

**Genetron® 410A**

Version 2.0

Revision Date 14.02.2013

Supersedes 1

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

**Product information**

Product name : Genetron® 410A

Type of product : Mixture

Use of the  
Substance/Mixture : Refrigerant

Uses advised against : none

**Company/Undertaking Identification**

Company	: Honeywell International, Inc. 101 Columbia Road 07962-1057 Morristown USA	Honeywell International, Inc. 101 Columbia Road Morristown, NJ 07962-1057 USA
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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 mixture is not classified as dangerous according to Directive 1999/45/EC.

**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.  
P304 + P340 IF INHALED: Remove victim to fresh air  
and keep at rest in a position  
comfortable for breathing.

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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**

S-phrase(s)

: S47/49

Keep only in the original container at a temperature not exceeding 50 °C.

**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 Name	CAS-No. Index-No. Registration number EC-No.	Classification 1272/2008	Classification 67/548/EEC	Concentration	Remarks
Difluoromethane	75-10-5 01-2119471312-47 200-839-4	Flam. Gas 1; H220 Press. Gas ; H280	F+; R12	>= 25 - < 50	1*
Pentafluoroethane	354-33-6 01-2119485636-25	Press. Gas ; H280		>= 25 - < 50	1*

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	206-557-8				
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1\* - For specific concentration limits/M-factor see Annexes of 1272/2008

N.C.\* - Non-hazardous substance - for information only

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. 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.

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**5. FIREFIGHTING MEASURES**

- |   |   |  |
|---|---|--|
| Suitable extinguishing media                  | : | The product is not flammable.<br>ASTM D 56-82<br>ASTM E-681<br>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.<br>Heating will cause pressure rise with risk of bursting<br>Cool closed containers exposed to fire with water spray.<br>This product is not flammable at ambient temperatures and atmospheric pressure.<br>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.  |

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**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.   |

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For personal protection see section 8.

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**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 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.

Specific use information : Restricted to professional users.  
For industrial use only.

**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.

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**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Components with workplace control parameters**

Contains no substances with occupational exposure limit values.

**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)  
Heat insulating gloves

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

Skin and body protection : Protective footwear

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**DNEL/ PNEC-Values**

No DNEL-data available.

No PNEC data available.

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**9. PHYSICAL AND CHEMICAL PROPERTIES**

Form	:	Liquefied gas
Colour	:	colourless
Odour	:	weak
molecular weight	:	not applicable
Boiling point/boiling range	:	-48,5 °C
Flash point	:	not applicable
Lower explosion limit	:	None
Upper explosion limit	:	None
Vapour pressure	:	14.844 hPa at 21,1 °C
Vapour pressure	:	33.798 hPa at 54,4 °C
Density	:	1,08 g/cm <sup>3</sup> at 21,1 °C
pH	:	neutral
Water solubility	:	1,5 g/l
Partition coefficient: n-octanol/water	:	log Pow 1,48 Medium: Ethane, pentafluoro- (HFC-125)
Partition coefficient: n-octanol/water	:	log Pow 0,21 Medium: Difluoromethane (HFC-32)
Relative vapor density	:	3 (Air = 1.0)
Evaporation rate	:	> 1 Method: Compared to CCl <sub>4</sub> .

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**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
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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

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**11. TOXICOLOGICAL INFORMATION**

Acute oral toxicity : not applicable

Acute dermal toxicity : no data available

Acute inhalation toxicity : LC50  
Species: rat  
Value: > 800000 ppm  
Exposure time: 4 h  
Test substance: Ethane, pentafluoro- (HFC-125)

Acute inhalation toxicity : LC50  
Species: rat  
Value: 520000 ppm  
Exposure time: 4 h  
Test substance: Difluoromethane (HFC-32)

Skin irritation : no data available

Eye irritation : no data available

Sensitisation : no data available

Repeated dose toxicity : Species: rat  
NOAEL : 20000 ppm

Further information : Ethane, pentafluoro- (HFC-125): Cardiac sensitisation threshold (dog): 75000 ppm. Difluoromethane. (HFC-32): Cardiac sensitisation threshold (dog): 350000 ppm. Inhalation: May cause cardiac arrhythmia. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing. Rapid evaporation of the liquid may cause frostbite.

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**12. ECOLOGICAL INFORMATION**

**Ecotoxicity effects**

Toxicity to fish : no data available

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Toxicity to aquatic plants : no data available

Acute toxicity to aquatic invertebrates : no data available

**Further information**

Additional ecological information : Accumulation in aquatic organisms is unlikely.

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**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.

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**14. TRANSPORT INFORMATION**

**ADR/RID**

UN Number : 3163  
Description of the goods : LIQUEFIED GAS, N.O.S.  
(PENTAFLUOROETHANE, DIFLUOROMETHANE)  
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.  
(Pentafluoroethane, Difluoromethane)  
Class : 2.2  
Hazard Labels : 2.2

**IMDG**

UN Number : 3163  
Description of the goods : LIQUEFIED GAS, N.O.S.  
(PENTAFLUOROETHANE, DIFLUOROMETHANE)  
Class : 2.2  
Hazard Labels : 2.2

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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

Global warming potential : 1.975  
(GWP)

**Other inventory information**

US. Toxic Substances : On TSCA Inventory  
Control Act  
Australia. Industrial : On the inventory, or in compliance with the inventory  
Chemical (Notification and  
Assessment) Act  
Canada. Canadian : All components of this product are on the Canadian DSL.  
Environmental Protection  
Act (CEPA). Domestic  
Substances List (DSL)  
Japan. Kashin-Hou Law : On the inventory, or in compliance with the inventory  
List  
Korea. Toxic Chemical : On the inventory, or in compliance with the inventory  
Control Law (TCCL) List  
Philippines. The Toxic : On the inventory, or in compliance with the inventory  
Substances and Hazardous  
and Nuclear Waste Control  
Act  
China. Inventory of Existing : On the inventory, or in compliance with the inventory  
Chemical Substances  
NZIOC - New Zealand : On the inventory, or in compliance with the inventory

**16. OTHER INFORMATION**

**Text of R-phrases and H-statements referred to under heading 3**

Difluoromethane	: H220 H280	Extremely flammable gas. Contains gas under pressure; may explode if heated.
	R12	Extremely flammable.
Pentafluoroethane	: 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 an amendment from the previous version.

Abbreviations:



# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006



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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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