

Reviewing chemical formulae + equations from 2008



Discuss; How do we work out chemical formulae for ionic compounds?

1. Cations can add to anions
2. The cation usually forms the first part of the name
3. If the formula is correct there is no overall charge
4. If you have more than one polyatomic ion they are placed inside brackets
5. Add physical state if known (s,l,g or aq)

Use the following tables to construct some formulae

Positive Ions (cations)		Negative Ions (anions)	
Name	Formula	Name	Formula
Hydrogen	H ⁺	Chloride	Cl ⁻
Sodium	Na ⁺	Bromide	Br ⁻
Silver	Ag ⁺	Fluoride	F ⁻
Potassium	K ⁺	Iodide	I ⁻
Lithium	Li ⁺	Hydroxide	OH ⁻
Ammonium	NH ₄ ⁺	Nitrate	NO ₃ ⁻
Barium	Ba ²⁺	Oxide	O ²⁻
Calcium	Ca ²⁺	Sulphide	S ²⁻
Copper(II)	Cu ²⁺	Sulphate	SO ₄ ²⁻
Magnesium	Mg ²⁺	Carbonate	CO ₃ ²⁻
Zinc	Zn ²⁺	Hydrogencarbonate	HCO ₃ ⁻
Lead	Pb ²⁺		
Iron(II)	Fe ²⁺		
Iron(III)	Fe ³⁺		
Aluminium	Al ³⁺		

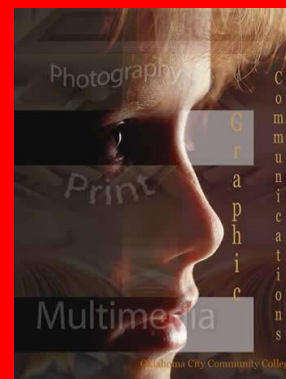


Table E
Selected Polyatomic Ions

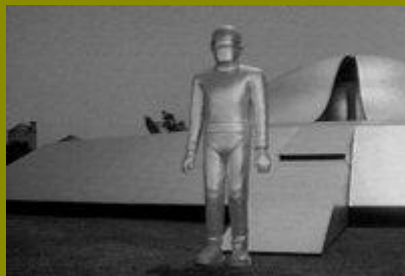
H_3O^+	hydronium	CrO_4^{2-}	chromate
Hg_2^{2+}	dimercury (I)	$\text{Cr}_2\text{O}_7^{2-}$	dichromate
NH_4^+	ammonium	MnO_4^-	permanganate
$\left. \begin{array}{l} \text{C}_2\text{H}_3\text{O}_2^- \\ \text{CH}_3\text{COO}^- \end{array} \right\}$	acetate	NO_2^-	nitrite
CN^-	cyanide	NO_3^-	nitrate
CO_3^{2-}	carbonate	O_2^{2-}	peroxide
HCO_3^-	hydrogen carbonate	OH^-	hydroxide
$\text{C}_2\text{O}_4^{2-}$	oxalate	PO_4^{3-}	phosphate
ClO^-	hypochlorite	SCN^-	thiocyanate
ClO_2^-	chlorite	SO_3^{2-}	sulfite
ClO_3^-	chlorate	SO_4^{2-}	sulfate
ClO_4^-	perchlorate	HSO_4^-	hydrogen sulfate
		$\text{S}_2\text{O}_3^{2-}$	thiosulfate



Table 4: Common Polyatomic Ions

ion	name	ion	name
NH_4^+	ammonium	CO_3^{2-}	carbonate
NO_2^-	nitrite	HCO_3^-	hydrogen carbonate†
NO_3^-	nitrate	ClO^-	hypochlorite
SO_3^{2-}	sulfite	ClO_2^-	chlorite
SO_4^{2-}	sulfate	ClO_3^-	chlorate
HSO_4^-	hydrogen sulfate*	ClO_4^-	perchlorate
OH^-	hydroxide	$\text{C}_2\text{H}_3\text{O}_2^-$	acetate
CN^-	cyanide	MnO_4^-	permanganate
PO_4^{3-}	phosphate	$\text{Cr}_2\text{O}_7^{2-}$	dichromate
HPO_4^{2-}	hydrogen phosphate	CrO_4^{2-}	chromate
H_2PO_4^-	dihydrogen phosphate	O_2^{2-}	peroxide

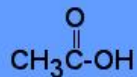
*Bisulfate and †bicarbonate are widely used common names for hydrogen sulfate and hydrogen carbonate, respectively.



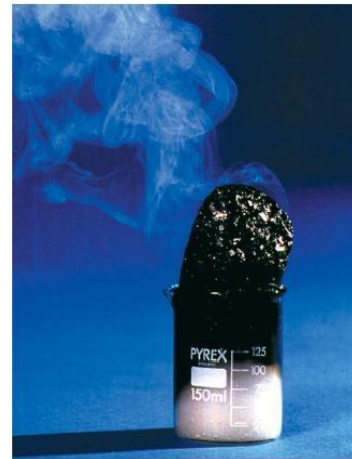
GORT's metal skin could not be scratched by diamond. I was so impressed!

Chemistry 11 Mr Graham
BSc PGCE

Ethanoic Acid or Acetic Acid



C. Ophardt, c. 2003



Concentrated acid + sugar demo

Find the formulae for the following covalent molecules, ethanol, ammonia, glucose, sugar, methane, butane, propane, hexane, sucrose, chloroform, tetrachloromethane

Chemistry 11 Mr Graham
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List some important
acid + bases. (with
formulae)

SOME IMPORTANT GENERAL EQUATIONS PLEASE COMPLETE.....

Acid + Base?, Acid + metal, Acid + carbonate, Acid + Sulphide, Acid + sulphite, Acid + thiosulphate, Metal + oxygen, non metal + oxygen, Metal oxides + water, non metal oxide + water, reactive metals with water, metal with water, metal displacement, halogen displacement

Just to get started

