

# SAFETY DATA SHEET

M1142 - ANSI - EN



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## HYDROGEN GAS (<20 PSI)

SDS No.: M1142  
Rev. Num. 08

SDS Revision Date:

04-Sep-2019

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### SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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<b>Company Identification:</b>	Occidental Chemical Corporation 14555 Dallas Parkway, Suite 400 P.O. Box 809050 Dallas, TX 75254
<b>24 Hour Emergency Telephone Number:</b>	1-800-733-3665 or 1-972-404-3228 (USA); CANUTEC (Canada): 1-613-996-6666; CHEMTREC (within USA and Canada): 1-800-424-9300; CHEMTREC (outside USA and Canada): +1 703-527-3887; CHEMTREC Contract No: CCN16186
<b>To Request an SDS:</b>	MSDS@oxy.com or 1-972-404-3245
<b>Customer Service:</b>	1-800-752-5151 or 1-972-404-3700
<b>Product Identifier:</b>	<b>HYDROGEN GAS (&lt;20 PSI)</b>
<b>Trade Name:</b>	HYDROGEN GAS (<20 PSI)
<b>Synonyms:</b>	Hydrogen; Hydrogen gas
<b>Product Use:</b>	Chemical Intermediate; Fuel
<b>Uses Advised Against:</b>	Not for use in anaerobic chambers.

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### SECTION 2. HAZARDS IDENTIFICATION

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**OSHA REGULATORY STATUS:** This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

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### EMERGENCY OVERVIEW:

**Color:** Colorless  
**Physical State:** Gas  
**Appearance:** Clear  
**Odor:** Odorless

**Signal Word:** **DANGER**

**MAJOR HEALTH HAZARDS:** SIMPLE ASPHYXIANT. MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION. INHALATION MAY PRODUCE LOSS OF CONCIUSNESS WITHOUT WARNING PROPERTIES.

**PHYSICAL HAZARDS:** EXTREMELY FLAMMABLE GAS. CONTAINS GAS UNDER PRESSURE, MAY EXPLODE IF HEATED. Forms explosive mixtures with air and oxidizing agents. Vapor may cause flash fire. Vapor/air mixtures are explosive. Hydrogen burns with an invisible flame.

**PRECAUTIONARY STATEMENTS:** Keep away from all ignition sources. If hydrogen storage containers / cylinders are exposed to excessive heat from fire or flame contact, withdraw immediately to a secure location. Do not breathe gas. Do not enter confined spaces unless adequately ventilated. Do not puncture container. Keep container tightly closed. Use only with adequate ventilation. Use a back flow preventive device in the piping. Use only with equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Close valve after each use and when empty. Protect from sunlight when ambient temperature exceeds 52°C (125°F).

**ADDITIONAL HAZARD INFORMATION:** Simple Asphyxiant - May displace oxygen and cause rapid suffocation.

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### HAZARD CLASSIFICATION:

<b>GHS: PHYSICAL HAZARDS:</b>	<ul style="list-style-type: none"> <li>• Flammable Gas - Cat. 1 Extremely Flammable</li> <li>• Gas Under Pressure - Compressed</li> </ul>
<b>GHS: SUPPLEMENTAL HAZARD:</b>	Simple Asphyxiant: May displace oxygen and cause rapid suffocation

**GHS SYMBOL:** Flame, Gas cylinder



**GHS SIGNAL WORD:** **DANGER**

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**GHS HAZARD STATEMENTS:****GHS - Physical Hazard Statement(s)**

- Extremely flammable gas

**GHS - Precautionary Statement(s) - Prevention**

- Keep away from heat/sparks/open flames/hot surfaces. — No smoking

**GHS - Precautionary Statement(s) - Response**

- Leaking gas fire: Do not extinguish, unless leak can be stopped safely
- Eliminate all ignition sources if safe to do so

