

SCIENCE • CLASS 10

CHAPTER 2

Acids, Bases and Salts

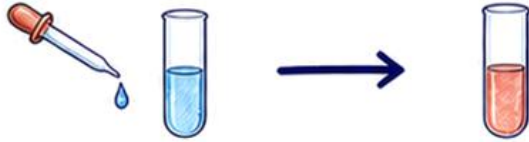
CHAPTER NOTES



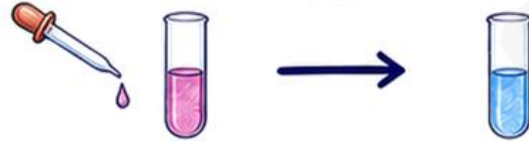
ACID-BASE INDICATORS

ACIDS & BASES

- Acid: sour; blue litmus → red



- Base: bitter, soapy; red litmus → blue



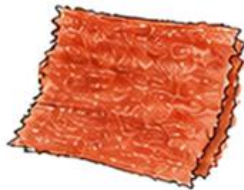
- Indicator: changes colour or odour in acidic/basic media

Litmus is a purple natural indicator from lichen.

TURMERIC



acid / neutral:
yellow



base:
reddish-brown

INDICATOR TESTS

	ACID	BASE
Red litmus	red / no change	blue
Blue litmus	red	blue / no change
Phenolphthalein	colourless	pink
Methyl orange	red	yellow

OLFACTORY INDICATORS



- odour retained in acid
- odour suppressed in base

KEY IDEA: Indicators reveal acids and bases without tasting.

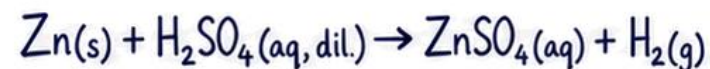
ACIDS & BASES WITH METALS

Acid + Metal $\rightarrow$ Salt + Hydrogen gas

ZINC + DILUTE ACID

Observations:

