



Date Prepared: July 1, 1992

Date Reviewed: March 21, 2006

MATERIAL SAFETY DATA SHEET

Product Name: Hydrogen, compressed

March 21, 2006

1. Chemical Product and Company Identification

Linweld, Inc
9911 Deer Park Road
Waverly, NE 68462

Telephone Number
Information: (402) 786-3330
Emergency: (402) 786-5277

Product Name: Hydrogen, compressed
Chemical Name: Hydrogen
Common Names: Hydrogen, compressed; Water gas; Normal hydrogen

2. Hazard Ingredients and Identity Information

COMPONENT	% VOLUME	OSHA-PEL	ACGIH-TLV	CAS NUMBER
Hydrogen	> 99.5	Simple Asphyxiant	Simple Asphyxiant	001333-74-0

3. Physical and Chemical Characteristics

Boiling Point:	-423.0° F	Vapor Density:	0.069	pH:	N/A
Melting Point:	-434.5° F	Evaporation Rate:	N/A	Physical State:	Gas
Vapor Pressure:	Supercritical	Solubility (H ₂ O):	Slight		

Appearance and Odor:
Colorless, odorless gas.

How to Detect This Substance:
N/A

Other Physical and Chemical Data:
Liquid density at boiling point, 4.43 lb/ft³ (70.96 kg/m³)
Gas density at 70° F 1 atm, 0.0052 lb/ft³ (0.0833 kg/m³)

4. Fire and Explosion Hazard Data

Flammability Classification:	Flammable	Flash Point (F):	N/A	LEL (%):	4
Ignition Temperature:	1058° F	Method:	N/A	UEL (%):	74.5

Extinguishing
Media:
Water; Carbon dioxide; Dry chemical.

Fire Fighting Procedures:
Approach fire with caution as high-temperature flame is practically invisible. Stop flow of gas before extinguishing fire. Use water spray to keep fire-exposed containers cool. Use flooding quantities of water as fog or spray.

Fire & Explosion Hazard:
Easily ignited over a wide range of vapor/air concentrations. Rapid propagation of flame or flashback possible. Burns with practically invisible flame at 3700° F, which must be avoided. Flammable or explosive when mixed with chlorine or other oxidizing materials. High-pressure releases can ignite with no apparent source of ignition possibly via static electricity.

5. Reactivity Data

Stability: Stable Hazardous Polymerization: Will not occur

Incompatibility:
Oxidizers. Fluorine and hydrogen react at 418° F when impurities are present. Chlorine and hydrogen mixtures explode if exposed to light. Lithium metal will burn in hydrogen atmosphere.

Conditions to Avoid:
N/A

5. Reactivity Data (Continued)**Hazardous Decomposition or Byproducts:**

None

Other Reactivity Data:

Electrical classification: Class 1, Group B

6. Health Hazard Data

Route(s) of Entry:	Eye contact No	Skin Contact No	Skin Absorption No
	Inhalation Yes	Ingestion No	

Health Hazards:**Acute**

Product is a simple asphyxiant. Effects of oxygen deficiency may include any, all or none of the following: rapid breathing, diminished mental alertness, impaired muscle coordination, blurred speech, and fatigue. As asphyxiation progresses; nausea, vomiting, and loss of consciousness may occur, eventually leading to convulsions, coma and death.

Chronic

NA

Carcinogenicity:

NTP No

IARC Monographs No

OSHA No

Signs and Symptoms of Exposure and Emergency First Aid Procedures:

Eye Contact No adverse effects anticipated.

Skin Contact No adverse effects anticipated.

Inhalation Product is a simple asphyxiant. Effects of oxygen deficiency may include any, all or none of the following: rapid breathing, diminished mental alertness, impaired muscle coordination, blurred speech, and fatigue. As asphyxiation progresses; nausea, vomiting, and loss of consciousness may occur, eventually leading to convulsions, coma and death.

Conscious victim should be assisted to an uncontaminated area and allowed to inhale fresh air. Unconscious victim should be moved to an uncontaminated area and given assisted respiration.

Ingestion NA

Medical Conditions Aggravated by Exposure:

Persons of ill health that may be aggravated by exposure to hydrogen should not be allowed to work with this product.

7. Precautions for Safe Handling and Use**Actions if Released or Spilled:**

Evacuate all personnel from affected area. Use appropriate personal protective equipment. If leak is in the user's equipment, be certain to purge piping with inert gas prior to attempting repairs. If leak is in cylinder or cylinder valve, contact the nearest distributor.

Waste Disposal Method:

Do not attempt to dispose of waste or unused quantities. Return in properly labeled shipping container, with any valve outlet plugs or caps secured and valve protection caps in place.

Handling and Storage Precautions:

Use only in well-ventilated areas. Valve protection caps must remain in place unless cylinder is secured with valve outlet piped to point of use. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure-reducing regulator when connecting cylinder to lower pressure piping or systems. Do not heat cylinder. Use a check valve or trap in the discharge line to prevent hazardous backflow into the cylinder.

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavy traffic areas and emergency exits.

Do not allow temperature of cylinder storage area to exceed 125° F. Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated.

Do not attempt to repair or alter cylinders. Do not tamper with the valve or pressure relief devices.

Do not store hydrogen within 20 feet of oxygen or combustible materials unless separated by a one-half hour rated, 5 feet high firewall. Post "NO SMOKING OR OPEN FLAMES" signs in the storage and use area.

7. Precautions for Safe Handling and Use (Conditioning)**Other Precautions:**

Compressed gas cylinders should only be refilled by qualified personnel. Shipment of compressed gas cylinders that have been filled without the consent of the cylinder owner is a violation of federal law (49 CFR).

Always secure cylinders in an upright position during transportation. Never transport cylinders in enclosed space such as a vehicle truck or van.

For additional recommendations, see CGA Pamphlet P-1, P-14, P-14, G-5.

Transportation Information:

Shipping Name	Hydrogen, compressed
Hazard Class	2.1
ID Number	UN1049
Shipping Label - 1	Flammable Gas

NFPA Rating:

Health: 0 **Flammability:** 4 **Reactivity:** 0

8. Control Measures**Eye Protection:**

Safety glasses or goggles as appropriate

Protective Gloves:

Protective gloves of any material.

Respiratory Protection:

Positive pressure airline with full mask or self-contained breathing apparatus should be available for emergency use.

Ventilation:

Local exhaust to prevent hydrogen accumulation sufficient to reduce oxygen concentration below 19.5%.

Other Protective Clothing or Equipment:

Safety shoes as appropriate.

9. Regulatory Information

Hydrogen is listed under the accident prevention provisions of section 112(r) of the Clean Air Act (CAA) with a threshold quantity (TQ) of 10,000 pounds.

SARA TITLE III NOTIFICATIONS AND INFORMATION**SARA Title III – Section 313 Supplier Notification:**

This product does not contain toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and 40 CFR 372.

SARA Title III – Hazard Classes:

Fire Hazard
Sudden Release of Pressure Hazard

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