbidden  
Passenger LQ: Forbidden  
Excepted quantity: E0  
IATA-packing instructions - Passenger: Forbidden  
IATA-max. quantity - Passenger: Forbidden  
IATA-packing instructions - Cargo: 200  
IATA-max. quantity - Cargo: 150 kg

## 14.5. Environmental hazards

ENVIRONMENTALLY HAZARDOUS: no

## 14.6. Special precautions for user

Follow the information given in the safety datasheet.  
Prior to transport: Secure container. Ensure cylinder valve is closed and not leaking. The valve outlet cap nut or plug (where provided) is correctly fitted. The valve protection device (where provided) is correctly fitted. Provide adequate ventilation.

## 14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

not applicable

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**SECTION 15: Regulatory information**

**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

**EU regulatory information**

2004/42/EC (VOC): >= 99% 25°C 17010hPa

**Additional information**

Regulation (EC) No. 648/2004 (Detergents regulation): not applicable  
Regulation (EC) No. 1005/2009 on substances that lead to the depletion of the ozone layer: not applicable  
Regulation (EC) No 850/2004 on persistent organic pollutants: not applicable  
Regulation (EC) No 689/2008 of the European Parliament and of the Council concerning the export and import of dangerous chemicals: This mix contains no chemicals that are subject to the export notification procedures (annex 1).

This mixture contains the following substances of very high concern (SVHC) which are included in the Candidate List according to Article 59 of REACH: none

This mixture contains the following substances of very high concern (SVHC) which are subject to authorisation according to Annex XIV of REACH: none

**National regulatory information**

Employment restrictions: Observe restrictions to employment for juvenils according to the 'juvenile work protection guideline' (94/33/EC). Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers. Observe employment restrictions for women of child-bearing age.

Water contaminating class (D): 1 - slightly water contaminating

**Additional information**

TRGS 510 "Lagerung von Gefahrstoffen in ortsbeweglichen Behältern"  
BGR 500 "Betreiben von Arbeitsmitteln" - Kapitel 2.33 "Anlagen für den Umgang mit Gasen"  
BGV D34 "Verwendung von Flüssiggas"

**15.2. Chemical safety assessment**

For this substance a chemical safety assessment has been carried out.

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**SECTION 16: Other information**

**Changes**

This data sheet contains changes from the previous version in section(s): 1,2,16.

Version 1,00 - 10.08.2015 - Creation

Version 1,01 - 08.02.2017 - General update

Version 1,02 - 15.05.2017 - changes in section 2

**Abbreviations and acronyms**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

BImSchV (Fed.Imm.Prot.Act): Directive on the Implementation of the Federal Immission Protection Act

CAS: Chemical Abstracts Service

DIN: Norm of the Deutsche Institut für Normung (German Institute for Standardization)

EC: Effective Concentration

EG: European Community (Europäische Gemeinschaft)

EN: European Norm

IATA: International Air Transport Association

IBC Code: International Code for the Construction and Equipment of ships carrying Dangerous Chemicals in Bulk

ICAO: International Civil Aviation Organization

IMDG: International Maritime Code for Dangerous Goods

ISO: Norm of the International Standards Organization

CLP: Classification, Labeling, Packaging

IUCLID: International Uniform Chemical Information Database

LC: Lethal concentration

LD: Lethal dose

log Kow: Octanol/water partition coefficient

MARPOL: Maritime Pollution Convention = Convention for the Prevention of Maritime Pollution from Ships

OECD: Organisation for Economic Co-operation and Development

PBT: Persistent, bio-cumulative, toxic

RID: Regulation Concerning the International Transport of Dangerous Goods by Rail

TRGS: Technische Regeln für Gefahrstoffe

UN: United Nations

VOC: Volatile Organic Compounds

vPvB: very persistent and very bio-cumulative

VwVwS: Administrative Regulation for Water Pollutants

WGK: German Water Hazard Class

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

DNEL: Derived No Effect Level

PNEC: Predicted No Effect Concentration

TLV: Threshold Limiting Value

STOT: Specific Target Organ Toxicity

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**Relevant H and EUH statements (number and full text)**

H220	Extremely flammable gas.
H280	Contains gas under pressure; may explode if heated.

**Further Information**

The information given in this safety data sheet is to describe the product's safety regulations. It is not for guaranteeing certain characteristics and is based on today's knowledge. The safety data sheet was generated upon information of pre-suppliers by:

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