- effervescence on zinc
- H_2 bubbles burn with a pop



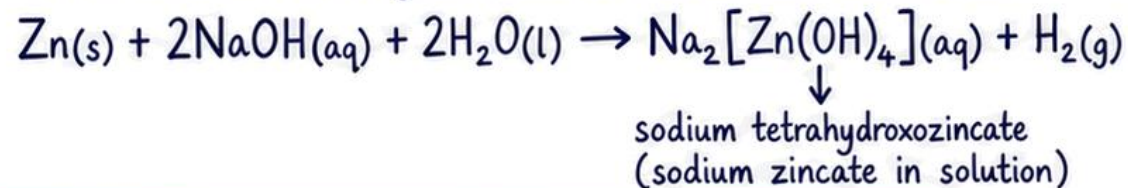
Teacher supervision

RATE & EXCEPTION

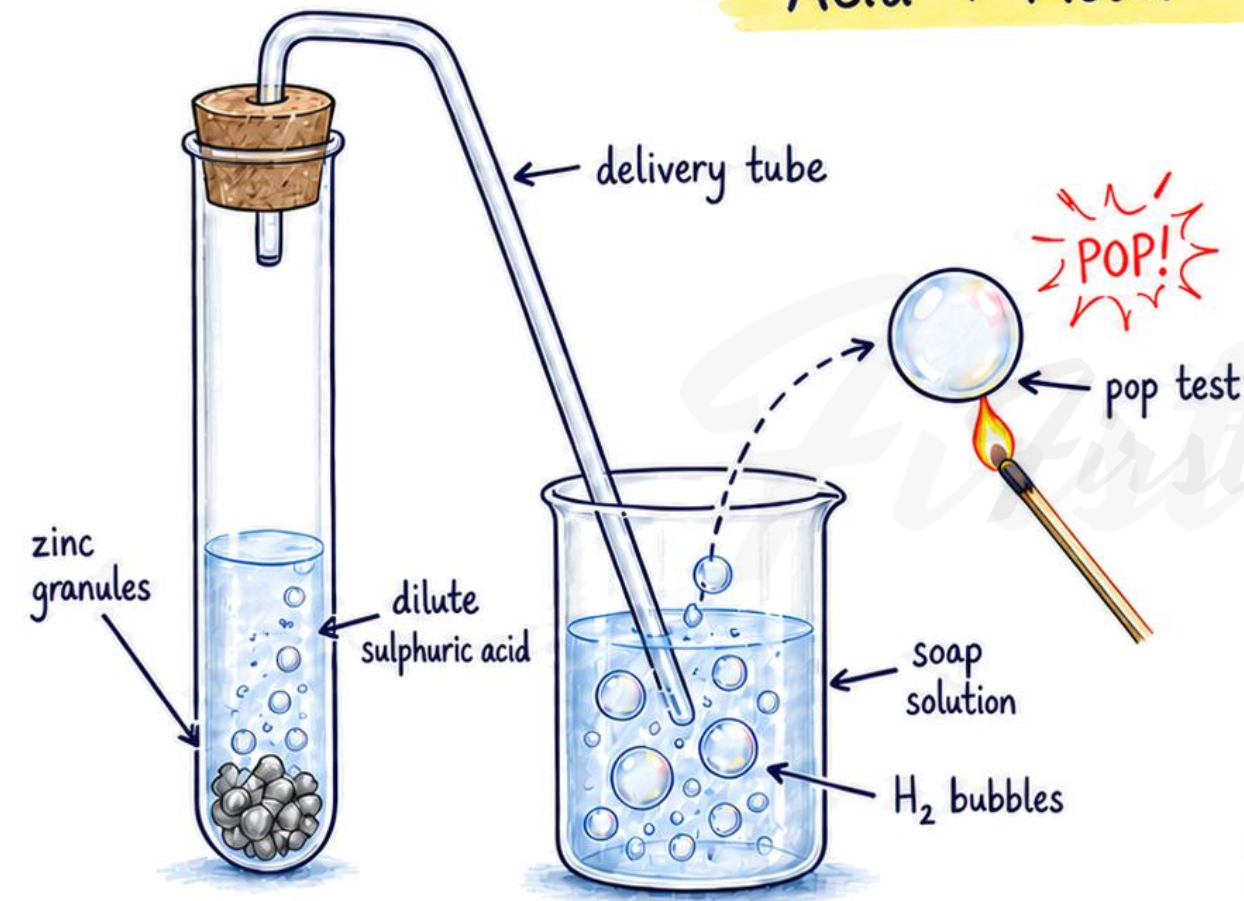
- Ethanoic (acetic) acid reacts more slowly.
- **IMPORTANT:** Nitric acid generally does not release H_2 with metals.

ZINC + STRONG BASE

Warm zinc with NaOH gives H_2 ; not all metals react with bases.



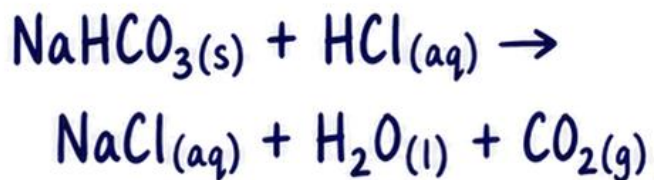
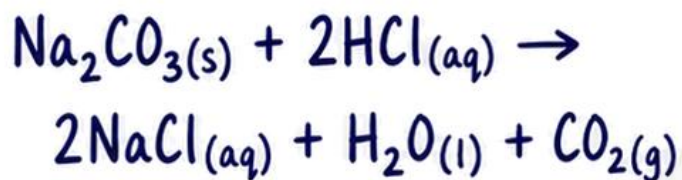
KEY IDEA: Some metals displace hydrogen from acids; selected metals also react with strong bases.



