

Safety Data Sheet according to Regulation (EC)

No. 1907/2006 (REACH)

Printed 07.12.2009
Revision 07.12.2009 (GB) Version 9.0

R 22

0022



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

Name of product R 22
Art-Nr.: 0022

Manufacturer/distributor GHC Gerling, Holz & Co. Handels GmbH
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Emergency advice GHC Gerling, Holz & Co. Handels GmbH
Phone +49 (0) 40 853 123-0

Recommended intended purpose(s)
Refrigerant.

2. HAZARDS IDENTIFICATION

Classification according to 67/548/EEC or 1999/45/EC
N; R59

R-phrases
59 Dangerous for the ozone layer.

Adverse human health effects and symptoms
Prolonged and repeated inhalation of decomposition products may cause a pulmonary oedema.

Information pertaining to special dangers for human and environment
In high concentrations may cause asphyxiation.
Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.
Contact with liquid may cause cold burns/frostbite.
Receptacle under pressure.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous ingredients

| CAS No | EC No | Name | [% wt] | Classification according to 67/548/EEC |
|---------|-----------|-----------------------|--------|--|
| 75-45-6 | 200-871-9 | Chlorodifluoromethane | >= 99 | R 59 |

4. FIRST AID MEASURES

General information
Remove contaminated soaked clothing immediately.
Adhere to personal protective measures when giving first aid.
Seek medical advice immediately.

In case of inhalation
Remove the casualty into fresh air and keep him immobile.
In case of breathing difficulties give oxygen.
Seek medical treatment immediately.

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In case of respiratory standstill give artificial respiration by respiratory bag (Ambu bag) or respirator. Send for a doctor.

In case of skin contact

In case of frostbite rinse with plenty of water. Don't remove clothing.

In case of frostbite spray with lukewarm (not hot) water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.

In case of eye contact

Eye rinsing with water carefully while protecting unhurt eye.

Call for a doctor immediately.

In case of ingestion

Ingestion is not considered a potential route of exposure.

Physician's information / possible dangers

In case of strong exposition risk of cardiac rhythm disturbances.

Treatment (Advice to doctor)

Do not give any preparations of the adrenalin-ephedrine group.

Long-term inhaling of separation products may cause pulmonary oedema.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Product does not burn, fire-extinguishing activities according to surrounding.

Extinguishing media which must not be used for safety reasons

Full water jet

Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases

In case of fire formation of dangerous gases possible.

Hydrogen chloride (HCl)

Hydrogen fluoride (HF)

Carbonyl fluoride.

Chlorine (Cl₂)

Phosgene

Special protective equipment for fire-fighters

Use breathing apparatus with independent air supply (isolated).

Wear full protective clothing.

Additional information

Cool endangered containers with water spray jet.

Exposure to fire may cause containers to rupture/explode.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

See chapter 8.

Remove persons to safety.

Environmental precautions

If possible, stop flow of product.

Do not discharge into the drains/surface waters/groundwater.

Prevent spread over a wide area (e.g. by containment or oil barriers).

Suppress gases/vapours/mists with water spray jet

Do not discharge into the subsoil/soil.

Methods for cleaning up

Ensure adequate air ventilation.

Allow to vaporise.

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Additional Information

Informations for safe handling see chapter 7.

Informations for personal protective equipment see chapter 8.

7. HANDLING AND STORAGE

Advice on safe handling

Use only in thoroughly ventilated areas.

Transfer and handle only in enclosed systems.

Provide good room ventilation even at ground level (vapours are heavier than air).

Prevent cylinders from falling over.

Ensure valve protection device is correctly fitted.

Ensure valve outlet cap nut or plug (where provided) is correctly fitted.

Open valve slowly to avoid pressure shock.

Do not allow backfeed into the container.

Advice on protection against fire and explosion

The product is not combustible.

Requirements for storage rooms and vessels

Keep in closed original container.

Ventilate store-rooms thoroughly.

Use transportable pressure equipment.

Suitable materials: Normalised steel and carbon steel, tempered steel, aluminium alloys, stainless steel.

Valve: Suitable materials: Brass, copper alloys, carbon steels, aluminium alloys, stainless steel.

Advice on storage compatibility

Do not store with combustible materials.

Do not store together with animal feedstuffs.

Do not store together with food.

Further information on storage conditions

Keep container tightly closed.

Store only in original container at temperature of 50°C maximum (=122°F).

Prevent cylinders from falling over.

Keep container in a well-ventilated place

Protect of heat.

Information on storage stability

At appropriate storage unlimited stability.

Recommendation(s) for intended use

Use in accordance with regulation (EC) No 1005/2009 on substances that deplete the ozone layer.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Additional advice on system design

no

Ingredients with occupational exposure limits to be monitored

| CAS No | Name | Code | [mg/m ³] | [ppm] | Spitzenb. | Remark |
|---------|-----------------------|--------------|----------------------|-------|-----------|---------------------------------|
| 75-45-6 | Chlorodifluoromethane | WEL, 8 hours | 3590 | 1000 | | EH40/2007/ United Kingdom |

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**Indicative occupational exposure limit values (91/322/EEC, 2000/39/EC or 2006/15/EC)**

| CAS No | Name | Code | [mg/m3] | [ppm] | Remark |
|---------|-----------------------|---------|---------|-------|--------|
| 75-45-6 | Chlorodifluoromethane | 8 hours | 3600 | 1000 | |

Additional advice

no

Respiratory protection

Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.

Keep self contained breathing apparatus readily available for emergency use.

In case of rescue and maintenance activities in storage containers use environment-independent breathing apparatus because of risk of suffocation by edging out of air oxygen

Hand protection

chemical-resistant gloves

Leather gloves

Eye protection

safety goggles, in case of increased risk add protective face shield

Skin protection

protective clothing

General protective measures

Do not inhale gases/vapours/aerosols.

