

**CATHOLIC SECONDARY SCHOOLS ASSOCIATION
CHEMISTRY DATA SHEET**

Avogadro's constant, N_A	$6.022 \times 10^{23} \text{ mol}^{-1}$
Volume of 1 mole ideal gas: at 100 kPa and	
at 0°C (273 K)	22.71 L
at 25°C (298 K)	24.79 L
Ionisation constant for water at 25°C (298.15 K), K_w	1.0×10^{-14}
Specific heat capacity of water	$4.18 \times 10^3 \text{ J kg}^{-1} \text{ K}^{-1}$

Some useful formulae

$$\text{pH} = -\log_{10} [\text{H}^+] \qquad \Delta H = -mC\Delta T$$

Some standard potentials

$\text{K}^+ + \text{e}^-$	\rightleftharpoons	$\text{K}_{(s)}$	-2.94 V
$\text{Ba}^{2+} + 2\text{e}^-$	\rightleftharpoons	$\text{Ba}_{(s)}$	-2.91 V
$\text{Ca}^{2+} + 2\text{e}^-$	\rightleftharpoons	$\text{Ca}_{(s)}$	-2.87 V
$\text{Na}^+ + \text{e}^-$	\rightleftharpoons	$\text{Na}_{(s)}$	-2.71 V
$\text{Mg}^{2+} + 2\text{e}^-$	\rightleftharpoons	$\text{Mg}_{(s)}$	-2.36 V
$\text{Al}^{3+} + 3\text{e}^-$	\rightleftharpoons	$\text{Al}_{(s)}$	-1.68 V
$\text{Mn}^{2+} + 2\text{e}^-$	\rightleftharpoons	$\text{Mn}_{(s)}$	-1.18 V
$\text{H}_2\text{O} + \text{e}^-$	\rightleftharpoons	$\frac{1}{2} \text{H}_{2(g)} + \text{OH}^-$	-0.83 V
$\text{Zn}^{2+} + 2\text{e}^-$	\rightleftharpoons	$\text{Zn}_{(s)}$	-0.76 V
$\text{Fe}^{2+} + 2\text{e}^-$	\rightleftharpoons	$\text{Fe}_{(s)}$	-0.44 V
$\text{Ni}^{2+} + 2\text{e}^-$	\rightleftharpoons	$\text{Ni}_{(s)}$	-0.24 V
$\text{Sn}^{2+} + 2\text{e}^-$	\rightleftharpoons	$\text{Sn}_{(s)}$	-0.14 V
$\text{Pb}^{2+} + 2\text{e}^-$	\rightleftharpoons	$\text{Pb}_{(s)}$	-0.13 V
$\text{H}^+ + \text{e}^-$	\rightleftharpoons	$\frac{1}{2} \text{H}_{2(g)}$	0.00 V
$\text{SO}_4^{2-} + 4\text{H}^+ + 2\text{e}^-$	\rightleftharpoons	$\text{SO}_{2(aq)} + 2\text{H}_2\text{O}$	0.16 V
$\text{Cu}^{2+} + 2\text{e}^-$	\rightleftharpoons	$\text{Cu}_{(s)}$	0.34 V
$\frac{1}{2} \text{O}_{2(g)} + \text{H}_2\text{O} + 2\text{e}^-$	\rightleftharpoons	2OH^-	0.40 V
$\text{Cu}^+ + \text{e}^-$	\rightleftharpoons	$\text{Cu}_{(s)}$	0.52 V
$\frac{1}{2} \text{I}_{2(s)} + \text{e}^-$	\rightleftharpoons	I^-	0.54 V
$\frac{1}{2} \text{I}_{2(aq)} + \text{e}^-$	\rightleftharpoons	I^-	0.62 V
$\text{Fe}^{3+} + \text{e}^-$	\rightleftharpoons	Fe^{2+}	0.77 V
$\text{Ag}^+ + \text{e}^-$	\rightleftharpoons	$\text{Ag}_{(s)}$	0.80 V
$\frac{1}{2} \text{Br}_{2(l)} + \text{e}^-$	\rightleftharpoons	Br^-	1.08 V
$\frac{1}{2} \text{Br}_{2(aq)} + \text{e}^-$	\rightleftharpoons	Br^-	1.10 V
$\frac{1}{2} \text{O}_{2(g)} + 2\text{H}^+ + 2\text{e}^-$	\rightleftharpoons	H_2O	1.23 V
$\frac{1}{2} \text{Cl}_{2(g)} + \text{e}^-$	\rightleftharpoons	Cl^-	1.36 V
$\frac{1}{2} \text{Cr}_2\text{O}_7^{2-} + 7\text{H}^+ + 3\text{e}^-$	\rightleftharpoons	$\text{Cr}^{3+} + \frac{7}{2} \text{H}_2\text{O}$	1.36 V
$\frac{1}{2} \text{Cl}_{2(aq)} + \text{e}^-$	\rightleftharpoons	Cl^-	1.40 V
$\text{MnO}_4^- + 8\text{H}^+ + 5\text{e}^-$	\rightleftharpoons	$\text{Mn}^{2+} + 4\text{H}_2\text{O}$	1.51 V
$\frac{1}{2} \text{F}_{2(g)} + \text{e}^-$	\rightleftharpoons	F^-	2.89 V