**GHS - Precautionary Statement(s) - Storage**

- Store in a well-ventilated place

**GHS - Precautionary Statement(s) - Disposal**

- There are no Precautionary Statement(s) - Disposal phrases assigned

**Physical Hazards Not Otherwise Classified**

- May form explosive mixtures with air
- Hydrogen burns with an invisible flame

**Hazard Not Otherwise Classified (HNOC)-Health**

- Simple Asphyxiant - May displace oxygen and cause rapid suffocation

**See Section 11: TOXICOLOGICAL INFORMATION**

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Component	CAS Number	Percent [%]
Hydrogen	1333-74-0	100

**SECTION 4. FIRST AID MEASURES**

**INHALATION:** Do not attempt rescue in confined spaces without adequate protective gear and proper training. If adverse effects occur, including loss of consciousness, remove to uncontaminated area. If breathing is difficult, oxygen should be administered by qualified personnel. If respiration or pulse has stopped, have a trained person administer Basic Life Support (Cardio-Pulmonary Resuscitation and/or Automatic External Defibrillator) and CALL FOR EMERGENCY SERVICES IMMEDIATELY.

**SKIN CONTACT:** Not a likely route of exposure. If skin irritation occurs, get medical advice/attention.

**EYE CONTACT:** Not a likely route of exposure. If eye irritation persists, get medical advice/attention.

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**INGESTION:** Not a likely route of exposure.

### **Most Important Symptoms/Effects (Acute and Delayed):**

This material is a simple asphyxiant. The symptoms of asphyxia depend on the rapidity with which the oxygen deficiency develops and how long it continues. In sudden acute asphyxia, unconsciousness may be immediate. With slow development there may be rapid respiration and pulse, air hunger, dizziness, reduced awareness, tightness in the head, tingling sensations, incoordination, faulty judgment, emotional instability, and rapid fatigue. As the asphyxia progresses, nausea, vomiting, collapse, unconsciousness, convulsions, deep coma and death are possible.

**Inhalation (Breathing):** Simple Asphyxiation. Acute inhalation may result in loss of consciousness with no warning due to displacement of oxygen. May cause other symptoms of hypoxia depending upon the oxygen level, such as air hunger, fatigue, increased pulse.

**Skin:** No known effects.

**Eye:** No known effects.

**Ingestion (Swallowing):** Ingestion is not a likely route of exposure because this material is a gas at normal conditions.

### **Delayed Symptoms/Effects:**

No delayed / chronic effects have been identified.

**Protection of First-Aiders:** Protect from oxygen deficient environments and explosive environments.

**Notes to Physician:** Treat for hypoxia and any hypoxia related conditions.

**Interaction with Other Chemicals Which Enhance Toxicity:** Any condition that reduces oxygenation.

**Medical Conditions Aggravated by Exposure:** Any condition aggravated by reduced oxygenation.

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## SECTION 5. FIRE-FIGHTING MEASURES

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**Fire Hazard:** Severe fire hazard. Vapor/air mixtures are explosive. Burns with invisible flame even in the dark. Containers may rupture or explode if exposed to heat. Electrostatic discharges may be generated by flow or agitation resulting in ignition or explosion. Gas may travel long distances to ignition sources and flashback. Gas in confined areas (e.g., tanks, sewers, buildings) may explode when exposed to fire. High-pressure releases often ignite without any apparent source of ignition. Exposure to rapidly expanding gas may cause frostbite.

**Extinguishing Media:** Flood with fine water spray. Use dry chemical and carbon dioxide.

**Unsuitable Extinguishing Media:** Do not use a solid water stream as it may scatter and spread fire.

**Fire Fighting:** Approach fire with caution as high-temperature flame is practically invisible. Do not attempt to extinguish fire unless flow of material can be stopped first. Use water spray to keep fire-exposed containers cool. Use flooding quantities of water as fog or spray. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. Keep unnecessary people away, isolate hazard area and deny entry. Wear NIOSH approved positive-pressure self-contained breathing apparatus operated in pressure demand mode. Evacuate

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if fire gets out of control or containers are directly exposed to fire. Let the fire burn. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

**Advice for Firefighters:** Stay upwind. Determine the extent of the problem. Isolate the area of release or fire and deny entry. Remove all ignition sources. Cool exposed non-cryogenic containers with large quantities of water from unattended equipment or remove intact containers if it can be done safely. For container exposed to fire evacuate the area in all directions because of the risk of BLEVE or explosion.