Hygiene measures

At work do not eat, drink and smoke.

Limitation and surveillance of the environment

See chapter 7.

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | |
|-------------------------------------|---------------|--------------|
| Form | Colour | Odour |
| Gaseous / liquefied under pressure. | colourless | ethereal |

Important health, safety and environmental information

| | Value | Temperature | at | Method | Remark |
|-----------------------------------|----------------|-------------|----------|--------|--------|
| pH value in delivery state | not applicable | | | | |
| boiling point | -40,8 °C | | 1013 hPa | | |
| melting point | -157,4 °C | | | | |
| Flash point | no | | | | |
| Flammability (gas) | no | | | | |
| Ignition temperature | no | | | | |
| Lower explosion limit | no | | | | |
| Upper explosion limit | no | | | | |

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| | Value | Temperature | at | Method | Remark |
|---|-------------------------------|-------------|----|----------|--------------|
| Vapour pressure | 9070 hPa | 20 °C | | | |
| Density | 1,211 g/cm ³ | 20 °C | | | liquid phase |
| Rel. vapour density | 3,03 | | | | air = 1 |
| Solubility in water | ca. 2,93 g/l | 25 °C | | 1013 hPa | |
| Partition coefficient (log p_{OW}) | 1,08 | | | | |
| Viscosity dynamic | 0,19 mPa*s | 20 °C | | | liquid phase |
| Oxidizing properties | no | | | | |
| Explosive properties | no | | | | |
| Additional information | Vapours are heavier than air. | | | | |

10. STABILITY AND REACTIVITY

Conditions to avoid

Heat sources / heat - risk of bursting.

Materials to avoid

Reactions with earth alkali metals.

Reactions with zinc.

Reactions with aluminium.

Hazardous decomposition products

Carbon monoxide

Carbon dioxide

Hydrogen chloride (HCl)

Fluorophosgene on contact open flame or glowing objects

Hydrogen fluoride

Phosgene

Thermal decomposition

Remark No decomposition if used as directed.

Additional information

Stable under normal conditions.

11. TOXICOLOGICAL INFORMATION

Acute toxicity/Irritability/Sensitization

| | Value/Validation | Species | Method | Remark |
|-------------------------------|------------------|---------|--------|--------|
| LC 50 acute inhalation | 22 Vol-% (4 h) | rat | | |

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| | Value/Validation | Species | Method | Remark |
|---|------------------|----------------|--------|--------|
| Irritability skin | non-irritant | rabbit | | |
| Irritability eye | low irritant | rabbit eye | | |
| Skin sensitization | non-sensitizing | Guinea pig | | |
| Sensitization respiratory system | | not determined | | |

Subacute Toxicity - Carcinogenicity

| | Value | Species | Method | Validation |
|------------------------------|-------|---------|--------|---|
| Mutagenicity | | | | No experimental information on genotoxicity in vitro and in vivo available. |
| Reproduction-Toxicity | | | | No indications of toxic effects were observed in reproduction studies in animals. |
| Carcinogenicity | | | | No indications of carcinogenic effects are available from long-term trials. |

Experiences made from practice

Gases have a suffocating effect.

12. ECOLOGICAL INFORMATION**Data on elimination (persistence and degradability)**

| | Elimination rate | Method of analysis | Method | Validation |
|---------------------------------------|--|--------------------|--------|------------|
| Physico-chemical degradability | At normal temperature very highly volatile or gaseous product that can be released to atmosphere. Elimination test cannot be employed. | | | |

Ecotoxicological effects

| | Value | Species | Method | Validation |
|----------------|----------------------|-------------------|--------|------------|
| Fish | LC50 777 mg/l (96 h) | Brachidanio rerio | | |
| Daphnia | EC50 433 mg/l (48 h) | Daphnia magna | | |

General regulation

Avoid emission in atmosphere.

GWP: 1700

ODP: 0,055

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13. DISPOSAL CONSIDERATIONS

| Waste code No. | Name of waste |
|----------------|--------------------------------|
| 14 06 01* | chlorofluorocarbons, HCFC, HFC |

Wastes marked with an asterisk are considered to be hazardous waste pursuant to Directive 91/689/EEC on hazardous waste.

Recommendations for the product

Return to manufacturer.

Recommendations for packaging

Transportable pressure equipment (empty, residual pressure): Return to supplier / manufacturer.

14. TRANSPORT INFORMATION

Land and inland navigation transport ADR/RID

UN 1018 REFRIGERANT GAS R 22 (CHLORODIFLUOROMETHAN), 2.2, (C/E), Classification code: 2A

Marine transport IMDG

UN 1018 REFRIGERANT GAS R 22 (CHLORODIFLUOROMETHANE), 2.2

Air transport ICAO/IATA-DGR

UN 1018 Chlorodifluoromethane (Refrigerant Gas R 22), 2.2

15. REGULATORY INFORMATION

Hazardous ingredients for labeling

Chlorodifluoromethane

Labelling according to 67/548/EEC or 1999/45/EC

N Dangerous for the environment

R-phrases

59 Dangerous for the ozone layer.

S-phrases

59 Refer to manufacturer/supplier for information on recovery/recycling.

VOC standard

VOC content $\geq 99\%$ 20 °C 9070 hPa

16. OTHER INFORMATION

Recommend uses and restrictions

Use in accordance with regulation (EC) No 1005/2009 on substances that deplete the ozone layer. National and local regulations concerning chemicals shall be observed.

Further information

All declarations of safety-data-sheet refer to pure substance.

The information contained herein is based on the state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

Wording of the R-phrases specified in chapter 3 (not the classification of the formulation!)

R 59 Dangerous for the ozone layer.