# HFC-245fa, Genetron® 245fa

Version 4.6 Revision Date 31.03.2014 Supersedes 3

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

### 1.1. Product identifier

| | | |
|---|---|---|
| Product name | : | HFC-245fa, Genetron® 245fa |
| Type of product | : | Substance |
| Remarks | : | SDS according to Art. 31 of Regulation (EC) 1907/2006. |
| Chemical Name | : | 1,1,1,3,3-Pentafluoropropane |
| EC-No. | : | 419-170-6 |
| Registration number | : | 01-0000016587-60 |

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

| | | |
|---|---|---|
| Use of the Substance/Mixture | : | Refrigerant<br>Heat transfer fluid |
| Uses advised against | : | none |

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

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

### 1.4. Emergency telephone number

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

## 2. HAZARDS IDENTIFICATION

### 2.1. Classification of the substance or mixture

**REGULATION (EC) No 1272/2008**

Gases under pressure Press. 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.

### 2.2. Label elements

**REGULATION (EC) No 1272/2008**

| | | | |
|---|---|---|---|
| Hazard pictograms | : | | |
| Signal word | : | Warning | |
| Hazard statements | : | H280 | Contains gas under pressure; may explode if heated. |
| Precautionary statements | : | P281 | Use personal protective equipment as required. |
| | | P260 | Do not breathe dust/ fume/ gas/ mist/ vapours/ spray. |
| | | P308 + P313 | IF exposed or concerned: Get medical advice/ attention. |
| | | P410 + P403 | 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.

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

### 2.3. Other hazards

**Potential health effects**

| | | |
|---|---|---|
| Skin | : | Rapid evapouration of the liquid may cause frostbite. |
| Eyes | : | May cause eye irritation. |
| 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 | : | Contains gas under pressure; may explode if heated. |

**Potential environmental effects**

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

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

| | | |
|---|---|---|
| Type of product | : | Substance |

**Chemical characterization**

| | | |
|---|---|---|
| Chemical Name | : | 1,1,1,3,3-Pentafluoropropane |
| CAS-No. | : | 460-73-1 |
| EC-No. | : | 419-170-6 |
| Registration number | : | 01-0000016587-60 |

Occupational Exposure Limit(s), if available, are listed in Section 8.

## 4. FIRST AID MEASURES

### 4.1 Description of first aid measures

| | | |
|---|---|---|
| Inhalation | : | Remove to fresh air. Artificial respiration and/or oxygen may be necessary. Call a physician immediately. |
| Skin contact | : | After contact with skin, wash immediately with plenty of water. If skin irritation persists, call a physician. |
| Eye contact | : | Remove contact lenses. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists, consult a specialist. |
| 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. |

### 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.<br>ASHRAE 34<br>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.

| | | |
|---|---|---|
| Further information | : | Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. |

## 6. ACCIDENTAL RELEASE MEASURES

### 6.1. Personal precautions, protective equipment and emergency procedures

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 evapourates readily.

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

Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

### 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.

Advice on protection against fire and explosion : Normal measures for preventive fire protection. Can form a combustible mixture with air at pressures above atmospheric pressure. Keep product and empty container away from heat and sources of ignition.

Hygiene measures : Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes and clothing.

### 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 | Control parameters | Exceeding Factor | Form of exposure | Remarks |
|---|---|---|---|---|---|---|
| 1,1,1,3,3-Pentafluoropropane | WEEL | TWA | 1.644 mg/m3<br>300 ppm | | | We are not aware of any national exposure limit. |

TWA - time weighted average

**DNEL/ PNEC-Values**

No DNEL-data available.

No PNEC data available.

### 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.

**Environmental exposure controls**

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

**Personal protective equipment**

| | | |
|---|---|---|
| Respiratory protection | : | Remarks: In the case of vapour formation use a respirator with an approved filter. |
| Hand protection | : | Glove material: Viton (R)<br>Break through time: > 480 min<br>Glove thickness: 0,7 mm<br>Vitoject® 890<br>Gloves must be inspected prior to use.<br>Replace when worn.<br>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.<br>Since actual conditions of practical use often deviate from standardised conditions according EN 374 the glove manufacturer reccomends to use the chemical protective glove in practice not longer than 50% of the recomended permeation time.<br>Manufacturer´s directions for use should be observed because of great diversity of types .<br>Suitable gloves tested according EN 374 are supplied e.g. from KCL GmbH, D-36124 Eichenzell, Vertrieb@kcl.de |
| Eye protection | : | Safety goggles<br>Face-shield |
| Skin and body protection | : | Protective footwear |

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on basic physical and chemical properties

| | | |
|---|---|---|
| Form | : | Liquefied gas |
| Colour | : | colourless |
| Odour | : | weak |
| molecular weight | : | 134,03 g/mol |
| Melting point/range | : | -103 °C |
| Boiling point/boiling range | : | 15,3 °C |
| Flash point | : | not applicable |
| Flammability (solid, gas) | : | no data available |
| Ignition temperature | : | 412 °C |
| Lower explosion limit | : | None |
| Upper explosion limit | : | None |
| Vapour pressure | : | 1.227 hPa<br>at 20 °C |
| Vapour pressure | : | 3.882 hPa<br>at 54,4 °C |
| Density | : | 1,32 g/cm3<br>at 20 °C |
| pH | : | neutral |
| Water solubility | : | 7,18 g/l |
| Solubility in other solvents | : | Medium: Methanol<br>partly soluble |
| Solubility in other solvents | : | Medium: Diethylether<br>partly soluble |
| Partition coefficient: n-octanol/water | : | log Pow 1,35<br>The product is more soluble in octanol. |

| | | |
|---|---|---|
| Relative vapour density | : | 4,6<br>(Air = 1.0) |
| Evaporation rate | : | < 1<br>Method: Compared to Ether (anhydrous). |
| Evaporation rate | : | > 1<br>Method: Compared to CCl4. |

