

## HARP® Iso-Pentane

Version: CLP01

Date: Oct 2011

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

Product name	Iso-Pentane
Chemical formula	i-C <sub>5</sub> H <sub>12</sub>
REACH registration number	01-2119475602-38-0000
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	Aerosol propellant, foam blowing agent

### 2. Hazards identification

#### Classification of the substance or mixture

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

Flammable liquid: Flammable liquid 1 – extremely flammable liquid and vapour

Aspiration hazard: Asp. Tox. 1 – may be fatal if swallowed and enters airways

Specific target organ toxicity – single: STOT SE 3 – May cause drowsiness or dizziness

Aquatic Chronic 2 – hazardous to the aquatic environment – toxic to aquatic life with long lasting effects

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

F+; R12 / Xn; R65, R66, R67 / N; R51/R53

Extremely flammable

Harmful: may cause lung damage if swallowed

Repeat exposure may cause skin dryness or cracking

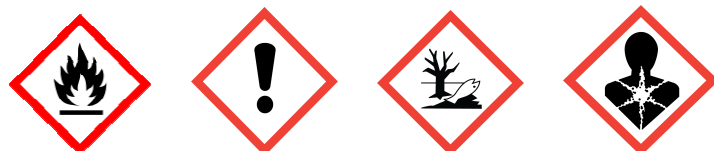
Vapours may cause drowsiness and dizziness

Toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment

**Risk advice to man and the environment:** Contact with liquid may cause cold burns / frost bite

#### Label elements

##### Labelling Pictograms



Signal word

Danger

##### Hazard statements

H224

H304

H336

H411

EUH066

Extremely flammable liquid and vapour

May be fatal if swallowed and enters airways

May cause drowsiness or dizziness

Toxic to aquatic life with long lasting effects

Repeated exposure may cause skin dryness and cracking

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### Precautionary statements

#### Precautionary statement prevention

P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233	Keep container tightly closed
P240	Ground / bond container and receiving equipment
P241	Use explosion proof electrical, ventilating and lighting equipment
P242	Use only non-sparking tools
P243	Take precautionary measures against static discharge
P261	Avoid breathing mist / vapours
P271	Use only outdoors or in a well-ventilated area
P273	Avoid release to the environment
P280	Wear protective gloves and eye / face protection

#### Precautionary statement response

P301 + P310	IF SWALLOWED: Immediately call a POISON CENTRE or doctor/physician
P303 + P361 + P353	IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water / shower.
P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P312	Call a POISON CENTRE or doctor / physician if you feel unwell.
P331	Do NOT induce vomiting
P370 + P378	In case of fire: Use water fog, foam, dry chemical or carbon dioxide (CO <sub>2</sub> ) for extinction.
P391	Collect spillage

#### Precautionary statement storage

P403 + P233 + P235	Store in a well-ventilated place. Keep container tightly closed. Keep cool.
P405	Store locked up.

#### Precautionary statement disposal

P501	Dispose of contents and container in accordance with local regulations.
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### Other hazards

Contact with liquid may cause cold burns / frost bite.

## 3. Composition / information on ingredients

<b>Substance / mixture:</b>	Substance
CAS number	78-78-4
Index-Nr.	601-085-00-2
EC No (from EINECS)	201-142-8

Contains no other components or impurities which will influence the classification of the product.

## 4. First aid measures

### Description of first aid measures

General advice	Remove victim to uncontaminated area wearing self-contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.
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Inhalation	Remove victim to uncontaminated area wearing self-contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.
Skin contact	In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Obtain medical assistance.
Eye contact	Immediately flush eyes thoroughly with water for at least 15 minutes.
Ingestion	Do not let victim drink anything. Do not induce vomiting. Seek immediate medical advice/attention.

### Most important symptoms and effects, both acute and delayed

In high concentrations may cause asphyxiation. Symptoms may include loss of mobility / consciousness. Victim may not be aware of asphyxiation. In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of co-ordination. May have damaging effect on respiratory system, central nervous system and liver. Depression of central nervous system. Symptoms may include dizziness, headache, nausea, unconsciousness, irritation of the mucous membranes and dry coughs. Irregular cardiac activity.

