

**DuPont™ Freon® 502 refrigerant**

Version 1.0

Revision Date 11/03/2011

Ref. 130000005106

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 : DuPont™ Freon® 502 refrigerant
Product Grade/Type : ASHRAE Refrigerant number designation: R-502
MSDS Number : 130000005106
Product Use : Refrigerant
Manufacturer : DuPont
1007 Market Street
Wilmington, DE 19898
Product Information : 1-800-441-7515 (outside the U.S. 1-302-774-1000)
Medical Emergency : 1-800-441-3637 (outside the U.S. 1-302-774-1139)
Transport Emergency : CHEMTREC: 1-800-424-9300 (outside the U.S. 1-703-527-3887)

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Rapid evaporation of the liquid may cause frostbite. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing. May cause cardiac arrhythmia.

Potential Health Effects

Skin

Chloropentafluoro ethane (CFC-115) : Contact with liquid or refrigerated gas can cause cold burns and frostbite.

Chlorodifluoromet hane (HCFC-22) : Contact with liquid or refrigerated gas can cause cold burns and frostbite.

Eyes

Chloropentafluoro ethane (CFC-115) : Contact with liquid or refrigerated gas can cause cold burns and frostbite.

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Chlorodifluoromethane (HCFC-22) : Contact with liquid or refrigerated gas can cause cold burns and frostbite.

Inhalation

Chloropentafluoroethane (CFC-115) : Effects of breathing high concentrations of vapour may include: Central nervous system depression, dizziness, confusion, incoordination, drowsiness, or unconsciousness, irregular heartbeat with a strange sensation in the chest, heart thumping, apprehension, feeling of fainting, dizziness or weakness, Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing..

Chlorodifluoromethane (HCFC-22) : Misuse or intentional inhalation abuse may cause death without warning symptoms, due to cardiac effects.
Other symptoms potentially related to misuse or inhalation abuse are: Anaesthetic effects, Light-headedness, dizziness, confusion, incoordination, drowsiness, or unconsciousness, irregular heartbeat with a strange sensation in the chest, heart thumping, apprehension, feeling of fainting, dizziness or weakness.
Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.

Carcinogenicity

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 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Concentration
Chloropentafluoroethane (CFC-115)	76-15-3	51.2 %
Chlorodifluoromethane (HCFC-22)	75-45-6	48.8 %

SECTION 4. FIRST AID MEASURES

Skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Treat for frostbite if necessary by gently warming affected area.

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Eye contact	: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.
Inhalation	: If inhaled, remove to fresh air. Keep person calm. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
Ingestion	: Is not considered a potential route of exposure.
General advice	: Never give anything by mouth to an unconscious person. When symptoms persist or in all cases of doubt seek medical advice.
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

Flammable Properties

Flash point	: does not flash
Autoignition temperature	: 704 °C (1,299 °F)
Lower explosion limit	: not applicable
Upper explosion limit	: not applicable
Fire and Explosion Hazard	: Cylinders are equipped with pressure and temperature relief devices, but may still rupture under fire conditions. Decomposition may occur.
Suitable extinguishing media	: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Firefighting Instructions	: Cool containers / tanks with water spray. Self-contained breathing apparatus (SCBA) is required if containers rupture and contents are released under fire conditions.

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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 area, especially low or enclosed places where heavy vapours might collect. Refer to protective measures listed in sections 7 and 8.
- Accidental Release Measures : Self-contained breathing apparatus (SCBA) is required if a large release occurs. Follow applicable Federal, State/Provincial and Local laws/regulations.

SECTION 7. HANDLING AND STORAGE

- Handling (Personnel) : Avoid breathing vapours or mist. Avoid contact with skin and eyes. Use sufficient ventilation to keep employee exposure below recommended limits. For personal protection see section 8.
- Storage : Store in a clean, dry place. Do not heat above 52° C (125° F).

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

- Engineering controls : 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.

