

Sunrise institute

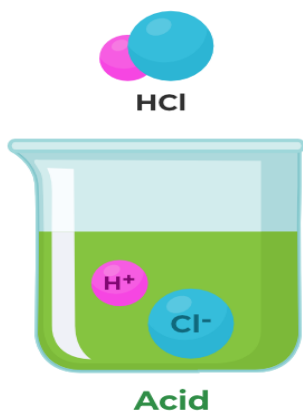
☐ Class 10 Science – Chapter 2: Acids, Bases and Salts (Full Notes with Explanation)

☐ 1. Introduction

This chapter helps us understand:

- What are acids and bases?
 - How they behave (chemical properties)
 - What is pH?
 - How salts are formed and used
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☐ 2. What Are Acids and Bases?



☐ Acids

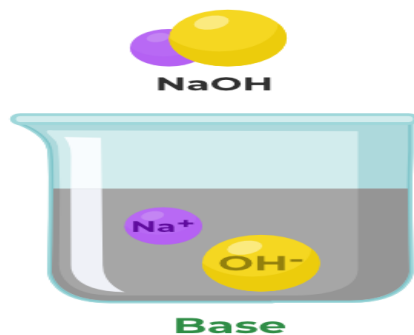
- Release H^+ ions in water
- Taste sour
- Turn blue litmus red

Examples:

- **Strong Acid** – Hydrochloric acid (HCl)
- **Weak Acid** – Acetic acid (CH_3COOH)

Daily Life Examples:

- Lemon: Citric acid
 - Curd: Lactic acid
 - Tamarind: Tartaric acid
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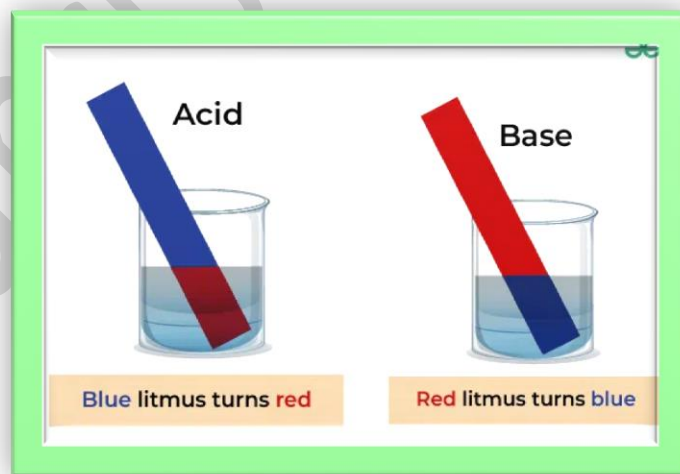


□ Bases

- Release OH^- ions in water
- Taste bitter and feel soapy
- Turn red litmus blue

Examples:

- **Strong Base** – Sodium hydroxide (NaOH)
 - **Weak Base** – Ammonium hydroxide (NH_4OH)
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□ 3. Indicators

| Indicator | In Acid | In Base |
|-----------|---------|---------|
|-----------|---------|---------|

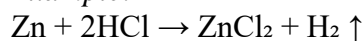
| Indicator | In Acid | In Base |
|-----------------|------------|---------|
| Litmus | Red | Blue |
| Methyl Orange | Red | Yellow |
| Phenolphthalein | Colourless | Pink |
| Turmeric | No change | Red |

□ 4. Chemical Properties of Acids and Bases

(i) Reaction with Metals

Acid + Metal → Salt + Hydrogen gas

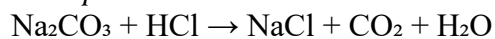
Example:



(ii) Reaction with Metal Carbonates / Bicarbonates

Acid + Carbonate → Salt + CO₂ + H₂O

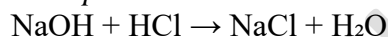
Example:



(iii) Neutralization Reaction

Acid + Base → Salt + Water

Example:



(iv) Reaction with Metal Oxides

Acid + Metal Oxide → Salt + Water

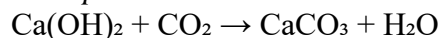
Example:



