Table of Some Common Polyatomic Ions

1 – Ions		2 – Ions		3 – Ions	
Formula	Name	Formula	Name	Formula	Name
$H_2PO_4^-$	dihydrogen phosphate	HPO_4^{2-}	hydrogen phosphate	PO_4^{3-}	phosphate
$H_2PO_3^-$	dihydrogen phosphite	HPO_3^{2-}	hydrogen phosphite	PO_3^{3-}	phosphite
HCO_3^-	hydrogen carbonate	CO_3^{2-}	carbonate	BO_3^{3-}	borate
HSO_4^-	hydrogen sulfate	SO_4^{2-}	sulfate		
HSO_3^-	hydrogen sulfite	SO_3^{2-}	sulfite		
BrO_3^-	bromate	$C_2O_4^{2-}$	oxalate		
CH_3COO^-	acetate	CrO_4^{2-}	chromate		
$C_6H_5COO^-$	benzoate	$Cr_2O_7^{2-}$	dichromate		
ClO^-	hypochlorite	$S_2O_3^{2-}$	thiosulfate		
ClO_2^-	chlorite	SiO_3^{2-}	silicate		
ClO_3^-	chlorate	1 + Ions			
ClO_4^-	perchlorate	Formula	Name		
CN^-	cyanide	NH_4^+	ammonium		
IO_3^-	iodate	H_3O^+	hydronium		
OH^-	hydroxide				
NO_3^-	nitrate				
NO_2^-	nitrite				
MnO_4^-	permanganate				
SCN^-	thiocyanate				

Formulae

$$q = mc\Delta T$$

$$q = C\Delta T$$

$$q = n\Delta_r H$$

$$\text{pH} = -\log\left[H_3O^+\right]$$

$$\text{pOH} = -\log\left[OH^-\right]$$

$$Q = It$$

$$Q = n_e F$$

$$\Delta_r H^\circ = \Sigma v \Delta_f H^\circ_{\text{products}} - \Sigma v \Delta_f H^\circ_{\text{reactants}}$$

$$\Delta_r H = \Sigma \text{BE}_{\text{reactants}} - \Sigma \text{BE}_{\text{products}}$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Constants and Conversions

Quantity	Symbol	Value
Avogadro's Number	N_A	6.02×10^{23}
standard temperature and pressure	STP	0.00 °C and 100 kPa
molar volume for a gas @ STP	V_{STP}	22.7 L/mol
auto-ionization constant of water @ 25 °C	K_W	1.00×10^{-14}
enthalpy of fusion for water @ 0 °C	$\Delta_{fus}H$	6.02 kJ/mol
enthalpy of vaporization for water @ 100.0 °C	$\Delta_{vap}H$	40.7 kJ/mol
specific heat of water @ 25.0 °C	$c_{H_2O(l)}$	4.184 J/g · °C
specific heat of ice	$c_{H_2O(s)}$	2.03 J/g · °C
specific heat of steam	$c_{H_2O(g)}$	2.01 J/g · °C
Faraday's Constant	F	96 500 C/mol

Solubility Rules for Ionic Compounds in Water at 25 °C

Ions	Group IA, NH_4^+, H^+ (H_3O^+)	ClO_3^-, NO_3^-, ClO_4^-	Cl^-, Br^-, I^-	CH_3COO^-	SO_4^{2-}	S^{2-}	OH^-	PO_4^{3-}, SO_3^{2-}, CO_3^{2-}
(aq) high Solubility (> 0.1 mol/L)	all	all	most	most	most	Group IA, Group IIA, NH_4^+	Group IA , NH^{4+}, Sr^{2+}, Ba^{2+}, Tl^+	Group IA, NH_4^+
(s) low Solubility (< 0.1 mol/L)	none	none	Ag^+, Tl^+, Hg_2^{2+}, Hg^+, Cu^+, Pb^{2+}	Ag^+, Hg^+	Ca^{2+}, Sr^{2+}, Ba^{2+}, Ra^{2+}, Pb^{2+}, Ag^+	most	most	most