

# Oxygen

## Physical Properties

Chemical formula . . . . .	O <sub>2</sub>	Triple point temperature . . . . .	-361.89°F (-218.79°C)
Molecular weight . . . . .	31.9988	Specific heat, BTU/lb °F	
Specific gravity ( Air = 1),		At constant pressure (1 atm)	
70°F (2.11°C), 1 atm . . . . .	1.105	70°F (211.1°C). . . . .	0.2193
Specific volume, cu ft/lb		At constant volume (1 atm),	
70°F (2.11°C), 1 atm . . . . .	12.08	70°F (211.1°C). . . . .	0.1566
Density, saturated vapor		Ratio of specific heats at	
lb/cu ft, 1 atm . . . . .	0.27876	70°F (211.1°C), 1 atm . . . . .	1.400
Normal boiling point, 1 atm . . . . .	-297.33°F (-182.96°C)	Coefficient of viscosity, micropoises	
Heat vaporization, BTU/lb (1 atm) . . . . .	91.7	77°F (25°C), 1 atm . . . . .	205.3
Critical pressure		Thermal conductivity, . . . . .	32°F (0°C)
Absolute atmospheres . . . . .	49.77	BTU/(sq ft) (hr) (°F)/ft . . . . .	0.014
Absolute psi . . . . .	731.4	Ionization potential, volts . . . . .	13.6
Critical point temperature . . . . .	-181.42°F (-118.57°C)	Excitation potential, first resonance potential, volts . . . . .	9.1
Triple point pressure		Weight per gallon liquid, at boiling point, lb . . . . .	9.55
Absolute atmospheres . . . . .	0.00146		
Absolute psi . . . . .	0.0215		

## Oxygen Specifications (Units in ppm [v/v] unless shown otherwise)

Limiting Characteristics	USP	Liquid CGA G-4.3 Type II, Grade B	MTG Typical	Gaseous CGA G-11.1 Type II, Grade C
Oxygen Min. %	99	99.5	99.7	99.5
Water	NA	6.6	1	5
Dewpoint, °F	NA	-82	-105	
Total Hydrocarbons as methane	NA	NA	40	

## Conversion Data

	WEIGHT		GAS		LIQUID	
	POUNDS Lb	KILOGRAMS Kg	CUBIC FEET SCF	CUBIC METERS Nm <sup>3</sup>	GALLONS Gal	LITERS L
1 Pound	1.0	0.4536	12.078	0.3173	0.1050	0.3975
1 Kilogram	2.205	1.0	26.632	0.6996	0.2315	0.8762
1 Ton	2000	907.2	24,157	635.0	209.9	794.5
1 SCF Gas	0.08279	0.03755	1.0	0.02629	0.008689	0.03289
1 Nm <sup>3</sup> Gas	3.1491	1.4282	38.04	1.0	0.3305	1.2511
1 Gal Liquid	9.528	4.321	115.1	3.026	1.0	3.785
1 L Liquid	2.517	1.1416	30.41	0.7995	0.2642	1.0

SCF (standard cubic feet) gas measured at 1 atmosphere and 70°F.

Liquid measured at 1 atmosphere and boiling temperature.

All values rounded to nearest 4/5 significant numbers.

Nm<sup>3</sup> (normal cubic meter) gas measured at 1 atmosphere and 0°C.