

Printing date 02.09.2013

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**1 Identification of the substance/mixture and of the company/undertaking**

- **Product identifier**
- **Trade name:** HCFC-22
- **Article number:** 22
- **CAS Number:**  
75-45-6
- **Relevant identified uses of the substance or mixture and uses advised against**  
No further relevant information available.
- **Application of the substance / the preparation**  
refrigerant  
Chemicals for synthesis
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**  
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+49-211-179 225-0 / office hour, +1-256-306-5000, +81-6-6349-7521

**2 Hazard identification**

- **Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**



GHS04 gas cylinder

Press. Gas H280 Contains gas under pressure; may explode if heated.



GHS08 health hazard

Repr. 1B H360 May damage fertility or the unborn child.



GHS07

STOT SE 3 H336 May cause drowsiness or dizziness.

Ozone 1 H420 Harms public health and the environment by destroying ozone in the upper atmosphere

- **Labelling according to Regulation (EC) No 1272/2008**  
The substance is classified and labelled according to the CLP regulation.
- **Signal word** Danger
- **Precautionary statements**  
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.  
P281 Use personal protective equipment as required.  
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
P405 Store locked up.  
P410 Protect from sunlight.  
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

**3 Composition/information on ingredients**

- **Chemical characterization:** Substances
- **CAS No. Description**  
75-45-6 chlorodifluoromethane

**4 First aid measures**

- **Description of first aid measures**
- **General information:** Seek immediate medical advice.

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- **After inhalation:** At high levels, cardiac arrhythmia may occur.
- **After skin contact:**  
Immediately wash with water and soap and rinse thoroughly.  
In cases of frost bites, rinse with plenty of water. Do not remove clothing.
- **After eye contact:** Rinse opened eye for several minutes under running water.
- **After swallowing:** If symptoms persist consult doctor.
- **Information for doctor:**  
Catecholamines such as adrenaline, and other compounds having similar effects, should be reserved for emergencies and then used only with special caution.
- **Most important symptoms and effects, both acute and delayed**  
Frost bites  
Causes asphyxiation in high concentrations. May cause an abnormal heart rhythm and prove suddenly fatal.
- **Indication of any immediate medical attention and special treatment needed**  
No further relevant information available.

## 5 Firefighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**  
CO<sub>2</sub>, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **For safety reasons unsuitable extinguishing agents:** none
- **Special hazards arising from the substance or mixture**  
During heating or in case of fire poisonous gases are produced.  
In case of fire, the following can be released:  
Hydrogen fluoride (HF)
- **Advice for firefighters**
- **Protective equipment:**  
Inhalation respiratory device.  
Wear fully protective suit.

## 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**  
Keep people at a distance and stay on the windward side.  
Mount respiratory protective device.  
Ensure adequate ventilation
- **Environmental precautions:** Suppress gases/fumes/haze with water spray.
- **Methods and material for containment and cleaning up:** Ensure adequate ventilation.
- **Reference to other sections** See Section 8 for information on personal protection equipment.

## 7 Handling and storage

- **Handling:**
- **Precautions for safe handling** Waste air is to be released into the atmosphere only via suitable separators.
- **Information about fire - and explosion protection:**  
The product is not flammable.  
Keep respiratory protective device available.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** Store only in unopened original receptacles.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:**  
Keep container tightly sealed.  
Protect from heat and direct sunlight.
- **Maximum storage temperature:** 40 °C
- **Specific end use(s)** No further relevant information available.

## 8 Exposure controls/personal protection

- **Additional information about design of technical facilities:** No further data; see item 7.

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- **Control parameters**
- **Ingredients with limit values that require monitoring at the workplace:**

## 75-45-6 chlorodifluoromethane

OEL (Japan) 3500 mg/m<sup>3</sup>, 1000 ppmREL (USA) Short-term value: 4375 mg/m<sup>3</sup>, 1250 ppmLong-term value: 3500 mg/m<sup>3</sup>, 1000 ppmTLV (USA) 3540 mg/m<sup>3</sup>, 1000 ppm

- **Additional information:** The lists valid during the making were used as basis.

- **Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**  
Wash hands before breaks and at the end of work.  
Keep away from tobacco products.
- **Respiratory protection:**  
Wear respirator for organic gases, where leakage may occur.  
Use suitable respiratory protective device in case of insufficient ventilation.
- **Protection of hands:**



Protective gloves

To avoid skin problems reduce the wearing of gloves to the required minimum.