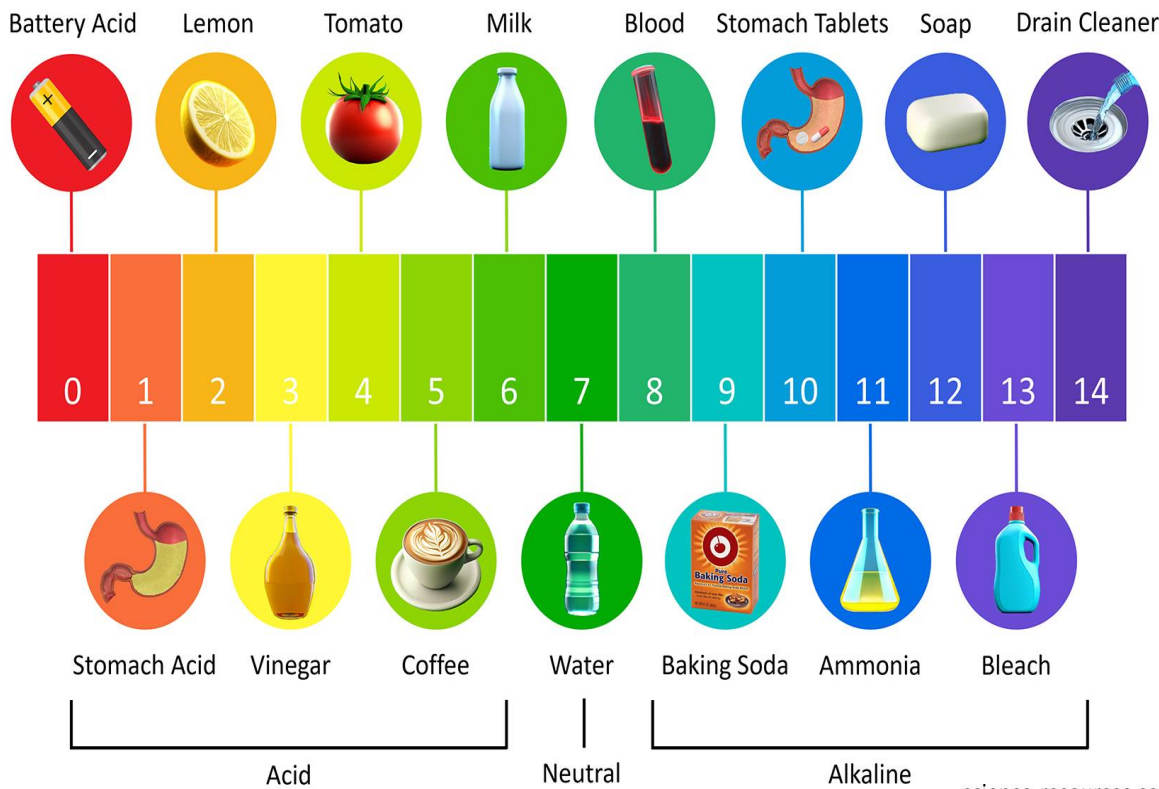
(v) Reaction with Non-metallic Oxides

Base + Non-metal Oxide → Salt + Water

Example:



The pH Scale



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- Measures strength of acids and bases
- **Range:** 0 (strong acid) → 14 (strong base)
- **pH 7** is neutral

Examples:

| Substance | pH | Nature |
|---------------|-----|-------------|
| Stomach acid | ~1 | Strong acid |
| Vinegar | ~3 | Weak acid |
| Pure water | 7 | Neutral |
| Soap solution | ~10 | Basic |
| Bleach | ~13 | Strong base |

□ 6. Importance of pH in Daily Life

1. **Stomach:** HCl helps digest food. Too much acid → indigestion
2. **Tooth decay:** Caused by low pH (< 5.5)

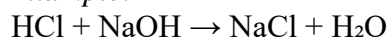
3. **Soil pH:** Affects plant growth (lime used to neutralize acidic soil)
4. **Aquatic life:** Sudden pH change harms organisms
5. **Antacids:** Neutralize stomach acid ($\text{Mg}(\text{OH})_2$)



□ 7. Salts

- Formed by neutralization:
Acid + Base \rightarrow Salt + Water

Example:

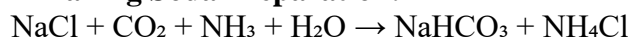


□ 8. Important Salts and Their Uses

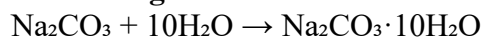
| Salt | Formula | Use |
|------------------|---|--------------------------------------|
| Common Salt | NaCl | In food, raw material for chemicals |
| Baking Soda | NaHCO_3 | Baking, antacids, fire extinguishers |
| Washing Soda | $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ | Cleaning, water softening |
| Bleaching Powder | CaOCl_2 | Disinfection, bleaching |
| Plaster of Paris | $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$ | Molding, making casts |