### Indication of any immediate medical attention and special treatment needed

Get immediate medical advice / attention.

## 5. Fire-fighting measures

### Extinguishing media

Suitable extinguishing media	All known extinguishants can be used.
Unsuitable extinguishing media	Do not use a solid water stream.

### Special hazards arising from the substance or mixture

Specific hazards	Exposure to fire may cause containers to rupture or explode.
Hazardous combustion products	If involved in a fire the following toxic and/or corrosive fumes may be produced by thermal decomposition: carbon dioxide, carbon monoxide

### Advice for fire fighters

Specific methods	If possible, stop flow of product. Move container away or cool with water from a protected position. If leaking, do not extinguish a flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire. Prevent water used in emergency cases from entering sewers and drainage systems.
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### Special protective equipment

Use self-contained breathing apparatus and chemically protective clothing. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to EN 469 will provide a basic level of protection from chemical incidents. EN 469:2005: Protective clothing for fire-fighters. Performance requirements for protective clothing for fire-fighting.

## 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Consider the risk of potentially explosive atmospheres. Evacuate area. Ensure adequate air ventilation. Use self-contained breathing apparatus and chemically protective clothing. Eliminate ignition sources. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

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### Environmental precautions

Try to stop release.

### Methods and materials for containment and cleaning up

Ventilate area. Keep away from ignition sources (including static discharges). Evacuate area. Prevent evaporation by covering with foam. Absorb excess liquid spillage on inorganic adsorbant material such as fine sand, brick dust etc. Place spent adsorbant in sealed packages and contact specialist waste disposal contractor.

### Reference to other sections

See also sections 8 and 13.

## 7. Handling and storage

### Precautions for safe handling

Only experienced and properly instructed persons should handle the product. The substance must be handled in accordance with good industrial hygiene and safety procedures. Avoid contact with skin. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your supplier if in doubt. Take precautionary measures against static discharges. Ensure equipment is adequately earthed. Purge air from system before introducing product. Do not smoke while handling product. Assess the risk of potentially explosive atmosphere and the need for explosion proof equipment. Consider the use of only non-sparking tools. Ensure the complete system has been (or is regularly) checked for leaks before use. Refer to suppliers handling instructions. Suck back of water into the container must be prevented. Do not allow backfeed into the container. Protect cylinders from physical damage; do not drag, roll, slide or drop. When moving cylinders, even for short distances, use a cart (trolley, hand truck etc.) designed to transport cylinders. Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use. If user experiences any difficulty operating valve, discontinue use and contact supplier. Never attempt to repair or modify container valves or safety relief devices. Damaged valves should be reported immediately to the supplier. Keep container valve outlets clean and free from contaminants, particularly oil and water. Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment. Close container valve after each use and when empty, even if still connected to equipment. Never attempt to transfer products from one cylinder/container to another. Never use direct flame or electrical heating devices to raise the pressure of a container. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.

### Conditions for safe storage, including any incompatibilities

Observe all regulations and local requirements regarding storage of containers. Segregate from other oxidants in store. Keep container below 35°C in a well-ventilated place. Containers should be stored in the vertical position and properly secured to prevent falling over. Stored containers should be periodically checked for general conditions and leakage. Container valve guards or caps should be in place. Store containers in location free from fire risk and away from sources of heat and ignition. Keep away from combustible materials. All electrical equipment in the storage areas should be compatible with the risk of a potentially explosive atmosphere. Containers should not be stored in conditions likely to encourage corrosion.

