

**HFC-245fa, Genetron® 245fa**

000000009878

Version 5.7

Revision Date 12.03.2019

Supersedes 4

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

**1.1. Product identifier**

Product name : HFC-245fa, Genetron® 245fa  
SDS-number : 000000009878  
Type of product : Substance  
Remarks : SDS according to Art. 31 of Regulation (EC) 1907/2006.  
Chemical name : 1,1,1,3,3-Pentafluoropropane  
CAS-No. : 460-73-1  
REACH 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  
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.  
Stationsplein Zuid-West 961  
1117 CE Schiphol-Oost  
Netherlands  
Telephone : +32 16 391 211  
Telefax :  
For further information, please contact: : PMTEU Product Stewardship:  
SafetyDataSheet@Honeywell.com  
Honeywell International, Inc.  
115 Tabor Road  
Morris Plains, NJ 07950-2546  
USA

**1.4. Emergency telephone number**

Emergency telephone number : +1-703-527-3887 (ChemTrec-Transport)  
+1-303-389-1414 (Medical)  
Country based Poison Control Center : see chapter 15.1

**SECTION 2: Hazards identification**

**HFC-245fa, Genetron® 245fa**

000000009878

Version 5.7

Revision Date 12.03.2019

Supersedes 4


**2.1. Classification of the substance or mixture**

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

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

**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 : P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.  
P280 Wear protective gloves/ eye protection/ face protection.  
P284 In case of inadequate ventilation wear respiratory protection.  
P308 + P313 IF exposed or concerned: Get medical advice/ attention.  
P410 + P403 Protect from sunlight. Store in a well-ventilated place.

**2.3. Other hazards**

High vapour concentrations can cause headaches, dizziness, drowsiness, and nausea, and may lead to unconsciousness. May cause cardiac arrhythmia.

**SECTION 3: Composition/information on ingredients**

**3.1. Substance**

Chemical name	CAS-No. Index-No. REACH Registration Number EC-No.	Classification 1272/2008	Concentration	Remarks
1,1,1,3,3-	460-73-1	Press. Gas ; H280	99,8 %	1*

**HFC-245fa, Genetron® 245fa**

000000009878

Version 5.7

Revision Date 12.03.2019

Supersedes 4

Pentafluoropropane	01-000016587-60 419-170-6			
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1\* - For specific concentration limits see Annexes of 1272/2008

**3.2. Mixture**

Not applicable

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

**SECTION 4: First aid measures**

**4.1 Description of first aid measures**

*General advice:*

First aider needs to protect himself. Move out of dangerous area. Take off all contaminated clothing immediately.

*Inhalation:*

Move 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. Take off contaminated clothing and shoes immediately. Wash clothing before reuse. Call a physician immediately.

*Eye contact:*

Remove contact lenses. Rinse immediately with plenty of water, also under the eyelids, for at least 5 minutes. Call a physician immediately.

*Ingestion:*

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**

Treat symptomatically.

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

**HFC-245fa, Genetron® 245fa**

000000009878

Version 5.7

Revision Date 12.03.2019

Supersedes 4

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**SECTION 5: Firefighting measures**

**5.1. Extinguishing media**

*Suitable extinguishing media:*

The product is not flammable.

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Water spray

Carbon dioxide (CO<sub>2</sub>)

Dry chemical

Foam

**5.2. Special hazards arising from the substance or mixture**

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.

Container may rupture on heating.

Cool closed containers exposed to fire with water spray.

Do not allow run-off from fire fighting to enter drains or water courses.

Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.

Exposure to decomposition products may be a hazard to health.

Fire may cause evolution of:

Hydrogen fluoride

Gaseous hydrogen chloride (HCl).

Carbon oxides

Halogenated compounds

Carbonyl halides

**5.3. Advice for firefighters**

Wear full protective clothing and self-contained breathing apparatus.

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

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**SECTION 6: Accidental release measures**

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

Evacuate personnel to safe areas. Wear personal protective equipment. Unprotected persons must be kept away. Ensure adequate ventilation. In case of insufficient ventilation wear suitable respiratory equipment. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**Honeywell**

## HFC-245fa, Genetron® 245fa

000000009878

Version 5.7

Revision Date 12.03.2019

Supersedes 4

### 6.2. Environmental precautions

Should not be released into the environment. Do not flush into surface water or sanitary sewer system. Prevent further leakage or spillage if safe to do so. Prevent spreading over a wide area (e.g. by containment or oil barriers).

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

Contain and collect spillage with non-combustible absorbent materials, e.g. sand, earth, vermiculite, diatomaceous earth and place in container for disposal according to local regulations (see section 13). Minimize contact of spilled material with soils to prevent runoff to surface waterways. Place spilled material in an appropriate container for disposal.

