

SAFETY DATA SHEET

According to Regulation (EC) No.1907/2006


INTERNATIONAL

GENETRON Performax™ LT (R407F)

Version: CLP01

Date: Mar 2012

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1. Identification of the substance / preparation and company / undertaking

Product name GENETRON Performax™ LT (R407F)

REACH registration number Registration deadline not expired

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Gellihirion Industrial Estate
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Emergency phone number +44 (0) 1270 502891 (24 hour)

Use Refrigerant

2. Hazards identification

EC Classification

Regulation (EC) No. 1272/2008 (CLP): Gases under pressure – Liquefied gas
H280 Contains gas under pressure; may explode if heated

Directives 67/548/EEC or 1999/45/EC: Handle in accordance with good industrial hygiene and safety practice

Label Elements

Hazard pictogram(s):



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 / fumes / 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

Additional information: Not a hazardous substance or mixture

Additional label elements

Hazardous components which must be listed on the label: Norflurane, Difluoromethane, Pentafluoroethane

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

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General advice 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

Hazardous components

Chemical name	CAS no.	EC no.	Classification 1272/2008	Classification 67/548/EEC	Concentration	Remarks
Norflurane	811-97-2	212-377-0	Gases under pressure; H280		>=25 - <50	See specification for specific concentrations
Difluoromethane	75-10-5	200-839-4	Flammable gases 1; H220 Gases under pressure; H280	F+; R12	>=25 - <50	
Pentafluoroethane	354-33-6		Gases under pressure; H280		>=25 - <50	

Occupational Exposure Limits, if available, are listed in section 8.

For the full text of the R-phrases / H-statements 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.

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.

Eye contact

Remove contact lenses. Rinse immediately with plenty of water, including 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.

Notes to physician

Treatment

Do not give adrenaline or similar drugs

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

5. Fire-fighting measures

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 a 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.

Fire Fighting Protective Equipment

Wear full protective clothing and self-contained breathing apparatus.

Further information

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

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6. Accidental release measures

Personal protection

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

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. Pressurised 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.

Hygiene measures

Provide adequate ventilation. When using, do not eat or drink.

Storage

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
Norflurane	EH40 WEL	Time weighted average	4.240 mg/m ³ 1.000 ppm			
Difluoromethane	WEL	Time weighted average	2.200 mg/m ³ 1.000 ppm			We are not aware of any national exposure limit
Pentafluoroethane	Honeywell	Time weighted average	1.000 ppm			

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 hygiene practices.

Personal protective equipment

Respiratory protection

In case of insufficient ventilation wear suitable respiratory equipment

Hand protection

Glove material: Vitron (R). Heat insulating gloves.

Eye protection

Safety glasses with wide-shields conforming to EN166. Face shield.

Skin & body protection

Protective footwear

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9. Physical and chemical properties

Form	Liquefied gas
Colour	Clear and colourless
Odour	Ether-like
Boiling point/boiling range	-45,5°C at 1.013 hPa
Ignition temperature	No data available
Lower explosion limit	None
Upper explosion limit	None
Vapour pressure	10.218 hPa at 21,1°C
Density	No data available
pH	Neutral
Water solubility	No data available
Partition coefficient: n-octanol/water	log Pow 1,06 (1,1,1,2-tetrafluoroethane (HFC-134a))
Partition coefficient: n-octanol/water	log Pow 1,48 (pentafluoroethane (HFC-125))
Relative vapour density	Not determined

10. Stability and reactivity

Conditions to avoid	Heating will cause pressure rise with risk of bursting. 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

11. Toxicological information

Acute oral toxicity	No data available
Acute dermal toxicity	No data available
Acute inhalation toxicity	LC50, species: rat, value: >500000ppm, exposure time: 4 h, test substance: 1,1,1,2-tetrafluoroethane (HFC-134a)
Acute inhalation toxicity	LC50, species: rat, value: 520000ppm, exposure time: 4 h, test substance: difluoromethane (HFC-32)
Acute inhalation toxicity	LC50, species: rat, value: >769000ppm, exposure time: 4 h, test substance: pentafluoroethane (HFC-125)
Skin irritation	No data available
Eye irritation	No data available
Sensitisation	Cardiac sensitization, species: dog, test substance: 1,1,1,2-tetrafluoroethane (HFC-134a), no observed effect level 50 000 ppm, lowest observable effect level 75 000 ppm.
Sensitisation	Cardiac sensitization, species: dog, test substance: difluoromethane (HFC-32), no observed effect level >350 000 ppm.
Sensitisation	Cardiac sensitization, species: dog, test substance: pentafluoroethane (HFC-125), no observed effect level 75 000 ppm, lowest observable effect level 100 000 ppm.

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Repeated dose toxicology	Species: rat, route of exposure: inhalation, NOEL: 50000 ppm, test substance: 1,1,1,2-tetrafluoroethane (HFC-134a), subchronic toxicity
Repeated dose toxicology	Species: rat, NOEL: 10000 ppm, test substance: 1,1,1,2-tetrafluoroethane (HFC-134a), chronic toxicity.
Repeated dose toxicology	Species: rat, route of exposure: inhalation, NOEL: >=50000 ppm, test substance: difluoromethane (HFC-32), subchronic toxicity.
Repeated dose toxicology	Species: rat, route of exposure: inhalation, NOEL: >=50000 ppm, test substance: pentafluoroethane (HFC-125), subchronic toxicity
Further information	Inhalation: may cause cardiac arrhythmia

12. Ecological information

Ecotoxicity effects

Toxicity to fish	No data available
Toxicity to aquatic plants	No data available
Toxicity to microorganisms	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 2006/16/EC; 91/689/EEC, Regulation number 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
Class	2
Classification code	2A
Hazard identification number	20
ADR/RID labels	2.2
Environmentally hazardous	No

IATA

UN Number	3163
Description of the goods	LIQUEFIED GAS, N.O.S (1,1,1,2-TETRAFLUOROETHANE, DIFLUOROMETHANE, PENTAFLUOROETHANE)
Class	2.2
Hazard labels	2.2

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IMDG

UN Number	3163
Description of the goods	LIQUEFIED GAS, N.O.S (1,1,1,2-TETRAFLUOROETHANE, DIFLUOROMETHANE, PENTAFLUOROETHANE)
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 depleting potential	0
Global warming potential (GWP)	1.705

Other inventory information

Country	Legislation	Information
US	Toxic Substances Control Act	On TSCA inventory
Australia	Industrial Chemical (Notification & Assessment) Act	On the inventory or in compliance with the inventory
Canada	Canadian Environmental Protection Act (CEPA) Domestic Substances List (DSL) (Can. Gaz. Part II, Vol.144)	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	On the inventory or 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

16. Other information

This datasheet was prepared in accordance with Regulation (EC) No. 1907/2006.

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Glossary

EC	European Community
CAS	Chemical Abstract Service
WEL	Workplace Exposure Limit
MAK:	Maximale Arbeitsplatz-Konzentration
STEL	Short Term Exposure Limit