

## Deuterated Silane, Si<sup>2</sup>H<sub>4</sub>, SiD<sub>4</sub>.



Semiconductor Grade Chemical Purity: ≥99.99%  
Isotopic Enrichment: ≥98 atom%

Deuterated Silane is used in Gigabyte DRAM production as a source of silicon without hydrogen, where the hydrogen that is typically incorporated in the crystal lattice, is detrimental to the high-speed operation of the gate. The heavier deuterium within the lattice provides a “mass barrier” to the Hot Electron Effect induced damage, thus increasing device lifetime. Deuterated Silane is a pyrophoric, toxic gas, with a TLV of 0.5 ppm. Deuterated Silane is also used in a variety of research applications to allow determination of hydrogen thermodynamics and incorporation rates.

### Physical and chemical properties

Chemical Purity	≥99.99%
Isotopic enrichment	≥98 atom%
Chemical Formula	Si <sup>2</sup> H <sub>4</sub> , SiD <sub>4</sub>
Molecular weight	36.15
Gas density @ 0°C (32°F)	0.0899 lb/ft <sup>3</sup> (1.44 Kg/m <sup>3</sup> )
Boiling point @ 1 atm	-112°C (-169°F)
Freezing/melting point @ 1 atm	-184.7°C (-300.5°F)
Specific gravity @ 21.1°C (70°F) and 14.7 Psia (air = 1)	1.2
Solubility in water @ 20°C (68°F)	Negligible
Specific volume (ft <sup>3</sup> /lb)	12.0
Vapor pressure @ -122.2°C (-188°F) psig	7.73

### Maximum Impurities

COMPONENT	CONCENTRATION (PPMV)
Argon + Oxygen	<5.0
Carbon Dioxide	<1.0
Carbon Monoxide	<1.0
Chlorosilanes	<5.0
Deuterium	<100.0
Deuterated Disilane	<20.0
Deuterated Methane	<5.0
Moisture (Incl. D2O)	<1.0
Nitrogen	<5.0

Cylinder Specifications*			Contents		Pressure	
Cylinder	Valve outlet options		Grams	Liters	Psig	bar
4A	CGA 350	DISS 632	1350	900	1050	73.4
4A	CGA 350	DISS 632	150	100	210	15.4

\*A large variety of cylinder sizes and valve options are available.  
Please inquire about specific packaging needs.

#### U.S. Shipping information

The following information is for U.S. domestic shipments only.

Proper shipping name	Silane
CAS #	13537-07-0
Hazard class number and description:	2.1 (Flammable Gas)
UN identification number	UN 2203
DOT label(s) required	Flammable Gas

#### Linde North America, Inc.

One Greenwich Street, Suite 100, Stewartsville, NJ 08886

Phone 1-908-329-9700 or 1-800-932-0624, Fax 1-908-329-9740, [www.lindeus.com](http://www.lindeus.com)