**Hazardous Combustion Products:** Hydrogen oxides; Under normal fire conditions, hazardous combustion products could result from the incidental co-burning of neighboring materials

**Sensitivity to Mechanical Impact:** Not sensitive.

**Sensitivity to Static Discharge:** Ground equipment in accordance with industry standards and best practices such as NFPA 77 [Recommended Practices on Static Electricity (2007)] and American Petroleum Institute (API) RP Recommended Practice 2003 [Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents (2008)]. Electrostatic charges may build up during handling and may form ignitable vapor-air mixtures in storage containers.

**Lower Flammability Level (air):** 4.1%

**Upper Flammability Level (air):** 74.2%

**Flash point:** No data available

**Auto-ignition Temperature:** 1051 °F (566 °C)

**GHS: PHYSICAL HAZARDS:**

- Flammable Gas - Cat. 1 Extremely Flammable
- Gas Under Pressure - Compressed

**Physical Hazards Not Otherwise Classified**

- May form explosive mixtures with air
  - Hydrogen burns with an invisible flame
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## SECTION 6. ACCIDENTAL RELEASE MEASURES

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**Personal Precautions:** Extremely flammable gas. Forms explosive mixtures with air and oxidizing agents. Eliminate all sources of ignition. Ventilate closed spaces before entering. Do not breathe gas. Handle in accordance with good industrial hygiene and safety practice.

**Personal Protective Equipment:** For Unknown Concentrations or Immediately Dangerous to Life or Health - Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply. Any self-contained breathing apparatus with a full facepiece. See section 8 for information on personal protective equipment. When working around this material, consider the use of flame resistant, and anti-static safety clothing and footwear.

**Emergency Procedures:** Evacuate unnecessary personnel and eliminate all sources of ignition. For other than

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minor leaks, immediately implement predetermined emergency plan.

**Environmental Precautions:** Stop leak if possible without personal risk. Releases should be reported, if required, to appropriate regulatory agencies.

**Methods and Materials for Containment, Confinement, and/or Abatement:** Keep unnecessary people away, isolate hazard area and deny entry. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Ventilate closed spaces before entering. Stop leak if possible without personal risk. Reduce vapors with water spray.

**Recovery:** In case of spill or leak, stop the leak as soon as possible.

**Neutralization:** Ventilate confined area if it can be done without placing personnel at risk. Use explosion proof equipment when using local exhaust ventilation. Monitor the concentration of flammable gas and oxygen. Prevent the creation of flammable or explosive concentrations of hydrogen in air.

**Final Disposal:** No additional information available.

**Additional Disaster Prevention Measures:** Keep unnecessary people away, isolate hazard area and deny entry. The primary hazard from a large release is fire. Eliminate all sources of ignition immediately if a release should occur. The public should be warned of any downwind vapor explosion hazards. Vapors or gases may travel long distances and ignite or cause a flashback fire to occur. Reduce vapors with water spray.

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## SECTION 7. HANDLING AND STORAGE

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### Handling:

**Precautions for Safe Handling:** Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use only non-sparking tools. Use only explosion proof equipment.

**Technical measures/precautions:** Use product only in closed system. Remove all sources of ignition. To avoid ignition by static electricity discharge, equipment must be bonded and grounded. Ground equipment in accordance with industry standards and best practices such as NFPA 77 [Recommended Practices on Static Electricity (2007)] and American Petroleum Institute (API) RP Recommended Practice 2003 [Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents (2008)]. Wear personal protective equipment as described in Exposure Controls/Personal Protection (Section 8) of the SDS. When working around this material, consider the use of flame resistant, and anti-static safety clothing and footwear.

**Other precautions:** Ground any equipment used in handling.

**Prevention of contact:** Avoid release to the environment. Ensure adequate ventilation, especially in confined areas. This material is a simple asphyxiant, which can cause harm without warning properties or other physiologic effects. Do not breathe gas.

