

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1. Product identifier

Product form : Mixture

Product name : Hydrogen (0.0001% - 99.9999%) in Propylene

Product code : SG-2002-01584

#### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Test gas/Calibration gas.

#### 1.3. Details of the supplier of the safety data sheet

Air Liquide America Specialty Gases 6141 Easton Rd Plumsteadville, PA 18949 - USA T 1.800.217.2688

www.airliquide.com

## 1.4. Emergency telephone number

Emergency number : CHEMTREC: 1-800-424-9300

#### **SECTION 2: Hazards identification**

#### 2.1. Classification of the substance or mixture

#### **Classification (GHS-US)**

Flam. Gas 1 H220 Compressed gas H280

Full text of H-phrases: see section 16

#### 2.2. Label elements

## **GHS-US** labeling

Hazard pictograms (GHS-US)





GHS02

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H220 - Extremely flammable gas

H280 - Contains gas under pressure; may explode if heated

CGA-HG04 - May form explosive mixtures with air

OSHA-H01 - May displace oxygen and cause rapid suffocation

Precautionary statements (GHS-US) : P202 - Do not handle until all safety precautions have been read and understood

P271 - Use only outdoors or in a well-ventilated area

P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing

P313 - Get medical advice/attention

CGA-PG05 - Use a back flow preventive device in the piping

CGA-PG21 - Open valve slowly

CGA-PG06 - Close valve after each use and when empty CGA-PG10 - Use only with equipment rated for cylinder pressure

P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely

CGA-PG14 - Approach suspected leak area with caution P381 - Eliminate all ignition sources if safe to do so

CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F) P210 - Keep away from heat, hot surfaces, open flames, sparks. - No smoking

P403 - Store in a well-ventilated place

## 2.3. Other hazards

No additional information available

## 2.4. Unknown acute toxicity (GHS-US)

Not applicable

01/16/2015 EN (English US) Page 1

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

## SECTION 3: Composition/information on ingredients

#### 3.1. Substance

Not applicable

#### 3.2. Mixture

Name	Product identifier	%	Classification (GHS-US)
Hydrogen	(CAS No) 1333-74-0	0.0001 - 99.9999	Flam. Gas 1, H220 Compressed gas, H280
Propylene	(CAS No) 115-07-1	0.0001 - 99.9999	Flam. Gas 1, H220

Full text of H-phrases: see section 16

## **SECTION 4: First aid measures**

#### 4.1. Description of first aid measures

First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If you feel

unwell, seek medical advice.

First-aid measures after skin contact : Adverse effects not expected from this product. First-aid measures after eye contact : Adverse effects not expected from this product.

First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

#### 4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation : May displace oxygen and cause rapid suffocation. Symptoms/injuries after skin contact : Adverse effects not expected from this product. Symptoms/injuries after eye contact : Adverse effects not expected from this product.

Symptoms/injuries after ingestion : Ingestion is not considered a potential route of exposure.

Symptoms/injuries upon intravenous : Not known.

administration

Chronic symptoms : Adverse effects not expected from this product.

### 4.3. Indication of any immediate medical attention and special treatment needed

If you feel unwell, seek medical advice. If breathing is difficult, give oxygen.

#### SECTION 5: Firefighting measures

## 5.1. Extinguishing media

Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire.

Unsuitable extinguishing media : Do not use water jet to extinguish.

## 5.2. Special hazards arising from the substance or mixture

Fire hazard : Extremely flammable gas.

Explosion hazard : May form flammable/explosive vapor-air mixture. Heat may build pressure, rupturing closed

containers, spreading fire and increasing risk of burns and injuries.

Reactivity : None known.

#### 5.3. Advice for firefighters

Firefighting instructions : In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. Use water spray

or fog for cooling exposed containers. Exercise caution when fighting any chemical fire.

Protection during firefighting : Standard protective clothing and equipment (e.g., Self Contained Breathing Apparatus) for fire

fighters. Do not enter fire area without proper protective equipment, including respiratory

protection.

## **SECTION 6: Accidental release measures**

## 6.1. Personal precautions, protective equipment and emergency procedures

General measures : Ensure adequate ventilation.

## 6.1.1. For non-emergency personnel

Protective equipment : Wear protective equipment consistent with the site emergency plan.

Emergency procedures : Escape the danger area by the closest safe route. Close doors and windows of adjacent

premises. Keep containers closed. Mark the danger area. Seal off low-lying areas. Keep upwind.

