

# Safety Data Sheet

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## Hydrogen

**MSDS Nr : 302-00-0043BOC(U) Version : 1.02 Date : 31/07/2000**

BOC, Priestley Road, Worsley, Manchester M28 2UT 0800 02 0800

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

Product name Hydrogen  
Chemical formula H<sub>2</sub>  
Company identification see heading and/or footer  
Emergency phone numbers see heading and/or footer

### 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 Compressed gas  
Extremely flammable

### 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.  
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.  
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.  
Special protective equipment for fire fighters Use self-contained breathing apparatus.

### 6 ACCIDENTAL RELEASE MEASURES

Personal precautions Evacuate area.  
Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.  
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.  
Do not smoke while handling product.

## 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 Not applicable.  
Vapour Pressure 20°C Not applicable.  
Solubility mg/l water 1.6 mg/l  
Appearance/Colour Colourless gas  
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.  
May react violently with oxidants.

## 11 TOXICOLOGICAL INFORMATION

General No known toxicological effects from this product.

## 12 ECOLOGICAL INFORMATION

General No known ecological damage caused by this product.

## 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.

## 14 TRANSPORT INFORMATION

UN Nr 1049  
Class/Div 2.1  
ADR/RID Item Nr 2,1° F  
ADR/RID Hazard Nr 23  
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:  
- cylinder valve is closed and not leaking  
- valve outlet cap nut or plug (where provided) is correctly fitted  
- valve protection device (where provided) is correctly fitted  
- there is adequate ventilation.  
- compliance with applicable regulations.

## 15 REGULATORY INFORMATION

Number in Annex I of Dir 67/548 001-001-00-9.  
EC Classification F+;R12  
-Symbols F+: Extremely flammable  
Labelling of cylinders  
-Symbols Label 3: flammable gas  
-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.

## 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.

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.

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