- **Material of gloves**  
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
- **Eye protection:** Safety glasses
- **Body protection:** Protective work clothing

## 9 Physical and chemical properties

- **Information on basic physical and chemical properties**
- **General Information**
- **Appearance:**

<b>Form:</b>	Liquefied gas
<b>Colour:</b>	Colourless
<b>Odour:</b>	Odourless
- **Change in condition**

<b>Melting point/Melting range:</b>	-160 °C
<b>Boiling point/Boiling range:</b>	-41 °C
- **Flash point:** Not applicable.
- **Danger of explosion:** Product does not present an explosion hazard.
- **Vapour pressure at 25 °C:** 1,04 MPa
- **Density at 25 °C:** 1,19 g/cm<sup>3</sup>
- **Vapour density** 3,0 g/cm<sup>3</sup> (air=1)
- **Solubility in / Miscibility with water at 25 °C:** 0,30 g/100g
- **Partition coefficient (n-octanol/water):** 1,13 log POW
- **Other information** No further relevant information available.

## 10 Stability and reactivity

- **Reactivity**
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.

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- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** alkali or alkaline earth metals--powdered Al, Zn, Mg, etc.
- **Hazardous decomposition products:** Fluorophosgene on contact with naked flame or red hot objects.

## 11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**
- **LD/LC50 values relevant for classification:**

### 75-45-6 chlorodifluoromethane

Inhalative LC50/4 h 220,000 ppm (rat)

- **Sensitization:** No sensitizing effects known.
- **Other information (about experimental toxicology):**  
Ames Assay – Positive  
Chromosomal Aberration Study in vitro- Negative  
Mouse micronucleus assay in vivo - Negative

### 75-45-6 chlorodifluoromethane

Inhalative Cardiac sensitive 25,000 ppm (dog)

Cardiac sensitization occurred in dogs at 50,000 ppm or greater from the action of exogenous epinephrine.

Development 20,000 ppm (rat)

A slight, but significant increase in developmental toxicity was observed.

50,000 ppm (rabbit)

- **Subacute to chronic toxicity:**

### 75-45-6 chlorodifluoromethane

Inhalative Subchronic study 10,000 ppm (rat) (13 weeks)

a organ weight increases and a decrease in body weight gain.

chronic study 50000 ppm (rat)

late-occurring tumors involving salivary glands in male rats,  
but not female rats or male or female mice.

- **Additional toxicological information:**  
When used and handled according to specifications, the product does not have any harmful effects to our experience and the information provided to us.  
The substance is not subject to classification according to the latest version of the EU lists.
- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**  
Repr. 1B

## 12 Ecological information

- **Toxicity**
- **Aquatic toxicity:**

### 75-45-6 chlorodifluoromethane

EC50/48 h 433 mg/l (daphnia)

LC50/96 h 777 mg/l (fish)

Zebra fish

- **Persistence and degradability** No further relevant information available.
- **Behaviour in environmental systems:**
- **Bioaccumulative potential**  
Due to the distribution coefficient n-octanol/water an accumulation in organisms is not expected.
- **Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:**  
Ozone depletion potential(ODP) : 0.055  
Global warming potential(GWP) : 1,700
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

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- **Other adverse effects** No further relevant information available.

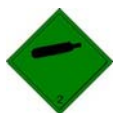
## 13 Disposal considerations

- **Waste treatment methods**
- **Recommendation**  
Must be specially treated adhering to official regulations.  
Incineration in an adequate incinerator is recommended.
- **Uncleaned packaging:**
- **Recommendation:** Disposal must be made according to official regulations.

## 14 Transport information

- **UN-Number**
- **ADR, IMDG, IATA** 1018
- **UN proper shipping name**
- **ADR** 1018 CHLORODIFLUOROMETHANE (REFRIGERANT GAS R22)
- **IMDG, IATA** CHLORODIFLUOROMETHANE (REFRIGERANT GAS R22)
- **Transport hazard class(es)**

- **ADR**



- **Class** 2 2A Gases.
- **Label** 2.2

- **IMDG**



- **Class** 2.2
- **Label** 2.2

- **IATA**



- **Class** 2 Gases.
- **Label** 2.2
- **Packing group**
- **ADR, IMDG, IATA** Not applicable
- **Environmental hazards:**
- **Marine pollutant:** No
- **Special precautions for user** Warning: Gases.
- **Danger code (Kemler):** 20
- **EMS Number:** F-C,S-V
- **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.
- **Transport/Additional information:**

- **ADR**
- **Limited quantities (LQ)** LQ1
- **Transport category** 3
- **Tunnel restriction code** C/E
- **UN "Model Regulation":** UN1018, CHLORODIFLUOROMETHANE (REFRIGERANT GAS R22), 2.2

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### 15 Regulatory information

### 16 Other information

*This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.*

· **Department issuing SDS:** EHS Department

· **Contact:** <http://www.daikin.com/>

· **Abbreviations and acronyms:**

*RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)*

*ICAO: International Civil Aviation Organization*

*ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)*

*IMDG: International Maritime Code for Dangerous Goods*

*IATA: International Air Transport Association*

*GHS: Globally Harmonized System of Classification and Labelling of Chemicals*

*CAS: Chemical Abstracts Service (division of the American Chemical Society)*

*LC50: Lethal concentration, 50 percent*

*LD50: Lethal dose, 50 percent*