



# Material Safety Data Sheet

## 1. Product and Company Identification

Product name : **Hydrogen, compressed**

Chemical formula : H<sub>2</sub>

Synonyms : Hydrogen gas; Hydrogen compressed; Hydrogen (H<sub>2</sub>); Dihydrogen; UN 1049

Company : Specialty Gases of America, Inc  
6055 Brent Dr.  
Toledo, OH 43611

Telephone : 419-729-7732

Emergency : 800-424-9300

## 2. Composition/Information on Ingredients

Components	CAS Number	% Volume
Hydrogen	1333-74-0	100%

## 3. Hazards Identification

### Emergency Overview

Flammable gas. May cause flash fire.  
May cause difficulty breathing.

### Potential Health Effects

Inhalation : Nausea, vomiting, difficulty breathing, irregular heartbeat, headache, fatigue, dizziness, disorientation, mood swings, tingling sensation, loss of coordination, convulsions, unconsciousness, coma.

Eye contact : No information on significant adverse effects.

Skin contact : No information on significant adverse effects.

Ingestion : Ingestion of a gas is unlikely.

Chronic Health Hazard : None.

## 4. First Aid Measures

Eye contact : Flush eyes with plenty of water.

Skin contact : Wash exposed skin with soap and water.

Ingestion : If a large amount is swallowed, get medical attention.

Inhalation : If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

Note to physicians : For inhalation, consider oxygen.

## 5. Fire-Fighting Measures

- Suitable extinguishing media : Carbon dioxide, regular dry chemical.  
 Specific hazards : Large fires: Flood with fine water spray.  
 : Severe fire hazard. Severe explosion hazard. Vapor/air mixtures are explosive. Pressurized containers may rupture or explode if exposed to sufficient heat. Electrostatic charges may be generated by flow or agitation resulting in ignition or explosion.
- Fire fighting : Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers from unmanned hose holder or monitor nozzle until well after the fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck: Stop leak if possible without personal risk. Let burn unless leak can be stopped immediately. For smaller tanks or cylinders, extinguish and isolate from other flammables. Evacuation radius: 800 meters (1/2 mile). Do not attempt to extinguish fire unless flow of material can be stopped first. Flood with fine water spray. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Evacuate if fire gets out of control or containers are directly exposed to fire. Evacuation radius: 500 meters (1/3 mile). Consider downward evacuation if material is leaking. Stop flow of gas.

## 6. Accidental Release Measures

- Occupational spill/release : Avoid heat, flames, sparks and other sources of ignition. Do not touch spilled material. Stop leak if possible without personal risk. Reduce vapors with water spray. Keep unnecessary people away. Isolate hazard area and deny entry. Remove sources of ignition. Ventilate closed spaces before entering.
- Additional advice : None.

## 7. Handling and Storage

### Handling

Secure cylinder when using to protect from falling. Use suitable hand truck to move cylinders.

### Storage

Store in accordance with all current regulations and standards. Grounding and bonding required. Keep separated from incompatible substances. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101.

## 8. Exposure Controls / Personal Protection

### Exposure limits

ACGIH, OSHA and NIOSH have not developed exposure limits for any of this product's components.

### Engineering measures/Ventilation

Provide local exhaust ventilation system. Ventilation equipment should be explosion-resistant if explosive concentrations of materials are present. Ensure compliance with applicable exposure limits.

### Personal protective equipment

- Respiratory protection : Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use.  
 For unknown concentrations or immediately dangerous to life or death – Any supplied-air respirator with a full facepiece that is operated in a pressure-

demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

- Hand protection : Wear appropriate chemical resistant gloves.  
Eye protection : Eye protection not required, but recommended.  
Skin and body protection : Protective clothing not required.

## 9. Physical and Chemical Properties

- Form : Gas.  
Color : Colorless.  
Odor : Odorless.  
Molecular weight : 2.0  
Vapor pressure : 760 mmHg @ -253°C  
Vapor density : 0.07 (air = 1)  
Boiling point : -253°C  
Melting point : -259°C  
Water solubility : 1.82% @ 20°C  
Solvent solubility : Slightly soluble: alcohol, ether.

## 10. Stability and Reactivity

- Stability : Stable under normal conditions.  
Conditions to avoid : Avoid heat, flames, sparks or other sources of ignition. Minimize contact with material. Containers may rupture or explode if exposed to heat.  
Materials to avoid : Metals, metal salts, oxidizing materials, combustible materials, halogens, metal salts, halo carbons.  
Hazardous decomposition products : Thermal decomposition products: miscellaneous decomposition products.

## 11. Toxicological Information

The components of this material have been reviewed in various sources and the following endpoints are published:

- HYDROGEN (1333-74-0) : Inhalation LC50 Rat: > 15000 ppm/1H

### Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, NTP, OSHA or DFG.

## 12. Ecological Information

No LOEL ecotoxicity data are available for this product's components.

## 13. Disposal Considerations

- Waste from residues / unused products : Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.  
Contaminated packaging : Return cylinder to supplier.

#### 14. Transport Information

##### DOT (US only)

Proper shipping name : Hydrogen, compressed  
Class : 2.1  
UN/ID No. : UN1049  
Labeling : Flammable Gas

#### 15. Regulatory Information

##### U.S. Federal Regulations

None of this product's components are listed under SARA Section 302/304 (40 CFR 355 Appendix A), SARA Section 311/312 (40 CFR 370.21), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

##### SARA 311/312

Acute: Yes  
Chronic: No  
Fire: Yes  
Reactive: No  
Pressure: Yes

##### U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
HYDROGEN	1333-74-0	Yes	Yes	Yes	Yes	Yes	Yes

Not regulated under California Proposition 65

#### 16. Other Information

Prepared by : Specialty Gases of America, Inc.  
For additional information, please visit our website at [www.americangasgroup.com](http://www.americangasgroup.com).