
**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. NaCl, Na⁺ and Cl⁻ and CuSO₄, Cu²⁺ and SO₄²⁻.

<table>
<thead>
<tr>
<th>Acid</th>
<th>Formula</th>
<th>Salt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrochloric acid</td>
<td></td>
<td>chloride</td>
</tr>
<tr>
<td>Sulfuric acid</td>
<td></td>
<td>sulfate</td>
</tr>
<tr>
<td>Nitric acid</td>
<td></td>
<td>nitrate</td>
</tr>
<tr>
<td>Acetic acid (vinegar)</td>
<td>CH₃COOH</td>
<td>acetate</td>
</tr>
</tbody>
</table>

Table: Common Acids and their Salts

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**

a) Hydrochloric acid + sodium hydroxide → ______________________ + water
b) Sulfuric acid + sodium hydroxide → ______________________ + water
c) Nitric acid + sodium hydroxide → ______________________ + water
d) Acetic acid + potassium hydroxide → ______________________ + water
e) Potassium hydroxide + nitric acid → ______________________ + water

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

a) Hydrochloric acid + magnesium → ______________________ + hydrogen
b) Sulfuric acid + magnesium → ______________________ + hydrogen
c) Magnesium + acetic acid → ______________________ + hydrogen
d) Zinc + hydrochloric acid → ______________________ + hydrogen
e) Sulfuric acid + Iron → ______________________ + hydrogen
f) Nickel + acetic acid → ______________________ + hydrogen

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

a) Hydrochloric acid + sodium carbonate → ______________________ + water + carbon dioxide
b) Hydrochloric acid + copper carbonate → ______________________ + water + carbon dioxide
c) Zinc carbonate + sulfuric acid → ______________________ + water + carbon dioxide
d) Acetic acid + sodium carbonate → ______________________ + water + carbon dioxide
e) Copper carbonate + nitric acid → ______________________ + water + carbon dioxide

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**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. \( \text{NaCl}, \text{Na}^+ \text{ and Cl}^- \) and \( \text{CuSO}_4, \text{Cu}^{2+} \text{ and SO}_4^{2-} \).

**Table: Common Acids and their Salts**

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<tr>
<td>Sulfuric acid</td>
<td>( \text{H}_2\text{SO}_4 )</td>
<td>sulfate</td>
</tr>
<tr>
<td>Nitric acid</td>
<td>( \text{HNO}_3 )</td>
<td>nitrate</td>
</tr>
<tr>
<td>Acetic acid (vinegar)</td>
<td>( \text{CH}_3\text{COOH} )</td>
<td>acetate</td>
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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**

a) Hydrochloric acid + sodium hydroxide \( \rightarrow \) sodium chloride + water

b) Sulfuric acid + sodium hydroxide \( \rightarrow \) sodium sulfate + water

c) Nitric acid + sodium hydroxide \( \rightarrow \) sodium nitrate + water

d) Acetic acid + potassium hydroxide \( \rightarrow \) potassium acetate + water

e) Potassium hydroxide + nitric acid \( \rightarrow \) potassium nitrate + water

**Chemical Reaction 2: Acid + Active metal \( \rightarrow \) Salt + Hydrogen gas**

a) Hydrochloric acid + magnesium \( \rightarrow \) magnesium chloride + hydrogen

b) Sulfuric acid + magnesium \( \rightarrow \) magnesium sulfate + hydrogen

c) Magnesium + acetic acid \( \rightarrow \) magnesium acetate + hydrogen

d) Zinc + hydrochloric acid \( \rightarrow \) zinc chloride + hydrogen

e) Sulfuric acid + Iron \( \rightarrow \) iron sulfate + hydrogen

f) Nickel + acetic acid \( \rightarrow \) nickel acetate + hydrogen

**Chemical Reaction 3: Acid + Metal carbonate \( \rightarrow \) Salt + Water + Carbon dioxide**

a) Hydrochloric acid + sodium carbonate \( \rightarrow \) sodium chloride + water + carbon dioxide

b) Hydrochloric acid + copper carbonate \( \rightarrow \) copper chloride + water + carbon dioxide

c) Zinc carbonate + sulfuric acid \( \rightarrow \) zinc sulfate + water + carbon dioxide

d) Acetic acid + sodium carbonate \( \rightarrow \) sodium acetate + water + carbon dioxide

e) Copper carbonate + nitric acid \( \rightarrow \) copper nitrate + water + carbon dioxide

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