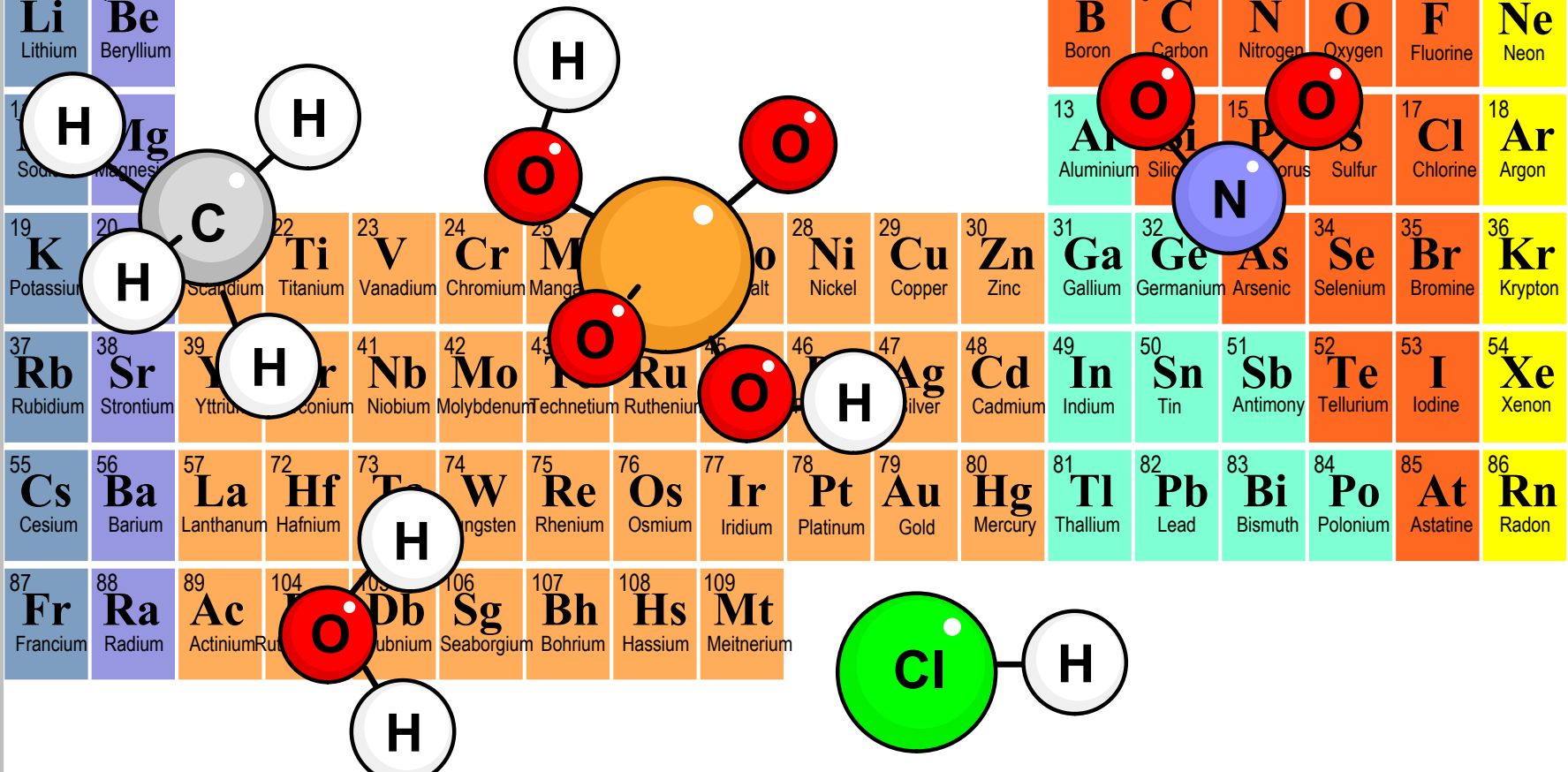


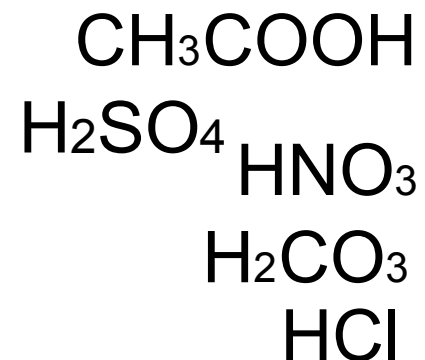
Acids, Bases and Salts

1 H Hydrogen	Acids, Bases and Salts																2 He Helium
3 Li Lithium	4 Be Beryllium											5 B Boron	6 C Carbon	7 N Nitrogen	8 O Oxygen	9 F Fluorine	10 Ne Neon
11 H	12 Mg Magnesium											13 Al Aluminium	14 Si Silicon	15 P Phosphorus	16 S Sulfur	17 Cl Chlorine	18 Ar Argon
19 K Potassium	20 Ca Calcium	21 Sc Scandium	22 Ti Titanium	23 V Vanadium	24 Cr Chromium	25 Mn Manganese	26 Fe Iron	27 Co Cobalt	28 Ni Nickel	29 Cu Copper	30 Zn Zinc	31 Ga Gallium	32 Ge Germanium	33 As Arsenic	34 Se Selenium	35 Br Bromine	36 Kr Krypton
37 Rb Rubidium	38 Sr Strontium	39 Y Yttrium	40 Zr Zirconium	41 Nb Niobium	42 Mo Molybdenum	43 Tc Technetium	44 Ru Ruthenium	45 Rh Rhodium	46 Pd Palladium	47 Ag Silver	48 Cd Cadmium	49 In Indium	50 Sn Tin	51 Sb Antimony	52 Te Tellurium	53 I Iodine	54 Xe Xenon
55 Cs Cesium	56 Ba Barium	57 La Lanthanum	58 Ce Cerium	59 Pr Praseodymium	60 Nd Neodymium	61 Pm Promethium	62 Sm Samarium	63 Eu Europium	64 Gd Gadolinium	65 Tb Terbium	66 Dy Dysprosium	67 Ho Holmium	68 Er Erbium	69 Tm Thulium	70 Yb Ytterbium	71 Lu Lutetium	
