

# SAFETY DATA SHEET

According to Regulation (EC) No.1907/2006

  
INTERNATIONAL

## HARP® 407A

Version: CLP01

Date: January 2018

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


Product name	R407A	
REACH registration numbers	1,1,1,2-Tetrafluoroethane	01-2119459374-33
	Pentafluoroethane	01-2119485636-25
	Difluoromethane	01-2119471312-47
Company	Harp International Ltd Gellihirion Industrial Estate Pontypridd Rhondda Cynon Taff CF37 5SX Tel: +44 (0) 1443 842255 Fax: +44 (0) 1443 841805 Email: harp@harpintl.com	
Emergency phone number	+44 (0) 1270 502891 (24 hour)	
Use	Refrigeration	

### 2. Hazards identification

#### EC Classification

Regulation (EC) No. 1272/2008 (CLP)      Gases under pressure – Liquefied gas

#### Label Elements

Name on label	
Hazardous components	1,1,1,2-Tetrafluoroethane (R134a) Pentafluoroethane (R125) Difluoromethane (R32)
Hazard statement(s)	H280: Contains gas under pressure; may explode if heated
Signal word(s)	Warning
Hazard pictogram(s)	
Precautionary statement(s)	
Storage	P410 + P403: Protect from sunlight. Store in a well-ventilated place.

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### 3. Composition / information on ingredients

#### Concentration

Substance name	CAS No.	EC No.	Concentration
1,1,1,2-Tetrafluoroethane (R134a)	811-97-2	212-377-0	ca. 40%
Pentafluoroethane (R125)	354-33-6	206-557-8	ca. 40%
Difluoromethane (R32)	75-10-5	200-839-4	ca. 20%

#### Hazardous components according to Regulation (EC) 1272/2008 as amended

Substance name	Hazard class	Hazard category	H Phrases
1,1,1,2-Tetrafluoroethane (R134a)	Gases under pressure	Liquefied gas	H280
Pentafluoroethane (R125)	Gases under pressure	Liquefied gas	H280
Difluoromethane (R32)	Flammable gases	Category 1	H220
	Gases under pressure	Liquefied gas	H280

### 4. First aid measures

<b>Inhalation</b>	Remove to fresh air. Oxygen or artificial respiration if needed. If symptoms persist, call a physician.
<b>Skin contact</b>	Allow to evaporate. Wash off with warm water. If symptoms persist, call a physician.
<b>Eye contact</b>	Immediately irrigate with eyewash solution or clean water, holding the eyelids apart for at least 10 minutes. Obtain immediate medical attention.
<b>Ingestion</b>	Unlikely route of exposure.
<b>Most important symptoms/effects, acute and delayed</b>	
<b>Inhalation</b>	In case of higher concentrations: narcosis, asphyxia, may cause cardiac arrhythmia.
<b>Skin contact</b>	Contact with liquid or refrigerated gas can cause cold burns and frostbite. Prolonged skin contact may defat the skin and produce dermatitis.
<b>Eye contact</b>	Causes frostbite burns to eyes. Symptoms: Lachrymation, redness, swelling of tissue, frostbite, burn.
<b>Ingestion</b>	Gas. Not applicable.

### 5. Fire-fighting measures

#### Extinguishing media

Suitable extinguishing media

As appropriate for surrounding fire. Keep fire exposed containers cool by spraying with water.

Unsuitable extinguishing media

None.

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### Specific hazards arising from the Chemical

The product is not flammable.  
Hazardous decomposition products formed under fire conditions.

### Special protective actions for Fire-Fighters

Wear self-contained breathing apparatus and protective suit  
Wear chemical resistant oversuit  
Special protective actions for fire-fighters  
In case of fire, use water spray  
Keep product and empty container away from heat and sources of ignition

## 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

#### Advice for non-emergency personnel

Prevent further leakage or spillage if safe to do so  
Keep away from incompatible products

#### Advice for emergency responders

Immediately evacuate personnel to safe areas  
Keep people away from and upwind of spill/leak  
Wear self-contained breathing apparatus and protective suit  
Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing  
Suppress (knock down) gases/vapours/mists with a water spray jet  
Avoid spraying the leak source  
Ventilate area

#### Environmental precautions

Discharge into the environment must be avoided  
Inform the responsible authorities in case of gas leakage or of entry into waterways, soil or drains

#### Methods and materials for containment and cleaning up

Allow to evaporate  
Prevent product from entering drains

#### Reference to other sections

Refer to protective measures listed in sections 7 and 8.

## 7. Handling and storage

### Precautions for safe handling

Use only in well-ventilated areas  
Use only clean and dry utensils  
Keep away from water  
Preferably transfer by pump or gravity  
Keep away from incompatible products

### Conditions for storage, including incompatibilities

#### Storage

Keep only in the original container  
Store in a receptacle equipped with a vent  
Keep containers tightly closed in a cool, well-ventilated place  
Keep in properly labelled containers  
Keep in a bonded area  
Keep away from heat/sparks/open flames/hot surfaces. No smoking.  
Keep away from incompatible products

#### Packing material

Suitable material – steel cylinder

#### Specific use(s)

For further information, please contact supplier.

