

Deuterium, $^2\text{H}_2$, D_2 .



Semiconductor Grade: $\geq 99.999\%_+$

Isotopic Enrichment: >99.75 atom%

$_+$ Chemical purity is exclusive of hydrogen and deuterium hydride

Deuterium is also known as “heavy hydrogen” due to the added mass of the neutron. It is used in a variety of applications, ranging from university and industrial research comparisons between the hydrogen and deuterium in deposited film analysis, to use as a rapid thermal anneal for certain semiconductor devices where deuterium’s higher bond energy is desired. Deuterium is also used optical fiber manufacturing to eliminate the water peak at 1390nm which significantly decreases fiber attenuation in the E band. Linde has high pressure (6000psi) packages specifically designed for this application. Please inquire. Deuterium is a highly flammable and asphyxiant gas. Refer to Linde’s Material Safety Data Sheet (MSDS) #1034.

$\geq 99.999\%$ Chemical Purity

>99.75 atom% Isotopic Enrichment

Maximum Impurities

COMPONENT	CONCENTRATION
Carbon Dioxide	<1 ppm
Carbon Monoxide	<1 ppm
Deuterium Hydride + Hydrogen	<5000 ppm
Moisture (Incl. D2O)	<1 ppm
Nitrogen	<1 ppm
Oxygen	<1 ppm
Hydrogen	<100 ppm
THC (as Methane)	<1 ppm

Physical Constants

Chemical formula	$^2\text{H}_2$, D_2
Molecular weight	4.032
Specific volume @ +70°F (+21.1°C)	96.15 ft ³ /lb, 5.99 m ³ /kg
Flammability range	5% to 75% in air
Critical pressure	241.34 psia, 16.64 bar
Critical temperature	-390.64°F, -234.8°C
Specific gravity @ 70°F, 1 atm (Air=1)	0.139

Cylinder Specifications*		Contents (Liters)	Pressure (psig)
Cylinder	Valve outlet options	Liters	Psig
527	CGA 703	12,000	6,000
300	CGA 350 DISS 724	7,300	2,400
200	CGA 350 DISS 724	6,700	2,200
80	CGA 350 DISS 724	2,000	1,800
30	CGA 350 DISS 724	1,000	2,000

*Additional cylinder sizes and/or valve outlets are available.

U.S. Shipping information

U.S. Dot proper shipping name	Deuterium, Compressed
Hazard class number and description:	2.1 (Flammable Gas)
UN identification number:	UN1957
U.S. DOT shipping label(s) required:	Flammable Gas
Cas number	07782-39-0

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