

## HARP® Ammonia

Version: CLP02

Date: Sept 2013

Page 1 of 9

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

Product name	Ammonia, anhydrous
Chemical formula	NH <sub>3</sub>
REACH registration number	01-2119488876-14-0000
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	08457 020202 (office hours) 0500 020202 (out of hours)
Use	Refrigerant

### 2. Hazards identification

#### Classification of the substance or mixture

**Classification according to Regulation (EC) No 1272/2008/EC (CLP/GHS)**  
Press. Gas (Liquified gas) – Contains gas under pressure; may explode if heated  
Flam. Gas 2 – Flammable gas  
Acute Tox. 3 – Toxic if inhaled  
Skin Corr. 1B – Causes severe skin burns and eye damage  
Acute Tox. 1 – Very toxic to aquatic life  
Corrosive to the respiratory tract

**Classification according to Directive 67/548/EEC & 1999/45/EC**  
R10 / T;R23 / C;R34 / N;R50

Flammable  
Toxic by inhalation  
Causes burns (to eyes, respiratory system and skin)  
Very toxic to aquatic organisms.

**Risk advice to man and the environment:** Liquified gas

#### Label elements

##### Labelling Pictograms



**Signal word**

Danger

##### Hazard statements

H280 Contains gas under pressure; may explode if heated  
H221 Flammable gas

# SAFETY DATA SHEET

According to Regulation (EC) No.1907/2006

## HARP® Ammonia

Version: CLP02

Date: Sept 2013

Page 2 of 9

H331	Toxic if inhaled
H314	Causes severe skin burns and eye damage
H400	Very toxic to aquatic life
EUH071	Corrosive to the respiratory tract

### Precautionary statements

#### Precautionary statement prevention

P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P280	Wear protective gloves/protective clothing/eye protection/face protection
P260	Do not breathe gas, vapours
P273	Avoid release to the environment

#### Precautionary statement response

P377	Leaking gas fire: Do not extinguish, unless leak can be stopped safely
P381	Eliminate all ignition sources if safe to do so
P303+P361+P353+P315	IF ON SKIN (or hair): Remove / take off immediately all contaminated clothes. Rinse skin with water/shower. Get immediate medical advice/attention.
P304+P340+P315	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get immediate medical advice/attention.
P305+P351+P338+P315	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention.

#### Precautionary statement storage

P403	Store in a well-ventilated place.
P405	Store locked up.

<b>Precautionary statement disposal</b>	None
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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	7664-41-7
Index-Nr.	007-001-00-5
EC No (from EINECS)	231-635-3

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.
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.

# SAFETY DATA SHEET

According to Regulation (EC) No.1907/2006

## HARP® Ammonia

Version: CLP02

Date: Sept 2013

Page 3 of 9

Skin / eye contact

May cause severe chemical burns to skin and cornea. Suitable first aid treatment should be immediately available. Seek medical advice before using product. Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Immediately flush eyes thoroughly with water for at least 15 minutes. Obtain medical assistance.

Ingestion

Ingestion is not considered a potential route of exposure.

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

May cause severe chemical burns to skin and cornea. Suitable first aid treatment should be immediately available. Seek medical advice before using product. May result in pulmonary oedema.

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

Obtain medical assistance. Treat with a corticosteroid spray as soon as possible after inhalation.

## 5. Fire-fighting measures

### Extinguishing media

Suitable extinguishing media

All known extinguishants can be used.

### 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: nitrogen dioxide, nitric oxide

### Advice for fire fighters

Specific methods

If possible, stop flow of product. Move container away or cool with water from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.

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

Evacuate area. Use self-contained breathing apparatus and chemically protective clothing. Ensure adequate air ventilation. Monitor concentration of released product. Eliminate ignition sources.

### Environmental precautions

Try to stop release. Reduce vapour with fog or fine water spray.

### Methods and materials for containment and cleaning up

Ventilate area. Hose down area with water. Wash contaminated equipment or sites of leaks with copious quantities of water. Keep area evacuated and free from ignition sources until any spilled liquid has evaporated. (Ground free from frost).

### Reference to other sections

See also sections 8 and 13.

**HARP® Ammonia**

Version: CLP02

Date: Sept 2013

Page 4 of 9

**7. Handling and storage**

**Precautions for safe handling**

Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your supplier if in doubt. Do not allow feedback into the container. Suck back of water into the container must be prevented. Keep away from ignition sources (including static discharges). Purge air from system before introducing gas. Refer to suppliers handling instructions. Avoid exposure, obtain special instructions before use. Avoid suck-back of water, acid and alkalis. Purge system with dry, inert gas (e.g. helium or nitrogen) before gas is introduced and when system is placed out of service. Assess the risk of potentially explosive atmosphere and the need for explosion proof equipment. Consider the use of only non-sparking tools. Do not smoke while handling product. Only experienced and properly instructed persons should handle gases under pressure. Protect cylinders from physical damage; do not drag, roll, slide or drop. 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. 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. Ensure the complete gas system has been (or is regularly) checked for leaks before use. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Close container valve after each use and when empty, even if still connected to equipment. Never attempt to repair or modify container valves or safety relief devices. Keep container valve outlets clean and free from contaminants, particularly oil and water. Never attempt to transfer products from one cylinder/container to another. Installation of a cross purge assembly between the cylinder and the regulator is recommended. The substance must be handled in accordance with good industrial hygiene and safety procedures. Ensure equipment is adequately earthed.

