



Freon™ MP52 refrigerant

Version 3.0

Revision Date 09/09/2016

Ref. 130000000372

This SDS adheres to the standards and regulatory requirements of the United States and may not meet the regulatory requirements in other countries.

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Freon™ MP52 refrigerant
 Product Use : Refrigerant, For professional users only.

Restrictions on use : Do not use product for anything outside of the above specified uses
 Manufacturer/Supplier : The Chemours Company FC, LLC
 1007 Market Street
 Wilmington, DE 19899
 United States of America

Product Information : 1-844-773-CHEM (outside the U.S. 1-302-773-1000)
 Medical Emergency : 1-866-595-1473 (outside the U.S. 1-302-773-2000)
 Transport Emergency : CHEMTREC: +1-800-424-9300 (outside the U.S. +1-703-527-3887)

SECTION 2. HAZARDS IDENTIFICATION

Product hazard category
 Gases under pressure Liquefied gas

Label content
 Pictogram :



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Signal word : Warning

Hazardous warnings : Contains gas under pressure; may explode if heated.

Hazardous prevention measures : Protect from sunlight. Store in a well-ventilated place.

Other hazards

Misuse or intentional inhalation abuse may lead to death without warning.

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

Rapid evaporation of the liquid may cause frostbite.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Concentration
2-Chloro-1,1,1,2-tetrafluoroethane (HCFC-124)	2837-89-0	52 %
Chlorodifluoromethane (HCFC-22)	75-45-6	33 %
1,1-Difluoroethane (HFC-152a)	75-37-6	15 %

SECTION 4. FIRST AID MEASURES

General advice : Never give anything by mouth to an unconscious person. When symptoms persist or in all cases of doubt seek medical advice.



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- Inhalation : Remove from exposure, lie down. Move to fresh air. Keep patient warm and at rest. Artificial respiration and/or oxygen may be necessary. Consult a physician.
- Skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Take off all contaminated clothing immediately. Consult a physician. Wash contaminated clothing before re-use. Treat for frostbite if necessary by gently warming affected area.
- Eye contact : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Consult a physician if necessary.
- Ingestion : Is not considered a potential route of exposure.
- Most important symptoms/effects, acute and delayed : Anaesthetic effects Light-headedness irregular heartbeat with a strange sensation in the chest, heart thumping, apprehension, feeling of fainting, dizziness or weakness
- Protection of first-aiders : If potential for exposure exists refer to Section 8 for specific personal protective equipment.
- Notes to physician : Because of possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, that may be used in situations of emergency life support should be used with special caution.

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : No applicable data available.

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- Specific hazards** : Cylinders are equipped with pressure and temperature relief devices, but may still rupture under fire conditions. Decomposition may occur. Contact of welding or soldering torch flame with high concentrations of refrigerant can result in visible changes in the size and colour of the torch flame. This flame effect will only occur in concentrations of product well above the recommended exposure limit. Therefore stop all work and ventilate to disperse refrigerant vapors from the work area before using any open flames. This product is not flammable at temperatures up to 100°C (212°F) at atmospheric pressure. Mixtures of this product with high concentrations of air at elevated pressure can become combustible at ambient temperature. As the temperature of the mixture is increased, lower pressure (but still greater than atmospheric pressure) can create the same effect. Product should not be mixed with air under pressure for leak testing or other purposes. Product should not be used or allowed to exist with high concentrations of air above atmospheric pressure.
- Special protective equipment for firefighters** : In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment. Wear neoprene gloves during cleaning up work after a fire.
- Further information** : Use water spray or fog to protect the fire fighters and to cool container. Self-contained breathing apparatus (SCBA) is required if containers rupture and contents are released under fire conditions.
Water runoff should be contained and neutralized prior to release.

SECTION 6. ACCIDENTAL RELEASE MEASURES

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

- Safeguards (Personnel)** : Evacuate personnel to safe areas. Ventilate the area. Refer to protective measures listed in sections 7 and 8.
- Environmental precautions** : Should not be released into the environment. In accordance with local and national regulations.

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- Spill Cleanup : Evaporates.
Ventilate area using forced ventilation, especially low or enclosed places where heavy vapors might collect.
- Accidental Release Measures : Ventilate area, especially low or enclosed places where heavy vapours might collect. Self-contained breathing apparatus (SCBA) is required if a large release occurs. Avoid open flames and high temperatures.

