Freon™ 32 Refrigerant



 Version
 Revision Date:
 SDS Number:
 Date of last issue: 09.10.2020

 1.3
 20.04.2021
 5394180-00004
 Date of first issue: 30.01.2020

SECTION 1: Identification of the hazardous chemical and of the supplier

Product identifier

Product name : Freon™ 32 Refrigerant

Chemical name : Difluoromethane

CAS-No. : 75-10-5

Product code

SDS-Identcode : 130000146903

Recommended use of the chemical and restrictions on use

Recommended use : Refrigerant

Restrictions on use : For professional users only.

Manufacturer or supplier's details

Company : The Chemours Malaysia Sdn. Bhd.

Address : Suite 20-01 & 20-02B, Level 20, The Pinnacle, Persiaran La-

goon, Bandar Sunway, Subang Jaya Selangor Darul Ehsan 47500 Malaysia

Telephone : +60 3 5021 0178

Emergency telephone number : 1-800-815-308

Telefax : +60 3 2178 4719

SECTION 2: Hazards identification

Classification of the hazardous chemical

Flammable gases : Category 1

Gases under pressure : Liquefied gas

Label elements

Hazard pictograms :





Signal word : Danger

Hazard statements : H220 Extremely flammable gas.

H280 Contains gas under pressure; may explode if heated.





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Precautionary statements Prevention:

P210 Keep away from heat/ sparks/ open flames/ hot surfaces.

No smoking.

Response:

P377 Leaking gas fire: Do not extinguish, unless leak can be

stopped safely.

P381 Eliminate all ignition sources if safe to do so.

Storage:

P410 + P403 Protect from sunlight. Store in a well-ventilated

place.

Other hazards which do not result in classification

Vapours are heavier than air and can cause suffocation by reducing oxygen available for breath-

Misuse or intentional inhalation abuse may cause death without warning symptoms, due to cardiac effects.

Rapid evaporation of the product may cause frostbite.

May displace oxygen and cause rapid suffocation.

SECTION 3: Composition and information of the ingredients of the hazardous chemical

Substance / Mixture Substance

Components

Chemical name	CAS-No.	Concentration (% w/w)
Difluoromethane#	75-10-5	>= 99.9 -<= 100

[#] Voluntarily-disclosed non-hazardous substance

SECTION 4: First aid measures

General advice In the case of accident or if you feel unwell, seek medical ad-

vice immediately.

When symptoms persist or in all cases of doubt seek medical

advice.

If inhaled If inhaled, remove to fresh air.

> If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

In case of skin contact Thaw frosted parts with lukewarm water. Do not rub affected

area.

Get medical attention immediately.

In case of eye contact Get medical attention immediately.

If swallowed Ingestion is not considered a potential route of exposure.

Most important symptoms

May cause cardiac arrhythmia.

and effects, both acute and Other symptoms potentially related to misuse or inhalation





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delayed abuse are

Cardiac sensitisation Anaesthetic effects Light-headedness

Dizziness confusion

Lack of coordination

Drowsiness Unconsciousness

Gas reduces oxygen available for breathing.

Contact with liquid or refrigerated gas can cause cold burns

and frostbite.

Protection of first-aiders : No special precautions are necessary for first aid responders.

Notes to physician : Because of possible disturbances of cardiac rhythm, cate-

cholamine drugs, such as epinephrine, that may be used in situations of emergency life support should be used with spe-

cial caution.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media : Water spray

Alcohol-resistant foam Carbon dioxide (CO2)

Dry chemical

Unsuitable extinguishing

media

None known.

Physicochemical hazards arising from the chemical

Specific hazards during fire-

fighting

Vapours may form flammable mixture with air

Exposure to combustion products may be a hazard to health. If the temperature rises there is danger of the vessels bursting

due to the high vapor pressure.

Hazardous combustion prod-

ucts

Hydrogen fluoride carbonyl fluoride

Carbon oxides

Special protective equipment and precautions for fire-fighters

Special protective equipment

for firefighters

Wear self-contained breathing apparatus for firefighting if nec-

essary.

Use personal protective equipment.

Specific extinguishing meth-

ods

Use extinguishing measures that are appropriate to local cir-

cumstances and the surrounding environment. Fight fire remotely due to the risk of explosion. Use water spray to cool unopened containers.