**Conditions for safe storage, including any incompatibilities**

Secure cylinders to prevent from falling. Keep container below 50°C in a well-ventilated place. Segregate from oxidant gases and other oxidants in store. Observe all regulations and local requirements regarding storage of containers. Containers should not be stored in conditions likely to encourage corrosion. 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.

**Specific end uses**

None

**8. Exposure controls / personal protection**

**Control parameters**

**Exposure limit value**

Value type	Value	Note
Great Britain – LTEL	25 ppm	EH 40/07
Great Britain - STEL	35 ppm	EH 40/07

**Derived no effect levels**

Type	Exposure	Value	Population	Effects
DNEL	Short term dermal	6,8 mg/kg bw/day	Workers	Systemic
DNEL	Long term inhalation	36 mg/m <sup>3</sup>	Workers	Local
DNEL	Long term inhalation	14 mg/cm <sup>2</sup>	Workers	Local

**Predicted no effect concentrations**

Type	Compartment detail	Value
PNEC	Fresh water	0,0011 mg/l
PNEC	Marine	0,0011 mg/l

# SAFETY DATA SHEET

According to Regulation (EC) No.1907/2006

## HARP® Ammonia

Version: CLP02

Date: Sept 2013

Page 5 of 9

### 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. Product to be handled in a closed system. Use only permanent leak-tight installations (e.g. welded pipes). Gas detectors should be used when toxic quantities may be released. Keep concentrations well below occupational exposure limits. Provide adequate general or local ventilation. Systems under pressure should be regularly checked for leaks. The substance must be handled in accordance with good industrial hygiene and safety procedures. Consider a work permit system e.g. for maintenance activities.

### 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. Wear eye protection to EN 166 when using gases. Full face mask recommended. Guideline: CEN: EN136 Respiratory protective devices. Full face masks. Requirements, testing, marking.

#### Skin and hand protection

Advice: Wear working gloves and safety shoes while handling gas cylinders. 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. Materials suitable for prolonged, direct contact: Material: Butyl rubber (Butyl), Min. breakthrough time: 480 min, Glove thickness: 0,7 mm, Guideline: EN 374-1/2/3 Protective gloves against chemicals and microorganisms, Protection index: 6. Advice: Materials suitable for short-term contact and/or liquid splashes. Material: CR (Chloroprene, Polychloroprene rubber), Min. breakthrough time: 30 min, glove thickness: 0,5 mm, Guideline: EN 374-1/2/3 Protective glove against chemicals and microorganisms, Protection index: 2

#### Body protection

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 working gloves and safety shoes when handling gas cylinders. Guideline: 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 K. Guideline: EN 14387: Respiratory protective devices. Gas filter(s) and combined filter(s). Requirements, testing, marking.

#### Thermal hazards

If there is a risk of contact with the liquid, all protective equipment should be suitable for extremely low temperatures.

#### Environmental Exposure Controls

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

# SAFETY DATA SHEET

According to Regulation (EC) No.1907/2006

## HARP® Ammonia

Version: CLP02

Date: Sept 2013

Page 6 of 9

### 9. Physical and chemical properties

<b>Appearance/colour</b>	Colourless gas
<b>Odour</b>	Ammoniacal
<b>Odour threshold</b>	Subjective and inadequate to warn for over exposure
<b>pH value</b>	If dissolved in water pH value will be affected
<b>Melting point</b>	-77,7°C
<b>Boiling point</b>	-33°C
<b>Flash point</b>	Not applicable for gases and gas mixtures
<b>Flammability range</b>	15 % (V) – 30 % (V)
<b>Vapour pressure 20°C</b>	8,6 bar
<b>Relative density, gas</b>	0,6
<b>Solubility in water</b>	Hydrolyses
<b>Partition coefficient (n-octanol/water)</b>	<1 logPow
<b>Auto-ignition temperature</b>	630°C
<b>Explosive properties</b>	Explosive acc. EU legislation: Not explosive Explosive acc. transp. Reg.: Not explosive
<b>Oxidising properties</b>	Not applicable
<b>Molecular weight</b>	17 g/mol
<b>Critical temperature</b>	132,4°C
<b>Relative density, liquid</b>	0,7
<b>Other information</b>	Although this substance has flammability data, it is difficult to ignite in air and is classified as non-flammable

### 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>	Oxidising agents. Air, Oxidiser. May react violently with acids. Reacts with water to form corrosive alkalis. Corrosive to galvanised metal. Corrosive to brass, Cu, Zn, Au, Ag and Hg. For material compatibility see latest version of ISO-11114.
<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: Nitrogen dioxide, Nitric oxide.