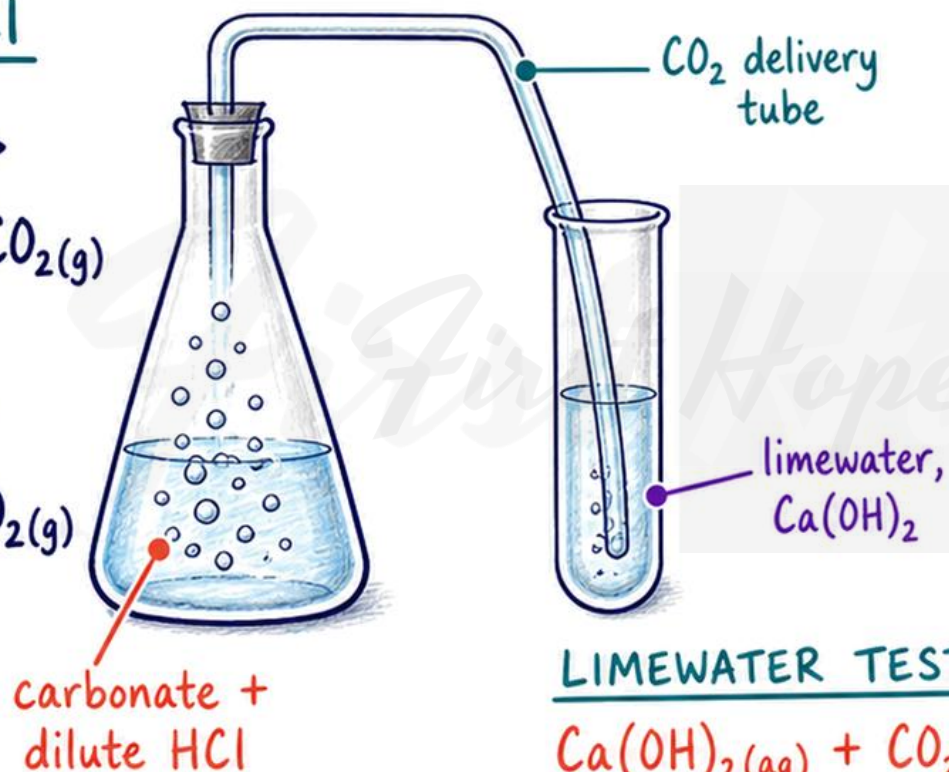
CARBONATES, HYDROGENCARBONATES & ACIDS

Metal carbonate / metal hydrogencarbonate + Acid $\rightarrow$ Salt + CO_2 + Water

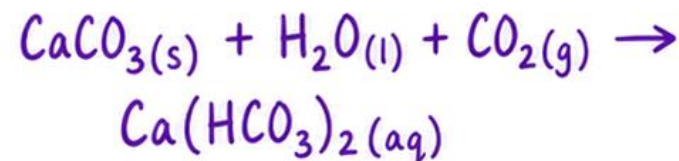
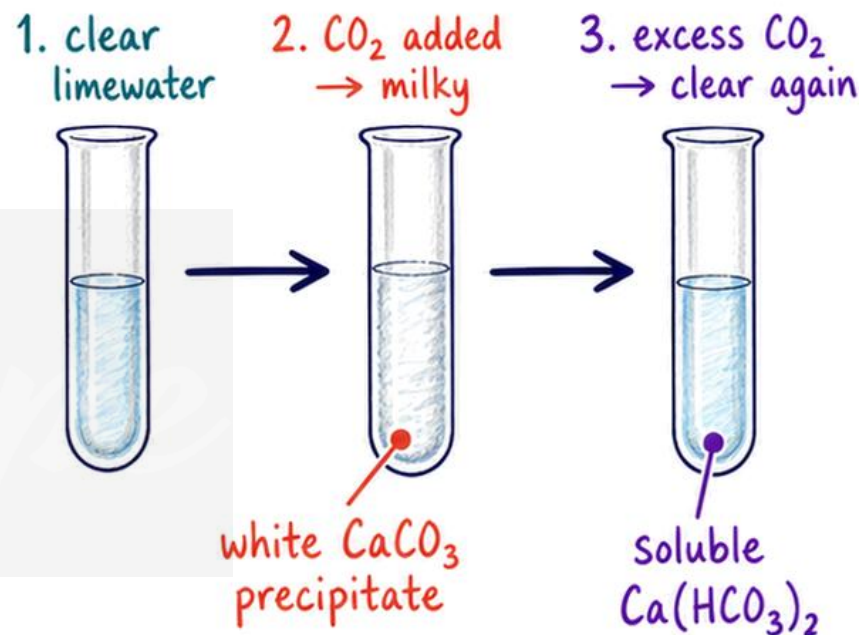
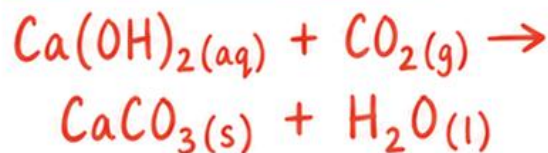
REACTIONS WITH HCl