Leaking gas fire: Do not extinguish, unless leak can be

stopped safely.

Remove undamaged containers from fire area if it is safe to do





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SO.

Evacuate area.

Hazchem Code 2YE

SECTION 6: Accidental release measures

Personal precautions, protec- :

tive equipment and emer-

gency procedures

Evacuate personnel to safe areas.

Only trained personnel should re-enter the area.

Remove all sources of ignition.

Avoid skin contact with leaking liquid (danger of frostbite).

Ventilate the area.

Follow safe handling advice (see section 7) and personal pro-

tective equipment recommendations (see section 8).

Environmental precautions Avoid release to the environment.

Prevent further leakage or spillage if safe to do so. Retain and dispose of contaminated wash water.

Methods and materials for containment and cleaning up Ventilate the area.

Non-sparking tools should be used.

Suppress (knock down) gases/vapours/mists with a water

spray jet.

Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to deter-

mine which regulations are applicable.

Sections 13 and 15 of this SDS provide information regarding

certain local or national requirements.

SECTION 7: Handling and storage

Handling

Precautions for safe handling

Technical measures Use equipment rated for cylinder pressure. Use a backflow

preventative device in piping. Close valve after each use and

when empty.

Local/Total ventilation If sufficient ventilation is unavailable, use with local exhaust

ventilation.

If advised by assessment of the local exposure potential, use only in an area equipped with explosion-proof exhaust ventila-

tion.

Advice on safe handling Avoid breathing gas.

Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure as-

Keep container tightly closed.

Wear cold insulating gloves/ face shield/ eye protection. Valve protection caps and valve outlet threaded plugs must remain in place unless container is secured with valve outlet

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piped to use point.

Use a check valve or trap in the discharge line to prevent haz-

ardous back flow into the cylinder. Prevent backflow into the gas tank.

Use a pressure reducing regulator when connecting cylinder

to lower pressure (<3000 psig) piping or systems.

Close valve after each use and when empty. Do NOT change

or force fit connections.

Prevent the intrusion of water into the gas tank.

Never attempt to lift cylinder by its cap. Do not drag, slide or roll cylinders.

Use a suitable hand truck for cylinder movement.

Keep away from heat, hot surfaces, sparks, open flames and

other ignition sources. No smoking.

Take precautionary measures against static discharges.

Take care to prevent spills, waste and minimize release to the

environment.

Storage

Conditions for safe storage, including any incompatibilities

Conditions for safe storage

Cylinders should be stored upright and firmly secured to pre-

vent falling or being knocked over.

Separate full containers from empty containers.

Do not store near combustible materials.

Avoid area where salt or other corrosive materials are present.

Keep in properly labelled containers.

Keep tightly closed.

Keep in a cool, well-ventilated place. Keep away from direct sunlight.

Store in accordance with the particular national regulations.

Keep away from heat and sources of ignition.

Materials to avoid : Do not store with the following product types:

Self-reactive substances and mixtures

Organic peroxides Oxidizing agents Flammable liquids Pyrophoric liquids Pyrophoric solids

Self-heating substances and mixtures

Explosives

Recommended storage tem: :

perature

< 52 °C

Storage period : > 10 yr

Further information on stor-

age stability

: The product has an indefinite shelf life when stored properly.

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SECTION 8: Exposure controls and personal protection

Control parameters

Contains no substances with occupational exposure limit values.

Appropriate engineering

controls

Minimize workplace exposure concentrations.

If sufficient ventilation is unavailable, use with local exhaust

ventilation.

If advised by assessment of the local exposure potential, use only in an area equipped with explosion-proof exhaust venti-

lation.

Individual protection measures, such as personal protective equipment

Eye/face protection : Wear the following personal protective equipment:

Chemical resistant goggles must be worn.

Face-shield

Skin protection : Wear the following personal protective equipment:

If assessment demonstrates that there is a risk of explosive atmospheres or flash fires, use flame retardant antistatic

protective clothing.

Hand protection

Material : Heat resistant gloves

Remarks : Choose gloves to protect hands against chemicals depending

on the concentration and quantity of the hazardous substance and specific to place of work. For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of workday. Breakthrough time is not determined for the product. Change

gloves often!

Respiratory protection : If adequate local exhaust ventilation is not available or expo-

sure assessment demonstrates exposures outside the rec-

ommended guidelines, use respiratory protection.