SECTION 7. HANDLING AND STORAGE

- Handling (Personnel) : Avoid breathing vapours or mist. Avoid contact with skin, eyes and clothing. Provide sufficient air exchange and/or exhaust in work rooms. For personal protection see section 8.
- Handling (Physical Aspects) : The product should not be mixed with air for leak testing or used with air for any other purpose above atmospheric pressure. Contact with chlorine or other strong oxidizing agents should also be avoided.
- Dust explosion class : Not applicable
- Storage : Valve protection caps and valve outlet threaded plugs must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure (<3000 psig) piping or systems. Never attempt to lift cylinder by its cap. Keep away from heat. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder. Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Separate full containers from empty containers. Keep at temperature not exceeding 52°C. Do not store near combustible materials. Avoid area where salt or other corrosive materials are present. The product has an indefinite shelf life when stored properly.
- Storage period : > 10 yr
- Storage temperature : < 52 °C (< 126 °F)



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SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls : Refrigerant Concentration monitors may be necessary to determine vapor concentrations in work areas prior to use of torches or other open flames, or if employees are entering enclosed areas. Use sufficient ventilation to keep employee exposure below recommended limits. Local exhaust should be used when large amounts are released. Mechanical ventilation should be used in low or enclosed places.

Personal protective equipment

Respiratory protection : Under normal manufacturing conditions, no respiratory protection is required when using this product.

Hand protection : Additional protection: Impervious gloves

Eye protection : Wear safety glasses with side shields. Additionally wear a face shield where the possibility exists for face contact due to splashing, spraying or airborne contact with this material.

Protective measures : Self-contained breathing apparatus (SCBA) is required if a large release occurs.

Exposure Guidelines

Exposure Limit Values

1-Chloro-1,2,2,2-tetrafluoroethane
No applicable data available.

Chlorodifluoromethane			
TLV	(ACGIH)	1,000 ppm	TWA

1,1-Difluoroethane
No applicable data available.

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SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical state : gaseous
Form : Liquefied gas
Color : colourless

Odor : slight, ether-like

Odor threshold : No applicable data available.

pH : No applicable data available.

Melting point/range : No applicable data available.

Boiling point/boiling range : Boiling point
-28.3 °C (-18.9 °F)

Flash point : does not flash

Evaporation rate : > 1
(CCL4=1.0)

Flammability (solid, gas) : No applicable data available.

Upper explosion limit : Not applicable

Lower explosion limit : Not applicable

Vapor pressure : 6,607 hPa at 25 °C (77 °F)

Vapor density : 3.6 at 25°C (77°F) and 1013 hPa (Air = 1.0)

Specific gravity (Relative density) : 1.21 at 25 °C (77 °F)

Water solubility : not determined

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Solubility(ies)	: No applicable data available.
Partition coefficient: n-octanol/water	: No applicable data available.
Auto-ignition temperature	: No applicable data available.
Decomposition temperature	: No applicable data available.
Viscosity, kinematic	: No applicable data available.
Viscosity, dynamic	: No applicable data available.
% Volatile	: 100 %

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: Stable at normal ambient temperature and pressure.
Chemical stability	: Stable at normal temperatures and storage conditions.
Possibility of hazardous reactions	: Polymerization will not occur.
Conditions to avoid	: Avoid open flames and high temperatures.
Incompatible materials	: Alkali metals Alkaline earth metals, Powdered metals, Powdered metal salts
Hazardous decomposition products	: Decomposition products are hazardous., This material can be decomposed by high temperatures (open flames, glowing metal surfaces, etc.) forming hydrochloric and hydrofluoric acids, and possibly carbonyl halides., These materials are toxic and irritating., Avoid contact with decomposition products

SECTION 11. TOXICOLOGICAL INFORMATION

2-Chloro-1,1,1,2-tetrafluoroethane (HCFC-124)

Inhalation 4 h LC50	: > 230000 ppm , Rat
	Anaesthetic effects
	Central nervous system effects

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Inhalation Low Observed Adverse Effect Concentration (LOAEC)	:	25000 ppm , Dog Cardiac sensitization
Inhalation No Observed Adverse Effect Concentration	:	10000 ppm , Dog Cardiac sensitization
Skin irritation	:	Not expected to cause skin irritation based on expert review of the properties of the substance.
Eye irritation	:	Not expected to cause eye irritation based on expert review of the properties of the substance.
Skin sensitization	:	Not expected to cause sensitization based on expert review of the properties of the substance. Does not cause respiratory sensitisation., There are no reports of human respiratory sensitization.
Repeated dose toxicity	:	Inhalation multiple species - No toxicologically significant effects were found.
Carcinogenicity	:	Not classifiable as a human carcinogen.
Mutagenicity	:	Tests on bacterial or mammalian cell cultures did not show mutagenic effects. Animal testing did not show any mutagenic effects.
Teratogenicity	:	Animal testing showed no developmental toxicity.
Further information	:	Cardiac sensitisation threshold limit : 140000 mg/m3
Chlorodifluoromethane (HCFC-22) Inhalation 4 h LC50	:	> 150000 ppm , Mouse
Inhalation Low Observed Adverse Effect Concentration (LOAEC)	:	50000 ppm , Dog Cardiac sensitization



