

SAFETY DATA SHEET

According to Regulation (EC) No.1907/2006

Solstice™ 1234ze

Version: CLP01

Date: Feb 2012

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

Product name HFO-1234ze, trans-1,3,3,3-Tetrafluoroprop-1-ene

REACH registration number Registration deadline not expired

Company Harp International Ltd
Gellihirion Industrial Estate
Pontypridd
Rhondda Cynon Taff
CF37 5SX
Tel: +44 (0) 1443 842255
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Email: harp@harpintl.com

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

Use Refrigerant

2. Hazards identification

Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008/EC (CLP/GHS)

Gases under pressure, Liquified gas

H280 Contains gas under pressure; may explode if heated

Classification according to Directive 67/548/EEC & 1999/45/EC

This substance is not classified as dangerous according to Directive 67/548/EEC.

Label elements

Labelling 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/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

Potential health effects

Skin Rapid evaporation of the liquid may cause frostbite
Eyes May irritate eyes
Ingestion Unlikely route of exposure
Inhalation Inhalation may cause central nervous system effects. Vapours may cause dizziness and drowsiness.
Chronic exposure None known
General advice Warning. Container under pressure

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Potential environmental effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal

3. Composition / information on ingredients

Substance / mixture:	Substance
CAS number	29118-24-9
EC No (from EINECS)	471-480-0

4. First aid measures

Description of first aid measures

General advice	Show this safety data sheet to the doctor in attendance. Keep warm and in a quiet place.
Inhalation	If inhaled, move to fresh air. Seek medical attention if irritation develops and persists.
Skin contact	Rapid evaporation of the liquid may cause frostbite. If there is evidence of frostbite, bathe (do not rub) with lukewarm (not hot) water. If water is not available, cover with a clean, soft cloth or similar covering. Call a physician if irritation develops or persists.
Eye contact	If eye irritation persists, consult a specialist.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Water mist, dry powder, foam or carbon dioxide.
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Special hazards arising from the substance or mixture

Specific hazards	Heating will cause pressure rise with risk of bursting. Some risk may be expected of corrosive and toxic decomposition products. Fire may cause evolution of hydrogen fluoride. However, this material can ignite when mixed with air under pressure and exposed to strong ignition sources.
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Advice for fire fighters

Special protective equipment	Wear full protective clothing and self-contained breathing apparatus. Exposure to decomposition products may be a hazard to health.
Further information	In the event of fire, cool tanks with water spray.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Provide adequate ventilation. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing. Avoid skin contact with leaking liquid (danger of frostbite). Use personal protective equipment. Keep people away from and upwind of spill/leak.

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Environmental precautions

Prevent further leakage or spillage if safe to do so. The product evaporates readily. Prevent spreading over a wide area e.g. by containment or oil barriers.

Methods for cleaning up

Do not direct water spray at the point of leakage. Allow to evaporate.

7. Handling and storage

Advice for safe handling

Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50°C. Do not pierce or burn, even after use. Do not burn. Exhaust ventilation at the object is necessary.

Advice on protection against fire and explosion

Do not spray on a naked flame or any incandescent material. Keep away from direct sunlight. Fire or intense heat may cause violent rupture of packages. Vapours may form explosive mixtures with air. The product is not easily combustible.

Hygiene measures

Avoid breathing vapours, mist or gas. Keep working clothes separately. Do not smoke.

Further information on storage conditions

Keep containers tightly closed in a cool, well-ventilated place. Keep only in the original container at temperatures not exceeding 50°C. Keep away from direct sunlight.

Advice on common storage

Do not store together with: Oxidising agents

8. Exposure controls / personal protection

Occupational exposure limits

Components	Basis	Value type	Control parameters	Exceeding factor	Form of exposure	Remarks
Trans-1,3,3,3-Tetrafluoroprop-1-ene	Honeywell	Time weighted average	800 ppm			We are not aware of any national exposure limit

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. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Avoid inhalation of vapour or mist.

Environmental exposure controls

Handle in accordance with local environmental regulations and good industrial practices.

Engineering measures

Local exhaust

Personal protective equipment

Respiratory protection

Remarks: In case of insufficient ventilation, wear suitable respiratory equipment. Wear a positive-pressure supplied-air respirator.