Filter type : Organic gas and low boiling vapour type

Hygiene measures : If exposure to chemical is likely during typical use, provide

eye flushing systems and safety showers close to the work-

ing place.

When using do not eat, drink or smoke. Wash contaminated clothing before re-use.

SECTION 9: Physical and chemical properties

Appearance : Liquefied gas

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Colour : colourless

Odour : slight, ether-like

Odour Threshold : No data available

pH : No data available

Melting point/freezing point : -136 °C

Initial boiling point and boiling

range

-51.6 °C

Flash point : Not applicable

Evaporation rate : > 1

(CCL4=1.0)

Flammability (solid, gas) : Flammable

Self-ignition : The substance or mixture is not classified as pyrophoric.

Upper explosion limit / Upper

flammability limit

Upper flammability limit

31 %(V)

Method: ASTM E681

Lower explosion limit / Lower

flammability limit

Lower flammability limit

14 %(V)

Method: ASTM E681

Vapour pressure : 17,010 hPa (25 °C)

Relative vapour density : 1.82

(Air = 1.0)

Relative density : 0.96 (25 °C)

Density : 0.961 g/cm³ (25 °C)

(as liquid)

Solubility(ies)

Water solubility : 4.4 g/l (25 °C)

Partition coefficient: n-

octanol/water

log Pow: -0.68 (25 °C)

Auto-ignition temperature : 530 °C

Decomposition temperature : No data available

Viscosity

Viscosity, kinematic : Not applicable





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Explosive properties : Not explosive

Oxidizing properties : The substance or mixture is not classified as oxidizing.

Particle size : Not applicable

SECTION 10: Stability and reactivity

Reactivity : Not classified as a reactivity hazard.

Chemical stability : Stable if used as directed. Follow precautionary advice and

avoid incompatible materials and conditions.

Possibility of hazardous reac-

tions

Vapours may form flammable mixture with air

Can react with strong oxidizing agents.

Flammable gas.

Conditions to avoid : Heat, flames and sparks.

Incompatible materials : Oxidizing agents

Hazardous decomposition

products

No hazardous decomposition products are known.

SECTION 11: Toxicological information

Information on likely routes of :

exposure

Inhalation
Skin contact
Eye contact

Acute toxicity

Not classified based on available information.

Components:

Difluoromethane:

Acute oral toxicity : Assessment: The substance or mixture has no acute oral tox-

icity

Acute inhalation toxicity : LC50 (Rat): > 520000 ppm

Exposure time: 4 h Test atmosphere: gas

Method: OECD Test Guideline 403

No observed adverse effect concentration (Dog): 350000 ppm

Test atmosphere: gas

Remarks: Cardiac sensitisation

Lowest observed adverse effect concentration (Dog): >

350000 ppm

Test atmosphere: gas

Remarks: Cardiac sensitisation





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Cardiac sensitisation threshold limit (Dog): > 735,000 mg/m3

Test atmosphere: gas

Remarks: Cardiac sensitisation

Acute dermal toxicity : Assessment: The substance or mixture has no acute dermal

toxicity

Skin corrosion/irritation

Not classified based on available information.

Components:

Difluoromethane:

Result : No skin irritation

Serious eye damage/eye irritation

Not classified based on available information.

Components:

Difluoromethane:

Result : No eye irritation

Respiratory or skin sensitisation

Skin sensitisation

Not classified based on available information.

Respiratory sensitisation

Not classified based on available information.

Components:

Difluoromethane:

Exposure routes : Skin contact Result : negative

Germ cell mutagenicity

Not classified based on available information.

Components:

Difluoromethane:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)

Method: OECD Test Guideline 471

Result: negative

Test Type: Chromosome aberration test in vitro

Method: OECD Test Guideline 473

Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo

cytogenetic assay)





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Species: Mouse

Application Route: inhalation (gas) Method: OECD Test Guideline 474

Result: negative

Germ cell mutagenicity -

Assessment

Weight of evidence does not support classification as a germ

cell mutagen.

Carcinogenicity

Not classified based on available information.

Reproductive toxicity

Not classified based on available information.