### 6.4. Reference to other sections

For personal protection see section 8.

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## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

*Advice on safe handling:*

Do not breathe vapours or spray mist. Do not use in areas without adequate ventilation.

*Advice on protection against fire and explosion:*

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:*

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Do not breathe vapours or spray mist. Ensure adequate ventilation, especially in confined areas. Remove and wash contaminated clothing before re-use. Contaminated work clothing should not be allowed out of the workplace. Keep working clothes separately. Wash hands before breaks and immediately after handling the product.

### 7.2. Conditions for safe storage, including any incompatibilities

*Requirements for storage areas and containers:*

Keep away from direct sunlight. Keep only in the original container in a cool, well ventilated place away from acids.

### 7.3. Specific end use(s)

*Specific use information:*

Restricted to professional users.

For industrial use only.

**HFC-245fa, Genetron® 245fa**

000000009878

Version 5.7

Revision Date 12.03.2019

Supersedes 4

**SECTION 8: Exposure controls/personal protection**

**8.1. Control parameters**

**Occupational exposure limits:**

Components	Basis / Value type	Value / Form of exposure	Exceeding Factor	Remarks
1,1,1,3,3-Pentafluoropropane	WEEL TWA	1.644 mg/m <sup>3</sup> 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**

Do not breathe vapours or spray mist.

**Engineering measures**

Use with local exhaust ventilation.

Perform filling operations only at stations with exhaust ventilation facilities.

**Personal protective equipment**

*Respiratory protection:*

In case of insufficient ventilation wear suitable respiratory equipment.

Self-contained breathing apparatus (EN 133)

*Hand protection:*

Glove material: Viton (R)

Vitoject® 890

Gloves must be inspected prior to use.

Replace when worn.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**Honeywell**

## HFC-245fa, Genetron® 245fa

000000009878

Version 5.7

Revision Date 12.03.2019

Supersedes 4

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 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 goggles

*Skin and body protection:*

Protective footwear

### Environmental exposure controls

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

## SECTION 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

**HFC-245fa, Genetron® 245fa**

000000009878

Version 5.7

Revision Date 12.03.2019

Supersedes 4

Vapour pressure	:	1.227 hPa at 20 °C
Vapour pressure	:	3.882 hPa at 54,4 °C
Density	:	1,32 g/cm <sup>3</sup> at 20 °C
pH	:	neutral
Water solubility	:	7,18 g/l
Solubility in other solvents	:	Medium: Methanol partly soluble
Solubility in other solvents	:	Medium: Diethylether partly soluble
Partition coefficient: n- octanol/water	:	log Pow 1,35 at: 21,5 °C The product is more soluble in octanol.
Relative vapour density	:	4,6 (Air = 1.0)
Evaporation rate	:	< 1 Method: Compared to Ether (anhydrous).
Evaporation rate	:	> 1 Method: Compared to CCl <sub>4</sub> .

**9.2 Other Information**

no additional data available

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**SECTION 10: Stability and reactivity**

**10.1. Reactivity**

Stable under recommended storage conditions.

**10.2. Chemical stability**

no data available



# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**Honeywell**

## HFC-245fa, Genetron® 245fa

000000009878

Version 5.7

Revision Date 12.03.2019

Supersedes 4

### 10.3. Possibility of hazardous reactions

no data available

### 10.4. Conditions to avoid

Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 55 °C.  
Can form a combustible mixture with air at pressures above atmospheric pressure.

### 10.5. Incompatible materials

Strong oxidizing agents  
Magnesium  
Finely divided aluminium

### 10.6. Hazardous decomposition products

Halogenated compounds  
Carbon oxides  
Hydrogen fluoride  
Carbonyl halides  
Gaseous hydrogen chloride (HCl).

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

*Acute oral toxicity:*  
Not applicable

*Acute dermal toxicity:*  
LD50  
Species: Rabbit  
Value: > 2.000 mg/kg

*Acute inhalation toxicity:*  
LC50  
Species: Rat  
Value: > 200000 ppm  
Exposure time: 4 h

LC50  
Species: Mouse  
Value: > 100000 ppm  
Exposure time: 4 h

*Skin irritation:*  
No skin irritation

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**Honeywell**

## HFC-245fa, Genetron® 245fa

000000009878

Version 5.7

Revision Date 12.03.2019

Supersedes 4

### *Eye irritation:*

no data available

### *Respiratory or skin sensitisation:*

Classification: non-sensitizing

### *Repeated dose toxicity:*

Species: Rat

Exposure time: 28 d

NOAEL: 500 ppm

### *Germ cell mutagenicity:*

Cell type: Human lymphocytes

Result: Weak positive activation without S9 at 30% v/v; not active with S9 up to 70% v/v.