6.1.2. For emergency responders

Protective equipment : Standard protective clothing and equipment (e.g., Self Contained Breathing Apparatus) for fire

fighters. Equip cleanup crew with proper protection.

01/16/2015 EN (English US) 2/8

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

**Emergency procedures** 

: Evacuate and limit access. Ventilate area. Remove ignition sources. Monitor concentration of released product. Consider the risk of potentially explosive atmospheres. Wear self-contained breathing apparatus when entering atmospheres of unknown contaminant concentration until proven to be safe.

#### **Environmental precautions**

Try to stop release if safe to do so.

#### Methods and material for containment and cleaning up

For containment : Try to stop release if safe to do so.

Methods for cleaning up : Dispose of this material and its container in accordance with local regulations.

#### 6.4. Reference to other sections

See also Sections 8 and 13.

## SECTION 7: Handling and storage

### Precautions for safe handling

Additional hazards when processed

: Pressurized container: Do not pierce or burn, even after use. Handle empty containers with care because residual vapors are flammable. Use equipment rated for cylinder pressure. In use, may form flammable vapor-air mixture. Close valve after each use and when empty.

Precautions for safe handling

: Do not handle until all safety precautions have been read and understood. Use only non-

sparking tools. Use only outdoors or in a well-ventilated area. Keep away from

heat/sparks/open flames/hot surfaces. - No smoking.

: Do not eat, drink or smoke when using this product. Hygiene measures

## Conditions for safe storage, including any incompatibilities

Technical measures

: Comply with applicable regulations. Proper grounding procedures to avoid static electricity

should be followed.

Storage conditions

: Do not expose to temperatures exceeding 52°C (125°F). Keep container closed when not in

use. Protect cylinder from physical damage. Store in well ventilated area.

Incompatible products

None known

Incompatible materials

Oxidizing materials. Air.

#### Specific end use(s)

Test gas/Calibration gas.

ACGIH

## SECTION 8: Exposure controls/personal protection

Not applicable

## **Control parameters**

Hydrogen (0.0001% - 99.9999%) in Propylene

7.00.11	Tot applicable	
OSHA	Not applicable	
Hydrogen (1333-74-0)		
ACGIH	Not applicable	
OSHA	Not applicable	

Propylene (115-07-1)		
ACGIH	ACGIH TWA (ppm)	500 ppm
OSHA	Not applicable	

## **Exposure controls**

Appropriate engineering controls

Ensure exposure is below occupational exposure limits. Provide adequate general and local exhaust ventilation. Systems under pressure should be regularly checked for leakages. Oxygen detectors should be used when asphyxiating gases may be released. Consider work permit system e.g. for maintenance activities.

Hand protection

Wear working gloves when handling gas containers. 29CFR 1910.138: Hand Protection.

Eye protection Skin and body protection Wear safety glasses with side shields. 29 CFR 1910.133: Eye and Face Protection. Wear suitable protective clothing, e.g. - lab coats, coveralls or flame resistant clothing.

Respiratory protection

None necessary during normal and routine operations. See Sections 5 & 6.

Thermal hazard protection

None necessary during normal and routine operations.

Environmental exposure controls

Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for

specific methods for waste gas treatment.

01/16/2015 EN (English US) 3/8

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Other information : Wear safety shoes while handling containers. 29 CFR 1910.136: Foot Protection.

## **SECTION 9: Physical and chemical properties**

#### 9.1. Information on basic physical and chemical properties

Physical state : Gas

Appearance : Clear, colorless gas.

Molecular mass : Not applicable for gas-mixtures.

Color : Colorless
Odor : Odorless

Odor threshold : No data available

pH : Not applicable for gas-mixtures.

Relative evaporation rate (butyl acetate=1) : No data available

Relative evaporation rate (ether=1) : Not applicable for gas-mixtures.

No data available Melting point Freezing point : No data available Boiling point No data available Flash point : No data available : No data available Auto-ignition temperature Decomposition temperature No data available Flammability (solid, gas) See Sect. 2.1 & 2.2 Vapor pressure Not applicable. Relative vapor density at 20 °C : No data available : No data available Relative density

Relative gas density : Heavier than or similar to air

Solubility : Water: Solubility in water of component(s) of the mixture :

•: 1.6 mg/l •: 384 mg/l

Log Pow : Not applicable for gas-mixtures.

Log Kow : Not applicable for gas-mixtures.