Components:

Difluoromethane:

Effects on fertility : Species: Mouse

Application Route: Inhalation

Result: negative

Remarks: Based on data from similar materials

Effects on foetal develop-

ment

Test Type: Combined repeated dose toxicity study with the

reproduction/developmental toxicity screening test

Species: Rat

Application Route: inhalation (gas) Method: OECD Test Guideline 414

Result: negative

Test Type: Combined repeated dose toxicity study with the

reproduction/developmental toxicity screening test

Species: Rabbit

Application Route: inhalation (gas) Method: OECD Test Guideline 414

Result: negative

Reproductive toxicity - As-

sessment

Weight of evidence does not support classification for repro-

ductive toxicity

STOT - single exposure

Not classified based on available information.

Components:

Difluoromethane:

Exposure routes : inhalation (gas)

Assessment : No significant health effects observed in animals at concentra-

tions of 20000 ppmV/4h or less

STOT - repeated exposure

Not classified based on available information.





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Components:

Difluoromethane:

Exposure routes : inhalation (gas)

Assessment : No significant health effects observed in animals at concentra-

tions of 250 ppmV/6h/d or less.

Repeated dose toxicity

Components:

Difluoromethane:

Species : Rat, male and female

NOAEL : 49100 ppm LOAEL : > 49100 ppm Application Route : inhalation (gas) Exposure time : 13 Weeks

Method : OECD Test Guideline 413

Aspiration toxicity

Not classified based on available information.

Components:

Difluoromethane:

No aspiration toxicity classification

SECTION 12: Ecological information

Ecotoxicity

Components:

Difluoromethane:

Toxicity to fish : LC50 (Fish): 1,507 mg/l

Exposure time: 96 h

Method: ECOSAR (Ecological Structure Activity Relation-

ships)

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia (water flea)): 652 mg/l

Exposure time: 48 h

Method: ECOSAR (Ecological Structure Activity Relation-

ships)

Toxicity to algae/aquatic

plants

EC50 (green algae): 142 mg/l

Exposure time: 96 h

Method: ECOSAR (Ecological Structure Activity Relation-

ships)





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Persistence and degradability

Components:

Difluoromethane:

Biodegradability : Result: Not readily biodegradable.

Method: OECD Test Guideline 301D

Bioaccumulative potential

Components:

Difluoromethane:

Partition coefficient: n-

octanol/water

: log Pow: 0.714

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13: Disposal information

Disposal methods

Waste from residues : Disposal of waste to be in accordance with the Environmental

Quality (Scheduled Wastes) Regulations and other guidelines

issuance by DOE and/or local authorities.

Contaminated packaging : Empty containers should be taken to an approved waste han-

dling site for recycling or disposal.

Empty pressure vessels should be returned to the supplier. Empty containers retain residue and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury and/or death. If not otherwise specified: Dispose of as unused product.

SECTION 14: Transport information

International Regulations

UNRTDG

UN number : UN 3252

Proper shipping name : REFRIGERANT GAS R 32

Class : 2.1

Packing group : Not assigned by regulation

Labels : 2.1

IATA-DGR

UN/ID No. : UN 3252

Proper shipping name : Refrigerant gas R 32

Class : 2.1





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Packing group Not assigned by regulation

Flammable Gas Labels

Packing instruction (cargo

aircraft)

Packing instruction (passen- : Not permitted for transport

ger aircraft)

IMDG-Code

UN number UN 3252

Proper shipping name **REFRIGERANT GAS R 32**

Class

Packing group Not assigned by regulation

Labels 2.1 **EmS Code** F-D, S-U Marine pollutant no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

Hazchem Code

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15: Regulatory information

Safety, health, and environmental regulations specific for the hazardous chemical

Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013.

Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulations 2000.

Montreal Protocol Difluoromethane

SECTION 16: Other information

Other information Freon™ and any associated logos are trademarks or copy-

rights of The Chemours Company FC, LLC.

Chemours™ and the Chemours Logo are trademarks of The

Chemours Company.

Before use read Chemours safety information.

For further information contact the local Chemours office or

nominated distributors.

Further information

Sources of key data used to compile the Safety Data

Sheet

Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agen-

cy, http://echa.europa.eu/





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Full text of other abbreviations

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR -Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified: Nch - Chilean Norm: NO(A)EC - No Observed (Adverse) Effect Concentration: NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate: NOM - Official Mexican Norm: NTP - National Toxicology Program: NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

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 is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.

MY / EN