Safety data sheet

Printing date 19.11.2019 Version number 1 Revision: 19.11.2019

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

1.1 Product identifier

Trade name: HFC-32
Article number: HFC32
EC number:
200-839-4
1.2 Relevant identified uses of the substance or mixture and uses advised against:
No further relevant information available.

1.3 Details of the supplier of the safety data sheet
Manufacturer/Supplier:
DAIKIN INDUSTRIES, LTD. CHEMICALS DIVISION:
Umeda Center Bldg., 4-12, Nakazaki-Nishi 2-chome, Kita-Ku, Osaka, JAPAN
Phone: (+81) 6-6373-4345 Fax: (+81) 6-6373-4281

Further information obtainable from: http://www.daikin.com/
1.4 Emergency telephone number:
Japan: +81-6-6349-7521
China: +86-512-5-232-0949, +86-21-34151689
South Korea: +82-2-568-1722
Americas: CHEMTREC +1-800-424-9300 (Outside US/Canada: +1-703-527-3887)
Europe: +49-211-179 225-0

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SECTION 2: Hazard identification

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

Flam. Gas 1 H220 Extremely flammable gas. Flam. Category: 1B, Hazard statement: Flammable gas, Hazard statement code: H221

Press. Gas L H280 Contains gas under pressure; may explode if heated.

2.2 Label elements
Labelling according to Regulation (EC) No 1272/2008:
The substance is classified and labelled according to the CLP regulation.
Signal word: Danger
Precautionary statements:
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 Eliminate all ignition sources if safe to do so.
P410+P403 Protect from sunlight. Store in a well-ventilated place.

SECTION 3: Composition/information on ingredients

Information on ingredients:

CAS: 75-10-5 Difluoromethane 100%
Flam. Gas 1, H220
Press. Gas L, H280
Identification number(s)
EC number: 200-839-4

SECTION 4: First aid measures

4.1 Description of first aid measures
General information: Seek immediate medical advice.
After inhalation:
Take affected persons into fresh air. Keep at rest.
At high levels, cardiac arrhythmia may occur.

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After skin contact:
Immediately wash with water and soap and rinse thoroughly.
In cases of frost bites, rinse with plenty of water. Do not remove clothing.
After eye contact: *Rinse opened eye for several minutes under running water.*
4.2 Most important symptoms and effects, both acute and chronic:
Frost bites
High concentrations cause asphyxiation. May cause an abnormal heart rhythm and prove suddenly fatal.
Information for doctor:
Catecholamines such as adrenaline, and other compounds having similar effects, should be reserved for emergencies and then used only with special caution.
4.3 Indication of any immediate medical attention and special treatment needed:
No further relevant information available.

SECTION 5: Firefighting measures

5.1 Extinguishing media
Suitable extinguishing agents:
CO2, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
For safety reasons unsuitable extinguishing agents: *Water with full jet*
5.2 Special hazards arising from the substance or mixture:
Formation of toxic gases is possible during heating or in case of fire.
Hydrogen fluoride (HF)
5.3 Advice for firefighters:
Protective equipment: *Wear fully protective suit.*

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:
Stay on the windward side.
Wear protective equipment. Keep unprotected persons away.
6.2 Environmental precautions: *Do not allow to enter sewers/surface or ground water.*
6.3 Methods and material for containment and cleaning up: *Ensure adequate ventilation.*
6.4 Reference to other sections: *See Section 8 for information on personal protection equipment.*

SECTION 7: Handling and storage

7.1 Precautions for safe handling:
Waste air is to be released into the atmosphere only via suitable separators.
Open and handle receptacle with care.
Information about fire - and explosion protection:
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.
7.2 Conditions for safe storage, including any incompatibilities:
Storage
Requirements to be met by storerooms and receptacles:
Store only in unopened original receptacles.
Store in a cool and dry location.
Information about storage in one common storage facility: *Not required.*
Further information about storage conditions:
Keep container tightly sealed.
Store in cool, dry conditions in well sealed receptacle.
Protect from heat and direct sunlight.
Maximum storage temperature: *40 ℃*
7.3 Specific end use(s): *No further relevant information available.*

