

**FREON® 22**

Version 2.1

Revision Date 2005/05/26

Ref. 130000024323

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

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product name : FREON® 22 (FREON® 22)
Product code :

Manufacturer or supplier's details

Supplier : Dupont Taiwan Limited
Street address : Taiwan, Taipei, 167 Tun Hwa North Road, Hung Kuo Building, 13th Floor

Telephone : (02) 2719 1999
Telefax : (02) 2712 9526
Emergency telephone/fax : 0800 055 119
number

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature : Substance

Synonyms : R-22

Components

Chemical Name	CAS-No.	Concentration
Chlorodifluoromethane (R22) (75-45-6	>99.5%
Chlorodifluoromethane (R22))		

3. HAZARDS IDENTIFICATION

Most important hazards

Adverse human effects : Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing. Rapid evaporation of the liquid may cause frostbite.

Environmental Effects : Dangerous for the ozone layer.

Physical and chemical hazards : No known effect.

Specific hazards : No known effect.

Main symptoms : No known effect.

Indication of Danger : 2.2

4. FIRST AID MEASURES

General advice

**FREON® 22**

Version 2.1

Revision Date 2005/05/26

Ref. 130000024323

If unconscious place in recovery position and seek medical advice. Never give anything by mouth to an unconscious person. If breathing is irregular or stopped, administer artificial respiration. If symptoms persist, call a physician.

First aid measures for different exposure routes

- | | |
|----------------------------|--|
| Eye contact | : Rinse thoroughly with plenty of water, also under the eyelids. Consult a physician. |
| Skin contact | : Wash off with warm water. Take off all contaminated clothing immediately. |
| Inhalation | : Move to fresh air. Keep patient warm and at rest. Artificial respiration and/or oxygen may be necessary. |
| Ingestion | : No information available. |
| Main symptoms and hazards | : No information available. |
| Protection of first-aiders | : No information available. |

Notes to physician

- | | |
|-----------|--|
| Treatment | : Do not give adrenaline or similar drugs. |
|-----------|--|

5. FIRE-FIGHTING MEASURES

- | | |
|--|---|
| Suitable extinguishing media | : No information available. |
| Specific hazards | : pressure build-up |
| Specific methods | : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Cool containers / tanks with water spray. |
| Special protective equipment for fire-fighters | : In the event of fire, wear self-contained breathing apparatus. |

6. ACCIDENTAL RELEASE MEASURES

- | | |
|---------------------------|--|
| Personal precautions | : 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. |
| Methods for cleaning up | : Evaporates. |

7. HANDLING AND STORAGE**Safe handling advice**

- | | |
|-------------------------|--|
| Advice on safe handling | : Provide sufficient air exchange and/or exhaust in work rooms. For personal protection see section 8. |
|-------------------------|--|

**FREON® 22**

Version 2.1

Revision Date 2005/05/26

Ref. 130000024323

Advice on protection against fire and explosion : No special protective measures against fire required.

Storage conditions

Requirements for storage areas and containers : Keep container tightly closed in a dry and well-ventilated place. Store in original container.

Further information on storage conditions : No information available.

Advice on common storage : No special protective measures against fire required.

Storage period : No information available.

Storage temperature : No information available.

Materials to avoid : No information available.

Other information : No information available.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures : Ensure adequate ventilation, especially in confined areas.

Control parameters

Chemical Name	Occupational Exposure Limits		Regulation
Chlorodifluoromethane (R22)	TWA	1,000 ppm, 3,540 mg/m ³	Standards on Workplace Atmosphere of Dangerous and Hazardous Materials (06 1995)

Biological standards : No information available.

Personal protective equipment

Respiratory protection : For rescue and maintenance work in storage tanks use self-contained breathing apparatus. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.

Hand protection : heat insulating gloves

Eye protection : safety glasses

Skin and body protection : No information available.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.