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

Exposure Guidelines

Exposure Limit Values

Chloropentafluoroethane

PEL: (OSHA) 1,000 ppm 6,320 mg/m³ 8 hr. TWA

TLV (ACGIH) 1,000 ppm TWA

Chlorodifluoromethane

TLV (ACGIH) 1,000 ppm TWA

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Form : Liquefied gas
 Color : clear, colourless
 Odor : slight, ether-like
 pH : neutral
 Boiling point : -45.3 °C (-49.5 °F)
 % Volatile : 100 %
 Vapour Pressure : 11,488 hPa at 25 °C (77 °F)
 Specific gravity : 1.22 at 25 °C (77 °F)
 Vapour density : 3.9 at 25°C (77°F) and 1013 hPa (Air=1.0)
 Evaporation rate : > 1
 (CCL4=1.0)

SECTION 10. STABILITY AND REACTIVITY

Stability : Stable under recommended storage conditions.
 Conditions to avoid : Avoid open flames and high temperatures.
 Incompatibility : Alkali metals Alkaline earth metals, Powdered metals, Powdered metal salts


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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

Hazardous reactions : Polymerization will not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

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Skin irritation : Rapid evaporation of the liquid may cause frostbite.

Chloropentafluoroethane (CFC-115)

Oral ALD : > 1,200 mg/kg , dog

Inhalation 4 h LC50 : > 800000 ppm , rat
Altered respiratory rate
Lethargy

Inhalation : 200000 ppm , dog
Cardiac sensitization

Repeated dose toxicity : Inhalation
multiple species

No toxicologically significant effects were found.

Oral
rat

No toxicologically significant effects were found.

Mutagenicity : Did not cause genetic damage in cultured bacterial cells.
Did not cause genetic damage in cultured mammalian cells.

Further information : Cardiac sensitisation threshold limit : 1263803 mg/m3

Chlorodifluoromethane (HCFC-22)

Dermal : not applicable

Oral : not applicable

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Inhalation 4 h LC50	:	220000 ppm , rat
Inhalation	:	dog Cardiac sensitization
Eye irritation	:	No eye irritation, rabbit Not expected to cause eye irritation based on expert review of the properties of the substance.
Skin sensitization	:	Did not cause sensitization on laboratory animals., guinea pig Not expected to cause sensitization based on expert review of the properties of the substance.
Repeated dose toxicity	:	Inhalation mouse No toxicologically significant effects were found.
Carcinogenicity	:	An increased incidence of tumours was observed in some laboratory animals but not in others. Overall weight of evidence indicates that the substance is not carcinogenic.
Mutagenicity	:	Did not cause genetic damage in animals. Did not cause genetic damage in cultured mammalian cells. Experiments showed mutagenic effects in cultured bacterial cells.
Reproductive toxicity	:	Evidence suggests the substance is not a reproductive toxin in animals.
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

SECTION 12. ECOLOGICAL INFORMATION

Aquatic Toxicity
Chloropentafluoroethane (CFC-115)


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96 h LC50	:	Oncorhynchus mykiss (rainbow trout) > 2.3 mg/l
Chlorodifluoromethane (HCFC-22)		
96 h LC50	:	Zebra fish 777 mg/l
96 h EC50	:	Algae 250 mg/l
48 h EC50	:	Daphnia magna (Water flea) 433 mg/l
Environmental Fate		
DuPont™ Freon® 502 refrigerant		
Biodegradability	:	According to the results of tests of biodegradability this product is not readily biodegradable.
Additional ecological information	:	Dangerous for the ozone layer.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste Disposal	:	Comply with applicable Federal, State/Provincial and Local Regulations. Recover, reclaim by distillation, or remove to a permitted waste disposal facility.
Environmental Hazards	:	Empty pressure vessels should be returned to the supplier.

SECTION 14. TRANSPORT INFORMATION

DOT	UN number	:	1973
	Proper shipping name	:	Chlorodifluoromethane and chloropentafluoroethane mixture
	Class	:	2.2
	Labelling No.	:	2.2
IMDG	UN number	:	1973
	Proper shipping name	:	Chlorodifluoromethane and chloropentafluoroethane mixture
	Class	:	2.2
	Labelling No.	:	2.2

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SECTION 15. REGULATORY INFORMATION

SARA 313 Regulated Chemical(s)	:	Chlorodifluoromethane , Chloropentafluoroethane
California Prop. 65	:	Chemicals known to the State of California to cause cancer, birth defects or any other harm: none known
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 , Chloropentafluoroethane
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): Chlorodifluoromethane , Chloropentafluoroethane

SECTION 16. OTHER INFORMATION

HMIS

Health	:	1
Flammability	:	0
Reactivity/Physical hazard	:	1
PPE	:	Personal Protection rating to be supplied by user depending on use conditions.

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Before use read DuPont's safety information.

For further information contact the local DuPont office or DuPont's nominated distributors.

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Significant change from previous version is denoted with a double bar.



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