General Chemistry Data Sheet
ACS Examinations Institute

ABBREVIATIONS AND SYMBOLS

amount of substance	n	Faraday constant	F	molar	M
ampere	A	free energy	G	molar mass	M
atmosphere	atm	frequency	v	mole	mol
atomic mass unit	u	gas constant	R	Planck's constant	h
atomic molar mass	A	gram	g	pressure	P
Avogadro constant	N_A	hour	h	rate constant	k
Celsius temperature	°C	joule	J	reaction quotient	Q
centi– prefix	c	kelvin	K	second	s
coulomb	C	kilo– prefix	k	speed of light	c
electromotive force	E	liter	L	temperature, K	T
energy of activation	E_a	measure of pressure	mmHg	time	t
enthalpy	H	milli– prefix	m	volt	V
entropy	S	molal	m	volume	V
equilibrium constant	K				

CONSTANTS

$R = 8.314 \ \text{J·mol}^{-1}\text{·K}^{-1}$

$R = 0.0821 \ \text{L·atm·mol}^{-1}\text{·K}^{-1}$

$1 \ F = 96{,}500 \ \text{C·mol}^{-1}$

$1 \ F = 96{,}500 \ \text{J·V}^{-1}\text{·mol}^{-1}$

$N_A = 6.022 \times 10^{23} \ \text{mol}^{-1}$

$h = 6.626 \times 10^{-34} \ \text{J·s}$

$c = 2.998 \times 10^{8} \ \text{m·s}^{-1}$

$0 \ °C = 273.15 \ \text{K}$

Note: Notation such as m·s^{-1} is read as meters per second.

EQUATIONS

Arrhenius Equation

$$k = Ae^{-E_a/RT}$$

Graham's Law of Effusion

$$\frac{\text{rate}_A}{\text{rate}_B} = \left(\frac{M_B}{M_A}\right)^{1/2}$$

Nernst Equation

$$E = E° - \frac{RT}{nF}\ln Q$$

Nernst Equation at 25 °C

$$E = E° - \frac{0.0592}{n}\log Q$$

Integrated Rate Laws

zero: $[A] = [A]_0 - kt$

first: $\ln[A] = \ln[A]_0 - kt$

second: $\dfrac{1}{[A]} = kt + \dfrac{1}{[A]_0}$

PERIODIC TABLE OF THE ELEMENTS

1 1A																	18 8A
1 H 1.008	2 2A											13 3A	14 4A	15 5A	16 6A	17 7A	2 He 4.003
3 Li 6.941	4 Be 9.012											5 B 10.81	6 C 12.01	7 N 14.01	8 O 16.00	9 F 19.00	10 Ne 20.18
11 Na 22.99	12 Mg 24.31	3 3B	4 4B	5 5B	6 6B	7 7B	8 8B	9 8B	10 8B	11 1B	12 2B	13 Al 26.98	14 Si 28.09	15 P 30.97	16 S 32.07	17 Cl 35.45	18 Ar 39.95
19 K 39.10	20 Ca 40.08	21 Sc 44.96	22 Ti 47.88	23 V 50.94	24 Cr 52.00	25 Mn 54.94	26 Fe 55.85	27 Co 58.93	28 Ni 58.69	29 Cu 63.55	30 Zn 65.39	31 Ga 69.72	32 Ge 72.61	33 As 74.92	34 Se 78.96	35 Br 79.90	36 Kr 83.80
37 Rb 85.47	38 Sr 87.62	39 Y 88.91	40 Zr 91.22	41 Nb 92.91	42 Mo 95.94	43 Tc (98)	44 Ru 101.1	45 Rh 102.9	46 Pd 106.4	47 Ag 107.9	48 Cd 112.4	49 In 114.8	50 Sn 118.7	51 Sb 121.8	52 Te 127.6	53 I 126.9	54 Xe 131.3
55 Cs 132.9	56 Ba 137.3	57 La 138.9	72 Hf 178.5	73 Ta 180.9	74 W 183.8	75 Re 186.2	76 Os 190.2	77 Ir 192.2	78 Pt 195.1	79 Au 197.0	80 Hg 200.6	81 Tl 204.4	82 Pb 207.2	83 Bi 209.0	84 Po (209)	85 At (210)	86 Rn (222)
87 Fr (223)	88 Ra (226)	89 Ac (227)	104 Rf (261)	105 Db (262)	106 Sg (263)	107 Bh (262)	108 Hs (265)	109 Mt (266)	110 (269)	111 (272)	112 (277)		114 (???)				

58 Ce 140.1	59 Pr 140.9	60 Nd 144.2	61 Pm (145)	62 Sm 150.4	63 Eu 152.0	64 Gd 157.3	65 Tb 158.9	66 Dy 162.5	67 Ho 164.9	68 Er 167.3	69 Tm 168.9	70 Yb 173.0	71 Lu 175.0
90 Th 232.0	91 Pa 231.0	92 U 238.0	93 Np (237)	94 Pu (244)	95 Am (243)	96 Cm (247)	97 Bk (247)	98 Cf (251)	99 Es (252)	100 Fm (257)	101 Md (258)	102 No (259)	103 Lr (262)