

PERMESSO DI RICERCA DI RISORSE GEOTERMICHE FINALIZZATO ALLA SPERIMENTAZIONE DI UN IMPIANTO PILOTA DENOMINATO "CORTOLLA"

COMUNI DI MONTECATINI VAL DI CECINA – PROVINCIA DI PISA

PROPONENTE:

R.T.I.

Raggruppamento Temporaneo di Impresa



PROGETTO DEFINITIVO

NUMERO ELABORATO:

CRT-RP01-A10-V00

TITOLO:

SCHEMA DEL FLUIDO DI LAVORO

DATA:

Febbraio 2017

PROGETTISTI:

RENEWEM S.r.l

Via Norvegia n° 68 - 56021 Cascina (PI) - ITALIA

UFFICI:

Renewem srl

Via Norvegia n° 68 - 56021 Cascina (PI) - ITALIA
tel. 0039 050 6205317 fax. 0039 050 0987814

Cosvig

Via T. Gazzei n° 89 - Radicondoli (SI) - ITALIA
tel. e fax. 0039 0577 752950

REVISIONE

DATA		NOTE
REV.1		
REV.2		
REV.3		



PERMESSO DI RICERCA DI RISORSE GEOTERMICHE FINALIZZATO ALLA SPERIMENTAZIONE DI UN IMPIANTO PILOTA DENOMINATO “CORTOLLA”

COMUNI DI MONTECATINI VAL DI CECINA – PROVINCIA DI PISA

PROCEDURA DI VALUTAZIONE DI IMPATTO AMBIENTALE

SCHEDA DEL FLUIDO DI LAVORO

RENEWEM S.R.L.

Gruppo di lavoro:

Dott. W. Luperini

Dott. F. Martini

Dott. N. Sannino

HFC-245fa, Genetron® 245fa

Version 4.4

Revision Date 12.09.2012

Supersedes 3

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

Product information

Product name : HFC-245fa, Genetron® 245fa
Type of product : Substance
Chemical Name : 1,1,1,3,3-Pentafluoropropane
EC-No. : 419-170-6
Registration number : 01-0000016587-60
Use of the Substance/Mixture : Refrigerant
Heat transfer fluid
Uses advised against : none

Company/Undertaking Identification

Company : Honeywell International, Inc. Honeywell International, Inc.
101 Columbia Road 101 Columbia Road
07962-1057 Morristown Morristown, NJ 07962-1057
USA USA
Telephone :
Telefax :
Emergency telephone number :
For further information, please contact: : PMTEU Product Stewardship:
SafetyDataSheet@Honeywell.com

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 explode if heated.

Precautionary statements : P281 Use personal protective equipment as

HFC-245fa, Genetron® 245fa

Version 4.4

Revision Date 12.09.2012

Supersedes 3

P260	required. 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.

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 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 : Causes damage to the following organs: cardiovascular system, upper respiratory tract.
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

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.

HFC-245fa, Genetron® 245fa

Version 4.4

Revision Date 12.09.2012

Supersedes 3

4. 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.
- 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.

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 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

HFC-245fa, Genetron® 245fa

Version 4.4

Revision Date 12.09.2012

Supersedes 3

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

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
1,1,1,3,3-Pentafluoropropane	WEEL	TWA	1.644 mg/m ³ 300 ppm			We are not aware of any national exposure limit.

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
 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.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Honeywell

HFC-245fa, Genetron® 245fa

Version 4.4

Revision Date 12.09.2012

Supersedes 3

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 : 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
at 20 °C

Vapour pressure : 3.882 hPa
at 54,4 °C

Density : 1,32 g/cm³
at 20 °C

pH : neutral

Water solubility : 7,18 g/l

Solubility in other solvents : Medium: Methanol

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Honeywell

HFC-245fa, Genetron® 245fa

Version 4.4

Revision Date 12.09.2012

Supersedes 3

	partly soluble
Solubility in other solvents	: Medium: Diethylether partly soluble
Partition coefficient: n-octanol/water	: log Pow 1,35 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 ₄ .

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	: LD50 Species: rabbit Value: > 2.000 mg/kg
Acute inhalation toxicity	: LC50 Species: rat Value: > 200000 ppm Exposure time: 4 h
Acute inhalation toxicity	: LC50 Species: mouse Value: > 100000 ppm Exposure time: 4 h

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Honeywell

HFC-245fa, Genetron® 245fa

Version 4.4

Revision Date 12.09.2012

Supersedes 3

Skin irritation	:	No skin irritation
Eye irritation	:	no data available
Sensitisation	:	Classification: non-sensitizing
Repeated dose toxicity	:	Species: rat Exposure time: 28 d NOAEL : 500 ppm
Over-exposure signs/ symptoms:	:	Target Organs: Causes damage to the following organs: cardiovascular system, irregular cardiac activity, upper respiratory tract.
Further information	:	Inhalation: May cause cardiac arrhythmia.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Toxicity to fish	:	LC50 Species: Oncorhynchus mykiss (rainbow trout) Value: > 81,8 mg/l Exposure time: 96 h
Toxicity to fish	:	NOEC Species: Oncorhynchus mykiss (rainbow trout) Value: > 10 mg/l Exposure time: 96 h
Toxicity to aquatic plants	:	EC50 Growth inhibition Species: Algae Value: > 118 mg/l Method: OECD Test Guideline 201
Acute toxicity to aquatic invertebrates	:	EC50 Species: Daphnia magna (Water flea) Value: > 97,9 mg/l Exposure time: 48 h
Acute toxicity to aquatic invertebrates	:	NOEC Species: Daphnia magna (Water flea) Value: > 97,9 mg/l Exposure time: 48 h

Further information

Additional ecological information	:	Accumulation in aquatic organisms is unlikely.
--------------------------------------	---	--

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Honeywell

HFC-245fa, Genetron® 245fa

Version 4.4

Revision Date 12.09.2012

Supersedes 3

13. DISPOSAL CONSIDERATIONS

- Product : Offer surplus and non-recyclable solutions to a licensed disposal company.
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:
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 : 3163
Description of the goods : LIQUEFIED GAS, N.O.S.
(1,1,1,3,3-PENTAFLUOROPROPANE)
Class : 2
Classification Code : 2A
Hazard identification No : 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

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

Ozone Depletion Potential: : 0

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Honeywell

HFC-245fa, Genetron® 245fa

Version 4.4

Revision Date 12.09.2012

Supersedes 3

Global warming potential (GWP) : 950

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

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 : Not 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.