

Material Safety Data Sheet - Hydrogen

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

MSDS NR : 067A
 PRODUCT NAME : Hydrogen
 CHEMICAL FORMULA : H₂
 COMPANY IDENTIFICATION : See heading and/or
 EMERGENCY PHONE NUMBER : 603-2078 9200

2. COMPOSITION / INFORMATION ON INGREDIENTS

SUBSTANCE / PREPARATION : Substance
 COMPONENTS / IMPURITIES : Contains on other components or impurities, which will influence the classification of the product.
 CAS NR : 01333-74-0
 EEC NR. (FROM EINECS) : 2156057

3. 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 (air = 1)
 VAPOUR PRESSURE 20 °C : Not applicable
 SOLUBILITY MG/L WATER : 1.6 mg/l
 APPEARANCE / COLOR : Colorless gas
 ODOUR : None
 AUTOIGNITION TEMPERATURE : 560 °C
 FLAMMABILITY RANGE : 4 –75 vol% in air
 OTHER DATA : Burn with a colourless invisible flame

4. FIRST AID MEASURES

INHALATION

In high concentration may cause asphyxiation. Symptoms may include loss of mobility / consciousness. Victim may not be aware of asphyxiation.

In low concentration may cause narcotic effects. Symptoms may include dizziness, headache, and nausea and lose 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.

INGESTION

Ingestion is not considered a potential route of exposure

5. FIRE FIGHTING MEASURE

SPECIFIC HAZARDS : Exposure to fire may cause containers to rupture/explode.
 Non flammable.
 HAZARDOUS COMBUSTION PRODUCTS : None
 SUITABLE EXTINGUISHING MEDIA SPECIFIC METHODS : All know extinguishants can be used
 : 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/explosive re-ignition may occur. Extinguish any fire.
 SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS : In confined space use self-contained breathing apparatus.

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6. ACCIDENTAL RELEASE MEASURES

- PERSONAL PRECAUTIONS : 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

Ensure equipment is adequately earthed. Suck back of water into the container must be prevented. Purge air from system before introducing gases.

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). Refer to supplier's container handling instruction. 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. HAZARDS IDENTIFICATION

- HAZARDS IDENTIFICATION : Compressed gas. Extremely flammable.

10. STABILITY AND REACTIVITY

- STABILITY AND REACTIVITY : Can form explosive mixture in air. May react violently with oxidants.

11. TOXICOLOGICAL INFORMATION

- GENERAL : No toxicological effects from this product

12. ECOLOGICAL INFORMATION

- GENERAL : No ecological damages caused by this product

13. DISPOSAL CONSIDERATIONS

- GENERAL : Do not discharge into areas where there is a risk forming an explosive mixture with air. Waste gas should flared through a suitable burner with a flash 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. : 2.1b
- ADR / RID HAZARD NR. : 230
- TERRACED NR. : 20
- GROUPOCARD NR : 20g04
- LABELING ADR : Label 3: Flammable gas.
- OTHER TRANSPORT INFORMATION :

Avoid transport on vehicles where load space is not separated from the driver's compartment. Ensure vehicles driver is aware of the potential hazards of the load ensure vehicles 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 caps nuts or plug (where provided) is correctly fitted
- Valve protection device (where provided) is correctly fitted
- Adequate ventilation
- Compliance with applicable regulations

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15. REGULATORY INFORMATION

NUMBER IN ANNEX 1 OF DIR 67 / 548	: 001-001-00-9
EC CLASSIFICATION	: F+; R12
SYMBOLS	: F+: Extremely flammable.
R PHRASES	: 12
S PHRASES	: 9-16-33
LABELING OF CYLINDERS	: SYMBOLS
	Road transport symbols are used and selected according to the most stringent product classification -EC or ADR.
	Label 3: Flammable gas.
RISK PHRASES	: R12 Extremely flammable
SAFETY PHRASES	: S9/16/33A. Keep container in well-ventilated place, away from ignition sources, including static discharge.

16. OTHER INFORMATION

Ensure all national / local regulations are observed. Ensure operators understand the hazard of oxygen enrichment. 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.