### Storage:

**Safe Storage Conditions:** Keep away from open flames, hot surfaces and sources of ignition. Store and handle in accordance with all current regulations and standards. Store in a cool, dry, ventilated area away from heat, sparks and flame. Keep separated from incompatible substances (see below or Section 10 of the Safety Data Sheet). May be subject to local, regional, and/or national storage regulations. For example, in the United States, material storage is

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subject to OSHA 29 CFR 1910.106. Store only where temperatures will not exceed 52°C (125°F). Post "No Smoking or Open Flames" signs in storage and use areas. For indoor storage, use a fireproof, well-ventilated area isolated from any sources of ignition. Ample fire water supply should be available. A fixed sprinkler/deluge system is recommended.

**Technical measures:** When handling product under pressure, use piping and equipment adequately designed to withstand the pressures to be encountered. Never work on a pressurized system. Ensure back flow prevention devices are installed in piping systems. Ground any equipment used in handling.

**!!!Incompatible Substances:** Can form explosive mixtures with air, May react violently with oxidizing agents.

**Packaging Material:** Not applicable.

### Additional Information:

#### GHS: PHYSICAL HAZARDS:

- Flammable Gas - Cat. 1 Extremely Flammable
- Gas Under Pressure - Compressed

#### Physical Hazards Not Otherwise Classified

- May form explosive mixtures with air
- Hydrogen burns with an invisible flame

## SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### REGULATORY EXPOSURE LIMIT(S):

This product does not contain any components that have regulatory occupational exposure limits (OELs) established.

### NON-REGULATORY EXPOSURE LIMIT(S):

This product does not contain any components that have advisory (non-regulatory) occupational exposure limits (OEL's).

**ENGINEERING CONTROLS:** Use closed systems. Provide local exhaust ventilation where gas may be released.

### PERSONAL PROTECTIVE EQUIPMENT:

**Eye Protection:** Follow good hygiene practices. Wear safety glasses with side-shields.

**Skin and Body Protection:** As a good hygiene practice, wear appropriate protective clothing and footwear to minimize skin contact. Consider using flame resistant, anti-static safety clothing and footwear.

**Hand Protection:** As a good hygiene practice, wear appropriate chemical resistant gloves. Consult a glove supplier for assistance in selecting an appropriate chemical resistant glove.

**Respiratory Protection:** No personal respiratory protective equipment normally required. Use a NIOSH approved air-supplied respirator where presence of this product may decrease the oxygen level to concentrations less than 19.5%. A respiratory protection program that meets 29 CFR 1910.134 must be followed whenever workplace conditions warrant use of a respirator.

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**HYGIENE MEASURES:** Handle in accordance with good industrial hygiene and safety practices. Good hygiene practices include but are not limited to: wearing suitable gloves and/or eye protection; washing hands and affected skin immediately after handling, before breaks, and at the end of the workday; regularly cleaning work area and clothing; etc.

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Physical State:</b>	Gas
<b>Form Presented:</b>	Compressed Gas
<b>Color:</b>	Colorless
<b>Odor:</b>	Odorless
<b>Molecular Formula:</b>	H <sub>2</sub>
<b>pH:</b>	Not applicable
<b>Melting Point/Range:</b>	Not applicable
<b>Freezing Point/Range:</b>	-434.6 °F (-259.2 °C)
<b>Flash point:</b>	No data available
<b>Explosion limits:</b>	4.1% - 74.2%
<b>Vapor Pressure:</b>	Gas at atmospheric pressure
<b>Vapor Density (air=1):</b>	0.069 (gas)
<b>Relative Density/Specific Gravity (water=1):</b>	No data available
<b>Water Solubility:</b>	0.019% by volume @ 21 °C
<b>Partition Coefficient (n-octanol/water):</b>	Not applicable
<b>Auto-ignition Temperature:</b>	1051 °F (566 °C)
<b>Decomposition Temperature:</b>	Not applicable
<b>Odor Threshold [ppm]:</b>	No data available
<b>Evaporation Rate (ether=1):</b>	Not applicable
<b>Volatility:</b>	100% by volume
<b>Flammability (solid, gas):</b>	Highly flammable 4 - 75 vol. %
<b>Lower Flammability Level (air):</b>	4.1%
<b>Upper Flammability Level (air):</b>	74.2%
<b>Viscosity:</b>	No data available

