



Version **Revision Date:** SDS Number: Date of last issue: 27.09.2019 09.05.2020 1329716-00037 Date of first issue: 27.02.2017 6.5

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

Product identifier

Product name : Freon™ 123 (R-123) refrigerant

Chemical name : 2,2-Dichloro-1,1,1-trifluoroethane

CAS-No. : 306-83-2

Product code

SDS-Identcode 130000024258

Recommended use of the chemical and restrictions on use

Recommended use Refrigerant

Restrictions on use For professional and industrial installation and use only.

Manufacturer or supplier's details

Company : The Chemours Malaysia Sdn. Bhd.

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

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

Telephone : +60 3 5624 4300

Emergency telephone number : 1800-82-0055

Telefax : +60 3 2178 4719

SECTION 2: Hazards identification

Classification of the hazardous chemical

Specific target organ toxicity - : Category 3

single exposure

Hazardous to the aquatic

environment - chronic hazard

Category 3

Hazardous to the ozone layer : Category 1

Label elements

Hazard pictograms







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Signal word : Warning

Hazard statements : H336 May cause drowsiness or dizziness.

H412 Harmful to aquatic life with long lasting effects.

H420 Harms public health and the environment by destroying

ozone in the upper atmosphere.

Precautionary statements : Prevention:

P271 Use only outdoors or in a well-ventilated area.

P273 Avoid release to the environment.

Response:

P304 + P340 + P312 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

Storage:

P405 Store locked up.

Disposal:

P502 Refer to manufacturer/ supplier for information on recov-

ery/ recycling.

Other hazards which do not result in classification

Dangerous for the ozone layer.

Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.

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

Rapid evaporation of the product may cause frostbite.

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

Substance / Mixture : Substance

Components

Chemical name	CAS-No.	Concentration (% w/w)
2,2-Dichloro-1,1,1-trifluoroethane	306-83-2	100

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.

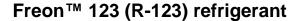
If inhaled : If inhaled, remove to fresh air.

Get medical attention if symptoms occur.

In case of skin contact : In case of contact, immediately flush skin with plenty of water.

Get medical attention if symptoms occur.

In case of eye contact : Flush eyes with water as a precaution.





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Get medical attention if irritation develops and persists.

If swallowed, DO NOT induce vomiting.

Get medical attention if symptoms occur. Rinse mouth thoroughly with water.

Most important symptoms and effects, both acute and

delayed

May cause cardiac arrhythmia.

Inhalation of high concentration may cause

Anaesthetic effects

Dizziness confusion

Light-headedness Drowsiness Unconsciousness Irregular cardiac activity

fainting Weakness

Skin contact may provoke the following symptoms:

Irritation Discomfort Pain

Swelling of tissue

Rash Itching

Eye contact may provoke the following symptoms

Discomfort Pain Redness

Impairment of vision

Adverse effects from repeated inhalation may include

Liver disorders

May cause drowsiness or dizziness.

Protection of first-aiders : First Aid responders should pay attention to self-protection,

and use the recommended personal protective equipment when the potential for exposure exists (see section 8).

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 : Not applicable

Will not burn

Unsuitable extinguishing

media

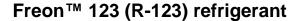
Not applicable Will not burn

Physicochemical hazards arising from the chemical

Specific hazards during fire-

fighting

: Exposure to combustion products may be a hazard to health.





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Hazardous combustion prod- : No hazardous combustion products are known

Special protective equipment and precautions for fire-fighters

Special protective equipment:

for firefighters

In the event of fire, wear self-contained breathing apparatus.

Use personal protective equipment.

Specific extinguishing meth-

ods

Use extinguishing measures that are appropriate to local cir-

cumstances and the surrounding environment. Use water spray to cool unopened containers.

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

SO.

Evacuate area.

SECTION 6: Accidental release measures

Personal precautions, protec: :

tive equipment and emer-

gency procedures

Use personal protective equipment.

Follow safe handling advice and personal protective equip-

ment recommendations.

Discharge into the environment must be avoided. **Environmental precautions**

Prevent further leakage or spillage if safe to do so.

Prevent spreading over a wide area (e.g. by containment or oil

Retain and dispose of contaminated wash water.

Local authorities should be advised if significant spillages

cannot be contained.