87 Fr Francium	88 Ra Radium	89 Ac Actinium	90 Th Thorium	91 Pa Protactinium	92 U Uranium	93 Np Neptunium	94 Pu Plutonium	95 Am Americium	96 Cm Curium	97 Bk Berkelium	98 Cf Californium	99 Es Einsteinium	100 Fm Fermium	101 Md Mendelevium	102 No Nobelium	103 Lr Lawrencium	
		104 Rf Rutherfordium	105 Db Dubnium	106 Sg Seaborgium	107 Bh Bohrium	108 Hs Hassium	109 Mt Meitnerium										



Acids

Hydrochloric Acid -
Sulphuric Acid -
Nitric Acid -
Carbonic Acid -
Acetic Acid -



1. Element Common to all acids = ...
2. Acids are compounds of **metals/non-metals**

Influence of Indicators

Indicator	Acid	Alkali
Litmus	Red	Blue
Bromothymol Blue	Pink	Yellow
Methyl Orange	Yellow	Red
Phenolphthalein	Colourless	Red

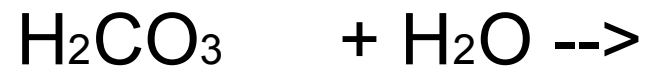
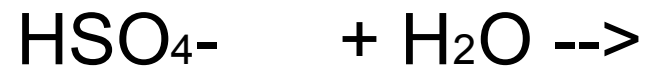
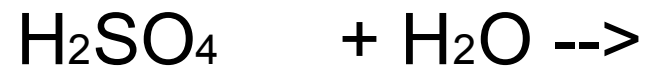
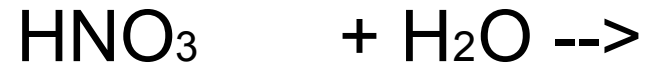
Dissociation of an acid

When acids dissolve in water they **DISSOCIATE** and release **H⁺** ions. This **H⁺** ion **ASSOCIATES** with other water molecules and forms the **OXONIUM ion (H₃O⁺)**



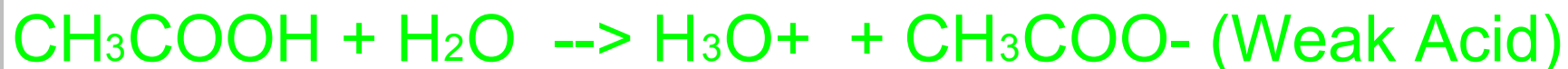
It is the **H₃O⁺** that is responsible for the properties of the acid

Dissociation of an acid - Examples



Strength of an acid

Acids which **DISSOCIATE** to a large extent are known as strong acids.