**SECTION 10. STABILITY AND REACTIVITY**

**Chemical Stability:** Stable at normal temperatures and pressures.

**Reactivity:** Not reactive under normal temperatures and pressures.

**Conditions to Avoid (e.g., static discharge, shock, or vibration):** Keep away from heat, sparks, open flames, hot surfaces, and other sources of ignition. Containers may rupture or explode if exposed to heat. To avoid ignition by static discharge, equipment must be bonded and grounded.

**!!!Incompatible Substances:** Can form explosive mixtures with air; May react violently with oxidizing agents

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**Hazardous Decomposition Products:** Under normal conditions of storage and use, hazardous decomposition products should not be produced.

**Hazardous Polymerization:** Will not occur.

## SECTION 11. TOXICOLOGICAL INFORMATION

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### POTENTIAL HEALTH EFFECTS:

**TOXICITY:**

This material is a simple asphyxiant, which can cause harm without warning properties or other physiologic effects. Its major hazard is from its flammable and explosive character.

**ACUTE TOXICITY:**

- Eye contact:** Not a likely route of exposure.
- Skin contact:** Not a likely route of exposure.
- Inhalation:** Simple Asphyxiant. May produce loss of consciousness without warning properties.
- Ingestion:** Not a likely route of exposure.

**CHRONIC TOXICITY:**

**Chronic Effects:** No known effects.

### SIGNS AND SYMPTOMS OF EXPOSURE:

- Inhalation (Breathing):** Simple Asphyxiation. Acute inhalation may result in loss of consciousness with no warning due to displacement of oxygen. May cause other symptoms of hypoxia depending upon the oxygen level, such as air hunger, fatigue, increased pulse.
- Skin:** No known effects.
- Eye:** No known effects.
- Ingestion (Swallowing):** Ingestion is not a likely route of exposure because this material is a gas at normal conditions.

**Interaction with Other Chemicals Which Enhance Toxicity:** Any condition that reduces oxygenation.

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### GHS HEALTH HAZARDS:

Simple Asphyxiant - May displace oxygen and cause rapid suffocation. No other GHS Health hazard categories have been identified for this material.

### TOXICITY DATA:

<b>LD50 Oral:</b> Not applicable to gases	<b>LD50 Dermal:</b> Not applicable to gases	<b>LC50 Inhalation:</b> Simple Asphyxiant
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**Eye Irritation/Corrosion:** Not a likely route of exposure.

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**Skin Irritation/Corrosion:** Not a likely route of exposure.

**Skin Absorbent / Dermal Route:** NO.

**RESPIRATORY OR SKIN SENSITIZATION:** Not classified as a skin or respiratory sensitizer per GHS criteria.

**CARCINOGENICITY:** This product is not classified as a carcinogen by NTP, IARC or OSHA.

**SPECIFIC TARGET ORGAN TOXICITY (Single Exposure):** The substance is not classified as a specific target organ toxicant after single exposure per GHS criteria

**SPECIFIC TARGET ORGAN TOXICITY (Repeated or Prolonged Exposure):** The substance is not classified as a specific target organ toxicant upon repeated exposure per GHS criteria.

**INHALATION HAZARD:** High concentrations of hydrogen in confined or closed environments can cause a lack of oxygen (asphyxiation).

**GERM CELL/IN-VITRO MUTAGENICITY:** Not classified as a mutagen per GHS criteria.

**REPRODUCTIVE TOXICITY:** Not classified as a reproductive toxin per GHS criteria.

**DEVELOPMENTAL TOXICITY:** Not classified as a developmental or reproductive toxin per GHS criteria.

**TOXICOKINETICS:** Not available.

**METABOLISM:** Not available.

**BIOLOGICAL DISTRIBUTION:** Not available.

**PATHOGENICITY AND ACUTE INFECTIOUSNESS (ORAL, DERMAL, AND INHALATION):** Not applicable.

**ENDOCRINE DISRUPTOR:** Not available.

**NEUROTOXICITY:** Not Available.

**IMMUNOTOXICITY:** Not available.

**Hazard Not Otherwise Classified (HNOC)-Health**

Simple Asphyxiant - May displace oxygen and cause rapid suffocation

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## SECTION 12. ECOLOGICAL INFORMATION

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### ECOTOXICITY (EC, IC, AN LC):

**Aquatic Toxicity:**

This material is believed to be practically non-toxic to aquatic life.

