

# TECHNICAL DATA

## MISCELLANEOUS PHYSICAL CONSTANTS

### Miscellaneous Physical Constants

NUMERICAL CONSTANT	VALUE	UNITS
Avogadro's Number	6.022045x10 <sup>23</sup>	Molecules/g-mole
Gas-Law Constant R	1.98719	cal/(g-mole)(°K)
	1.98719	Btu/(lb-mole)(°R)
	82.0568	(cm <sup>3</sup> )(atm)/(g-mole)(°K)
	0.0820568	(liter)(atm)/(g-mole)(°K)
	10.7314	(ft <sup>3</sup> )(lb)/(in <sup>2</sup> )(lb-mole)(°R)
	0.730228	(ft <sup>3</sup> )(atm)/(lb-mole)(°R)
	8.314510	(kPa) (L) / (g-mol) (°K)
	8314.5100	(Pa) (L) / (g-mol) (°K)
0.0831451	(bar) (L) / (g-mol) (°K)	

\*Unless otherwise noted mol=g-mol

### Volume of Ideal Gas

Conditions	Volume, L	Volume, m <sup>3</sup>
0 °C, 1 atm.	22.414	0.022414
15 °C, 1 atm.	23.645	0.023645
70 °F, 1 atm.	24.146	0.024146
<b>NTP (U.S.)</b>	70 °F, 1 atm.	
<b>STP (U.S.)</b>	0 °C, 1 atm.	

V	T	n	atm	psi	mm Hg	cm Hg	in Hg	in H <sub>2</sub> O	ft H <sub>2</sub> O
ft <sup>3</sup>	°K	mol	0.00290	0.0426	2.20	0.220	0.0867	1.18	0.0982
		lb-mol	1.31	19.31	999	99.9	39.3	535	44.6
	°R	mol	0.00161	0.02366	1.22	0.122	0.0482	0.655	0.0546
		lb-mol	0.730	10.73	555	55.5	21.8	297	24.8
cm <sup>3</sup>	°K	mol	82.05	1,206	62,400	6,240	2,450	33,400	2,780
		lb-mol	37,200	547,000	2.83E+07	2.83E+06	1.11E+06	1.51E+07	1.26E+06
	°R	mol	45.6	670	34,600	3,460	1,360	18,500	1,550
		lb-mol	20,700	304,000	1.57E+07	1.57E+06	619,000	8.41E+06	701,000
L	°K	mol	0.08205	1.206	62.4	6.24	2.45	33.4	2.78
		lb-mol	37.2	547	28,300	2,830	1,113	15,140	1,262
	°R	mol	0.0456	0.670	34.6	3.46	1.36	18.5	1.55
		lb-mol	20.7	304	15,700	1,570	619	8,410	701

This table gives the appropriate value of R for use in the ideal gas equation, PV=nRT, when the variable are expressed in other units.

\*Unless otherwise noted mol=g-mol