

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	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%; text-align: center;">NH₄⁺</td> <td style="width: 50%;"></td> <td style="width: 50%; text-align: center;">ammonium</td> </tr> <tr> <td></td> <td style="text-align: center;">H₃O⁺</td> <td></td> <td style="text-align: center;">hydronium</td> </tr> </table>					NH ₄ ⁺		ammonium		H ₃ O ⁺		hydronium
	NH ₄ ⁺						ammonium						
	H ₃ O ⁺		hydronium										
IO ₃ ⁻	iodate												
OH ⁻	hydroxide												
NO ₃ ⁻	nitrate												
NO ₂ ⁻	nitrite												
MnO ₄ ⁻	permanganate												
SCN ⁻	thiocyanate												

Formulae

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

Constants and Conversions

Quantity	Symbol	Value
Avogadro's Number	N _A	6.022 × 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 ^o _{fus}	6.02 kJ/mol
enthalpy of vaporization for water @ 100.0 °C	ΔH ^o _{vap}	40.7 kJ/mol
specific heat of water @ 25.0 °C	c _{water}	4.184 J/g°C
specific heat of ice	c _{ice}	2.03 J/g°C
specific heat of steam	c _{steam}	2.01 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 ⁺ , Hg ⁺	Ca ²⁺ , Sr ²⁺ , Ba ²⁺ , Ra ²⁺ , Pb ²⁺ , Ag ⁺	most	most	most