### FATE AND TRANSPORT:

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**PERSISTENCE:** This material is believed not to persist in the environment.

**BIODEGRADATION:** This material is inorganic and not subject to biodegradation.

**BIOCONCENTRATION:** This material will not bioaccumulate.

**BIOACCUMULATIVE POTENTIAL:** Does not bioaccumulate.

**MOBILITY IN SOIL:** Not applicable.

**ADDITIONAL ECOLOGICAL INFORMATION:** No ecological damage caused by this product.

## SECTION 13. DISPOSAL CONSIDERATIONS

**Waste from material:**

Use or reuse if possible. May be subject to disposal regulations. Dispose in accordance with all applicable regulations.

**Container Management:**

Dispose of container in accordance with applicable local, regional, national, and/or international regulations.

**Contaminated Material:**

Dispose according to appropriate regulations

## SECTION 14. TRANSPORT INFORMATION

### LAND TRANSPORT

**U.S. DOT 49 CFR 172.101:**

**UN NUMBER:** UN1049

**PROPER SHIPPING NAME:** Hydrogen, compressed

**HAZARD CLASS/ DIVISION:** 2.1

**PACKING GROUP:** NA

**LABELING REQUIREMENTS:** 2.1

**Special provisions for transport:** Tank Carriage: Passage forbidden through tunnels of category B, C, D and E. Additional tunnel restrictions may exist. Verify local, regional, and/or national regulations.

**ADDITIONAL INFORMATION:** Emergency Response Guide Number 115.

\* **NOTE:** N89 - When steel UN pressure receptacles are used, only those bearing the "H" mark are authorized (49 CFR 172.102)

### CANADIAN TRANSPORTATION OF DANGEROUS GOODS:

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**UN NUMBER:** UN1049  
**SHIPPING NAME:** Hydrogen, compressed  
**CLASS OR DIVISION:** 2.1  
**PACKING/RISK GROUP:** NA  
**LABELING REQUIREMENTS:** 2.1

### MARITIME TRANSPORT (IMO / IMDG)

**UN NUMBER:** UN1049  
**PROPER SHIPPING NAME:** HYDROGEN, COMPRESSED  
**HAZARD CLASS / DIVISION:** 2.1  
**Packing Group:** Not applicable  
**ADDITIONAL INFORMATION:** Emergency Schedule (EmS): Fire (F-D); Spillage (S-U)

### AIR TRANSPORT (ICAO / IATA)

**Status - ICAO/IATA:** Transport by passenger and cargo aircraft is forbidden

**UN Number:** Not applicable  
**Proper shipping name:** Not applicable  
**Hazard Class:** Not applicable  
**Packing group:** Not applicable

Not applicable.

## SECTION 15. REGULATORY INFORMATION

### U.S. REGULATIONS

#### **OSHA REGULATORY STATUS:**

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

#### **CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):**

Not regulated.

#### **SARA EHS Chemical (40 CFR 355.30)**

Not regulated.

#### **EPCRA SECTIONS 311/312 HAZARD CATEGORIES (40 CFR 370.10):**

Acute Health Hazard, Fire Hazard, Sudden Release of Pressure

#### **SARA HAZARD CATEGORIES ALIGNED WITH GHS (2018):**

Physical Hazard - Flammable (gases, aerosols, liquids, or solids)

Physical Hazard - Gas Under Pressure

Health Hazard - Simple Asphyxiant

#### **EPCRA SECTION 313 (40 CFR 372.65):**

Not regulated.

