

HFC-134a, Genetron® 134a

Version 2.4

Revision Date 02.07.2012

Supersedes 1

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

Product information

Product name : HFC-134a, Genetron® 134a
Type of product : Substance
Chemical Name : Norflurane
EC-No. : 212-377-0
Registration number : 01-2119459374-33
Use of the Substance/Mixture : Refrigerant
Propellant
Uses advised against : none

Company/Undertaking Identification

Company : Honeywell Specialty Chemicals Seelze GmbH
Wunstorfer Straße 40
30926 Seelze
Germany
Telephone : (49) 5137-999 0
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For further information, please contact: : PMTEU Product Stewardship:
SafetyDataSheet@Honeywell.com
Honeywell International, Inc.
101 Columbia Road
Morristown, NJ 07962-1057
USA

2. HAZARDS IDENTIFICATION

Classification

REGULATION (EC) No 1272/2008


Gases under pressure Liquefied gas
H280 Contains gas under pressure; may explode if heated.

DIRECTIVES 67/548/EEC or 1999/45/EC

This substance is not classified as dangerous according to Directive 67/548/EEC.

Label elements

REGULATION (EC) No 1272/2008

Hazard pictograms : 

Signal word : Warning

Hazard statements : H280 Contains gas under pressure; may

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Precautionary statements : P410 + P403
explode if heated.
Protect from sunlight. Store in a well-ventilated place.

DIRECTIVES 67/548/EEC or 1999/45/EC

Not a hazardous substance or mixture according to EC-directives 67/548/EEC or 1999/45/EC.
The product does not need to be labelled in accordance with EC directives or respective national laws.

Additional label elements:

Special labelling of certain products : Contains fluorinated greenhouse gases covered by the Kyoto Protocol.

Potential health effects

Skin : Rapid evaporation of the liquid may cause frostbite.
Eyes : May irritate eyes.
Ingestion : Unlikely route of exposure.
Inhalation : High vapour concentrations can cause headaches, dizziness, drowsiness, and nausea, and may lead to unconsciousness. May cause cardiac arrhythmia.
Chronic Exposure : None known.
Further information : Warning! Container under pressure.

Potential environmental effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical characterization

Chemical Name : Norflurane
CAS-No. : 811-97-2
EC-No. : 212-377-0

Registration number : 01-2119459374-33

Occupational Exposure Limit(s), if available, are listed in Section 8.
For the full text of the R-phrases/ H-statements mentioned in this Section, see Section 16.

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4. FIRST AID MEASURES

- 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 : As this product is a gas, refer to the inhalation section. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Call a physician immediately.
- Further information : Do not give adrenaline or similar drugs.

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

5. FIREFIGHTING MEASURES

- Suitable extinguishing media : The product is not flammable. ASHRAE 34
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
- Specific hazards during firefighting : 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.
- Special protective equipment for firefighters : Wear full protective clothing and self-contained breathing apparatus.
- Further information : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

6. ACCIDENTAL RELEASE MEASURES

- Personal precautions : 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.
- Environmental precautions : Prevent further leakage or spillage if safe to do so. The product evaporates readily.

For personal protection see section 8.

7. HANDLING AND STORAGE

Handling

- Advice on safe handling : Open drum carefully as content may be under pressure. The

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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 : Provide adequate ventilation. When using do not eat or drink.

Storage

Further information on storage conditions : Store in original container. Keep away from direct sunlight. Keep containers tightly closed in a cool, well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limits:

Components	Basis	Value type	Control parameters	Exceeding Factor	Form of exposure	Remarks
Norflurane	EH40 WEL	TWA	4.240 mg/m3 1.000 ppm			

TWA - time weighted average

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.

Environmental exposure controls

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

Personal protective equipment

Respiratory protection : Remarks: In case of insufficient ventilation wear suitable respiratory equipment.

Hand protection : Glove material: Viton (R)
 Break through time: > 480 min
 Glove thickness: 0,7 mm
 Vitoject® 890
 Heat insulating gloves
 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

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according to Regulation (EC) No. 1907/2006

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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 : Protective footwear

DNEL/ PNEC-Values

No DNEL-data available.

No PNEC data available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form : Liquefied gas

Colour : colourless

Odour : weak

molecular weight : 102,02 g/mol

Melting point/range : -101 °C

Boiling point/boiling range : -26,2 °C

Flash point : not applicable

Flammability (solid, gas) : no data available

Ignition temperature : > 750 °C

Lower explosion limit : no data available

Upper explosion limit : no data available

Vapour pressure : 5.915 hPa
at 21,1 °C

Vapour pressure : 14.713 hPa
at 54,4 °C

Density : 1,2 g/cm³

pH : neutral

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Water solubility : 1,5 g/l

Partition coefficient: n-octanol/water : log Pow 1,06
The product is more soluble in octanol.

Relative vapour density : 3,5

Evaporation rate : > 1
Method: Compared to CCl4.

10. STABILITY AND REACTIVITY

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.

Materials to avoid : oxidising substances
Possible incompatibility with alkali sensitive materials.
Powdered metals

Hazardous decomposition products : Halogenated compounds
Hydrogen fluoride
Carbonyl halides
Carbon oxides

Stability : >250 °C

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity : not applicable

Acute dermal toxicity : no data available

Acute inhalation toxicity : LC50
Species: rat
Value: > 500000 ppm
Exposure time: 4 h

Skin irritation : no data available

Eye irritation : no data available

Sensitisation : no data available

12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Toxicity to fish : no data available

Toxicity to aquatic plants : no data available

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Acute toxicity to aquatic invertebrates : no data available

Further information

Additional ecological information : Accumulation in aquatic organisms is unlikely.

13. DISPOSAL CONSIDERATIONS

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

Waste key for the unused product : Classification: 14.06.01

Further information : Provisions relating to waste:
EC Directive 2006/12/EC; 91/689/EEC
Regulation No. 1013/2006

For personal protection see section 8.

14. TRANSPORT INFORMATION

ADR/RID

UN Number : 3159
Description of the goods : 1,1,1,2-TETRAFLUOROETHANE
Class : 2
Classification Code : 2A
Hazard identification No : 20
ADR/RID-Labels : 2.2
Environmentally hazardous : no

IATA

UN Number : 3159
Description of the goods : 1,1,1,2-Tetrafluoroethane
Class : 2.2
Hazard Labels : 2.2

IMDG

UN Number : 3159
Description of the goods : 1,1,1,2-TETRAFLUOROETHANE
Class : 2.2
Hazard Labels : 2.2
EmS Number : F-C, S-V
Marine pollutant : no

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

Ozone Depletion Potential: : 0

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Global warming potential (GWP) : 1.300

Other regulations : EU Regulation 842/2006/EC
Restricted to professional users.
For industrial use only.

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 list.
Japan. Kashin-Hou Law List : On the inventory, or in compliance with the inventory
Korea. Existing Chemicals Inventory (KECI) : 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
NZIOC - New Zealand : On the inventory, or in compliance with the inventory

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

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