THE PERIODIC TABLE

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KEY		Symbol of element																				
Atomic Number		Name of element																				
Atomic Weight																						
79		Gold																				
197.0																						
1 H 1.008 Hydrogen	4 Be 9.012 Beryllium	12 Mg 24.31 Magnesium	20 Ca 40.08 Calcium	21 Sc 44.96 Scandium	22 Ti 47.87 Titanium	23 V 50.94 Vanadium	24 Cr 52.00 Chromium	25 Mn 54.94 Manganese	26 Fe 55.85 Iron	27 Co 58.93 Cobalt	28 Ni 58.69 Nickel	29 Cu 63.55 Copper	30 Zn 65.39 Zinc	36 Kr 83.80 Krypton	54 Xe 131.3 Xenon	86 Rn [222.0] Radon	118 Uuo — Ununoctium					
3 Li 6.941 Lithium	11 Na 22.99 Sodium	19 K 39.10 Potassium	37 Rb 85.47 Rubidium	55 Cs 132.9 Caesium	87 Fr [223.0] Francium	88 Ra [226.0] Radium	89–103 Actinides	104 Rf [261.1] Rutherfordium	105 Db [262.1] Dubnium	106 Sg [263.1] Seaborgium	107 Bh [264.1] Bohrium	108 Hs [265.1] Hassium	109 Mt [268] Meitnerium	110 Un — Ununnilium	111 Uuu — Unununium	112 Uub — Ununbium	113 Uut — Ununtrium	114 Uuq — Ununquadium	115 Uup — Ununpentium	116 Uuh — Ununhexium	117 Uus — Ununseptium	118 Uuo — Ununoctium
5 B 10.81 Boron	13 Al 26.98 Aluminium	31 Ga 69.72 Gallium	49 In 114.8 Indium	81 Tl 204.4 Thallium	113 Nh [284] Nihonium	114 Fl [289] Flerovium	115 Mc [288] Moscovium	116 Lv [293] Livermorium	117 Ts [304] Tennessine	118 Og [304] Oganesson	119 Uue [304] Ununennium	120 Uuh [304] Unbinilium	121 Uus [304] Untrium	122 Uub [304] Unbium	123 Uut [304] Untrium	124 Uuq [304] Unquadium	125 Uup [304] Unpentium	126 Uuh [304] Unhexium	127 Uus [304] Unseptium	128 Uuo [304] Unoctium	129 Uuq [304] Unquadium	130 Uup [304] Unpentium
6 C 12.01 Carbon	14 Si 28.09 Silicon	32 Ge 72.61 Germanium	50 Sn 118.7 Tin	82 Pb 207.2 Lead	114 Fl [289] Flerovium	115 Mc [288] Moscovium	116 Lv [293] Livermorium	117 Ts [304] Tennessine	118 Og [304] Oganesson	119 Uue [304] Ununennium	120 Uuh [304] Unbinilium	121 Uus [304] Untrium	122 Uub [304] Unbium	123 Uut [304] Untrium	124 Uuq [304] Unquadium	125 Uup [304] Unpentium	126 Uuh [304] Unhexium	127 Uus [304] Unseptium	128 Uuo [304] Unoctium	129 Uuq [304] Unquadium	130 Uup [304] Unpentium	
7 N 14.01 Nitrogen	15 P 30.97 Phosphorus	33 As 74.92 Arsenic	51 Sb 121.8 Antimony	83 Bi 209.0 Bismuth	115 Mc [288] Moscovium	116 Lv [293] Livermorium	117 Ts [304] Tennessine	118 Og [304] Oganesson	119 Uue [304] Ununennium	120 Uuh [304] Unbinilium	121 Uus [304] Untrium	122 Uub [304] Unbium	123 Uut [304] Untrium	124 Uuq [304] Unquadium	125 Uup [304] Unpentium	126 Uuh [304] Unhexium	127 Uus [304] Unseptium	128 Uuo [304] Unoctium	129 Uuq [304] Unquadium	130 Uup [304] Unpentium		
8 O 16.00 Oxygen	16 S 32.07 Sulfur	34 Se 78.96 Selenium	52 Te 127.6 Tellurium	84 Po [210.0] Polonium	116 Lv [293] Livermorium	117 Ts [304] Tennessine	118 Og [304] Oganesson	119 Uue [304] Ununennium	120 Uuh [304] Unbinilium	121 Uus [304] Untrium	122 Uub [304] Unbium	123 Uut [304] Untrium	124 Uuq [304] Unquadium	125 Uup [304] Unpentium	126 Uuh [304] Unhexium	127 Uus [304] Unseptium	128 Uuo [304] Unoctium	129 Uuq [304] Unquadium	130 Uup [304] Unpentium			
9 F 19.00 Fluorine	17 Cl 35.45 Chlorine	35 Br 79.90 Bromine	53 I 126.9 Iodine	85 At [210.0] Astatine	117 Ts [304] Tennessine	118 Og [304] Oganesson	119 Uue [304] Ununennium	120 Uuh [304] Unbinilium	121 Uus [304] Untrium	122 Uub [304] Unbium	123 Uut [304] Untrium	124 Uuq [304] Unquadium	125 Uup [304] Unpentium	126 Uuh [304] Unhexium	127 Uus [304] Unseptium	128 Uuo [304] Unoctium	129 Uuq [304] Unquadium	130 Uup [304] Unpentium				
10 Ne 20.18 Neon	18 Ar 39.95 Argon	36 Kr 83.80 Krypton	54 Xe 131.3 Xenon	86 Rn [222.0] Radon	118 Og [304] Oganesson	119 Uue [304] Ununennium	120 Uuh [304] Unbinilium	121 Uus [304] Untrium	122 Uub [304] Unbium	123 Uut [304] Untrium	124 Uuq [304] Unquadium	125 Uup [304] Unpentium	126 Uuh [304] Unhexium	127 Uus [304] Unseptium	128 Uuo [304] Unoctium	129 Uuq [304] Unquadium	130 Uup [304] Unpentium					