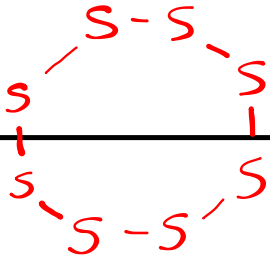


Molecular Models

What are the three-dimensional structures of the molecular substances: water (H_2O), hydrogen peroxide (H_2O_2), hydrogen sulfide (H_2S), methane (CH_4), methanol (CH_3OH), ethanol ($\text{C}_2\text{H}_5\text{OH}$), propane (C_3H_8), ammonia (NH_3), chlorine and sulfur (cyclooctasulfur)?

Name	Molecular Formula	Structural Diagram
methanol	CH_3OH	$\begin{array}{c} \text{H} \\ \\ \text{H} - \text{C} - \text{O} - \text{H} \\ \\ \text{H} \end{array}$
chlorine	Cl_2	$\text{Cl} - \text{Cl}$
sulfur	S_8	

Naming and Writing Formulas for Acids and Bases

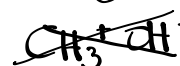
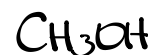
Acids are **aqueous hydrogen compounds** that turn blue litmus red.



Bases are **aqueous solutions of ionic hydroxides** that turn red litmus blue.



Sodium hydroxide



IDENTIFYING ACIDS AND BASES FROM FORMULA

Most acid can be identified from **starting with H** or ending in -COOH.

i.e. HCl, H₂SO₄, CH₃COOH

* H⁺ ion

Note: NH₃ and CH₄ are not acids!

When naming acids, common names (for common acids) or IUPAC names can be used.

IUPAC (modern) Acid Names

- name the acid as an aqueous hydrogen compound
- Ex. aqueous hydrogen sulfide - H₂S_(aq)

Classical Acid Names

- used the suffix **-ic** Ex. sulfuric
- used hydro and the suffix **-ic** Ex. hydrochloric
- used suffix **-ous** Ex. sulfurous
- and others (see inside back cover)

Rules for Naming Acids

1. If anion ends in -ide, the acid is "hydro_____ic acid"

Ex. HCl IUPAC: aqueous hydrogen chloride

$H^+ Cl^-$ COMMON: hydrochloric acid

2. If anion ends in -ate, the acid is "_____ic acid"

Ex. H_2SO_4 IUPAC: aqueous hydrogen sulfate

$H^+ SO_4^{2-}$
 H^+ COMMON: sulfuric acid

3. If anion ends in -ite, the acid is "_____ous acid"

Ex. H_2SO_3 IUPAC: aqueous hydrogen sulfite

$H^+ SO_3^{2-}$ COMMON: sulfurous acid

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EXERCISE # ²⁹⁻³²~~26-33~~