

SAFETY DATA SHEET



Freon™ 123 (R-123) refrigerant

Version 7.0 Revision Date: 05/02/2018 SDS Number: 1329735-00035 Date of last issue: 01/30/2018
Date of first issue: 02/27/2017

SECTION 1. IDENTIFICATION

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

SDS-Identcode : 130000024258

Manufacturer or supplier's details

Company name of supplier : The Chemours Company FC, LLC

Address : 1007 Market Street
Wilmington, DE 19899 United States of America (USA)

Telephone : 1-844-773-CHEM (outside the U.S. 1-302-773-1000)

Emergency telephone : Medical emergency: 1-866-595-1473 (outside the U.S. 1-302-773-2000) ; Transport emergency: +1-800-424-9300 (outside the U.S. +1-703-527-3887)

Recommended use of the chemical and restrictions on use

Recommended use : Refrigerant


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

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200

Specific target organ systemic toxicity - single exposure : Category 3

GHS label elements

Hazard pictograms : 

Signal Word : Warning

Hazard Statements : H336 May cause drowsiness or dizziness.

Precautionary Statements : **Prevention:**
P261 Avoid breathing mist or vapors.
P271 Use only outdoors or in a well-ventilated area.

Response:
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.

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Storage:

P405 Store locked up.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

Dangerous for the ozone layer.

Vapors 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/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance
Substance name : 2,2-Dichloro-1,1,1-trifluoroethane
CAS-No. : 306-83-2

Hazardous ingredients

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 advice 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.
Get medical attention if irritation develops and persists.

If swallowed : 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

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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.

Notes to physician : Treat symptomatically and supportively.

SECTION 5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Not applicable
Will not burn
- Unsuitable extinguishing media : Not applicable
Will not burn
- Specific hazards during fire fighting : Exposure to combustion products may be a hazard to health.
- Hazardous combustion products : No hazardous combustion products are known
- Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances 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.
- Special protective equipment for fire-fighters : In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment.
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SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency measures : Use personal protective equipment.
Follow safe handling advice and personal protective
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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 labeled 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 temperature : < 126 °F / < 52 °C
- Storage period : > 10 y
- Further information on storage stability : The product has an indefinite shelf life when stored properly.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
2,2-Dichloro-1,1,1-trifluoroethane	306-83-2	TWA	50 ppm	US WEEL

Engineering measures : Minimize workplace exposure concentrations.
Use with local exhaust ventilation.

Personal protective equipment

Respiratory protection : General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

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- Hand protection
Material : Low temperature resistant gloves
- Remarks : Choose gloves to protect hands against chemicals depending on the concentration 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!
- Eye protection : Wear the following personal protective equipment:
Safety glasses
- Skin and body protection : Skin should be washed after contact.
- Hygiene measures : Ensure that eye flushing systems and safety showers are located close to the working place.
When using do not eat, drink or smoke.
Wash contaminated clothing before re-use.
-

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : liquid
- Color : colorless
- Odor : slight, ether-like
- Odor Threshold : No data available
- pH : 7
- Melting point/freezing point : No data available
- Initial boiling point and boiling range : 82.0 °F / 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 : Lower flammability limit

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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 sensitization

No observed adverse effect concentration (Dog): 10000 ppm
Symptoms: Cardiac sensitization

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

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.

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 sensitization

Skin sensitization

Not classified based on available information.

Respiratory sensitization

Not classified based on available information.

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Components:

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

Routes of exposure : Skin contact
Species : Guinea pig
Result : negative

Result : negative

Germ cell mutagenicity

Not classified based on available information.

Components:

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

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

Carcinogenicity

Not classified based on available information.

Components:

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

Carcinogenicity - Assessment : Weight of evidence does not support classification as a carcinogen, Based on data from similar materials

IARC No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Not classified based on available information.

Components:

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

Reproductive toxicity - Assessment : Weight of evidence does not support classification for reproductive toxicity

STOT-single exposure

May cause drowsiness or dizziness.

Components:

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

Assessment : May cause drowsiness or dizziness.

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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 concentrations 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 (vapor)
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 aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 17.3 mg/l
Exposure time: 48 h
Toxicity to algae : ErC50 (Pseudokirchneriella subcapitata (green algae)): 96.6 mg/l
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

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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: 2006-10-01)

Group: Annex C - Group I: HCFCs (consumption and production)

0.02

Includes all isomers of the substance, regardless of whether the isomer is explicitly listed on its own.

Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class II Substances (Update: 2007-07-01)

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Dispose of in accordance with local regulations.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.
If not otherwise specified: Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

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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.

Domestic regulation

49 CFR

Not regulated as a dangerous good

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Specific target organ toxicity (single or repeated exposure)

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

2,2-Dichloro-1,1,1-trifluoroethane	306-83-2	100 %
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US State Regulations

Pennsylvania Right To Know

2,2-Dichloro-1,1,1-trifluoroethane	306-83-2
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California Prop. 65

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

International Regulations

Montreal Protocol (Ozone Depleting Substances) : 2,2-Dichloro-1,1,1-trifluoroethane

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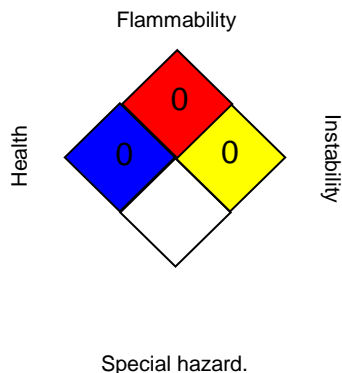
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SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



HMIS® IV:

HEALTH	/	0
FLAMMABILITY		0
PHYSICAL HAZARD		0

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

Freon™ and any associated logos are trademarks or copyrights 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.

All chemical substances in this material are included on or exempted from listing on the TSCA Inventory of Chemical Substances.

Full text of other abbreviations

US WEEL : USA. Workplace Environmental Exposure Levels (WEEL)
US WEEL / TWA : 8-hr TWA

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; 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; HMIS - Hazardous Materials Identification System; 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; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of

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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; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; 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

Sources of key data used to compile the Material Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>

Revision Date : 05/02/2018

Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

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.

US / Z8