Methods and materials for

containment and cleaning up

Soak up with inert absorbent material.

For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped, store recovered material in appropriate container. Clean up remaining materials from spill with suitable absor-

bent.

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

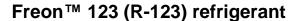
Precautions for safe handling

Technical measures See Engineering measures under EXPOSURE

CONTROLS/PERSONAL PROTECTION section.

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

ventilation.





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Advice on safe handling : Do not breathe vapours or spray mist.

Do not swallow.

Avoid contact with eyes.

Avoid prolonged or repeated contact with skin.

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

sessment

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

environment.

Valve protection caps and valve outlet threaded plugs must remain in place unless container is secured with valve outlet pined to use point

piped to use point.

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

ardous back flow into the cylinder.

Use a pressure reducing regulator when connecting cylinder

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

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

Use a suitable hand truck for cylinder movement.

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. Do not expose drums to direct heat or temperature above 46°C (115°F) to avoid pressurizing and possibly distorting the

drums.

Material should not be dispensed by pouring from pail/drum shipping containers containing 5 gallons or more. The use of a drum pump is recommended for dispensing from pail/drum shipping containers with 5 gallons or more, except for smaller containers where adequate ventilation can be used to manage

the exposure.

Keep in properly labelled containers.

Store locked up.

Keep in a cool, well-ventilated place.

Store in accordance with the particular national regulations.

Materials to avoid : No special restrictions on storage with other products.

Recommended storage tem-

perature

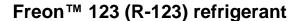
< 52 °C

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.

Individual protection measures, such as personal protective equipment

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

Safety glasses

Skin protection : Skin should be washed after contact.

Hand protection

Material : Low temperature 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.

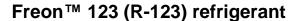
SECTION 9: Physical and chemical properties

Appearance : liquid

Colour : colourless

Odour : slight, ether-like

Odour Threshold : No data available





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pH : 7

Melting point/freezing point : No data available

Initial boiling point and boiling :

range

27.8 °C

Flash point : does not flash

Evaporation rate : < 1

(CCL4=1.0)

Flammability (solid, gas) : Not applicable

Flammability (liquids) : Will not burn

Upper explosion limit / Upper

flammability limit

Upper flammability limit Method: ASTM E681

None.

Lower explosion limit / Lower

flammability limit

Lower flammability limit

Method: ASTM E681

None.

Vapour pressure : 913.6 hPa (25 °C)

Relative vapour density : 5.5

Relative density : 1.47 (25 °C)

Density : 1.46 g/cm3 (25 °C)

(as liquid)

Solubility(ies)

Water solubility : 3.9 g/l (25 °C)

Partition coefficient: n-

octanol/water

No data available

Auto-ignition temperature : No data available

Decomposition temperature : No data available

Viscosity

Viscosity, kinematic : No data available

Explosive properties : Not explosive

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

Particle size : Not applicable





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SECTION 10: Stability and reactivity

Reactivity : Not classified as a reactivity hazard.

Chemical stability : Stable under normal conditions.

Possibility of hazardous reac-

tions

None known.

Conditions to avoid : None known.

Incompatible materials : None.

Hazardous decomposition

products

No hazardous decomposition products are known.

SECTION 11: Toxicological information

Information on likely routes of:

exposure

Inhalation Skin contact Ingestion

Eye contact

Acute toxicity

Not classified based on available information.

Components:

2,2-Dichloro-1,1,1-trifluoroethane:

Acute oral toxicity : LD50 (Rat): 9,000 mg/kg

Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat): 32000 ppm

Exposure time: 4 h
Test atmosphere: gas

Lowest observed adverse effect concentration (Dog): 20000

ppm

Symptoms: Cardiac sensitisation

No observed adverse effect concentration (Dog): 10000 ppm

Symptoms: Cardiac sensitisation

Cardiac sensitisation threshold limit (Dog): 124,000 mg/m3

Symptoms: Cardiac sensitisation

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg

Assessment: The substance or mixture has no acute dermal

toxicity

Skin corrosion/irritation

Not classified based on available information.





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Components:

2,2-Dichloro-1,1,1-trifluoroethane:

Species : Rabbit

Result : No skin irritation

Serious eye damage/eye irritation

Not classified based on available information.