#### **DEPARTMENT OF HOMELAND SECURITY (DHS)- Chemical Facility Anti-Terrorism Standards (6 CFR 27):**

The following components are regulated under DHS:

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Component	DHS - Security Issues	DHS-Sabotage Screening Threshold Qty.	DHS-Sabotage Min. Conc.	DHS-Theft Screening Threshold Qty.	DHS-Theft Min. Conc.	DHS-Release Screening Threshold Qty.	DHS-Release Min. Conc.	CWC Toxic Chemicals:
Hydrogen 1333-74-0 ( 100 )	Release - Flammable	Not Listed	Not Listed	Not Listed	Not Listed	10000 lb STQ	1.0%Minimum Concentration	-

**OSHA PROCESS SAFETY (PSM) (29 CFR 1910.119):**

The PSM standard may apply to processes which involve a flammable liquid or gas in a quantity of 10,000 pounds (4535.9 kg) or more.

Component	EPA RMP Toxic or Flammable TPQ	PSM - Highly Hazardous Substances	Flash Point
Hydrogen 1333-74-0 ( 100 )	Flammable (10000 lb threshold quantity)		

**EPA'S CLEAN WATER AND CLEAN AIR ACTS:**

Regulated as noted in table below.

Component	Clean Water Act - Priority Pollutants	CAA - ODS CLASS 1 AND CLASS 2	CAA - Volatile Organic Compounds (VOCs) in SOCM	CAA - HON Rule - Organic HAPs	CAA - Hazard Air Pollutants	CAA - Urban HAPs List (Integrated Urban Strategy)	SNAP - Substitutes for ODS	EPA RMP Toxic or Flammable TPQ
Hydrogen	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Flammable (10000 lb threshold quantity)

**NATIONAL INVENTORY STATUS**

Component	TSCA Inventory	TSCA ACTIVE LIST	TSCA 12(b)	TSCA - Section 4	TSCA - Section 5	TSCA - Section 6	TSCA - Section 8
Hydrogen 1333-74-0 (100 %)	Listed	ACTIVE	Not Listed	Not listed	Not Listed	Not listed	Not listed

**CANADIAN CHEMICAL INVENTORY:** All components of this product are listed on either the DSL or the NDSL.

Component	DSL	NDSL
Hydrogen 1333-74-0 ( 100 )	Listed	Not Listed

**STATE REGULATIONS**

Component	California Proposition 65 Cancer WARNING:	California Proposition 65 CRT List - Male reproductive toxin:	California Proposition 65 CRT List - Female reproductive toxin:	Massachusetts Right to Know Hazardous Substance List	Rhode Island Right to Know Hazardous Substance List
Hydrogen	Not Listed	Not Listed	Not Listed	Listed	Listed

Component	New Jersey Right to Know Hazardous Substance List	New Jersey Special Health Hazards Substance List	New Jersey - Environmental Hazardous Substance List	Pennsylvania Right to Know Hazardous Substance List	Pennsylvania Right to Know Special Hazardous Substances	Pennsylvania Right to Know Special Hazardous Substances	Pennsylvania Right to Know Environmental Hazard List
Hydrogen	1010	flammable - fourth degree	Listed	Listed	Not Listed	Not Listed	Not Listed

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**CANADIAN REGULATIONS**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.

Component	Canada - CEPA - Schedule I - List of Toxic Substances	Canada - NPRI	Canada - CEPA - 2010 Greenhouse Gases (GHG) Subject to Mandatory Reporting	CANADIAN CHEMICAL INVENTORY:	NDSL:
Hydrogen 1333-74-0 ( 100 )	Not listed	Not Listed	Not Listed	Listed	Not Listed

**SECTION 16. OTHER INFORMATION**

**Prepared by:** Occidental Chemical Corporation - HES&S Product Stewardship Department

**Rev. Date:** 04-Sep-2019

**Reason for Revision:**

- Scheduled review

**IMPORTANT:**

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OSHA Standard 29 CFR 1910.1200 requires that information be provided to employees regarding the hazards of chemicals by means of a hazard communication program including labeling, safety data sheets, training and access to written records. We request that you, and it is your legal duty to, make all information in this Safety Data Sheet available to your employees.

**End of Safety Data Sheet**