Test Method: Ames test

Metabolic activation: with and without metabolic activation

Result: negative

Species: Mouse

Cell type: Bone marrow

Application Route: Inhalation

Method: Mutagenicity (micronucleus test)

Result: negative

### *Aspiration hazard:*

no data available

### *Other information:*

Inhalation: May cause cardiac arrhythmia.

## SECTION 12: Ecological information

### 12.1. Toxicity

#### *Toxicity to fish:*

LC50

Species: *Oncorhynchus mykiss* (rainbow trout)

Value: > 81,8 mg/l

Exposure time: 96 h

NOEC

Species: *Oncorhynchus mykiss* (rainbow trout)

Value: > 10 mg/l

Exposure time: 96 h

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**Honeywell**

## HFC-245fa, Genetron® 245fa

000000009878

Version 5.7

Revision Date 12.03.2019

Supersedes 4

### *Toxicity to aquatic plants:*

EC50

Growth inhibition

Species: Algae

Value: > 118 mg/l

Method: OECD Test Guideline 201

### *Toxicity to aquatic invertebrates:*

EC50

Species: Daphnia magna (Water flea)

Value: > 97,9 mg/l

Exposure time: 48 h

NOEC

Species: Daphnia magna (Water flea)

Value: > 97,9 mg/l

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**

Accumulation in aquatic organisms is unlikely.

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## **SECTION 13: Disposal considerations**

### **13.1. Waste treatment methods**

#### *Product:*

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

#### *Remarks:*

The classification of the product may meet the criteria for a hazardous waste. Classification: 14.06.01

**HFC-245fa, Genetron® 245fa**

000000009878

Version 5.7

Revision Date 12.03.2019

Supersedes 4

*Further information:*

Provisions relating to waste:  
EC Directive 2006/12/EC; 2008/98/EEC  
Regulation No. 1013/2006

For personal protection see section 8.

**SECTION 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 : 20  
Number  
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

**SECTION 15: Regulatory information**

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

**Poison Control Center**

Country	Phone Number
Austria	+4314064343
Belgium	070 245245

Country	Phone Number
Liechtenstein	no data available
Lithuania	+370532362052

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

# Honeywell

## HFC-245fa, Genetron® 245fa

000000009878

Version 5.7

Revision Date 12.03.2019

Supersedes 4

Bulgaria	(+359)29154233
Croatia	(+3851)23-48-342
Cyprus	no data available
Czech Republic	+420224919293; +420224915402
Denmark	82121212
Estonia	16662; (+372)6269390
Finland	9471977
France	+33(0)145425959
Greece	no data available
Hungary	(+36-80)201-199
Iceland	5432222
Ireland	+353(1)8092166
Italy	+39 0649906140
Germany	Berlin : 030/19240
	Bonn : 0228/19240
	Erfurt : 0361/730730
	Freiburg : 0761/19240
	Göttingen : 0551/19240
	Homburg : 06841/19240
	Mainz : 06131/19240
Munich : 089/19240	
Latvia	+37167042473

Luxembourg	070245245; (+352)80002-5500
Malta	no data available
Netherlands	030-2748888
Norway	22591300
Poland	no data available
Portugal	808250143
Romania	no data available
Slovakia (NTIC)	+421 2 54 774 166
Slovenia	no data available
Spain	+34915620420
Sweden	112 (begär Giftinformation);+46104566786
Switzerland	145
United Kingdom	no data available

### 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

Japan. Kashin-Hou Law List  
On the inventory, or in compliance with the inventory

**HFC-245fa, Genetron® 245fa**

000000009878

Version 5.7

Revision Date 12.03.2019

Supersedes 4

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  
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**

A chemical safety assessment has been carried out. In accordance to the article 14(4) of the REACH regulation (EC) No. 1907/2006, exposure estimation and risk characterization is not required.

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**SECTION 16: Other information**

**Text of H-statements referred to under heading 3**

1,1,1,3,3-Pentafluoropropane : H280 Contains gas under pressure; may explode if heated.

**Further information**

All directives and regulations refer to amended versions.  
Vertical lines in the left hand margin indicate a relevant amendment from the previous version.

Abbreviations:

EC European Community  
CAS Chemical Abstracts Service  
DNEL Derived no effect level  
PNEC Predicted no effect level  
vPvB Very persistent and very bioaccumulative substance  
PBT Persistent, bioaccumulative und toxic substance

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.

**HFC-245fa, Genetron® 245fa**

000000009878

Version 5.7

Revision Date 12.03.2019

Supersedes 4

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