**FREON[®] 22**

Version 2.1

Revision Date 2005/05/26

Ref. 130000024323

9. PHYSICAL AND CHEMICAL PROPERTIES**Appearance**

Form : liquefied gas

Colour : colourless

Odour : ether-like

pH : neutral

Boiling point/range : -40.8 °C (1,013 hPa)

Decomposition temperature : no data available

Flash point : not applicable

Autoignition temperature : no data available

Explosion limits

Upper explosion limit : no data available

Lower explosion limit : not applicable

Vapour pressure : 7,228 hPa (12 °C)10,450 hPa (25 °C)19,423 hPa (50 °C)

Vapour density : 3.03 (25 °C)

Density : 1.210 g/cm³ (20 °C)(as liquid)1.194 g/cm³ (25 °C)(as liquid)0.0047 g/cm³ (-40.72 °C) (1,013 hPa) 0.0036 g/cm³ (ca. 21 °C) (1,013 hPa) 0.0035 g/cm³ (25 °C) (1,013 hPa)

Solubility : 2.93 g/l water: (25 °C)(1,013 hPa)4.22 g/l water: (12 °C)(1,013 hPa)

10. STABILITY AND REACTIVITY

Stability : No information available.

Hazardous reactions : Stable

Materials to avoid : No information available.

Conditions to avoid : The product is not flammable in air under ambient conditions of temperature and pressure. When pressurised with air or oxygen the mixture may become flammable. Certain mixtures of HCFCs or HFCs with chlorine may become flammable or reactive under certain conditions.

Hazardous decomposition products : hydrogen halides, carbon dioxide (CO₂), Carbon monoxide, fluorocarbons, carbonyl halides

**FREON[®] 22**

Version 2.1

Revision Date 2005/05/26

Ref. 130000024323

11. TOXICOLOGICAL INFORMATION

- Acute toxicity : No data is available on the product itself.
- Chlorodifluoromethane (R22) : Inhalation: LC50/4 h/rat : 778 mg/l
LC50/0.25 h/rat : 1,237 mg/l
LC50/0.5 h/mouse : 990 mg/l
- Local effects : no data available
- Sensitization : No data is available on the product itself.
- Chlorodifluoromethane (R22) : Did not cause sensitization on laboratory animals.
- Chronic toxicity : no data available
- Specific effects
- Carcinogenicity : no data available
- Mutagenicity : no data available
- Teratogenicity : no data available
- Toxicity to reproduction : no data available
- Other : Excessive exposures may affect human health, as follows:
Inhalation: severe shortness of breath, narcosis, Irregular cardiac activity

12. ECOLOGICAL INFORMATION

- Environmental properties/Mobility
- Ecotoxicity effects : no data available
- Chlorodifluoromethane (R22) : Toxicity to fish: static test LC50/96 h/Zebra fish: 777 mg/l
- Mobility : no data available
- Abiotic degradation : According to the results of tests of biodegradability this product is not readily biodegradable.
- Bioaccumulation : no data available

13. DISPOSAL CONSIDERATIONS

- Waste disposal methods : Can be used after re-conditioning.

**FREON® 22**

Version 2.1

Revision Date 2005/05/26

Ref. 130000024323

14. TRANSPORT INFORMATION

International transport regulations

IMDG

UN-No : 1018
Proper shipping name : Chlorodifluoromethane
Class : 2.2
Marine pollutant : no

IATA_C

UN-No : 1018
Proper shipping name : Chlorodifluoromethane
Class : 2.2

UN-No : 1018 (Chlorodifluoromethane)
Domestic transport regulations : Road traffic safety rule
Road transportation dangerous goods management regulation
Shipping of dangerous goods rule
Taiwan Railroad Bureau dangerous goods transportation regulation
Compressed gas safety rule

Matters needing attention to :
transportation

15. REGULATORY INFORMATION**National regulatory information:**

Toxic Materials. Hazard : Other designated chemical
Communication of Dangerous
Materials and Toxic Materials

Regulations in other countries

R-phrase(s) : R59 Dangerous for the ozone layer.
S-phrase(s) : S59 Refer to manufacturer/supplier for information on recovery/recycling.

16. OTHER INFORMATION

Sources of key data used to compile the datasheet : Hazardous and toxic substances
Toxic chemical substances
Road safety
Road transportation dangerous goods
Occupational health and safety
Standards on Workplace Atmosphere of Dangerous and Hazardous Materials (06 1995)
Storage
Air pollution

Revision date : 2005/05/26

Department : Dupont Taiwan Limited
Taiwan, Taipei, 167 Tun Hwa North Road, Hung Kuo Building, 13th Floor

Responsible/issuing person :



FREON[®] 22

Version 2.1

Revision Date 2005/05/26

Ref. 130000024323

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.