

Table of Some Common Polyatomic Ions

1 - Ions		2 - Ions		3 - Ions	
Formula	Name	Formula	Name	Formula	Name
H ₂ PO ₄ ⁻	dihydrogen phosphate	HPO ₄ ²⁻	hydrogen phosphate	PO ₄ ³⁻	phosphate
H ₂ PO 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 ₂ O ₄ ²⁻	oxalate		
CH ₃ COO ⁻	acetate	CrO ₄ ²⁻	chromate		
C ₆ H ₅ COO ⁻	benzoate	Cr ₂ O ₇ ²⁻	dichromate		
ClO ⁻	hypochlorite	S ₂ O 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 ₃ O ⁺	hydronium	
OH ⁻	hydroxide				
NO ₃ ⁻	nitrate				
NO ₂ ⁻	nitrite				
MnO ₄ ⁻	permanganate				
SCN ⁻	thiocyanate				

Formulae

$q = mc\Delta T$
$q = C\Delta T$
$q = n\Delta H_{\text{mol}}$
$\text{pH} = -\log[\text{H}_3\text{O}^+]$
$Q = It$
$Q = n_e F$
$\Delta H^\circ = \sum \Delta H^\circ_f (\text{products}) - \sum \Delta H^\circ_f (\text{reactants})$
$\Delta H_{\text{rxn}} = \sum \text{BE}(\text{reactants}) - \sum \text{BE}(\text{products})$
$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Constants and Conversions

Quantity	Symbol	Value
Avagadro's Number	N _A	6.022 × 10 ²³
standard temperature and pressure	STP	0.00 °C and 101.3 kPa
molar volume for a gas @ STP	MV	22.4 L/mol
auto-ionization constant of water @ 25°C	K _w	1.00 × 10 ⁻¹⁴
enthalpy of fusion for water @ 0°C	ΔH _{fus} ^o	6.02 kJ/mol
enthalpy of vaporization for water @ 100.0°C	ΔH _{vap} ^o	40.7 kJ/mol
specific heat of water @ 25.0°C	c _{water}	4.184 J/g°C
Faraday's Constant	F	96500 C/mol

Solubility Rules for Ionic Compounds in Water at 25°C

Ions	Group IA, NH ₄ ⁺ , H ⁺ (H ₃ O ⁺)	ClO ₃ ⁻ , NO ₃ ⁻ , ClO ₄ ⁻	Cl ⁻ , Br ⁻ , I ⁻	CH ₃ COO ⁻	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 ⁺ , Pb ²⁺ , Hg ⁺ , Cu ⁺ , Tl ⁺	Ca ²⁺ , Sr ²⁺ , Ba ²⁺ , Ra ²⁺ , Pb ²⁺ , Ag ⁺	most	most	most