Viscosity, kinematic : Not applicable.

Viscosity, dynamic : Not applicable.

Explosive properties : Without adequate ventilation formation of explosive mixtures may be possible.

Oxidizing properties : None.

Explosive limits : No data available

9.2. Other information

Additional information : Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below

ground level.

## **SECTION 10: Stability and reactivity**

#### 10.1. Reactivity

None known.

#### 10.2. Chemical stability

Stable under normal conditions.

## 10.3. Possibility of hazardous reactions

Can form explosive mixture with air.

#### 10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

#### 10.5. Incompatible materials

Air. Oxidizing materials.

#### 10.6. Hazardous decomposition products

Under normal conditions of storage and use hazardous decomposition products should not be produced.

01/16/2015 EN (English US) 4/8

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

## SECTION 11: Toxicological information

#### 11.1. Information on toxicological effects

Acute toxicity : Not classified

Hydrogen (1333-74-0)	
LC50 inhalation rat (ppm)	820000 ppm/4h
Propylene (115-07-1)	
LC50 inhalation rat (mg/l)	658 mg/l/4h
LC50 inhalation rat (ppm)	49957.23 ppm/4h
Skin corrosion/irritation	Not classified
	pH: Not applicable for gas-mixtures.
Serious eye damage/irritation	Not classified
	pH: Not applicable for gas-mixtures.

Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

Propy	lene (115-07	'-1)
-------	--------------	------

 IARC group
 3 - Not classifiable

 Reproductive toxicity
 : Not classified

 Specific target organ toxicity (single exposure)
 : Not classified

Specific target organ toxicity (repeated : Not classified

exposure)

Aspiration hazard : Not classified

Symptoms/injuries after inhalation : May displace oxygen and cause rapid suffocation.

Symptoms/injuries after skin contact : Adverse effects not expected from this product.

Symptoms/injuries after eye contact : Adverse effects not expected from this product.

Symptoms/injuries after ingestion : Ingestion is not considered a potential route of exposure.

Symptoms/injuries upon intravenous

administration

: Not known.

Chronic symptoms : Adverse effects not expected from this product.

## **SECTION 12: Ecological information**

## 12.1. Toxicity

Ecology - general : Classification criteria are not met.

#### 12.2. Persistence and degradability

Hydrogen (0.0001% - 99.9999%) in Propylene		
Persistence and degradability	No data available.	
Hydrogen (1333-74-0)		
Persistence and degradability	No ecological damage caused by this product.	
Propylene (115-07-1)		
Persistence and degradability	The substance is biodegradable. Unlikely to persist.	

## 12.3. Bioaccumulative potential

Hydrogen (0.0001% - 99.9999%) in Propylene		
Log Pow	Not applicable for gas-mixtures.	
Log Kow	Not applicable for gas-mixtures.	
Bioaccumulative potential	No data available.	
Hydrogen (1333-74-0)		
BCF fish 1	(no bioaccumulation expected)	
Log Pow	Not applicable for inorganic gases.	
Bioaccumulative potential	No ecological damage caused by this product.	

01/16/2015 EN (English US) 5/8

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Propylene (115-07-1)	
Log Pow	1.77
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.

#### 12.4. Mobility in soil

Hydrogen (0.0001% - 99.9999%) in Propylene		
Mobility in soil	No data available.	
Hydrogen (1333-74-0)		
Ecology - soil	No ecological damage caused by this product.	
Propylene (115-07-1)		
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.	

#### 12.5. Other adverse effects

Effect on ozone layer : None.

Effect on the global warming : No known ecological damage caused by this product.

## **SECTION 13: Disposal considerations**

#### 13.1. Waste treatment methods

Waste treatment methods : Contact supplier if guidance is required. 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 flash back arrestor. Do not discharge into any place where its accumulation could be dangerous. Ensure that the emission levels from local regulations or operating permits are not

exceeded.

Waste disposal recommendations : Refer to the CGA Pamphlet P-63 "Disposal of Gases" available at www.cganet.com for more

guidance on suitable disposal methods.

## **SECTION 14: Transport information**

In accordance with DOT

Transport document description : UN1954 Compressed gas, flammable, n.o.s.

UN-No.(DOT) : UN1954

Proper Shipping Name (DOT) : Compressed gas, flammable, n.o.s.

