

Pure Gas: Sulfur Hexafluoride

DESCRIPTION

Sulfur Hexafluoride is a colorless, odorless, nontoxic, nonflammable gas that is used as an insulating gas in electrical equipment. At atmospheric pressures it sublimates directly from a solid to a gas. Sulfur Hexafluoride is chemically inert and is completely stable in the presence of most materials to temperatures of about +400°F at 392 psig (+204°C at 28 bar). It is shipped as a liquefied compressed gas at its vapor pressure of 298 psig at +70°F (21.5 bar at +21.3°C). Sulfur Hexafluoride is used for leak detection and as a gaseous dielectric for transformers, condensers and circuit breakers. Sulfur Hexafluoride is highly effective as an etchant in the semiconductor industry. Spectra Gases Material Safety Data Sheets (MSDS) are available for Sulfur Hexafluoride and should be used as guidelines in regard to first aid, methods of storage, handling and general use of Sulfur Hexafluoride.

PURITY SPECIFICATIONS (MAXIMUM IMPURITY LEVELS)*			
Contaminant	Semiconductor Grade 99.999%	UHP Grade 99.99%	Standard Grade 99.8%
Carbon Tetra fluoride (CF ₄)	1.0 ppm	10.0 ppm	700.0 ppm
Methane (CH ₄)	1.0 ppm	N/A	N/A
Nitrogen (N ₂)	3.0 ppm	50.0 ppm	500.0 ppm
Nitrous Oxide (N ₂ O)	1.0 ppm	5.0 ppm	200.0 ppm
Oxygen (O ₂)	1.0 ppm	10.0 ppm	300.0 ppm
Water (H ₂ O)	0.50 ppm	1.0 ppm	5.0 ppm

* Higher purities are available upon request.

CYLINDER INFORMATION					
Purity	Cylinder Size*	Valve Outlet*	Volume Cu.Ft./Liters	Gross Weight Lbs/Kg	Pressure Psig/Bar
Semiconductor Grade	2	590	115.0 / 52.0	230 / 104	320 / 23
	2	590	75.0 / 34.0	190 / 86	320 / 23
	3	590	20.0 / 9.0	75 / 34	320 / 23
	LB	170	0.5 / 0.2	6 / 3	320 / 23
UHP Grade	2	590	115.0 / 52.0	230 / 104	320 / 23
	2	590	075.0 / 34.0	190 / 086	320 / 23
	3	590	020.0 / 09.0	075 / 034	320 / 23
	LB	170	000.5 / 00.2	006 / 003	320 / 23
Standard Grade	2	590	115.0 / 52.0	230 / 104	320 / 23
	2	590	75.0 / 34.0	190 / 86	320 / 23
	3	590	20.0 / 9.0	75 / 34	320 / 23
	LB	170	0.5 / 0.2	6 / 3	320 / 23

* Additional cylinder sized and/or valve outlets are available upon request.

(Continued)



PHYSICAL CONSTANTS

Chemical formula	SF ₆
Molecular weight	146.05
Vapor pressure	at +70°F (+21.1°C) at +114°F (45.6°C) 312.7 psia, 21.56 bar; 544.3 psia, 37.53 bar
Density of the gas	at +68°F (+20°C) and 1 atm 0.385 lb/ft ³ , 6.17 kg/m ³
Specific gravity of the gas	at +130°F (+54.4°C) and 1 atm (water=1) 5.11
Specific volume of the gas	at +70°F (+21.1°C) and 1 atm 2.5 ft ³ /lb, 0.16 m ³ /kg
Density of the liquid, saturated	at +70°F (+21.1°C) at +105°F (40.6°C) 73.9 lb/ft ³ , 1183.76 kg/m ³ 84.9 lb/ft ³ , 1359.97 kg/m ³
Sublimation temperature	at 1 atm -82.7°F, -63.8°C
Melting point	-59.4°F, -50.8°C
Critical temperature	+114.0°F, +45.55°C
Critical pressure	544.3 psia 37.53 bar
Critical density	45.8 lb/ft ³ , 734 kg/m ³
Latent heat of vaporization at +68°F (+20°C)	27.1 Btu/lb, 63.1 kJ/kg
Latent heat of fusion at -59.4°F (-50.8°C) 32.5 psia	14.8 Btu/lb, 34.4 kJ/kg

SHIPPING DATA

Synonyms	SF ₆
CAS Register Number	2551-62-4
DOT Classification	Nonflammable gas
DOT Label	Nonflammable gas
Transport Canada Classification	2.2
Substance Identification (SI)	1080
UN Number	UN 1080
Hazards	High Pressure and Suffocation
Toxicity (TLV)	1000 ppm
Flammability Range (in air)	Nonflammable gas
Odor	None