

**SAFETY DATA SHEET**

according to Regulation (EC) No. 1907/2006

**Honeywell****HCFC-22, Genetron® 22**

Version 4.0

Revision Date 20.07.2015

Supersedes 3

**1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING****1.1. Product identifier**

Product name : HCFC-22, Genetron® 22

SDS-number : 000000009890

Type of product : Substance

Remarks : SDS according to Art. 31 of Regulation (EC) 1907/2006.

Chemical Name : Chlorodifluoromethane

CAS-No. : 75-45-6

Registration number : no data available

**1.2. Relevant identified uses of the substance or mixture and uses advised against**

Use of the Substance/Mixture : Refrigerant

Uses advised against : none

**1.3. Details of the supplier of the safety data sheet**

Company	: Honeywell Fluorine Products Europe B.V. Laarderhoogtweg 18 1101 EA Amsterdam Netherlands	Honeywell International, Inc. 101 Columbia Road Morristown, NJ 07962-1057 USA
Telephone	: (31) 020 5656911	
Telefax	: (31) 020 5656600	
For further information, please contact:	: PMTEU Product Stewardship: SafetyDataSheet@Honeywell.com	

**1.4. Emergency telephone number**

Emergency telephone number : (32) 16 391 209 (Mon-Fri, 9.00-17.00h)  
3887 (ChemTrec)  
+1-303-389-1414 (Medical) +1-703-527-

**2. HAZARDS IDENTIFICATION****2.1. Classification of the substance or mixture****REGULATION (EC) No 1272/2008**

Gases under pressure Liquefied gas

H280 Contains gas under pressure; may explode if heated.

Hazardous to the ozone layer Category 1

H420 Harms public health and the environment by destroying ozone in the upper atmosphere

**2.2. Label elements****REGULATION (EC) No 1272/2008**

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Hazard pictograms	:		
Signal word	:	Warning	
Hazard statements	:	H280 H420	Contains gas under pressure; may explode if heated. Harms public health and the environment by destroying ozone in the upper atmosphere
Precautionary statements	:	P281 P260 P308 + P313 P410 + P403	Use personal protective equipment as required. Do not breathe dust/ fume/ gas/ mist/ vapours/ spray. IF exposed or concerned: Get medical advice/ attention. Protect from sunlight. Store in a well-ventilated place.

**2.3. Other hazards**

Warning! Container under pressure.

**3. COMPOSITION/INFORMATION ON INGREDIENTS****3.1. Substance**

Chemical Name	CAS-No. Index-No. Registration number EC-No.	Classification 1272/2008	Concentration	Remarks
Chlorodifluoromethane (Active ingredient)	75-45-6 200-871-9	Press. Gas Press. Gas; H280 Ozone 1; H420	100	1*

1\* - For specific concentration limits see Annexes of 1272/2008

N.C.\* - Non-hazardous substance - for information only

**3.2. Mixture**

Not applicable

Occupational Exposure Limit(s), if available, are listed in Section 8.  
For the full text of the H-Statements mentioned in this Section, see Section 16.**4. FIRST AID MEASURES****4.1 Description of first aid measures**

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*Inhalation:*

Remove to fresh air. Artificial respiration and/or oxygen may be necessary. Call a physician immediately.

*Skin contact:*

Rapid evaporation of the liquid may cause frostbite. In case of contact with liquid, thaw frosted parts with water, then remove clothing carefully. Wash with plenty of water. Consult a physician. Take off contaminated clothing and shoes immediately. Wash contaminated clothing before re-use.

*Eye contact:*

Remove contact lenses. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

*Ingestion:*

Ingestion is unlikely because of the physical properties and is not expected to be hazardous. As this product is a gas, refer to the inhalation section.

**4.2. Most important symptoms and effects, both acute and delayed**

no data available

**4.3. Indication of any immediate medical attention and special treatment needed**

Do not give adrenaline or similar drugs.

See Section 11 for more detailed information on health effects and symptoms. :

**5. FIREFIGHTING MEASURES****5.1. Extinguishing media***Suitable extinguishing media:*

The product is not flammable.

ASHRAE 34

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

*Extinguishing media which shall not be used for safety reasons:*

High volume water jet

**5.2. Special hazards arising from the substance or mixture**

Possibility of generating hazardous reactions during a fire due to the presence of F and Cl groups.

Heating will cause pressure rise with risk of bursting

Cool closed containers exposed to fire with water spray.

This product is not flammable at ambient temperatures and atmospheric pressure.

However, this material can ignite when mixed with air under pressure and exposed to strong ignition sources.

**5.3. Advice for firefighters**

Wear full protective clothing and self-contained breathing apparatus.