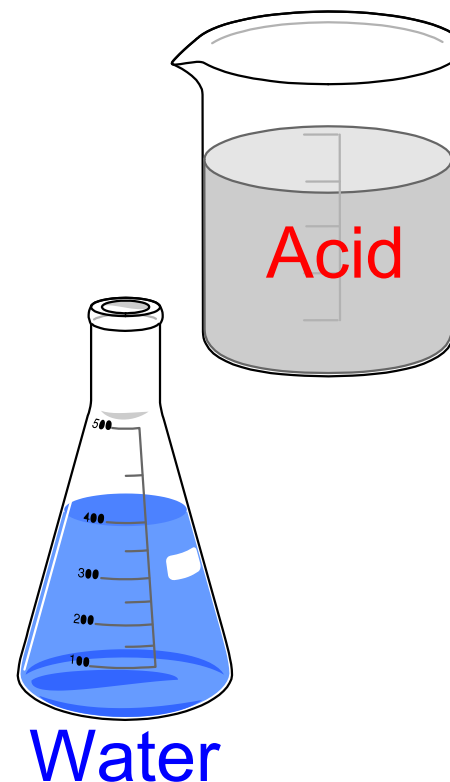


DILUTING ACIDS

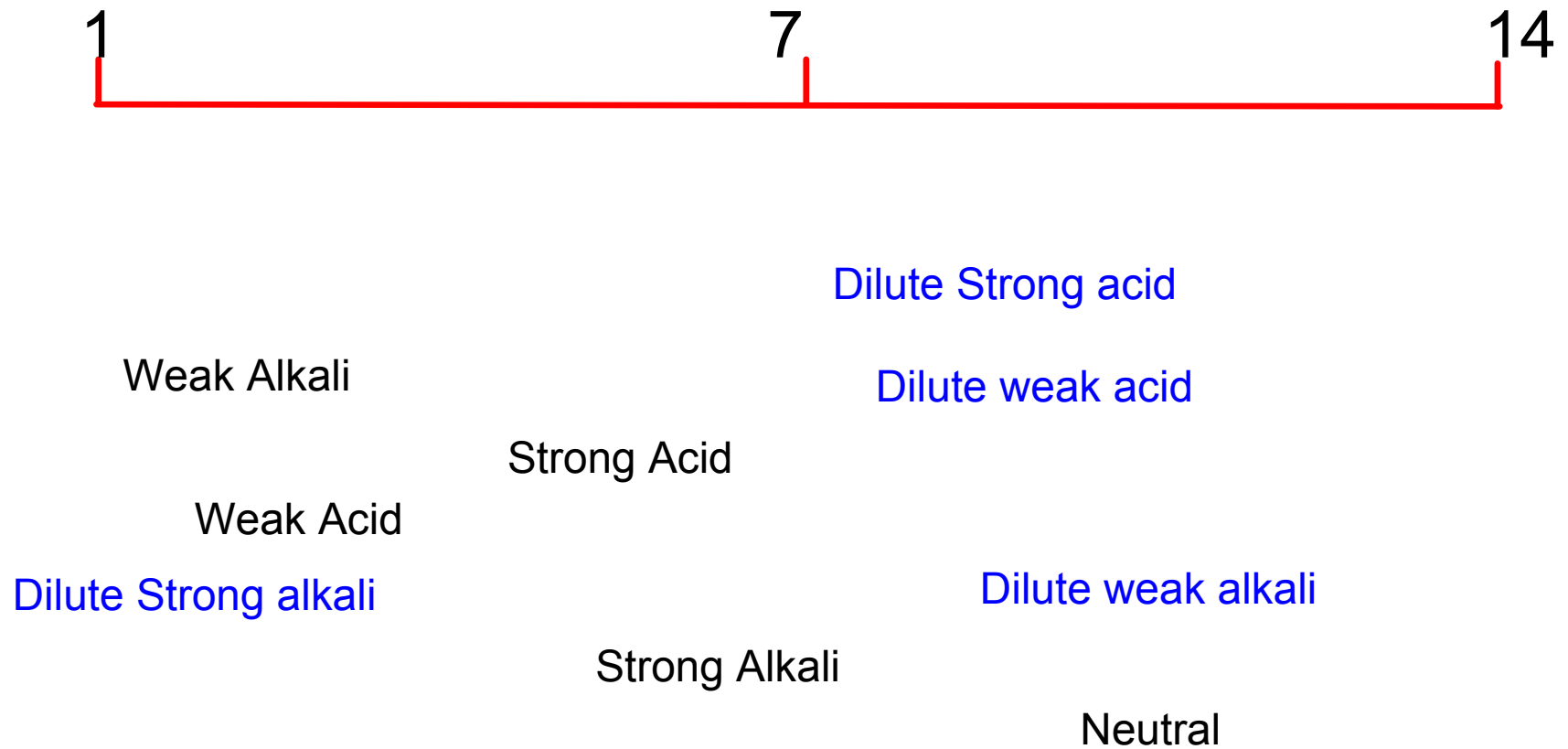
Always add the acid to the water

- exothermic reaction
- dont want concentrated acid to spill out

The pH of an acid is unaffected by diluting the acid



pH Scale



Reactions of acids

Acid + Metal \rightarrow Salt + Hydrogen

Acid + Metal Oxide \rightarrow Salt + Water

Acid + Carbonate \rightarrow Salt + Water + Carbon Dioxide

Bases

An alkali is a soluble base and the resulting solution is known as an alkaline solution.

Sodium Hydroxide -

Potassium Hydroxide -

Magnesium Hydroxide -

Ammonium Hydroxide -

KOH

Mg(OH)₂

NH₄OH

NaOH Caustic Soda

Properties of Alkalis

1. Soapy Feeling
2. Alkalis dissolve in water to release the **HYDROXIDE ION (OH⁻)**



The properties are due to the presence of OH⁻ ions

Reaction of Acids and Bases

Acids + Base \rightarrow Salt + water

HCl + NaOH \rightarrow

