

SAFETY DATA SHEET

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	Version: 1.02	Date: 12/05/99

01 - IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

PRODUCT NAME	HARP® 11
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02 - COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME OF THE SUBSTANCE	TRICHLOROFLUOROMETHANE
GENERIC NAME	HALOGENATED HYDROCARBON
CAS	75-69-4
EINECS	200-892-3

03 - HAZARDS IDENTIFICATION

MOST IMPORTANT HAZARDS	-
HEALTH EFFECTS	Practically non harmful
PHYSICAL AND CHEMICAL HAZARDS	Thermal decomposition giving toxic and corrosive products
SPECIFIC HAZARDS/EEC	DANGEROUS FOR THE ENVIRONMENT Dangerous to the ozone layer

04 - FIRST AID MEASURES

INHALATION	Move to fresh air Oxygen or artificial respiration if needed
SKIN CONTACT	Frostbite: treat as thermal burns
EYE CONTACT	Wash immediately, abundantly and thoroughly with water If irritation persists, consult an ophthalmologist

05 - FIRE-FIGHTING MEASURES

SPECIFIC HAZARDS	Thermal decomposition into chlorinated and fluorinated toxic and corrosive products: Hydrogen fluoride Hydrogen chloride Phosgene Oxides of carbon
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SPECIFIC METHODS

Cool containers/tanks with water spray
Prohibit all sources of sparks and ignition - Do not smoke

**SPECIAL PROTECTIVE EQUIPMENT
FOR FIRE-FIGHTERS**

Wear self-contained breathing apparatus and protective suit

06 - ACCIDENTAL RELEASE MEASURES

PERSONAL PROTECTION

Avoid contact with skin and eyes and inhalation of vapours
Wear personal protective equipment
In enclosed areas: ventilate or wear self-contained breathing apparatus (risk of anoxia)
Remove all sources of ignition
Do not smoke

07 - HANDLING AND STORAGE

HANDLING

Technical measures/Precautions

-
Provide for appropriate exhaust ventilation at machinery
Provide showers, eye-baths

Safe handling advice

Avoid ignition sources and contact with hot surfaces - DO NOT SMOKE
Open drum carefully as contents may be under pressure

STORAGE

Technical measures/Storage conditions

-
Store at room temperature in the original container
Keep away from naked flames, hot surfaces and sources of ignition
Keep in a cool, well ventilated place
Protect full containers from sources of heat to avoid over-pressurisation

PACKAGING MATERIALS

Recommended

Prohibited

-
Ordinary steel
Alloys containing more than 2% of magnesium
Light metals and alloys in the presence of humidity, including parts of the installation in contact with the product (beryllium - zinc - aluminium)
Plastic materials

08 - EXPOSURE CONTROLS/PERSONAL PROTECTION

PROTECTIVE PROVISIONS

Provide sufficient air exchange and/or exhaust in work areas

CONTROL PARAMETERS

-

Exposure limits

UK HSE EH40/95:
HARP® 11:
Long-term exposure limit (8-hour TWA reference period) = 1000 ppm, 5600 mg/m³
Short-term exposure limit (15 min. reference period) = 1250 ppm, 7000 mg/m³

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PERSONAL PROTECTION EQUIPMENT

Respiratory protection	-
Hand protection	In case of insufficient ventilation wear suitable respiratory equipment
Eye protection	Gloves
Specific hygiene measures	Safety glasses
	Avoid contact with skin and eyes and inhalation of vapours
	Do not smoke

09 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE (20°C)	liquid
COLOUR	colourless
ODOUR	ether-like (slightly)
pH	not applicable
BOILING POINT/RANGE	23.8°C
FLASH POINT	No flash point (in the test conditions)
VAPOUR PRESSURE	(25°C): 1056 mbar (50°C): 2347 mbar (70°C): 4052 mbar
VAPOUR DENSITY AT BOILING POINT	5.85 kg/m ³
LIQUID DENSITY	(25°C): 1476 kg/m ³ (50°C): 1414 kg/m ³
SOLUBILITY	Soluble in hydrocarbons and chlorinated solvents, alcohols, ketones and esters. Solubility of product in water at 25°C = 1.1 g/l
PARTITION COEFFICIENT	log P _{ow} = 2.53
OTHER DATA	Critical temperature: T _c = 198°C Critical pressure: P _c = 4.41 MPa (44.1 bar)

10 - STABILITY AND REACTIVITY

CONDITIONS TO AVOID	Keep away from heat and sources of ignition Avoid contact with flames and red hot metallic surfaces
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HAZARDOUS DECOMPOSITION PRODUCTS