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Inhalation No Observed Adverse Effect Concentration	:	25000 ppm , Dog Cardiac sensitization
Skin irritation	:	Not expected to cause skin irritation based on expert review of the properties of the substance.
Eye irritation	:	Not expected to cause eye irritation based on expert review of the properties of the substance.
Skin sensitization	:	Not expected to cause sensitization based on expert review of the properties of the substance.
Repeated dose toxicity	:	Inhalation Mouse - gas No toxicologically significant effects were found.
Carcinogenicity	:	Not classifiable as a human carcinogen. Overall weight of evidence indicates that the substance is not carcinogenic.
Mutagenicity	:	Animal testing did not show any mutagenic effects. Experiments showed mutagenic effects in cultured bacterial cells.
Reproductive toxicity	:	No toxicity to reproduction
Teratogenicity	:	Animal testing showed effects on embryo-fetal development at levels equal to or above those causing maternal toxicity.
Further information	:	Cardiac sensitisation threshold limit : 175000 mg/m3
1,1-Difluoroethane (HFC-152a)		
Inhalation 4 h LC50	:	> 437500 ppm , Rat
Inhalation No Observed Adverse Effect Concentration	:	50000 ppm , Dog Cardiac sensitization
Inhalation Low Observed Adverse Effect	:	150000 ppm , Dog Cardiac sensitization

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Concentration (LOAEC) Skin sensitization	:	Does not cause respiratory sensitisation., Rat
Repeated dose toxicity	:	Inhalation Rat - NOAEL: 67.485 mg/l No toxicologically significant effects were found.
Carcinogenicity	:	Not classifiable as a human carcinogen. Animal testing did not show any carcinogenic effects.
Mutagenicity	:	Animal testing did not show any mutagenic effects. Did not cause genetic damage in cultured bacterial cells. Tests on mammalian cell cultures showed mutagenic effects.
Reproductive toxicity	:	No toxicity to reproduction Animal testing showed no reproductive toxicity.
Teratogenicity	:	Animal testing showed no developmental toxicity.
Further information	:	Cardiac sensitisation threshold limit : 405000 mg/m3

Carcinogenicity

The carcinogenicity classifications for this product and/or its ingredients have been determined according to HazCom 2012, Appendix A.6. The classifications may differ from those listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or those found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest edition).

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, or OSHA, as a carcinogen.

SECTION 12. ECOLOGICAL INFORMATION

Aquatic Toxicity

Chlorodifluoromethane (HCFC-22)

96 h LC50

: Zebra fish 777 mg/l

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96 h EC50	:	Algae 250 mg/l
48 h EC50	:	Daphnia magna (Water flea) 433 mg/l
1,1-Difluoroethane (HFC-152a)	:	
96 h LC50	:	Fish 295.78 mg/l
96 h EC50	:	Algae 47.76 mg/l
48 h EC50	:	Daphnia (water flea) 146.7 mg/l

Environmental Fate

Chlorodifluoromethane (HCFC-22)

Biodegradability : According to the results of tests of biodegradability this product is not readily biodegradable.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste disposal methods - Product : Can be used after re-conditioning. Recover by distillation or remove to a permitted waste disposal facility. Comply with applicable Federal, State/Provincial and Local Regulations.

Contaminated packaging : Empty pressure vessels should be returned to the supplier.

SECTION 14. TRANSPORT INFORMATION

DOT	UN number	:	1078
	Proper shipping name	:	Refrigerant gases, n.o.s. (2-Chloro-1,1,1,2-Tetrafluoroethane, Chlorodifluoromethane)
	Class	:	2.2
	Labelling No.	:	2.2



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IATA_C	UN number	: 1078
	Proper shipping name	: Refrigerant gas, n.o.s. (2-Chloro-1,1,1,2-Tetrafluoroethane, Chlorodifluoromethane)
	Class	: 2.2
	Labelling No.	: 2.2
IMDG	UN number	: 1078
	Proper shipping name	: REFRIGERANT GAS, N.O.S. (2-Chloro-1,1,1,2-Tetrafluoroethane, Chlorodifluoromethane)
	Class	: 2.2
	Labelling No.	: 2.2

SECTION 15. REGULATORY INFORMATION

SARA 313 Regulated Chemical(s)	: 1-Chloro-1,2,2,2-tetrafluoroethane, Chlorodifluoromethane
PA Right to Know Regulated Chemical(s)	: Substances on the Pennsylvania Hazardous Substances List present at a concentration of 1% or more (0.01% for Special Hazardous Substances): Chlorodifluoromethane
NJ Right to Know Regulated Chemical(s)	: Substances on the New Jersey Workplace Hazardous Substance List present at a concentration of 1% or more (0.1% for substances identified as carcinogens, mutagens or teratogens): 1-Chloro-1,2,2,2-tetrafluoroethane, 1,1-Difluoroethane, Chlorodifluoromethane
California Prop. 65	: Chemicals known to the State of California to cause cancer, birth defects or any other harm: none known

SECTION 16. OTHER INFORMATION

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distributors.

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