

Formulae of Common Ions

The charges of some common ions can be deduced from the position of the element in the periodic table.

Position of Element in the Periodic Table	Charge of Most Common Ion	Example
Group 1	+1	sodium, Na^+
Group 2	+2	magnesium, Mg^{2+}
Group 3	+3	aluminium, Al^{3+}
Group 5	-3	nitride, N^{3-}
Group 6	-2	oxide, O^{2-}
Group 7	-1	chloride, Cl^-

The charges of compound ions and some transition metal ions are not as easily deduced but you may need to recall them and use them to determine the formulae of ionic compounds.

The table below shows the formulae and charges of some common ions.

Positive Ions		Negative Ions	
ammonium	NH_4^+	hydride	H^-
hydrogen	H^+	hydroxide	OH^-
hydronium	H_3O^+	cyanide	CN^-
titanium	Ti^{4+}	carbonate	CO_3^{2-}
chromium(III)	Cr^{3+}	hydrogen carbonate	HCO_3^-
iron(II)	Fe^{2+}	nitrite	NO_2^-
iron(III)	Fe^{3+}	nitrate	NO_3^-
cobalt(II)	Co^{2+}	sulfite	SO_3^{2-}
copper(II)	Cu^{2+}	sulfate	SO_4^{2-}
zinc	Zn^{2+}	hydrogen sulfate	HSO_4^-
silver	Ag^+	phosphate	PO_4^{3-}
lead(II)	Pb^{2+}	manganate(VII)	MnO_4^-
lead(IV)	Pb^{4+}	dichromate(VI)	$\text{Cr}_2\text{O}_7^{2-}$