

**Safety Data Sheet according to Regulation (EC)
No. 1907/2006 (REACH)**

Printed 30.11.2010
Revision 30.11.2010 (GB) Version 7.2
R 227
0027

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

Product identifier

Name of product R 227
Art-Nr.: 0027
Name of substance 1,1,1,2,3,3,3-Heptafluoropropane
EC No 207-079-2
CAS No 431-89-0

Manufacturer/distributor

GHC Gerling, Holz & Co. Handels GmbH
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Advice

Phone +49 (0) 40 853 123-0
Fax +49 (0) 40 853 123-66

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

no

R-phrases

no

Classification according to Regulation (EC) No 1272/2008 [CLP/GHS]

Hazard classes and Hazard categories Hazard Statements Classification procedure

Liquef. Gas **H280** **On basis of test data.**

Hazard statements for physical hazards

H280 Contains gas under pressure; may explode if heated.

Labelling according to Regulation (EC) No 1272/2008 [CLP/GHS]



GHS04

Signal word

Warning

Hazard statements for physical hazards

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Precautionary Statements

Storage

P403 Store in a well-ventilated place.

Supplemental Hazard information (EU)

Health properties

Asphyxiant in high concentrations.

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.

3. Composition/information on ingredients

CAS No 431-89-0
EC No 207-079-2

1,1,1,2,3,3,3-Heptafluoropropane

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.

Seek medical treatment immediately.

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 contact with skin wash off with warm water.

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

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Call for a doctor immediately.

In case of ingestion

Ingestion is not considered a potential route of exposure.

Treatment (Advice to doctor)

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

5. Firefighting measures

Suitable extinguishing media

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

Extinguishing media which must not be used for safety reasons

no

Special hazards arising from the substance or mixture

In case of fire formation of dangerous gases possible.

Carbon monoxide (CO)

Hydrogen fluoride (HF)

Carbonyl fluoride.

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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

Take up with absorbent material (e.g. sand, sawdust, general-purpose binder, kieselguhr).

Flush away residues with water.

After taking up the material dispose according to regulation.

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.

Suck back of water into the container must be prevented.

No water to valves, flanges and other fittings.

Purging of pipes and valves with inert gases - to avoid: water, solvents.

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.

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).

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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 842/2006 on certain fluorinated greenhouse gases.

8. Exposure controls/personal protection

Additional advice on system design

no

Additional advice

no

Respiratory protection

Environment-independent breathing apparatus.
Breathing apparatus in the event of high concentrations.
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 with side 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

Gaseous / liquefied under pressure.

Colour

colourless

Odour

ethereal

Important health, safety and environmental information

	Value	Temperature	at	Method	Remark
pH value in delivery state	not applicable				
boiling point	-16,4 °C		1013 hPa		

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	Value	Temperature	at	Method	Remark
melting point	-131 °C				
Flash point	no				
Ignition temperature	no				
Lower explosion limit	no				
Upper explosion limit	no				
Vapour pressure	3900 hPa	20 °C			
Density	1,408 g/cm ³	20 °C			information concerns to liquid phase
Rel. vapour density	4,2				
Solubility in water	0,3 - 0,6 g/l	20 °C			
Partition coefficient (log p_{OW})	ca. 2,5				
Viscosity dynamic	0,27 mPa*s	20 °C			
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 oxidising agents.

Reactions with alkali metals.

Reactions with earth alkali metals.

Reactions with metals in powder form.

Reactions with reducing agents.

Hazardous decomposition products

Carbon monoxide

Fluorophosgene on contact open flame or glowing objects

Hydrogen fluoride

Thermal decomposition

Remark No decomposition if used as directed.

Additional information

Stable under normal conditions.

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11. Toxicological information

Acute toxicity/Irritability/Sensitization

	Value/Validation	Species	Method	Remark
LC50 acute inhalation	> 788698 ppm (4 h)	rat	OECD 403	
Irritability skin		no		
Irritability eye		no		
Skin sensitization		not determined		
Sensitization respiratory system		not determined		

Subacute Toxicity - Carcinogenicity

	Value	Species	Method	Validation
Mutagenicity				No mutagenity, after different in-vitro studies.
Reproduction-Toxicity				not determined
Carcinogenicity				not determined

Toxicity test (Additional information)

No experimental indication of genotoxicity in vitro (Ames-test negative).

Experiences made from practice

Long-term inhaling of separation products may cause pulmonary oedema.
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.			
Biological degradability	20 % (28 d)		Closed-bottles-test	not readily degradable

Ecotoxicological effects

	Value	Species	Method	Validation
Fish	LC0 >= 30 mg/l (96 h)	Brachidanio rerio		
Bacteria	EC0 >= 173 mg/l			

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General regulation

GWP: 2900

Use in accordance with regulation (EC) No 842/2006 on certain fluorinated greenhouse gases.

Avoid emission in atmosphere.

13. Disposal considerations

Waste code No.

16 05 05

Name of waste

gases in pressure containers other than those mentioned in 16 05 04

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 3296 REFRIGERANT GAS R 227, 2.2, (C/E), Classification code: 2A

Marine transport IMDG

UN 3296 HEPTAFLUOROPROPANE, 2.2

Air transport ICAO/IATA-DGR

UN 3296 Heptafluoropropane, 2.2

15. Regulatory information

VOC standard

VOC content

<=100 % 20 °C 3900 hPa

16. Other information

Recommend uses and restrictions

Use in accordance with regulation (EC) No 842/2006 on certain fluorinated greenhouse gases.

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.

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