SECTION 8: Exposure controls/personal protection

Additional information about design of technical facilities: *No further data; see item 7.*

8.1 Control parameters *No further information available.*

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Ingredients with limit values that require monitoring at the workplace:

CAS: 75-10-5 Difluoromethane
WEEL (USA) 1000 ppm
DNELs:
Inhalative
DNEL - general population 750 mg/m³ (long-term exposure) (systemic effects)
DNEL - worker 7035 mg/m³ (long-term exposure) (systemic effects)
PNECs:
PNEC
0.142 mg/l (freshwater) (aqua)
0.534 mg/kg dw (freshwater) (sediment)
1.42 mg/l (intermittent release) (aqua)
Additional information: *The lists valid during the making were used as basis.*

8.2 Exposure controls
Personal protective equipment
General protective and hygienic measures:
Wash hands before breaks and at the end of work.
Do not eat or drink while working.
Keep away from tobacco products.
Respiratory protection:
Wear respirator for organic gases, where leakage may occur.
Use suitable respiratory protective device in case of insufficient ventilation.
Use respiratory protective device with organic gas cartridge.
Protection of hands:
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.


Protective gloves

To avoid skin problems reduce the wearing of gloves to the required minimum.
Material of gloves:
Strong material gloves
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
Leather
Penetration time of glove material
The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.
Eye protection:


Safety glasses

Body protection: *Protective work clothing*

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SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties
General Information
Appearance

Form:	*Liquefied gas*
Colour:	*Colourless*
Odour:	*Odourless*
Odour threshold:	*Not determined.*
pH-value:	*No further information available.*
Melting point/freezing point:	*-136 °C*

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Initial boiling point and boiling range: -51.7 °C

Flash point: Not applicable.

Flammability (solid, gas): Flammable
Ignition temperature: 530 °C (1018hPa)

Decomposition temperature: No further information available.

Auto-ignition temperature: Not determined.
Explosive properties: Not determined.

Explosion limits:
Lower explosive limit: No further information available.
13.8 Vol% (High Pressure Gas Safety Act: Japan)
Upper explosive limit: No further information available.
29.9 Vol% (High Pressure Gas Safety Act: Japan)

Vapour pressure at 25 °C: 1.69 MPa

Density at 25 °C: 0.961 g/cm³ (Saturated liquid)
Relative density Not determined.
Vapour density Not determined.
Evaporation rate Not applicable.

Solubility in / Miscibility with water: No further information available.
1680 mg / l (25 ℃ atmospheric pressure)

Partition coefficient: n-octanol/water: 0.21 log POW
Viscosity:
Dynamic: Not determined.
Kinematic: Not determined.
9.2 Other information: No further relevant information available.

SECTION 10: Stability and reactivity

10.1 Reactivity No further relevant information available.
10.2 Chemical stability
Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
10.3 Possibility of hazardous reactions: Reacts with alkali and metals.
10.4 Conditions to avoid: No further relevant information available.
10.5 Incompatible materials: Alkali or alkaline earth metals - powdered Al, Zn, Mg, etc.
10.6 Hazardous decomposition products: Poisonous gases/vapours

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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.
LD/LC50 values relevant for classification:

CAS: 75-10-5 Difluoromethane
Inhalative LC0/4h > 520000 ppm (Rat)
Primary irritant effect
Skin corrosion/irritation

CAS: 75-10-5 Difluoromethane
Inhalative Cardiac sensitive 350000 ppm (Dog)
Development 50000 ppm (Rat and rabbit)
Based on available data, the classification criteria are not met.
Serious eye damage/irritation Based on available data, the classification criteria are not met.
after inhalation: No further information available.
Respiratory or skin sensitisation Based on available data, the classification criteria are not met.