**6. ACCIDENTAL RELEASE MEASURES****6.1. Personal precautions, protective equipment and emergency procedures**

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Immediately contact emergency personnel. Wear personal protective equipment. Unprotected persons must be kept away. Ensure adequate ventilation. In case of insufficient ventilation wear suitable respiratory equipment.

**6.2. Environmental precautions**

Prevent further leakage or spillage if safe to do so. The product evaporates readily.

**6.3. Methods and materials for containment and cleaning up**

Ventilate the area.

**6.4. Reference to other sections**

For personal protection see section 8.

**7. HANDLING AND STORAGE****7.1. Precautions for safe handling***Advice on safe handling:*

Open drum carefully as content may be under pressure. The product should only be used in areas from which all naked lights and other sources of ignition have been excluded. Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50 °C. Do not pierce or burn, even after use. Do not spray on a naked flame or any incandescent material. Do not use in areas without adequate ventilation. Contaminated equipment (brushes, rags) must be cleaned immediately with water.

*Hygiene measures:*

Remove and wash contaminated clothing before re-use.

**7.2. Conditions for safe storage, including any incompatibilities***Further information on storage conditions:*

Store in original container. Keep away from direct sunlight. Keep containers tightly closed in a cool, well-ventilated place.

**7.3. Specific end use(s)***Specific use information:*

Restricted to professional users.  
For industrial use only.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****8.1. Control parameters***Occupational exposure limits:*

Components	Basis / Value type	Value / Form of exposure	Exceeding Factor	Remarks
Chlorodifluoromethane	EH40 WEL TWA	3.590 mg/m <sup>3</sup> 1.000 ppm		
Chlorodifluoromethane	EU ELV TWA	3.600 mg/m <sup>3</sup> 1.000 ppm		Indicative

TWA - Time weighted average

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**DNEL/ PNEC-Values**

No DNEL-data available.

Component	Environmental compartment / Value	Remarks
Chlorodifluoromethane	Fresh water: 0,378 mg/l	Assessment factor: 1000
Chlorodifluoromethane	Marine water: 0,0378 mg/l	Assessment factor: 10000
Chlorodifluoromethane	Fresh water sediment: 1,871 mg/kg dw	
Chlorodifluoromethane	Marine sediment: 0,187 mg/kg dw	
Chlorodifluoromethane	Soil: 0,134 mg/kg dw	

**8.2. Exposure controls****Occupational exposure controls**

The Personal Protective Equipment must be in accordance with EN standards:respirator EN 136, 140, 149; safety glasses EN 166; protective suit: EN 340, 463, 468, 943-1, 943-2; gloves EN 374, safety shoes EN-ISO 20345.

**Personal protective equipment***Respiratory protection:*

In case of insufficient ventilation wear suitable respiratory equipment.  
Self-contained breathing apparatus (EN 133)

*Hand protection:*

Protective gloves against cold  
(EN 511)

Gloves must be inspected prior to use.

Replace when worn.

Remarks:Supplementary note: The specifications are based on information and tests from similar substances by analogy.

Due to varying conditions ( e.g.temperature or other strains) it must be considered that the usage of a chemical protective glove in practice may be much shorter than the permeation time determined in accordance with EN 374.

Since actual conditions of practical use often deviate from standardised conditions according EN 374 the glove manufacturer recommends to use the chemical protective glove in practice not longer than 50% of the recommended permeation time.

Manufacturer's directions for use should be observed because of great diversity of types .

Suitable gloves tested according EN 374 are supplied e.g. from KCL GmbH, D-36124 Eichenzell, Vertrieb@kcl.de

*Eye protection:*

Safety glasses with side-shields conforming to EN166

Face-shield

*Skin and body protection:*

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Protective footwear

**Environmental exposure controls**

Handle in accordance with local environmental regulations and good industrial practices.

**9. PHYSICAL AND CHEMICAL PROPERTIES****9.1. Information on basic physical and chemical properties**

Form	:	Liquefied gas
Colour	:	colourless
Odour	:	slight
molecular weight	:	86,46 g/mol
Melting point/range	:	-160 °C
Boiling point/boiling range	:	-40,8 °C
Flash point	:	Not applicable
Flammability (solid, gas)	:	no data available
Ignition temperature	:	no data available
Lower explosion limit	:	None
Upper explosion limit	:	None
Vapour pressure	:	9.384 hPa at 21,1 °C
Vapour pressure	:	21.470 hPa at 54,4 °C
Density	:	1,21 g/cm <sup>3</sup> at 21,1 °C
pH	:	neutral
Water solubility	:	3,0 g/l
Partition coefficient: n-octanol/water	:	log Pow 1,08 - 1,13 The product is more soluble in octanol.
Relative vapour density	:	3 (Air = 1.0)

**9.2 Other Information**

no additional data available

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**10. STABILITY AND REACTIVITY****10.1. Reactivity**

Stable under normal conditions.  
Hazardous polymerisation does not occur.