### 11. Toxicological information

#### Information on toxicological effects

Acute oral toxicity	LD50 / rat, value in standard unit: 350 mg/kg
Acute inhalation toxicity	LC50 / rat, exposure time: 1 h, value in non-standard unit: 9500 ppm LC50 / rat, exposure time: 4 h, value in non-standard unit: 2000 ppm
Acute dermal toxicity	Not applicable
Acute toxicity other routes	Not applicable

**HARP® Ammonia**

Version: CLP02

Date: Sept 2013

Page 7 of 9

Skin irritation	Irritant
Eye irritation	Irritant
Sensitisation	Not classified as a sensitiser
Mutagenicity assessment	There is no evidence of mutagenic potential
Carcinogenicity assessment	There is no evidence of carcinogenic effects
Toxicity to reproduction assessment	No known effects from this product
Teratogenicity assessment	No indication of teratogenic effects
Other toxicity information	May cause inflammation of the respiratory system and skin. Inhalation of large amounts leads to bronchospasm, laryngeal oedema and pseudomembrane formation. Irritating to the eyes.

## 12. Ecological information

### Toxicity

Toxic to water organisms. Avoid release to the environment. Product is not allowed to be discharged into ground water or aquatic environment.

	Species	Exposure time	Value type	Value type in standard unit
Acute and prolonged toxicity fish	Rainbow trout	96 h	LC50	0,16-1,1 mg/l
Acute and prolonged toxicity fish	Rainbow trout	-	NOEC	1,2 mg/l
Acute toxicity aquatic invertebrates	Daphnia magna	48 h	EC50	25,4 mg/l
Acute toxicity aquatic invertebrates	Daphnia magna	-	NOEC	0,79 mg/l
Toxicity aquatic plants	Chlorella	432 h	EC50	2.700 mg/l
Chronic toxicity fish	Ictalurus punctatus	31 d		0,048 mg/l*
Chronic toxicity aquatic invertebrates	Daphnia magna	4 d		0,79 mg/l**

\* The statement of the toxic effect relates to the analytically determined concentration.

\*\*The product has not been tested. The statement has been derived from products of a similar structure or composition.

<b>Persistence and degradability</b>	The substance is biodegradable. Unlikely to persist.
<b>Bioaccumulative potential</b>	The substance has no potential for bioaccumulation
<b>Mobility in soil</b>	The substance has low mobility in soil. The substance is soluble in water.
<b>Results of PBT and vPvB assessment</b>	Not classified as PBT or vPvB
<b>Other adverse effects</b>	May cause pH changes in aqueous ecological systems. Depending on local conditions and existing concentrations, disturbances in the biodegradation process of activated sludge are possible.

## 13. Disposal considerations

### Waste treatment methods

Must not be discharged to atmosphere. Gas may be scrubbed in sulphuric acid solution. Gas may be scrubbed in water. 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. Refer to the EIGA code of practice (Doc. 30 "Disposal of gases" downloadable at <http://www.eiga.org>) for more guidance on suitable disposal methods. Contact supplier if guidance is required. Dispose of cylinder via gas supplier only. Gases in pressure containers (including halons) contain dangerous substances. EWC No. 16 05 04\*

# SAFETY DATA SHEET

According to Regulation (EC) No.1907/2006

## HARP® Ammonia

Version: CLP02

Date: Sept 2013

Page 8 of 9

### 14. Transport information

#### ADR/RID

Class	2
Classification code	2TC
UN number	1005
Labelling no	2.3, 8
Proper shipping name	AMMONIA, ANHYDROUS
Packing group/instruction	P200
Hazard number	33
Emergency Action Code	2RE
Tunnel restriction code	(C/D)

Environmental hazards	Environmentally hazardous
Special precautions for user	None

#### IATA

Class	2.3
UN number	1005
Labelling number	2.3, 8
Proper shipping name	AMMONIA, ANHYDROUS
Packing group/instruction	P200

Environmental hazards	Environmentally hazardous
Special precautions for user	None

#### IMDG

Class	2.3
UN number	1005
Labelling no.	2.3, 8
Proper shipping name	AMMONIA, ANHYDROUS
Packing group/instruction	P200
EmS	F-C,S-U

Environmental hazards	None
Special precautions for user	None

Transport in bulk according to Annex II of MARPOL73/78 and the IBC code: Not applicable

#### 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: Listed

#### Chemical Safety Assessment

A Chemical Safety Assessment has been carried out.



# SAFETY DATA SHEET

According to Regulation (EC) No.1907/2006

 HARP  
INTERNATIONAL

## HARP<sup>®</sup> Ammonia

Version: CLP02

Date: Sept 2013

Page 9 of 9

### 16. Other information

Ensure all national/local regulations are observed. Ensure operators understand the toxicity hazard. Users of breathing apparatus must be trained. 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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