Other information (about experimental toxicology):
Chromosomal Aberration Study in vitro- Negative
Mouse Micronucleus Assay in Vivo - Negative
Repeated dose toxicity *NOAEC (inhalation): 105000 mg/m³ (rat) (OECD 413)*
CMR effects
Mutagenicity:
Ames test: negative (OECD 471)
In vitro mammalian chromosome aberration test: negative (OECD 473)
Mammalian erythrocyte micronucleus test: negative (OECD 474)
Toxicity for reproduction:
NOAEC (inhalation): 208000 mg/m³ (mouse) (OECD 478; read across)
Developmental toxicity:
NOAEC (inhalation): 105000 mg/m³ (rat)
Germ cell mutagenicity
Not applicable
Carcinogenicity *Based on available data, the classification criteria are not met.*
Reproductive toxicity *Based on available data, the classification criteria are not met.*
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.*
Aspiration hazard *Based on available data, the classification criteria are not met.*

SECTION 12: Ecological information

12.1 Toxicity
Aquatic toxicity:
EC50/96 h 142 mg/l (algae) (QSAR)
LC50/48 h 652 mg/l (daphnia) (QSAR)
LC50/96 h 1507 mg/l (fish) (QSAR)
12.2 Persistence and degradability:
Not easily biodegradable
5% after 28 days (OECD 301 D)
Behaviour in environmental systems
Components: *Half-life in air: 1237 days*
12.3 Bioaccumulative potential:
Due to the distribution coefficient n-octanol/water an accumulation in organisms is not expected.
12.4 Mobility in soil: *No further relevant information available.*
Other information
Koc = 1.49 - 21-73 (QSAR)
log Koc = 0.17 - 1.34 (QSAR)
Additional ecological information:
General notes:
Ozone depletion potential(ODP) : 0
Global warming potential(GWP) : 675 / IPCC Fourth Assessment Report (AR4)
12.5 Results of PBT and vPvB assessment
PBT: *Not applicable.*
vPvB: *Not applicable.*
12.6 Other adverse effects: *No further relevant information available.*

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Recommendation:
Must be specially treated adhering to official regulations.
Incineration in an adequate incinerator is recommended.

Uncleaned packaging
Recommendation: *Disposal must be made according to official regulations.*

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Trade name: HFC-32

SECTION 14: Transport information

14.1 UN-Number:
ADR, IMDG, IATA *3252*
14.2 UN proper shipping name:
ADR: *3252 DIFLUOROMETHANE (REFRIGERANT GAS R 32)*
IMDG, IATA *DIFLUOROMETHANE (REFRIGERANT GAS R 32)*
14.3 Transport hazard class(es):

ADR

Class: *2 Gases.*
Label: *2.1*
IMDG, IATA

Class: *2.1*
Label: *2.1*
14.4 Packing group:
IMDG, IATA *Not applicable*
14.5 Environmental hazards:
Marine pollutant: *No*
14.6 Special precautions for user: *Warning: Gases.*
Danger code (Kemler): *23*
14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: *Not applicable.*
Transport/Additional information: *Avoid direct sunlight. Make sure of no damage, corrosion, leaks on the receptacles.*
Take necessary measures for preventing cargo shift.
UN "Model Regulation": *UN3252, DIFLUOROMETHANE (REFRIGERANT GAS R 32), 2.1*

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SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
Labelling according to Regulation (EC) No 1272/2008
The substance is classified and labelled according to the CLP regulation.
Hazard pictograms

GHS02

Signal word *Danger*
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.
P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 Eliminate all ignition sources if safe to do so.
P410+P403 Protect from sunlight. Store in a well-ventilated place.

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Other regulations, limitations and prohibitive regulations:
High Pressure Gas Safety Act (Japan) : non-flammable gas
ISO817 : Classification A2L (lower flammability)
15.2 Chemical safety assessment: *A Chemical Safety Assessment has not been carried out.*

SECTION 16: Other information

The product is for the industrial use only. We do not guarantee the safety in case the product is used for the other purposes. When using the product for health-care application or food/feed application, consult us in advance.
This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Department issuing SDS: *EHS Department*
Contact: *http://www.daikin.com/*
Abbreviations and acronyms:
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organisation
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
DNEL: Derived No-Effect Level (REACH)
PNEC: Predicted No-Effect Concentration (REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
Flam. Gas 1: Flammable gases – Category 1
Press. Gas L: Gases under pressure – Liquefied gas
**** Data compared to the previous version altered.***