

**Genetron® 407A**

Version 1.2

Revision Date 01.09.2009

Print Date 21.10.2010

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

**Product information**

Trade name : Genetron® 407A

Use of the Substance/Mixture : Refrigerant

**Company/Undertaking Identification**

Company : Honeywell Fluorine Products Europe B.V.  
Laarderhoogtweg 18  
1101 EA Amsterdam  
Telephone : (31) 020 5656911  
Telefax : (31) 020 5656600  
Emergency telephone : (32) 14584545  
For further information, please contact: : SafetyDataSheet@Honeywell.com

**2. HAZARDS IDENTIFICATION**

**Risk advice to man and the environment**

This mixture is not classified as dangerous according to Directive 1999/45/EC.  
High vapour concentrations can cause headaches, dizziness, drowsiness, and nausea, and may lead to unconsciousness.  
Rapid evaporation of the liquid may cause frostbite.  
May cause cardiac arrhythmia.

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

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

**Chemical characterization**

Chemical Name : Genetron® 407A

**Hazardous components**

Chemical Name	CAS-No.	EC-No.	Index-No.	Classification	Concentration
Norflurane	811-97-2	212-377-0			>= 25 - < 50
Pentafluoroethane	354-33-6	206-557-8			>= 25 - < 50
Difluoromethane	75-10-5	200-839-4		F+; R12	>= 12,5 - < 20

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

**4. FIRST AID MEASURES**

Inhalation : Remove to fresh air.  
Artificial respiration and/or oxygen may be necessary.  
Call a physician immediately.

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- 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.

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

### 5. FIRE-FIGHTING 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 fire fighting : 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 fire-fighters : Wear self-contained breathing apparatus and protective suit.
- 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 product should only be used in areas from which all naked  
lights and other sources of ignition have been excluded.

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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.

**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 controls**

Components	Basis	Value type	Control parameters	Exceeding Factor	Form of exposure	Remarks
Norflurane	EH40 WEL	time weighted average	4.240 mg/m3 1.000 ppm			
Pentafluoroethane	WEEL	time weighted average	4.900 mg/m3 1.000 ppm			We are not aware of any national exposure limit.
Difluoromethane	WEEL	time weighted average	2.200 mg/m3 1.000 ppm			We are not aware of any national exposure limit.

**Personal protective equipment**

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

Hand protection : Glove material: Viton (R)  
Heat insulating gloves

Eye protection : Safety glasses with side-shields conforming to EN166  
Face-shield

Skin and body protection : Protective footwear

Protective measures : 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.

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### 9. PHYSICAL AND CHEMICAL PROPERTIES

#### Appearance

Form : Liquefied gas  
Colour : colourless  
Odour : slight

#### Safety data

Boiling point/boiling range : -45 °C  
Vapour pressure : 11.270 hPa  
at 21,1 °C  
Vapour pressure : 25.667 hPa  
at 54,4 °C  
Density : 1,145 g/cm<sup>3</sup>  
at 25 °C

Partition coefficient: n-  
octanol/water : log Pow 1,06  
Medium: 1,1,1,2-tetrafluoroethane (HFC-134a)  
Partition coefficient: n-  
octanol/water : log Pow 1,48  
Medium: Ethane, pentafluoro- (HFC-125)  
Partition coefficient: n-  
octanol/water : log Pow 1,48  
Remarks: Ethane, pentafluoro- (HFC-125)  
Relative vapour density : 3,1

### 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 : Halogenated compounds  
products Hydrogen fluoride  
Carbonyl halides  
Carbon oxides  
Thermal decomposition : >250 °C

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### 11. TOXICOLOGICAL INFORMATION

- Acute inhalation toxicity : LC50  
Species: rat  
Dose: > 500000 ppm  
Exposure time: 4 h  
Test substance: 1,1,1,2-tetrafluoroethane (HFC-134a)
- Acute inhalation toxicity : LC50  
Species: rat  
Dose: > 800000 ppm  
Exposure time: 4 h  
Test substance: Ethane, pentafluoro- (HFC-125)
- Acute inhalation toxicity : LC50  
Species: rat  
Dose: 520000 ppm  
Exposure time: 4 h  
Test substance: Difluoromethane (HFC-32)
- Information derived from practical experience. : Ethane, pentafluoro- (HFC-125): Cardiac sensitisation threshold (dog): 75000 ppm.  
Difluoromethane. (HFC-32): Cardiac sensitisation threshold (dog): 350000 ppm.  
1,1,1,2-tetrafluoroethane (HFC-134a): Cardiac sensitisation threshold (dog): 80000 ppm.  
Inhalation: May cause cardiac arrhythmia.  
Ingestion: No hazards to be specially mentioned.  
Skin contact: Rapid evaporation of the liquid may cause frostbite. Irritating to skin.  
Eye contact: Irritating to eyes.

### 12. ECOLOGICAL INFORMATION

- Ozone Depletion Potential: : 0
- Global warming potential (GWP) : 1.990

### 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

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### 14. TRANSPORT INFORMATION

#### ADR

UN Number : 3338  
Description of the goods : REFRIGERANT GAS R 407A  
Class : 2  
Classification Code : 2A  
Hazard identification No : 20  
ADR/RID-Labels : 2.2

#### IATA

UN Number : 3338  
Description of the goods : Refrigerant gas R 407A  
Class : 2.2  
Hazard Labels : 2.2  
Packing instruction (cargo aircraft) : 200  
Packing instruction (passenger aircraft) : 200

#### IMDG

UN Number : 3338  
Description of the goods : REFRIGERANT GAS R 407A  
Class : 2.2  
Hazard Labels : 2.2  
EmS Number : F-C  
Marine pollutant : no

#### RID

UN Number : 3338  
Description of the goods : REFRIGERANT GAS R 407A  
Class : 2  
Classification Code : 2A  
Hazard identification No : 20  
ADR/RID-Labels : 2.2

### 15. REGULATORY INFORMATION

#### Labelling according to EC Directives 1999/45/EC

Further information : 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.

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

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### 16. OTHER INFORMATION

#### Further information

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.

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