Pure Gas: Helium

DESCRIPTION

Helium is a rare atmospheric gas which is colorless, odorless, tasteless, nontoxic, nonflammable and only slightly soluble in water. The concentration of Helium in the atmosphere by volume percent is 5.24 x 10-4. Helium is principally shipped and used in either gaseous or liquid form for nuclear reactors, semiconductors, lasers, light bulbs, superconductivity, instrumentation, medical applications, cryogenics, MRI and R & D laboratory research. Spectra Gases Material Safety Data Sheets (MSDS) are available for Helium gas and should be used as guidelines in regard to first aid, methods of storage, handling and general use of Helium.

PURITY SPECIFICATIONS (MAXIMUM IMPURITY LEVELS)*		
Contaminant	Research Grade 99.9999%	UHP Grade 99.999%
Argon (Ar)	0.1 ppm	3.0 ppm
Carbon Dioxide (CO2)	0.1 ppm	1.0 ppm
Carbon Monoxide (CO)	0.5 ppm	1.0 ppm
Hydrogen (H2)	0.5 ppm	3.0 ppm
Krypton (Kr)	0.1 ppm	1.0 ppm
Neon (Ne)	0.5 ppm	3.0 ppm
Nitrogen (N2)	0.1 ppm	3.0 ppm
Oxygen (O2)	0.1 ppm	1.0 ppm
Total Hydrocarbons (THC)	0.1 ppm	1.0 ppm
Water (H20)	0.2ppm	1.0 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
Research Grade	1	580	291 / 8200	139 / 63	2640 / 183
	2	580	243 / 6900	118 / 54	2490 / 173
	3	580	073 / 2100	048 / 22	2200 / 153
	LB	580/170	002 / 0057	006 / 03	1800 / 125
UHP Grade	1	580	291 / 8200	139 / 63	2640 / 183
	2	580	243 / 6900	118 / 54	2490 / 173
	3	580	073 / 2100	048 / 22	2200 / 153
	LB	580/170	002 / 0057	006 / 03	1800 / 125
Non-Refillable Cylinders	D1	580	— / 0400	18 / 8	1625 / 113
	D2	580	— / 0200	12 / 5	1250 / 087
	D2	580	— / 0100	10 / 4	0600 / 042
	D3	580	— / 0050	07 / 3	0725 / 051
	D3	580	— / 0025	07 / 3	0350 / 025
	D7	580	— / 0020	03 / 1	0240 / 018
	D7	580	— / 12	03 / 1	0140 / 011

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

(Continued)

PHYSICAL CONSTANTS		
Chemical name		He
Molecular weight		4.00
Density of the gas at 70°F (21,1° C), 1 atm		0.0103 lb/ft3, 0.165 kg/m3
Specific gravity of the gas at 70°F (21,1° C), 1 atm		0.138
Specific volume of the gas at 70°F (21,1° C), 1 atm		97.09 ft3/lb, 6.061 m3/kg
Density of liquid at boiling point and 1 atm		7.802 lb/ft3, 124.98 kg/m3
Boiling point at 1 atm		–452.1°F, –268.9°C
Melting point at 1 atm		None
Critical temperature at 1 atm		–450.3°F, –267.9°C
Critical pressure		33.0 psia, 2.27 bar
Critical density		4.347 lb/ft3, 69.64 kg/m3
Latent heat of vaporization at normal boiling point		8.72 Btu/lb, 20.28 kJ/kg
Latent heat of fusion at triple point		No Triple Point
Specific heat of the gas at 70°F (21,1° C), 1 atm	Cp	1.24 Btu/(lb) (°F) 5.19 kJ/(kg) (°C)
	Cv	0.745 Btu/(lb) (°F) 3.121 kJ/(kg) (°C)
Ratio of specific heats (C p/C v)		1.66
Solubility in water, vol/vol at 32 °F (0° C)		0.0094
Weight of liquid at boiling point		1.043 lb/gal, 125.0 kg/m3

SHIPPING DATA	
Synonyms	He
CAS Register Number	7440-59-7
DOT Classification	Nonflammable gas
DOT Label	Nonflammable gas
Transport Canada Classification	2.2
Substance Identification (SI)	1046
UN Number	UN 1046
Hazards	High Pressure and suffocation
Toxicity (TLV)	Asphyxiant
Flammability Range (in air)	Nonflammable gas
Odor	None