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### 8. Exposure controls / personal protection

#### Control parameters

Exposure limit values

Substance	Harp acceptable exposure limit	EH40 workplace exposure limits
1,1,1,2-Tetrafluoroethane	TWA = 1000 ppm	TWA = 1000 ppm / 4240 mg/m <sup>3</sup>
Pentafluoroethane	TWA = 1000 ppm	Not listed
Difluoromethane	TWA = 1000 ppm	Not listed

#### Exposure controls

Appropriate engineering controls	Ensure adequate ventilation Apply technical measures to comply with the occupational exposure limits
Respiratory protection	Self-contained breathing apparatus (EN 133) Wear self-contained breathing apparatus in confined spaces, in cases where the oxygen level is depleted, or in case of significant emissions Use only respiratory protection that conforms to international / national standards
Hand protection	Take note of the information given by the producer concerning permeability and break through times and of special workplace conditions (mechanical strain, duration of contact). Protective gloves Suitable material: Fluoroelastomer
Eye protection	Tightly fitted safety goggles
Skin and body protection	Wear suitable protective clothing If splashes are likely to occur, wear: apron, boots, Neoprene
Hygiene measures	Eye wash bottles or eye wash stations in compliance with applicable standards When using do not eat, drink or smoke Gloves, overalls and boots have to be double layered (protection against cold temperature). Handle in accordance with good industrial hygiene and safety practice
Environmental exposure controls	Dispose of rinse water in accordance with local and national regulations.

### 9. Physical and chemical properties

Form	Compressed liquefied gas
Colour	Colourless
Odour	Ether-like
pH	Neutral
pKa	Not applicable
Melting point/freezing point	-103°C (Pentafluoroethane)
Boiling point/boiling range	-45.5 to -38.9°C
Flash point	Not applicable
Evaporation rate	No data
Flammability (solid, gas)	The product is not flammable
Flammability	Not applicable

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<b>Explosive properties</b>	Not explosive
<b>Vapour pressure</b>	10.35 bar at 20°C 21.94 bar at 50°C (Pentafluoroethane)
<b>Vapour density</b>	2.54
<b>Density</b>	Not applicable
<b>Relative density</b>	1.17 at 20°C
<b>Bulk density</b>	Not applicable
<b>Solubility</b>	430 mg/l at 25°C, water (Pentafluoroethane)
<b>Solubility/qualitative</b>	No data available
<b>Partition coefficient: n-octanol/water</b>	log Pow: 1.48, 20°C (Pentafluoroethane)
<b>Auto-ignition temperature</b>	No data available
<b>Decomposition temperature</b>	No data
<b>Viscosity</b>	Not applicable
<b>Oxidizing properties</b>	Non oxidizer

## 10. Stability and reactivity

<b>Reactivity</b>	Risk of violent reaction
<b>Chemical stability</b>	Stable under recommended storage conditions
<b>Possibility of hazardous reactions</b>	Strong oxidizers, alkali metals and alkaline earth metals may cause fires or explosions.
<b>Conditions to avoid</b>	Heat
<b>Materials to avoid</b>	Light and/or alkaline metals, powdered metals, alkaline earth metals, oxidising agents
<b>Hazardous decomposition products</b>	Gaseous hydrogen fluoride (HF), Fluorophosgene The release of other hazardous decomposition products is possible

## 11. Toxicological information

<b>Acute toxicity</b>	
Acute oral toxicity	Not applicable
Acute inhalation toxicity	LC50, 4 h, >2,080,000 mg/m <sup>3</sup> (1,1,1,2-Tetrafluoroethane)
Acute dermal toxicity	Not applicable
<b>Skin corrosion/irritation</b>	Not applicable
<b>Serious eye damage/eye irritation</b>	Not applicable
<b>Respiratory or skin sensitization</b>	Guinea pig, did not cause sensitization on laboratory animals
<b>Mutagenicity</b>	In vitro tests did not show mutagenic effects (Pentafluoroethane) In vivo tests did not show mutagenic effects (Pentafluoroethane)
<b>Carcinogenicity</b>	Negative (1,1,1,2-Tetrafluoroethane)
<b>Toxicity for reproduction</b>	Developmental toxicity, rat, no observed effect (1,1,1,2-Tetrafluoroethane)
<b>Repeated dose toxicity</b>	Inhalation, after a single exposure, dog, cardiac sensitization following adrenergic stimulation Inhalation, rat, >=50000ppm, NOAEL (1,1,1,2-Tetrafluoroethane) Inhalation, repeated exposure, rat, >=50000ppm, NOAEL (Pentafluoroethane) Inhalation, 90-day, rat, 108 mg/m <sup>3</sup> , NOAEL (Difluoromethane)
<b>Other information</b>	No data available

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**12. Ecological information**