Hazard labels (DOT) : 2.1 - Flammable gas



DOT Symbols : G - Identifies PSN requiring a technical name

DOT Packaging Exceptions (49 CFR 173.xxx) : 306

DOT Packaging Non Bulk (49 CFR 173.xxx) : 302;305

DOT Packaging Bulk (49 CFR 173.xxx) : 314;315

DOT Quantity Limitations Passenger aircraft/rail : Forbidden

(49 CFR 173.27)

DOT Quantity Limitations Cargo aircraft only (49 : 150 kg

CFR 175.75)

DOT Vessel Stowage Location : D - The material must be stowed "on deck only" on a cargo vessel and on a passenger vessel

carrying a number of passengers limited to not more than the larger of 25 passengers or one passenger per each 3 m of overall vessel length, but the material is prohibited on passenger

vessels in which the limiting number of passengers is exceeded.

DOT Vessel Stowage Other : 40 - Stow "clear of living quarters"

**Additional information** 

Other information : No supplementary information available.

Special transport precautions : 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. Before transporting product containers: - Ensure there is adequate ventilation. - Ensure that containers are firmly secured. - Ensure cylinder valve is closed and not leaking. - Ensure valve outlet cap nut or plug (where provided)

is correctly fitted. - Ensure valve protection device (where provided) is correctly fitted.

01/16/2015 EN (English US) 6/8

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

#### **ADR**

No additional information available

Transport by sea

UN-No. (IMDG) : 1954

Proper Shipping Name (IMDG) : COMPRESSED GAS, FLAMMABLE, N.O.S.

Class (IMDG) : 2.1 - Flammable gases

Air transport

UN-No.(IATA) : 1954

Proper Shipping Name (IATA) : COMPRESSED GAS, FLAMMABLE, N.O.S.

Class (IATA) : 2

## **SECTION 15: Regulatory information**

#### 15.1. US Federal regulations

### Hydrogen (1333-74-0)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

#### Propylene (115-07-1)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Listed on United States SARA Section 313

SARA Section 313 - Emission Reporting 1.0 %

#### 15.2. International regulations

#### **CANADA**

Hydrogen (1333-74-0)		
Listed on the Canadian DSL (Domestic Sustances List)		
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas	
D 1 (45 05 0)		

### Propylene (115-07-1)

Listed on the Canadian DSL (Domestic Sustances List)

WHMIS Classification Class A - Compressed Gas
Class B Division 1 - Flammable Gas

## **EU-Regulations**

## Hydrogen (1333-74-0)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

## Propylene (115-07-1)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

## Classification according to Regulation (EC) No. 1272/2008 [CLP]

Not classified

## Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

## 15.2.2. National regulations

## Hydrogen (1333-74-0)

Listed on the AICS (Australian Inventory of Chemical Substances)

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)

Listed on the Korean ECL (Existing Chemicals List)

Listed on NZIoC (New Zealand Inventory of Chemicals)

Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

#### Propylene (115-07-1)

Listed on the AICS (Australian Inventory of Chemical Substances)

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)

Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory

Listed on the Korean ECL (Existing Chemicals List)

Listed on NZIoC (New Zealand Inventory of Chemicals)

Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

#### 15.3. US State regulations

01/16/2015 EN (English US) 7/8

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

## Hydrogen (1333-74-0)

- U.S. Massachusetts Right To Know List
- U.S. New Jersey Right to Know Hazardous Substance List
- U.S. Pennsylvania RTK (Right to Know) List

## Propylene (115-07-1)

- U.S. Massachusetts Right To Know List
- U.S. New Jersey Right to Know Hazardous Substance List
- U.S. Pennsylvania RTK (Right to Know) Environmental Hazard List
- U.S. Pennsylvania RTK (Right to Know) List

## **SECTION 16: Other information**

Indication of changes : Revised safety data sheet in accordance with OSHA final rule on GHS implementation

promulgated March 26, 2012.

Other information : This Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29

CFR, 1910.1200. Other government regulations must be reviewed for applicability to this

product.

#### Full text of H-phrases:

Compressed gas	Gases under pressure Compressed gas
Flam. Gas 1	Flammable gases Category 1
H220	Extremely flammable gas
H280	Contains gas under pressure; may explode if heated

## SDS US (GHS HazCom 2012)

This Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR, 1910.1200. Other government regulations must be reviewed for applicability to this product. To the best of Air Liquide America Corporation's knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness are not guaranteed and no warranties of any type, either express or implied, are provided. The information contained herein relates only to this specific product. If this product is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.

01/16/2015 EN (English US) 8/8