## 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
Hydrogen fluoride
Carbonyl halides
Carbon oxides

## 11. TOXICOLOGICAL INFORMATION

### 11.1. Information on toxicological effects

Acute oral toxicity : not applicable

| | | |
|---|---|---|
| Acute dermal toxicity | : | LD50<br>Species: rabbit<br>Value: > 2.000 mg/kg |
| Acute inhalation toxicity | : | LC50<br>Species: rat<br>Value: > 200000 ppm<br>Exposure time: 4 h |
| Acute inhalation toxicity | : | LC50<br>Species: mouse<br>Value: > 100000 ppm<br>Exposure time: 4 h |
| Skin irritation | : | No skin irritation |
| Eye irritation | : | no data available |
| Sensitisation | : | Classification: non-sensitizing |
| Repeated dose toxicity | : | Species: rat<br>Exposure time: 28 d<br>NOAEL : 500 ppm |
| Further information | : | Inhalation: May cause cardiac arrhythmia. |

## 12. ECOLOGICAL INFORMATION

### 12.1. Toxicity

| | | |
|---|---|---|
| Toxicity to fish | : | LC50<br>Species: Oncorhynchus mykiss (rainbow trout)<br>Value: > 81,8 mg/l<br>Exposure time: 96 h |
| Toxicity to fish | : | NOEC<br>Species: Oncorhynchus mykiss (rainbow trout)<br>Value: > 10 mg/l<br>Exposure time: 96 h |
| Toxicity to aquatic plants | : | EC50<br>Growth inhibition<br>Species: Algae<br>Value: > 118 mg/l<br>Method: OECD Test Guideline 201 |
| Toxicity to aquatic invertebrates | : | EC50<br>Species: Daphnia magna (Water flea) |

| | | |
|---|---|---|
| | | Value: > 97,9 mg/l<br>Exposure time: 48 h |
| Toxicity to aquatic invertebrates | : | NOEC<br>Species: Daphnia magna (Water flea)<br>Value: > 97,9 mg/l<br>Exposure time: 48 h |

### 12.2. Persistence and degradability

no data available

### 12.3. Bioaccumulative potential

no data available

### 12.4. Mobility in soil

no data available

### 12.5. Results of PBT and vPvB assessment

no data available

### 12.6. Other adverse effects

| | | |
|---|---|---|
| Additional ecological information | : | 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.<br>Refer to manufacturer/supplier for information on recovery/recycling. |
| Remarks | : | To present knowledge of the supplier, this product is not regarded as hazardous waste as defined by EU Directive 91/689/EC. |
| Waste key for the unused product | : | Classification: 14.06.01 |
| Further information | : | Provisions relating to waste:<br>EC Directive 2006/12/EC; 91/689/EEC<br>Regulation No. 1013/2006 |

For personal protection see section 8.

## 14. TRANSPORT INFORMATION

**ADR/RID**

| | | |
|---|---|---|
| UN Number | : | 3163 |
| Description of the goods | : | LIQUEFIED GAS, N.O.S. (1,1,1,3,3-PENTAFLUOROPROPANE) |
| Class | : | 2 |
| Classification Code | : | 2A |
| Hazard Identification Number | : | 20 |
| ADR/RID-Labels | : | 2.2 |
| Environmentally hazardous | : | no |

**IATA**

| | | |
|---|---|---|
| UN Number | : | 3163 |
| Description of the goods | : | Liquefied gas, n.o.s. (1,1,1,3,3-Pentafluoropropane) |
| Class | : | 2.2 |
| Hazard Labels | : | 2.2 |

**IMDG**

| | | |
|---|---|---|
| UN Number | : | 3163 |
| Description of the goods | : | LIQUEFIED GAS, N.O.S. (1,1,1,3,3-PENTAFLUOROPROPANE) |
| Class | : | 2.2 |
| Hazard Labels | : | 2.2 |
| EmS Number | : | F-C, S-V |
| Marine pollutant | : | no |

## 15. REGULATORY INFORMATION

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

| | | |
|---|---|---|
| Ozone Depletion Potential: | : | 0 |
| Global warming potential (GWP) | : | 950 |
| Other regulations | : | EU Regulation 842/2006/EC |

**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 | : | All components of this product are on the Canadian DSL. |

| | | |
|---|---|---|
| Environmental Protection Act (CEPA). Domestic Substances List (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 | : | Not in compliance with the inventory |
| China. Inventory of Existing Chemical Substances | : | On the inventory, or in compliance with the inventory |
| New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand | : | On the inventory, or in compliance with the inventory |

**15.2 Chemical safety assessment**

| | | |
|---|---|---|
| Chemical safety assessment | : | A Chemical Safety Assessment has been carried out for this substance. |

## 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.
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