**Toxicity**

Fishes	Brachydanio rerio	LC50	96 h	>200 mg/l	1,1,1,3,3-pentafluorobutane
Fishes	Brachydanio rerio	LC50	96 h	Ca. 200 mg/l	1,1,1,3,3-pentafluorobutane
Crustaceans	Daphnia magna	EC50	48 h	>200 mg/l	1,1,1,3,3-pentafluorobutane
Crustaceans	Daphnia magna	NOEC	48 h	200 mg/l	1,1,1,3,3-pentafluorobutane
Algae	Selenastrum capricornutum	NOEC	72 h	13.2 mg/l	1,1,1,3,3-pentafluorobutane
Algae	Selenastrum capricornutum	EC50	72 h	>114 mg/l	1,1,1,3,3-pentafluorobutane
Terrestrial plants		NOEC	growth	>=6 g/m <sup>3</sup>	

**Persistence and degradability**

Abiotic degradation

Air, indirect photo-oxidation. T<sub>1/2</sub> from 4.16 – 28.2 y

Conditions: sensitizer: OH radicals.

Degradation products: carbon dioxide (CO<sub>2</sub>) / hydrofluoric acid / TFA

Biodegradation

Aerobic, tested according to closed bottle test, chemical degradation, 2-5% after 28 d. Result: not readily biodegradable

Aerobic, tested according to biodegradation by methane oxidation. Result: not readily biodegradable (1,1,1,2-Tetrafluoroethane)

**Bioaccumulative potential**

Bioaccumulative potential: log Pow 0.21-1.48. Result: does not bioaccumulate

**Mobility**

Soil/sediments, adsorption, log KOC: from 1.05 – 1.7. Conditions: calculated value

Air, Henry's law constant (H), from 19.7 – 150 hPa.m<sup>3</sup>/mol, 20°C. Conditions: calculated value, considerable volatility

**Other adverse effects**

Ozone depletion potential = 0

Result = no effect on stratospheric ozone

Ozone depletion potential; ODP; (R11 = 1)

Global Warming Potential = 1774

**13. Disposal considerations**

**Waste disposal methods**

In accordance with local and national regulations

Refer to manufacturer/supplier for information on recovery/recycling

**Contaminated packaging**

To avoid treatments, as far as possible, use dedicated containers

Where possible recycling is preferred to disposal or incineration

**14. Transport information**

**International transport regulations**

**IATA-DGR**

UN number

UN 3338

Class

2.2

ICAO-Labels

2.2 - Non-flammable, non-toxic gas

Proper shipping name

REFRIGERANT GAS R407A

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### IMDG

UN number UN 3338  
Class 2.2  
IMDG-Labels 2.2 - Non-flammable, non-toxic gas  
HI/UN No. 3340  
EmS F-C, S-V  
Proper shipping name REFRIGERANT GAS R407A

### ADR

UN number UN 3338  
Class 2  
ADR/RID Labels 2.2 - Non-flammable, non-toxic gas  
HI/UN No. 20 / 3340  
Proper shipping name REFRIGERANT GAS R407A

### RID

UN number UN 3338  
Class 2  
ADR/RID Labels 2.2 - Non-flammable, non-toxic gas  
HI/UN No. 20 / 3340  
Proper shipping name REFRIGERANT GAS R407A

### ADN

UN number UN 3338  
Class 2  
ADR/RID Labels 2.2 - Non-flammable, non-toxic gas  
Proper shipping name REFRIGERANT GAS R407A

## 15. Regulatory information

### Applicable Laws or Regulations

- Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) as amended
- Directive 1999/45/EC of the European Parliament and of the Council of 31 May 1999 concerning the approximation of laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labelling of dangerous preparations, as amended
- Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, as amended
- Regulation (EC) No 166/2006 of the European Parliament and of the Council of 18 January 2006 concerning the establishment of a European Pollutant Release and Transfer Register and amending Council Directives 91/689/EEC and 96/61/EC
- Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste
- EH40/2005 Workplace Exposure Limits, as amended through 1, 10, 2007 (WEL's) published by the Health and Safety Executive (HSE). Issued under the Control of Substances Hazardous to Health Regulations, as amended

### Notification status

Inventory information	Status
Australian Inventory of Chemical Substances (AICS)	In compliance with inventory
Canadian Domestic Substances List (DSL)	In compliance with inventory
Inventory of Existing Chemical Substances (China) (IECS)	In compliance with inventory
Japanese Existing and New Chemical Substances (MITI List) (ENCS)	In compliance with inventory
New Zealand Inventory of Chemicals (NZIOC)	In compliance with inventory
Toxic Substance Control Act List (TSCA)	In compliance with inventory
EU List of Existing Chemical Substances (EINECS)	In compliance with inventory
Korean Existing Chemicals Inventory (KECI (KR))	In compliance with inventory
Philippine Inventory of Chemicals and Chemical Substances (PICCS)	In compliance with inventory

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### 16. Other information

#### Full text of H-Statements referred to under section 3

H220	Extremely flammable gas
H280	Contains gas under pressure; may explode if heated

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

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