



# Safety Data Sheet

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## HYDROGEN

### 1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

**Product name** Hydrogen  
**Chemical name/formula** Hydrogen / H<sub>2</sub>  
**Company identification** See header and footer  
**Emergency phone no.** See 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 No.** 1333-74-0

### 3. HAZARDS IDENTIFICATION

**General**

- Compressed gas.
- Extremely flammable.

### 4. FIRST-AID MEASURES

**Inhalation**

- In high concentrations may cause asphyxiation. Symptoms may include loss of mobility or 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.
- 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**

- No adverse effects anticipated.

**Ingestion**

- Ingestion is not considered a potential route of exposure.

### 5. FIRE-FIGHTING MEASURES

**Specific hazards**

- Exposure to fire may cause containers to rupture or explode.

**Hazardous combustion products**

- None.

**Suitable extinguishing media**

- All known extinguishants can be used.

**Specific methods**

- If possible, stop flow of product.
- Move container away or cool with water from a protected position.
- Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous or explosive re-ignition may occur.
- Extinguish any other fire.

**Special protective equipment (for fire fighters)**

- In confined space, use a 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.
- Post warning notices.

**Environmental precautions**

- Try to stop release.

**Clean up methods**

- Ventilate area.

### 7. HANDLING & STORAGE

**General**

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

### 8. EXPOSURE CONTROLS & PERSONAL PROTECTION

**Exposure limit value**

- None.

**Personal protection**

- Ensure adequate ventilation.
- Do not smoke while handling product.

### 9. PHYSICAL & 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 gas  
**Odour** None  
**Auto-ignition temperature** 560°C  
**Flammability range** 4 – 75 volume % in air. Burns with colourless invisible flame.

For product and/or safety enquiry, please send, call, fax or log on to:

**SINGAPORE OXYGEN AIR LIQUIDE PTE LTD**  
16, Jalan Buroh, Singapore 619475.

Tel: (65) 6265 3788 or 6265 4555 Fax: (65) 6265 1441 or 6268 8403 Website: [www.soxal.com](http://www.soxal.com) Business Registration No: 197001157D

## HYDROGEN

### 10. STABILITY & REACTIVITY

- General**
- 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 effects from 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 a flash back arrestor.
  - Do not discharge into any place where its accumulation could be dangerous.
  - Contact SOXAL if guidance is required.

### 14. TRANSPORT INFORMATION

- UN No.** 1049  
**Class/Division** 2.1 (Flammable Gas)  
**Subsidiary risk** None  
**UN proper shipping name** Hydrogen, compressed  
**IMO/IATA shipping label**



- 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.

### Other transport information

- Before transporting product containers, ensure that they are firmly secured and:
  - compliance with applicable regulations;
  - 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; and
  - there is adequate ventilation.

### 15. REGULATORY INFORMATION

- General**
- Singapore's WSH (General Provisions) Regulations 2006, Sections 42 & 43.
  - Singapore Standards:
    - CP 12:2000 Part 1
    - CP 98:2003
    - SS 152:2003
    - SS 286:1984 Part 1 to Part 5

### Risk and safety phrases

- R12 - Extremely flammable.
- S9 - Keep container in well-ventilated place.
- S16 - Keep away from ignition sources. No smoking.
- S33 - Take precautionary measures against static discharge.

### 16. OTHER INFORMATION

- General**
- Ensure all local regulations or legislations are observed.
  - Ensure operators or users understand the flammability hazard of this gas.
  - The hazard of asphyxiation is often overlooked and must be stressed before use.
  - 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 revising.
  - 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 is for information purposes only and is subjected to change without notice.

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