

# ELECTRONIC GAS

## HYDROGEN H<sub>2</sub>

Hydrogen is a flammable, colorless, odorless, non-toxic gas that is lighter than air. It is used as a carrier gas in semiconductor processes, especially for silicon deposition or crystal growing and as a scavenger gas in atmosphere soldering as well as for annealing copper films. The use of forming gases (H<sub>2</sub> diluted in N<sub>2</sub>) allows virtually a complete elimination of oxygen and its inconveniences in medium to high temperature processes. It is shipped in steel cylinders under high pressure.

### Container Information

CYLINDER SIZE	CONTENTS		Pressure @ 21.1°C Valve Outlet	2000 psig CGA-350 / DISS-724
	Ft <sup>3</sup>	M <sup>3</sup>		
044	210	6.0	DOT Shipping Description:	Hydrogen, compressed, 2.1, UN 1049
016	70	2.0	DOT Shipping Labels DOT Guide No. CAS Registry No.	Flammable Gas 22 1333-74-0

### Specifications

COMPONENT HYDROGEN	ULSI 99.9999% min	VLSI 99.9995% min
Carbon Dioxide	< 100 ppb	< 500 ppb
Carbon Monoxide	< 100 ppb	< 500 ppb
Oxygen	< 100 ppb	< 500 ppb
Nitrogen	< 200 ppb	< 1000 ppb
THC (as Methane)	< 100 ppb	< 500 ppb
Water	< 200 ppb	< 1000 ppb

**SHELF LIFE:** 2 years

### Physical Properties

Molecular Weight	2.016
Flammability Limits in air	4.0 - 75.0%
Specific Gravity, Gas @ 70°F(21.1°C), 1 atm(Air=1)	0.07
Density, Gas @ 70°F(21.1°C), 1 atm	0.0052lbs/ft <sup>3</sup> (0.0835g/l)
Specific Volume, Gas @ 70°F(21.1°C), 1 atm	191.7ft <sup>3</sup> /lb (11.97l/g)
Melting Point @ 75.1 psia (518 kPa)	-434.6°F (-259.2°C)
Boiling Point @ 1 atm	-423°F (-252.8°C)
Critical Temperature	-399.8°F (-239.9°C)
Critical Pressure	188.1 psia (12.97 bar)
Toxicity	Non-Toxic, asphyxiant only