### Specific end uses

None

## 8. Exposure controls / personal protection

### Control parameters

#### Exposure controls

Great Britain – LTEL

Value = 600ppm (EH40/07)

### Derived no effect levels

Product name	Type	Exposure	Value	Population	Effects
iso-Pentane	DNEL	Long term dermal	432 mg/kg bw/day	Workers	Systemic
	DNEL	Long term inhalation	3.000 mg/m <sup>3</sup>	Workers	Systemic
	DNEL	Long term dermal	214 mg/kg bw/day	Consumers	Systemic
	DNEL	Long term inhalation	643 mg/m <sup>3</sup>	Consumers	Systemic
	DNEL	Long term oral	214 mg/kg bw/day	Consumers	Systemic

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### **Predicted no effect concentrations**

Not applicable.

### **Exposure controls**

#### **Appropriate engineering controls**

A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered. Gas detectors should be used when quantities of flammable gases /vapours may be released. Consider a work permit system e.g. for maintenance activities. Systems under pressure should be regularly checked for leakages. Provide adequate general or local ventilation. Keep concentrations well below occupational exposure limits.

### **Personal protective equipment**

#### **Eye and face protection**

Protect eye, face and skin from liquid splashes. Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the work period. Wear a face shield when transfilling and breaking transfer connections. Safety eyewear, goggles or face shield to EN166 should be used to avoid exposure to liquid splashes. Full face mask recommended. Guideline: CEN: EN136 Respiratory protective devices. Full face masks. Requirements, testing, marking.

#### **Skin and hand protection**

Advice: Wear cold insulating gloves. Guideline: EN 511 Protective gloves against cold.

Chemically resistant gloves complying with EN 374 should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Material: nitrile. Guideline: EN 374-1/2/3 Protective gloves against chemicals and micro-organisms.

#### **Body protection**

Protect eyes, face and skin from contact with product. Keep suitable chemically resistant protective clothing readily available for emergency use. Personal protective equipment for the body should be selected based on the task being performed and the risks involved. Guideline: EN 943 Protective clothing against liquid and gaseous chemicals, aerosols and solid particles.

#### **Other protection**

Wear flame resistant/retardant clothing. Take precautionary measures against static discharges. Wear working gloves and safety shoes when handling cylinders. ISO 20345 Safety footwear.

#### **Respiratory protection**

Keep self-contained breathing apparatus readily available for emergency use. Use SCBA in the event of high concentrations. The selection of the Respiratory Protective Device (RPD) must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected RPD. When allowed by a risk assessment Respiratory Protective Equipment (RPE) may be used. Guideline: EN 136: Respiratory protective devices. Full face masks. Requirements, testing, marking. Material: Filter AX. Guideline: EN 14387: Respiratory protective devices. Gas filter(s) and combined filter(s). Requirements, testing, marking.

### **Environmental Exposure Controls**

Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods of waste product treatment. Provide adequate general or local ventilation.

## **9. Physical and chemical properties**

<b>Appearance/colour</b>	Colourless liquid
<b>Odour</b>	Faint. Poor warning properties at low concentrations
<b>Odour threshold</b>	Subjective and inadequate to warn for over exposure
<b>Melting point</b>	-159,9°C
<b>Boiling point</b>	27,8°C
<b>Flash point</b>	-51°C
<b>Flammability range</b>	1,3 % (V) – 7,6 % (V)
<b>Vapour pressure 20°C</b>	0,780 bar
<b>Relative density, gas</b>	2,49

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<b>Solubility in water</b>	48 mg/l
<b>Partition coefficient (n-octanol/water)</b>	No data available
<b>Auto-ignition temperature</b>	420°C
<b>Molecular weight</b>	72,15 g/mol
<b>Relative density, liquid</b>	0,62

**Other information** Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

### 10. Stability and reactivity

<b>Reactivity</b>	Unreactive under normal conditions
<b>Chemical stability</b>	Stable under normal conditions
<b>Possibility of hazardous reactions</b>	Can form potential explosive atmosphere in air. May react violently with oxidants.
<b>Conditions to avoid</b>	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
<b>Incompatible materials</b>	Air, oxidiser
<b>Hazardous decomposition products</b>	Under normal conditions of storage and use, hazardous decomposition products should not be produced. If involved in a fire, the following toxic and/or corrosive fumes may be produced by thermal decomposition: carbon dioxide, carbon monoxide.

