

**DuPont™ Freon® 12 refrigerant**

Version 2.2

Revision Date 09/29/2011

Ref. 130000012069

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® 12 refrigerant
Product Grade/Type : ASHRAE refrigerant number designation: R-12
Tradename/Synonym : CFC-12
MSDS Number : 130000012069
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

Potential Health Effects

Skin

Dichlorodifluoromethane (CFC-12) : Contact with liquid or refrigerated gas can cause cold burns and frostbite.
May cause skin irritation.
May cause: Discomfort, itching, redness, or swelling.

Eyes

Dichlorodifluoromethane (CFC-12) : Contact with liquid or refrigerated gas can cause cold burns and frostbite.
May cause eye irritation.
May cause: tearing, Redness, Discomfort.

Inhalation


DuPont™ Freon® 12 refrigerant

Version 2.2

Revision Date 09/29/2011

Ref. 130000012069

Dichlorodifluoromethane (CFC-12) : 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
Dichlorodifluoromethane (CFC-12)	75-71-8	100 %

SECTION 4. FIRST AID MEASURES

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

**DuPont™ Freon® 12 refrigerant**

Version 2.2

Revision Date 09/29/2011

Ref. 130000012069

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 : > 750 °C (1,382 °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 : 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.

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

**DuPont™ Freon® 12 refrigerant**

Version 2.2

Revision Date 09/29/2011

Ref. 130000012069

SECTION 7. HANDLING AND STORAGE

- Handling (Personnel) : Use sufficient ventilation to keep employee exposure below recommended limits.
- 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. 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.
- Storage temperature : < 52 °C (< 126 °F)

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

- Engineering controls : Normal ventilation for standard manufacturing procedures is generally adequate. 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


DuPont™ Freon® 12 refrigerant

Version 2.2

Revision Date 09/29/2011

Ref. 130000012069

Dichlorodifluoromethane				
PEL:	(OSHA)	1,000 ppm	4,950 mg/m3	8 hr. TWA
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	: -29.8 °C (-21.6 °F)
% Volatile	: 100 %
Vapour Pressure	: 6,506 hPa at 25 °C (77 °F)
Specific gravity	: 1.31 at 25 °C (77 °F)
Water solubility	: 0.028 g/l at 25 °C (77 °F)
Vapour density	: 4.3 at 25°C (77°F) and 1013 hPa (Air=1.0)

SECTION 10. STABILITY AND REACTIVITY

Stability	: Stable at normal temperatures and storage conditions.
Conditions to avoid	: Avoid open flames and high temperatures.
Incompatibility	: 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
Hazardous reactions	: Polymerization will not occur.

**DuPont™ Freon® 12 refrigerant**

Version 2.2

Revision Date 09/29/2011

Ref. 130000012069

SECTION 11. TOXICOLOGICAL INFORMATION

Dichlorodifluoromethane (CFC-12)

Dermal : no data available

Oral LD50 : > 1,000 mg/kg , rat

Inhalation 4 h LC50 : 1200000 ppm , rat
Central nervous system effectsInhalation No observed
adverse effect level : 25000 ppm , multiple species
Cardiac sensitization

Skin irritation : No skin irritation, guinea pig

Eye irritation : slight irritation, rabbit

Repeated dose toxicity : Inhalation
rat

No toxicologically significant effects were found.

Oral
multiple species

No toxicologically significant effects were found.

Carcinogenicity : Animal testing did not show any carcinogenic effects.

Mutagenicity : Animal testing did not show any mutagenic effects.
Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

Teratogenicity : Animal testing showed no developmental toxicity.

SECTION 12. ECOLOGICAL INFORMATION

Aquatic Toxicity



DuPont™ Freon® 12 refrigerant

Version 2.2

Revision Date 09/29/2011

Ref. 130000012069

Dichlorodifluoromethane (CFC-12)
 48 h LC50 : Oryzias latipes (Orange-red killifish) 67 mg/l
 48 h EC50 : Daphnia magna (Water flea) 95 mg/l

Environmental Fate

Dichlorodifluoromethane (CFC-12)
 Bioaccumulation : < 10
 Bioaccumulation is unlikely.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste Disposal : 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.
 Environmental Hazards : Empty pressure vessels should be returned to the supplier.

SECTION 14. TRANSPORT INFORMATION

DOT UN number : 1028
 Proper shipping name : Dichlorodifluoromethane
 Class : 2.2
 Labelling No. : 2.2
 Reportable Quantity : 5,000 lbs Dichlorodifluoromethane
 TDG_RAIL UN number : 1028
 Proper shipping name : Dichlorodifluoromethane
 Class : 2.2
 Labelling No. : 2.2
 IATA_C UN number : 1028
 Proper shipping name : Dichlorodifluoromethane
 Class : 2.2

**DuPont™ Freon® 12 refrigerant**

Version 2.2

Revision Date 09/29/2011

Ref. 130000012069

IMDG	Labelling No.	: 2.2
	UN number	: 1028
	Proper shipping name	: Dichlorodifluoromethane
	Class	: 2.2
	Labelling No.	: 2.2

SECTION 15. REGULATORY INFORMATION

SARA 313 Regulated Chemical(s)	: Dichlorodifluoromethane
CERCLA Reportable Quantity	: 5,000 lbs Based on the percentage composition of this chemical in the product.: Dichlorodifluoromethane
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): Dichlorodifluoromethane
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): Dichlorodifluoromethane

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



DuPont™ Freon® 12 refrigerant

Version 2.2

Revision Date 09/29/2011

Ref. 130000012069

conditions.

FREON is a registered trademark of E. I. du Pont de Nemours and Company

Before use read DuPont's safety information.

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

® DuPont's registered trademark

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 given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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