Thermal decomposition into chlorinated and fluorinated toxic and corrosive products:
Hydrogen fluoride (hydrofluoric acid)
Hydrogen chloride gas
Phosgene
Oxides of carbon

FURTHER INFORMATION	The product is stable under normal handling and storage conditions
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11 - TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Inhalation	- Effects of breathing high concentrations may include: Headache, sleepiness, dizziness
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Like other volatile aliphatic halogenated compounds the product can be carried by accumulation of vapours and/or inhalation in large quantities:
Loss of consciousness and cardiac disorders aggravated by stress and lack of oxygen: risk of mortality:

Practically not harmful by inhalation
No effect observed at concentrations below 10 000 ppm

LOCAL EFFECTS

Skin-contact

-
Ejection of liquefied gas: frostbite possible, irritation, eczema

Eye-contact

Transitory irritation

Inhalation

Irritating to respiratory system at high concentrations of vapour

12 - ECOLOGICAL INFORMATION

MOBILITY

Rapid evaporation: half-life time $t_{1/2}$ = 6.1 hours

PERSISTENCE/DEGRADABILITY

In water

-
Not biodegradable under aerobic conditions: < 10% after 27 days

In air

Slow degradation in the atmosphere by OH radical: half-life time $t_{1/2}$ = 38 years

Ozone depletion potential: ODP = 1.0

Halocarbon global warming potential: HGWP = 1.0

BIOACCUMULATION

Slightly bioaccumulable: $\log P_{ow}$ = 2.53

ECOTOXICITY

-

AQUATIC TOXICITY

-

Acute toxicity

Slightly harmful to fish: LC50, 96h (Oncorhynchus mykiss) = 190 mg/l

Slightly harmful to daphnia: EC(I)50,48h = 130 mg/l

Bacteria under anaerobic conditions: IC, 24 hours (Domestic waste water) > 75 mg/l

13 - DISPOSAL CONSIDERATIONS

DISPOSAL OF PRODUCT

Recycle or incinerate at an approved site only

14 - TRANSPORT INFORMATION

CONSULT HRPR FOR FURTHER INFORMATION

ADR/RID

Not regulated

IMDG

Not regulated

IATA

Not regulated

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15 - REGULATORY INFORMATION

EEC DIRECTIVE	-
SAFETY DATA SHEETS	D.91/155/EEC amended by D.93/112/EEC: Dangerous substances and preparations
EEC CLASSIFICATION/LABELLING HAZARDOUS SUBSTANCES	- D.67/548/EEC amended by D.93/21/EEC - Labelling guide (18th ATP) N DANGEROUS FOR THE ENVIRONMENT R59 Dangerous for the ozone layer S59 Refer to manufacturer/supplier for information on recovery/recycling S61 Avoid release to the environment. Refer to special instructions/safety data sheet
EEC No. (EINECS) SUBSTANCES DAMAGING TO THE OZONE LAYER	200-892-3 R. EEC No. 594/91 modified and R. No. 3093/94
BRITISH REGULATION SAFETY DATA SHEET CLASSIFICATION/LABELLING	- - CHIP2: Chemicals (Hazard Information and Packaging for Supply) Regulations 1994, SI No. 3247

16 - OTHER INFORMATION

RECOMMENDED USES	Refrigerant, blowing agent
BIBLIOGRAPHY REFERENCES	Encyclopédie des gaz (Air Liquide - Ed. 1976 - Elsevier Amsterdam) Fiche toxicologique INRS: No. 135 dichlorodifluoromethane

NOTE

This information contained within this safety data sheet applies only to the Harp International Limited product to which it relates. The information provided is based upon our best knowledge at the time that this safety data sheet was published.

The information is believed to be accurate and is given in all good faith.

When used in other preparations, in formulations or in mixtures, it is necessary to ascertain if the classification of the hazards have changed. The attention of users is drawn to the possibility of creating other hazards when the product is used for purposes other than that for which it is recommended. In such cases a complete reassessment should be made by user.

This safety data sheet should only be used and reproduced in order that the necessary measures may be taken relating to the protection of health and safety at work and relating to the protection of environment.

The reference to the legislative, regulatory and codes of practice documents must not be considered as exhaustive.

It is the responsibility of handlers of the product to pass on the totality of the information contained within this document to any subsequent persons who will come into contact with, handle or use the product in any way.

They should check the adequacy of the information contained in the safety data sheet received before passing it onto their customers.

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