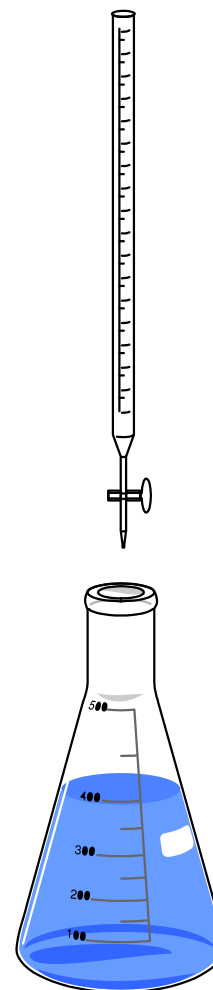
H₂SO₄ + KOH \rightarrow

HNO₃ + Mg(OH)₂

The process is known as **NEUTRALISATION**

Neutralisation

- It is the process of adding an acid to a base to form a salt and water.
- It is an exothermic reaction
- The point at which neutralisation occurs is also known as the end point
- The end point is determined when an indicator changes colour



OXIDES

Base Oxides

- Oxide of a metal
- Dissolves in water forming a base
- reacts with acids to form a salt

e.g. $\text{CuO} + \text{H}_2\text{SO}_4$

Acidic Oxides

- Oxides of non-metals
- Dissolve in water forming an acid
- React with bases to form salts + Water

e.g. $\text{CO}_2 + \text{NaOH}$

Preparation of SALTS

1. Acid + Base \rightarrow Salt + Water

2. Acid + Metal \rightarrow Salt + Hydrogen

3. Acid + Metal Oxide \rightarrow Salt + Water

4. Acid + Carbonate \rightarrow Salt + Water + Carbon Dioxide