

# Safety Data Sheet

**Product :**

**Hydrogen (refrigerated)**

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MSDS Nr : 067B\_AL

Version : 1.01

Date : 31/07/2002

## 1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY

MSDS Nr	067B_AL
Product name	Hydrogen (refrigerated)
Chemical formula	H <sub>2</sub>
Company identification	see heading and/or footer see paragraph 16 "OTHER INFORMATION"
Emergency phone numbers	see heading and/or footer see paragraph 16 "OTHER INFORMATION"

## 2 COMPOSITION/INFORMATION ON INGREDIENTS

Substance/Preparation	Substance.
Components/Impurities	Contains no other components or impurities which will influence the classification of the product.
CAS Nr	01333-74-0
EEC Nr (from EINECS)	215-605-7

## 3 HAZARDS IDENTIFICATION

Hazards identification	Refrigerated liquefied gas. Contact with product may cause cold burns or frostbite. Extremely flammable
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## 4 FIRST AID MEASURES

Inhalation	In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. 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/eye contact	Immediately flush eyes thoroughly with water for at least 15 minutes. In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance
Ingestion	Ingestion is not considered a potential route of exposure.

## 5 FIRE FIGHTING MEASURES

Specific hazards	Exposure to fire may cause containers to rupture/explode.
Hazardous combustion products	None
Suitable extinguishing media	All known extinguishants can be used.

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Specific methods

If possible, stop flow of product.  
Move away from the container and cool with water from a protected position.  
Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire.  
If leaking do not spray water onto container. Water surrounding area (from protected position) to contain fire.

Special protective equipment for fire fighters

In confined space use self-contained breathing apparatus.

## 6 ACCIDENTAL RELEASE MEASURES

Personal precautions

Use protective clothing.  
Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.  
Evacuate area.  
Ensure adequate air ventilation.  
Eliminate ignition sources.

Environmental precautions

Try to stop release.

Clean up methods

Ventilate area.

## 7 HANDLING AND STORAGE

Handling and storage

Ensure equipment is adequately earthed.  
Suck back of water into the container must be prevented.  
Purge air from system before introducing gas.  
Do not allow backfeed into the container.  
Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.  
Keep away from ignition sources (including static discharges).  
Segregate from oxidant gases and other oxidants in store.  
Refer to supplier's container handling instructions.  
Keep container below 50°C in a well ventilated place.

## 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protection

Ensure adequate ventilation.  
Protect eyes, face and skin from liquid splashes.  
Do not smoke while handling product.

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## 9 PHYSICAL AND CHEMICAL PROPERTIES

Molecular weight	2
Melting point	-259 °C
Boiling point	-253 °C
Critical temperature	-240 °C
Relative density, gas	0.07 (air=1)
Relative density, liquid	0.07 (water=1)
Vapour Pressure 20°C	Not applicable.
Solubility mg/l water	1.6 mg/l
Appearance/Colour	Colourless liquid
Odour	None
Autoignition temperature	560 °C
Flammability range	4-75 vol% in air.
Other data	Burns with a colourless invisible flame.

## 10 STABILITY AND REACTIVITY

Stability and reactivity	Can form explosive mixture with air. Liquid spillages can cause embrittlement of structural materials. May react violently with oxidants.
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## 11 TOXICOLOGICAL INFORMATION

General	No known toxicological effects from this product.
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## 12 ECOLOGICAL INFORMATION

General	Can cause frost damage to vegetation.
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## 13 DISPOSAL CONSIDERATIONS

General	Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste gas should be flared through a suitable burner with flash back arrestor. Do not discharge into any place where its accumulation could be dangerous. Contact supplier if guidance is required.
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## 14 TRANSPORT INFORMATION

Proper shipping name	Hydrogen, refrigerated liquid
UN Nr	1966

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Class/Div	2.1
ADR/RID Classification code	2, 3°F
ADR/RID Hazard Nr	223
Labelling ADR	Label 3: flammable gas
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 an emergency. Before transporting product containers ensure that they are firmly secured and: - there is adequate ventilation. - compliance with applicable regulations.

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## 15 REGULATORY INFORMATION

Number in Annex I of Dir 67/548	Not included in Annex I.
EC Classification	Proposed by the industry F+:R12
-Symbols	F+: Extremely flammable
-Risk phrases	R12 Extremely flammable.
-Safety phrases	S9 Keep container in well ventilated place. S16 Keep away from ignition sources - No smoking. S33 Take precautionary measures against static discharges.

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## 16 OTHER INFORMATION

May cause frostbite.

Ensure operators understand the flammability hazard.

The hazard of asphyxiation is often overlooked and must be stressed during operator training.

Ensure all national/local regulations are observed.

Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.

Details given in this document are believed to be correct at the time of going to press. Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.

This Safety Data Sheet has been established in accordance with the applicable European Directives and applies to all countries that have translated the Directives in their national laws.

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This MSDS is for information purposes only and is subject to change without notice. [Prior to purchase of products, please contact your local Air Liquide office for a complete MSDS (with Manufacturer's name and emergency phone number).]

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**End of document.**

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