- effervescence
- colourless CO_2



LIMEWATER TEST

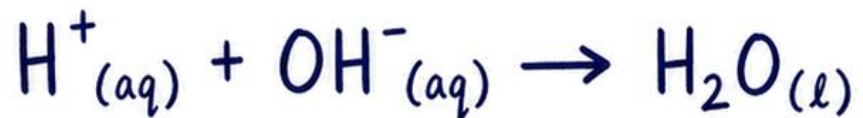
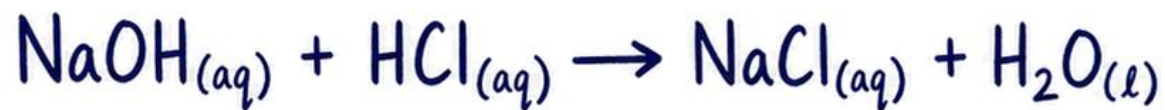
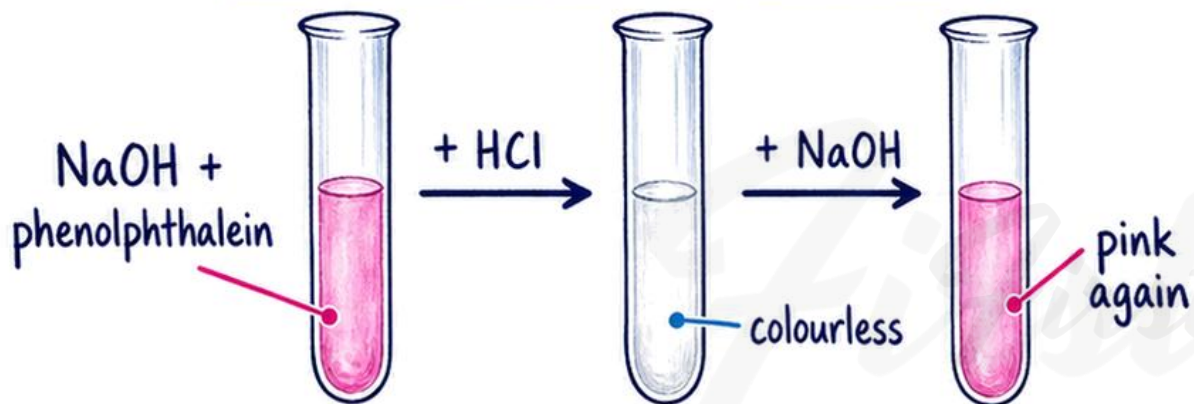


KEY IDEA: CO_2 first forms insoluble CaCO_3 ; excess CO_2 forms soluble $\text{Ca}(\text{HCO}_3)_2$.

NEUTRALISATION & OXIDES

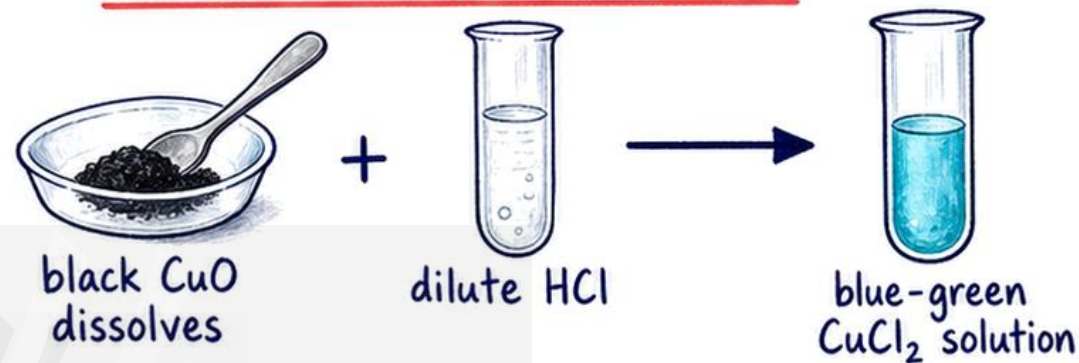
NEUTRALISATION

Acid + Base $\rightarrow$ Salt + Water



H^+ and OH^- combine to form water.

METALLIC OXIDE + ACID

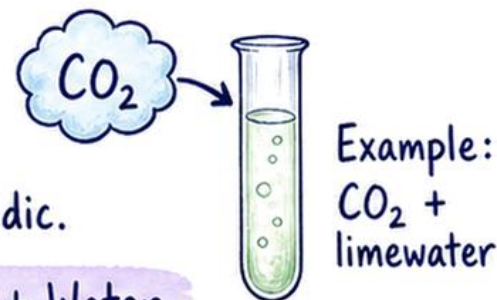


Metal oxide + Acid $\rightarrow$ Salt + Water

OXIDE PATTERNS

- Many metallic oxides are basic.
- Many non-metallic oxides are acidic.

Non-metal oxide + Base $\rightarrow$ Salt + Water



KEY IDEA: Neutralisation forms salt and water; oxide behaviour often follows acid-base patterns.

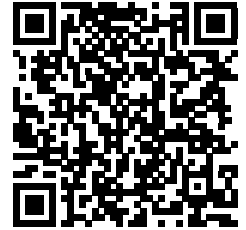


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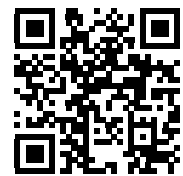


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