Hand protection

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

Eye protection

Goggles

Skin and body protection

Wear suitable protective equipment. Protective footwear.

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9. Physical and chemical properties

Form	Liquefied gas
Appearance/colour	Colourless
Odour	Slight, ether-like
Boiling point	-19°C
Flash point	Does not flash
Auto-ignition temperature	368°C
Lower explosion limit	no data available
Upper explosion limit	no data available
Vapour pressure	4.192 hPa at 20°C
Vapour pressure	10.998 hPa at 54,4°C
Density	1,17 g/cm ³ at 21,1°C
Solubility in water	0,373mg/l
Partition coefficient (n-octanol/water)	log Pow 1,6
Relative vapour density	4 (Air = 1.0)

10. Stability and reactivity

Conditions to avoid	Some risk may be expected of corrosive and toxic decomposition products. Avoid heat, flames and sparks.
Materials to avoid	Reactions with alkali metals.
Hazardous decomposition products	Pyrolysis products containing fluoride. Fluorocarbons. Hydrogen fluoride.
Stability and reactivity	Hazardous decomposition products formed under fire conditions. To avoid thermal decomposition, do not over heat.

11. Toxicological information

Information on toxicological effects

Acute oral toxicity	Not applicable
Acute dermal toxicity	No data available
Acute inhalation toxicity	LC50/rat, value: >207000 ppm, >965 mg/l. Exposure time: 4 h
Skin irritation	Species: rabbit, result: no skin irritation. Method: OECD Test guideline 404
Eye irritation	No data available
Sensitisation	Species: human, classification: non-sensitizing
Further information	Not mutagenic in Ames Test. May cause headache and dizziness. No experimental indications on genotoxicity in vivo found. Detailed toxicological data and examinations, exceeding the data set in the MSDS are available for professional users on request.

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12. Ecological information

Persistence and degradability

Biodegradability Aerobic. Result: Not readily biodegradable

Ecotoxicity effects

		Species	Value	Exposure time	Comment
Toxicity to fish	NOEC	Cyprinus carpio (Carp)	>117 mg/l	96 h	
Toxicity to aquatic plants	NOEC	Algae	>170 mg/l	72 h	Growth inhibition
Acute toxicity to aquatic invertebrates	EC50	Daphnia magna (water flea)	>160 mg/l	48 h	

13. Disposal considerations

Product	Dispose according to legal requirements. Contact manufacturer.
Packaging	Legal requirements are to be considered in regard of reuse or disposal of used packaging materials
Further information	Provisions relating to waste: EC Directive 2006/12/EC; 91/689/EEC Regulation No. 1013/2006

14. Transport information

ADR/RID

Class	2
Classification code	2A
UN number	3163
Labels	2.2
Proper shipping name	LIQUIFIED GAS, N.O.S. (TRANS-1,3,3,3-TETRAFLUOROPROP-1-ENE)
Hazard number	20
Environmentally hazardous	No

IATA

Class	2.2
UN number	3163
Hazard labels	2.2
Proper shipping name	LIQUIFIED GAS, N.O.S. (TRANS-1,3,3,3-TETRAFLUOROPROP-1-ENE)

IMDG

Class	2.2
UN number	3163
Hazard labels	2.2
Proper shipping name	LIQUIFIED GAS, N.O.S. (TRANS-1,3,3,3-TETRAFLUOROPROP-1-ENE)
EmS number	F-C,S-V
Marine pollutant	No

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15. Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

Other inventory information

Country	Legislation	Information
US	Toxic Substances Control Act	On TSCA inventory
Australia	Industrial Chemical (Notification & Assessment) Act	Not in compliance with inventory
Canada	Canadian Environmental Protection Act (CEPA)	Not in compliance with inventory
	Domestic Substances List (DSL)	
Japan	Kashin-Hou Law List	On the inventory or in compliance with the inventory
Korea	Existing Chemicals Inventory (KECI)	Not in compliance with inventory
Philippines	The Toxic Substances and Hazardous and Nuclear Waste Control Act	Not in compliance with 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	Not in compliance with inventory

16. Other information

Abbreviations

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

Note

When using this document care should be taken as the decimal sign and its position complies with rules for the structure and drafting of international standards and is a comma on the line. As an example 2,000 is two (to three decimal places) and not two thousand, whilst 1.000 is one thousand and not one (to three decimal places).

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

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