

Genetron® 410A

000000009881

Version 3.4

Revision Date 10.05.2017

Supersedes 2

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

1.1. Product identifier

Product name : Genetron® 410A
SDS-number : 000000009881
Type of product : Mixture
Remarks : SDS according to Art. 31 of Regulation (EC) 1907/2006.

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

Use of the Substance/Mixture : Refrigerant
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

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

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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.

P304 + P340

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

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

Warning! Container under pressure.

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

| Chemical name | CAS-No. Index-No. REACH Registration Number EC-No. | Classification 1272/2008 | Concentration | Remarks |
|-------------------|--|--|------------------|---------|
| Difluoromethane | 75-10-5 01-2119471312-47 200-839-4 | Flam. Gas 1; H220 Press. Gas ; H280 | >= 25 % - < 50 % | 1* |
| Pentafluoroethane | 354-33-6 01-2119485636-25 206-557-8 | Press. Gas ; H280 | >= 25 % - < 50 % | 1* |

1* - For specific concentration limits see Annexes of 1272/2008

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Remaining components of this product are non-hazardous and/or are present at concentrations below reportable limits.

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:

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:

Ingestion is unlikely because of the physical properties and is not expected to be hazardous. As this product is a gas, refer to the inhalation section.

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.

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SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

The product is not flammable.

ASTM D 56-82

ASTM E-681

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

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.

Fire may cause evolution of:

Halogenated compounds

Hydrogen fluoride

Carbon oxides

Carbonyl halides

5.3. Advice for firefighters

Wear full protective clothing and self-contained breathing apparatus.

SECTION 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 evaporates readily.

6.3. Methods and materials for containment and cleaning up

Ventilate the area.

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:

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.

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.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

DNEL/ PNEC-Values

| Component | End-use / Impact | Exposure duration | Value | Exposure routes | Remarks |
|-------------------|--|-------------------|-------------|-----------------|---------|
| Pentafluoroethane | Workers / Long-term systemic effects | | 16444 mg/m3 | Inhalation | |
| Pentafluoroethane | Consumers / Long-term systemic effects | | 1753 mg/m3 | Inhalation | |
| Difluoromethane | Workers / Long-term systemic effects | | 7035 mg/m3 | Inhalation | |

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| | | | | | |
|-----------------|---|--|-----------|------------|--|
| Difluoromethane | Consumers / Long-term systemic effects | | 750 mg/m3 | Inhalation | |
|-----------------|---|--|-----------|------------|--|

| Component | Environmental compartment / Value | Remarks |
|-------------------|--------------------------------------|----------------------------|
| Pentafluoroethane | Fresh water: 0,1 mg/l | Assessment factor: 1000 |
| Pentafluoroethane | Fresh water sediment: 0,6 mg/kg dw | |
| Difluoromethane | Fresh water: 0,142 mg/l | Assessment factor: 1000 |
| Difluoromethane | Fresh water sediment: 0,534 mg/kg dw | |

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.

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)
Gloves must be inspected prior to use.
Replace when worn.
Protective gloves against cold
(EN 511)

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:

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Safety glasses with side-shields conforming to EN166
Face-shield

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 | : | 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 ³ 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) |

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Relative vapour density : 3
(Air = 1.0)

Evaporation rate : > 1
Method: Compared to CCl₄.

9.2 Other Information

no additional data available

SECTION 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

oxidizing substances
Possible incompatibility with alkali sensitive materials.
Powdered metals

10.6. Hazardous decomposition products

Halogenated compounds
Hydrogen fluoride
Carbonyl halides
Carbon oxides

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute oral toxicity:
Not applicable

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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)

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

Respiratory or skin sensitisation:

no data available

Repeated dose toxicity:

Species: Rat

NOAEL: 20000 ppm

Aspiration hazard:

no data available

Other 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.

SECTION 12: Ecological information

12.1. Toxicity

Toxicity to fish:

no data available

Toxicity to aquatic plants:

no data available

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Toxicity to aquatic invertebrates:
no data available

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.

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:

To present knowledge of the supplier, this product is not regarded as hazardous waste as defined by EU Directive 91/689/EC. Classification: 14.06.01

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. (PENTAFLUOROETHANE, DIFLUOROMETHANE) |
| Class | : | 2 |

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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.
(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
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 |
| Bulgaria | (+35929154233 |
| 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 |

| Country | Phone Number |
|-----------------|---|
| Latvia | +37167042473 |
| Liechtenstein | no data available |
| Lithuania | +370532362052 |
| 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 |

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| | | | |
|---------|------------------------|----------------|-------------------|
| Italy | no data available | United Kingdom | no data available |
| 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 | | |

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

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
On the inventory, or 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

15.2 Chemical safety assessment

A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

Text of H-statements referred to under heading 3

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| | | | |
|-----------------|---|--------------|---|
| Difluoromethane | : | H220 H280 | Extremely flammable gas. Contains gas under pressure; may explode if heated. |
|-----------------|---|--------------|---|

| | | | |
|-------------------|---|------|---|
| 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 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.