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Naming Polyatomic Compounds

A polyatomic ion is a group of two or more atoms treated as a single unit having a single oxidation state. Even though they are not binary compounds, they still contain a positive and negative charged ion held together by an ionic bond.

We name substances containing polyatomic ions the same way we name binary compounds.

Examples

Na_2SO_4

$(NH_4)_2CO_3$

$Pb(NO_3)_2$

NH_4Cl

When writing the formula for compounds containing polyatomic ions, we use the same 'crossing over' rule that we do for ionic compounds.

Examples

aluminum sulfate

potassium dichromate

copper (II) phosphate

magnesium carbonate

There are often four possible polyatomic ions formed when non-metallic atoms combine with oxygen (oxyanions).

'-ate' is considered the base polyatomic ion

'hypo- -ite' is two less oxygens
'-ite' is one less oxygen
'per-' is one more oxygen

Examples

ClO^{1-} hypochlorite
ClO_2^{1-} chlorite
ClO_3^{1-} chlorate
ClO_4^{1-} perchlorate

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Polyatomic ions you will need to know for your quiz:

Hydroxide	OH^{1-}	carbonate	CO_3^{2-}
Nitrate	NO_3^{1-}	sulfate	SO_4^{2-}
Chlorate	ClO_3^{1-}	chromate	CrO_4^{2-}
Bromate	BrO_3^{1-}	dichromate	$Cr_2O_7^{2-}$
Iodate	IO_3^{1-}	oxalate	$C_2O_4^{2-}$
Permanganate	MnO_4^{1-}	phosphate	PO_4^{3-}
Acetate	$C_2H_3O_2^{1-}$	ammonium	NH_4^{1+}