### 11. Toxicological information

#### Information on toxicological effects

Acute oral toxicity	LD50 / rat, value in non-standard unit: >2.000 mg/kg. Slightly toxic
Acute inhalation toxicity	LC50 / rat, value in non-standard unit: >25,3 mg/l. Slightly toxic.
Acute dermal toxicity	Slightly toxic
Acute toxicity other routes	May be fatal if swallowed and enters airways
Skin irritation	Not classed as irritant. Repeated exposure may cause skin dryness or cracking. May cause dermatitis by skin contact.
Eye irritation	Not classified as irritant. May cause mild, short-term discomfort to eyes.
Sensitisation	Not classified as a sensitiser.
Repeated dose toxicity	Not expected to cause damage to organs from prolonged or repeated exposure.
Mutagenicity assessment	There is no evidence of mutagenic potential
Carcinogenicity assessment	There is no evidence of carcinogenic effects
Toxicity to reproduction assessment	No indication of toxic effects
Teratogenicity assessment	No indication of teratogenic effects

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### 12. Ecological information

#### Toxicity

May cause long-term adverse effects in the aquatic environment.

	Species	Exposure time	Value type	Value type in standard unit
Acute and prolonged toxicity fish	Rainbow trout	96 h	LC50	4,26 mg/l
Acute toxicity aquatic invertebrates	Daphnia magna	48 h	EC50	2,7 mg/l
Toxicity aquatic plants	Algae	72 h	NOEC	7,51 mg/l
			EC50	10,7 mh/l

#### Persistence and degradability

Atmospheric degradation

The substance degrades rapidly in the atmosphere. Readily biodegradable.

Photo degradation

Half-life (direct photolysis): 2,3 d. Non-significant photolysis.

Stability in water

Degradation: 71,4%, duration: 28 days. Non-significant hydrolysis

#### Bioaccumulative potential

Not determined

#### Mobility in soil

Because of its high volatility, the product is unlikely to cause ground or water pollution.

#### Results of PBT and vPvB assessment

Not classified as PBT or vPvB

#### Other adverse effects

None

### 13. Disposal considerations

#### Waste treatment methods

Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste product should be flared through a suitable burner with flash back arrestor. Toxic and corrosive gases formed during combustion should be scrubbed before discharge to atmosphere. Do not discharge into any place where its accumulation could be dangerous. Contact supplier if guidance is required. Dispose of container via supplier only.

### 14. Transport information

#### ADR/RID

Class	3
Classification code	F1
UN number	1265
Labelling no	3
Proper shipping name	PENTANES
Packing group	I
Hazard number	33
Emergency Action Code	3YE
Tunnel restriction code	(D/E)

Environmental hazards

Environmentally hazardous

Special precautions for user

None

#### IATA

Class	3
UN number	1265
Labelling number	3
Proper shipping name	PENTANES
Packing group	I

Environmental hazards

Environmentally hazardous

Special precautions for user

None

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### IMDG

Class	3
UN number	1265
Labelling no.	3
Proper shipping name	PENTANES
Packing group	I
EmS	F-E,S-D

Environmental hazards	Environmentally hazardous
Special precautions for user	None

Transport in bulk according to Annex II of MARPOL73/78 and the IBC code

Substance name	PENTANE (ALL ISOMERS)
Ship type required	3
Pollution category	Y

### Other transport information

Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or emergency. Before transporting product containers ensure that they are firmly secured. Ensure that the cylinder valve is closed and not leaking. Ensure that the valve outlet cap nut or plug (where provided) is correctly fitted. Ensure that the valve protection device (where provided) is correctly fitted. Ensure adequate ventilation. Ensure compliance with applicable regulations.

## 15. Regulatory information

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

Seveso Directive 96/82/EC: Covered

### Chemical Safety Assessment

A Chemical Safety Assessment has been carried out.

## 16. Other information

Ensure all national/local regulations are observed. Ensure operators understand the flammability hazard. The hazard of asphyxiation is often overlooked and must be stressed during operator training. Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.

### 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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