Formulas of Acids – Review & Practice

Determining the formula of an acid means essentially determining the formula of a hydrogen compound and adding the (aq) symbol to indicate that it is the solution of the compound (an ACID) with which we are concerned. A thorough knowledge of the previous work on chemical formulas and nomenclature will be required for this section.

E . g . #1: Predict the formula for hydrobromic acid.

'Hydro - - - ic' means a binary acid
'- - -brom - - -' means bromine (+H)

$H^1 + Br^{-1} \Rightarrow H_1Br_1 \Rightarrow HBr$
For an acid $\Rightarrow$ $HBr_{(aq)}$

E . g . #2: Predict the formula for sulfurous acid.

No 'Hydro - ' indicates that it is not binary (thus a radical)
' - - - - - -ous' indicates it contains the ' – ite' radical
'sulfur - - -' indicates it contains the sulphite radical
$H^{+1} + SO_3^{-2} \Rightarrow H_2SO_3$

For an acid $\Rightarrow$ H_2SO_3 (aq)

ClO_2 = chlorite / ous

Exercise:

hydroiodic acid HI (aq)
perchloric acid $HClO_4$ (aq)
nitric acid HNO_3 (aq)
phosphorous acid H_3PO_3 (aq)
hypochlorous acid HClO (aq)
Hypocarbonous acid H_2CO (aq)
Chloric acid $HClO_3$ (aq)
Nitrous acid HNO_2 (aq)
Chlorous acid $HClO_2$ (aq)
Phosphoric acid H_3PO_4 (aq)

Hydrosulphuric acid H_2S (aq)
Carbonic acid H_2CO_3 (aq)
Phosphoric acid H_3PO_4 (aq)
Chlorous acid $HClO_2$ (aq)
Sulphuric acid H_2SO_4 (aq)
Carbonous acid H_2CO_2 (aq)
Hyposulphurous acid H_2SO_2 (aq)

Hydrofluoric acid HF (aq)
Penitric acid HNO_4 (aq)
Hydrochloric acid HCl (aq)

H_2SO_4 (aq) Sulphuric acid
$HClO_2$ (aq) Chlorous acid
H_3PO_4 (aq) Phosphoric acid
H_2CO_3 (aq) Carbonic acid
H_2S (aq) Hydrosulphoric acid

HCl (aq) Hydrochloric acid
HNO_4 (aq) Pernitric acid
HF (aq) Hydrofluoric acid
H_2SO_2 (aq) Hyposulphurous acid
H_2CO_2 (aq) Carbonous acid

H_3PO_4 (aq) Phosphoric acid
$HClO_3$ (aq) Chloric acid
HNO_2 (aq) Nitrous acid
$HClO_3$ (aq) Chloric acid
H_2CO (aq) Hypocarbonous acid

HClO (aq) Hypochlorous acid
H_3PO_3 (aq) Phosphorous acid
HNO_3 (aq) Nitric acid
$HClO_4$ (aq) Perchloric acid
HI (aq) Hydroiodic acid