

PHYSICO-CHEMICAL CONSTANTS

Quantity	Symbol	Value	Units	Rel.Uncertainty (ppm)
Avogadro constant	N_A, L	6.0221367(36)	10^{23} mol	0.59
atomic mass constant, $\frac{1}{2}m(^{12}\text{C})$	m_u	1.6605402(10)	10^{-27} kg	0.59
in electron volts, $m_u c^2 / \{e\}$		931.49432(28)	MeV	0.30
Faraday constant	F	96485.309(29)	Cmol^{-1}	0.30
molar Planck constant	$N_A h$	3.99031323(36)	10^{-10} Jsmol $^{-1}$	0.089
	$N_A h c$	0.11962658(11)	Jmmol $^{-1}$	0.089
molar gas constant	R	8.314510(70)	Jmol $^{-1}$ K $^{-1}$	8.4
Boltzmann constant, R/N_A	k	1.380658(12)	10^{-23} JK $^{-1}$	8.5
in electron volts, $k/\{e\}$		8.617385(73)	10^{-5} eVK $^{-1}$	8.4
in hertz, k/h		2.08367418	10^{10} HzK $^{-1}$	8.4
in wavenumbers, k/hc		69.50387(59)	$\text{m}^{-1}\text{k}^{-1}$	8.4
molar volume (ideal gas), RT/p				
$T = 273.15$ K, $p = 100$ kPa	V_m	21.41410(19)	L/mol	8.4
Loschmidt constant, N_A/V_m	n_0	2.686763(23)	10^{25} m^{-3}	8.5
$T = 273.15$ K, $p = 100$ kPa	V_m	21.71108(19)	L/mol	8.4
Sackur-Tetrode constant				
(absolute entropy constants), $\frac{1}{2} + \ln\{(2\pi m_u k T_1 / h^2)^{3/2} k T_1 / p_0\}$				
$T_1 = 1$ K, $p_0 = 100$ kPa	S_0/R	-1.151693(21)		18
$p_0 = 101325$ Pa		-1.164856(21)		18
Stefan-Boltzmann constant, $(\pi^2/60)k^4/\hbar^3 c^2$	σ	5.67051(19)	10^{-8} Wm $^{-2}$ K $^{-4}$	34
first radiation constant, $2\pi\hbar c^2$	c_1	3.7417749(22)	10^{-16} Wm 2	0.60
second radiation constant, $\hbar c/k$	c_2	0.01438769(12)	mK	8.4
Wien displacement law constant, $b = \lambda_{max} T = c_2/4.96511423\dots$	b	2.897756(24)	10^{-3} mK	8.4