Components:

2,2-Dichloro-1,1,1-trifluoroethane:

Species : Rabbit

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:

2,2-Dichloro-1,1,1-trifluoroethane:

Exposure routes : Skin contact Species : Guinea pig Result : negative

negative

Germ cell mutagenicity

Not classified based on available information.

Components:

2,2-Dichloro-1,1,1-trifluoroethane:

Germ cell mutagenicity - : Weight of evidence does not support classification as a germ

Assessment cell mutagen.

Carcinogenicity

Not classified based on available information.

Components:

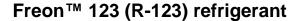
2,2-Dichloro-1,1,1-trifluoroethane:

Carcinogenicity - Assess- : Weight of evidence does not support classification as a car-

ment cinogen, Based on data from similar materials

Reproductive toxicity

Not classified based on available information.





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Components:

2,2-Dichloro-1,1,1-trifluoroethane:

Reproductive toxicity - As-

Weight of evidence does not support classification for repro-

sessment ductive toxicity

STOT - single exposure

May cause drowsiness or dizziness.

Components:

2,2-Dichloro-1,1,1-trifluoroethane:

Assessment : May cause drowsiness or dizziness.

STOT - repeated exposure

Not classified based on available information.

Components:

2,2-Dichloro-1,1,1-trifluoroethane:

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

tions of 1 mg/l/6h/d or less.

Repeated dose toxicity

Components:

2,2-Dichloro-1,1,1-trifluoroethane:

 Species
 : Rat

 NOAEL
 : 3.13 mg/l

 LOAEL
 : 6.3 mg/l

Application Route : inhalation (vapour)

Exposure time : 70 d

Remarks : No significant adverse effects were reported

Aspiration toxicity

Not classified based on available information.

SECTION 12: Ecological information

Ecotoxicity

Components:

2,2-Dichloro-1,1,1-trifluoroethane:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 55.5 mg/l

Exposure time: 96 h

Toxicity to daphnia and other:

er : EC5

EC50 (Daphnia magna (Water flea)): 17.3 mg/l

aquatic invertebrates

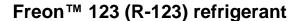
Exposure time: 48 h

Toxicity to algae/aquatic

plants

ErC50 (Pseudokirchneriella subcapitata (green algae)): 96.6

mg/l





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Exposure time: 96 h

EbC50 (Pseudokirchneriella subcapitata (green algae)): 67.8

mg/l

Exposure time: 96 h

Persistence and degradability

Components:

2,2-Dichloro-1,1,1-trifluoroethane:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 24 % Exposure time: 28 d

Bioaccumulative potential

Components:

2,2-Dichloro-1,1,1-trifluoroethane:

Bioaccumulation : Bioconcentration factor (BCF): 33

Mobility in soil

No data available

Other adverse effects

Components:

2,2-Dichloro-1,1,1-trifluoroethane:

Ozone-Depletion Potential : 0.02

Where a range of ODPs is indicated, the highest value in that range shall be used for the purposes of the Protocol. The ODPs listed as a single value have been determined from calculations based on laboratory measurements. Those listed as a range are based on estimates and are less certain. The range pertains to an isomeric group. The upper value is the estimate of the ODP of the isomer with the highest ODP, and the lower value is the estimate of the ODP of the isomer with

the lowest ODP.

Regulation: UNEP - Handbook for the Montreal Protocol on Substances that Deplete the Ozone Layer (Update: 2016-11-

23)

Group: Annex C - Group I: HCFCs (consumption and produc-

tion)

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.

Freon™ 123 (R-123) refrigerant



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

dling site for recycling or disposal.

If not otherwise specified: Dispose of as unused product.

SECTION 14: Transport information

International Regulations

UNRTDG

Not regulated as a dangerous good

IATA-DGR

Not regulated as a dangerous good

IMDG-Code

Not regulated as a dangerous good

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

Not applicable for product as supplied.

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 2,2-Dichloro-1,1,1-trifluoroethane

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

compile the Safety Data

Sheet

Sources of key data used to : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agen-

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

Date format : dd.mm.yyyy

Full text of other abbreviations





Freon™ 123 (R-123) refrigerant

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AICS - Australian Inventory of Chemical Substances; 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