

## Word Equations Involving Acids - Identification of Salts.

**KEY POINT:** When acids react with substances \_\_\_\_\_ are produced. (Anagram of LSTAS)

A salt is an ionic compound formed by the action of an \_\_\_\_\_ on a substance. (Anagram of CIDA)

Salts are composed of \_\_\_\_\_ and negative ions. Eg.  $\text{NaCl}$ ,  $\text{Na}^+$  and  $\text{Cl}^-$  and  $\text{CuSO}_4$ ,  $\text{Cu}^{2+}$  and  $\text{SO}_4^{2-}$

**Table: Common Acids and their Salts**

Acid	Formula	Salt
Hydrochloric acid		chloride
Sulfuric acid		sulfate
Nitric acid		nitrate
Acetic acid (vinegar)	$\text{CH}_3\text{COOH}$	acetate

Use the table above to identify the salts produced for the following reactions.

**HINT:** Salts are named metal first, so look for the metal. The non-metal part comes from the acid.

### Chemical Reaction 1: Acid + Alkali $\rightarrow$ Salt + Water

- Hydrochloric acid + sodium hydroxide  $\rightarrow$  \_\_\_\_\_ + water
- Sulfuric acid + sodium hydroxide  $\rightarrow$  \_\_\_\_\_ + water
- Nitric acid + sodium hydroxide  $\rightarrow$  \_\_\_\_\_ + water
- Acetic acid + potassium hydroxide  $\rightarrow$  \_\_\_\_\_ + water
- Potassium hydroxide + nitric acid  $\rightarrow$  \_\_\_\_\_ + water

### Chemical Reaction 2: Acid + Active metal $\rightarrow$ Salt + Hydrogen gas

- Hydrochloric acid + magnesium  $\rightarrow$  \_\_\_\_\_ + hydrogen
- Sulfuric acid + magnesium  $\rightarrow$  \_\_\_\_\_ + hydrogen
- Magnesium + acetic acid  $\rightarrow$  \_\_\_\_\_ + hydrogen
- Zinc + hydrochloric acid  $\rightarrow$  \_\_\_\_\_ + hydrogen
- Sulfuric acid + Iron  $\rightarrow$  \_\_\_\_\_ + hydrogen
- Nickel + acetic acid  $\rightarrow$  \_\_\_\_\_ + hydrogen

### Chemical Reaction 3: Acid + Metal carbonate $\rightarrow$ Salt + Water + Carbon dioxide

- Hydrochloric acid + sodium carbonate  $\rightarrow$  \_\_\_\_\_ + water + carbon dioxide
- Hydrochloric acid + copper carbonate  $\rightarrow$  \_\_\_\_\_ + water + carbon dioxide
- Zinc carbonate + sulfuric acid  $\rightarrow$  \_\_\_\_\_ + water + carbon dioxide
- Acetic acid + sodium carbonate  $\rightarrow$  \_\_\_\_\_ + water + carbon dioxide
- Copper carbonate + nitric acid  $\rightarrow$  \_\_\_\_\_ + water + carbon dioxide

## Word Equations Involving Acids - Identification of Salts - ANSWERS

**KEY POINT:** When acids react with substances *salts* are produced. (Anagram of LSTAS)

A salt is an ionic compound formed by the action of an *acid* on a substance. (Anagram of CIDA)

Salts are composed of *positive* and negative ions. Eg.  $\text{NaCl}$ ,  $\text{Na}^+$  and  $\text{Cl}^-$  and  $\text{CuSO}_4$ ,  $\text{Cu}^{2+}$  and  $\text{SO}_4^{2-}$

**Table: Common Acids and their Salts**

Acid	Formula	Salt
Hydrochloric acid	$\text{HCl}$	chloride
Sulfuric acid	$\text{H}_2\text{SO}_4$	sulfate
Nitric acid	$\text{HNO}_3$	nitrate
Acetic acid (vinegar)	$\text{CH}_3\text{COOH}$	acetate

Use the table above to identify the salts produced for the following reactions.

**HINT:** Salts are named metal first, so look for the metal. The non-metal part comes from the acid.

### Chemical Reaction 1: Acid + Alkali → Salt + Water

- Hydrochloric acid + sodium hydroxide → *sodium chloride* + water
- Sulfuric acid + sodium hydroxide → *sodium sulfate* + water
- Nitric acid + sodium hydroxide → *sodium nitrate* + water
- Acetic acid + potassium hydroxide → *potassium acetate* + water
- Potassium hydroxide + nitric acid → *potassium nitrate* + water

### Chemical Reaction 2: Acid + Active metal → Salt + Hydrogen gas

- Hydrochloric acid + magnesium → *magnesium chloride* + hydrogen
- Sulfuric acid + magnesium → *magnesium sulfate* + hydrogen
- Magnesium + acetic acid → *magnesium acetate* + hydrogen
- Zinc + hydrochloric acid → *zinc chloride* + hydrogen
- Sulfuric acid + Iron → *iron sulfate* + hydrogen
- Nickel + acetic acid → *nickel acetate* + hydrogen

### Chemical Reaction 3: Acid + Metal carbonate → Salt + Water + Carbon dioxide

- Hydrochloric acid + sodium carbonate → *sodium chloride* + water + carbon dioxide
- Hydrochloric acid + copper carbonate → *copper chloride* + water + carbon dioxide
- Zinc carbonate + sulfuric acid → *zinc sulfate* + water + carbon dioxide
- Acetic acid + sodium carbonate → *sodium acetate* + water + carbon dioxide
- Copper carbonate + nitric acid → *copper nitrate* + water + carbon dioxide