**10.2. Chemical stability**

no data available

**10.3. Possibility of hazardous reactions**

no data available

**10.4. Conditions to avoid**

Heating will cause pressure rise with risk of bursting  
Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50 °C.  
Do not pierce or burn, even after use. Do not spray on a naked flame or any incandescent material.

**10.5. Incompatible materials**

oxidising substances  
Possible incompatibility with alkali sensitive materials.  
Powdered metals

**10.6. Hazardous decomposition products**

Halogenated compounds  
Carbonyl halides  
Carbon oxides  
Hydrogen halides

**11. TOXICOLOGICAL INFORMATION****11.1. Information on toxicological effects**

*Acute oral toxicity:*  
Not applicable

*Acute dermal toxicity:*  
no data available

*Acute inhalation toxicity:*  
LC50  
Species: Rat  
Value: > 300000 ppm  
Exposure time: 4 h

*Skin irritation:*  
no data available

*Eye irritation:*  
no data available

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*Respiratory or skin sensitisation:*

no data available

*Repeated dose toxicity:*

Species: Rat

Note: NOEL

: 10,000 ppm

Information derived from practical experience.:

Inhalation: May cause cardiac arrhythmia.

Ingestion: No hazards to be specially mentioned.

Skin contact: Rapid evaporation of the liquid may cause frostbite. Irritating to skin.

Eye contact: Irritating to eyes.

Cardiac sensitisation threshold (dog): 50000 ppm.

*Aspiration hazard:*

no data available

*Other information:*

Chlorodifluoromethane (HCFC-22): Cardiac sensitisation threshold (dog): 50000 ppm.

**12. ECOLOGICAL INFORMATION****12.1. Toxicity***Toxicity to fish:*

LC50

static test

Species: Danio rerio (zebra fish)

Value: 777 mg/l

Exposure time: 96 h

*Toxicity to aquatic plants:*

no data available

*Toxicity to aquatic invertebrates:*

EC50

static test

Species: Daphnia magna (Water flea)

Value: 433 mg/l

Exposure time: 48 h

**12.2. Persistence and degradability**

no data available

**12.3. Bioaccumulative potential**

no data available



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**12.4. Mobility in soil**

no data available

**12.5. Results of PBT and vPvB assessment**

no data available

**12.6. Other adverse effects**

Accumulation in aquatic organisms is unlikely.

**13. DISPOSAL CONSIDERATIONS****13.1. Waste treatment methods***Product:*

Offer surplus and non-recyclable solutions to a licensed disposal company. Refer to manufacturer/supplier for information on recovery/recycling.

*Remarks:*

The classification of the product may meet the criteria for a hazardous waste. Classification: 14.06.01

*Further information:*

Provisions relating to waste:

EC Directive 2006/12/EC; 2008/98/EEC

Regulation No. 1013/2006

For personal protection see section 8.

**14. TRANSPORT INFORMATION****ADR/RID**

UN Number	:	1018
Description of the goods	:	CHLORODIFLUOROMETHANE
Class	:	2
Classification Code	:	2A
Hazard Identification Number	:	20
ADR/RID-Labels	:	2.2
Environmentally hazardous	:	no

**IATA**

UN Number	:	1018
Description of the goods	:	Chlorodifluoromethane
Class	:	2.2
Hazard Labels	:	2.2

**IMDG**

UN Number	:	1018
Description of the goods	:	CHLORODIFLUOROMETHANE
Class	:	2.2
Hazard Labels	:	2.2
EmS Number	:	F-C, S-V
Marine pollutant	:	no

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**15. REGULATORY INFORMATION****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****Other inventory information**

US. Toxic Substances Control Act  
On TSCA Inventory

Australia. Industrial Chemical (Notification and Assessment) Act  
On the inventory, or in compliance with the inventory

Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL)  
All components of this product are on the Canadian DSL.

Japan. Kashin-Hou Law List  
On the inventory, or in compliance with the inventory

Korea. Toxic Chemical Control Law (TCCL) List  
On the inventory, or in compliance with the inventory

Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act  
On the inventory, or in compliance with the inventory

China. Inventory of Existing Chemical Substances  
On the inventory, or in compliance with the inventory

**15.2 Chemical safety assessment**

A Chemical Safety Assessment has not been carried out.

**16. OTHER INFORMATION****Further information**

All directives and regulations refer to amended versions.  
Vertical lines in the left hand margin indicate an amendment from the previous version.

## Abbreviations:

EC European Community

CAS Chemical Abstracts Service

DNEL Derived no effect level

PNEC Predicted no effect level

vPvB Very persistent and very bioaccumulative substance

PBT Persistent, bioaccumulative und toxic substance

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. Final determination of suitability of any material is the sole responsibility of the user.

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This information should not constitute a guarantee for any specific product properties.

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