□ 9. Reactions of Salts

□ Baking Soda Preparation:

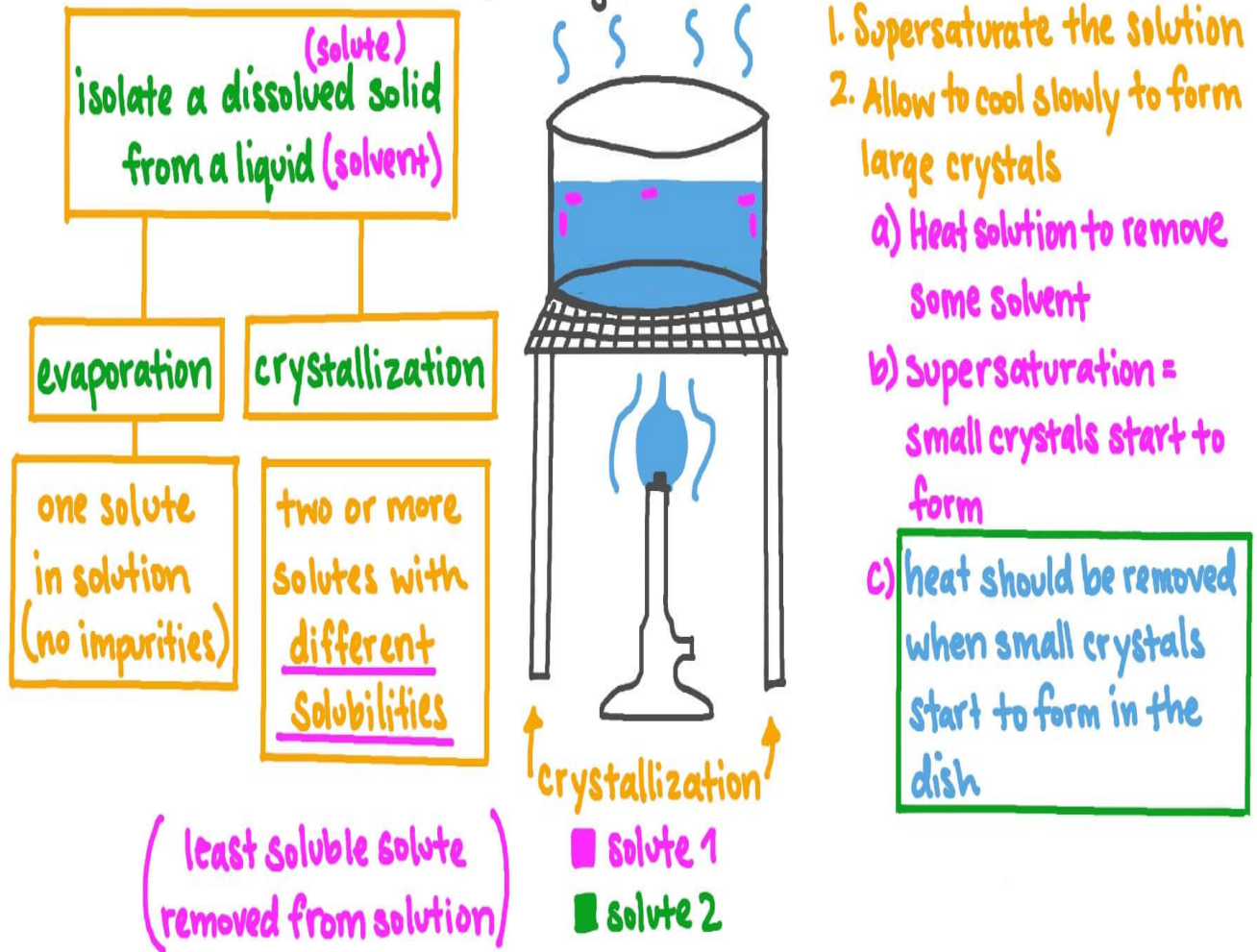


□ Washing Soda Formation:



10. Crystallization

The given diagram shows the setup for a crystallization process. When should the heat be removed from the evaporating dish?



- Used to get **pure crystals from solutions**
- Example: Purifying salt by filtering and evaporating