



# What Happens When an Acid and a Base Mix Together

KS4 CHEMISTRY

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## Acids and Bases Are Opposites

Imagine if you had two puzzle pieces that fit together perfectly—that's what **acids** and **bases** are like. They're chemical opposites. **Acids** are substances that taste sour and can sting (like lemon juice or vinegar). **Bases** are the opposite—they're slippery and bitter (like baking soda or soap). When you bring these two opposites together, something amazing happens.

## The Neutralisation Reaction

When an **acid** mixes with a **base**, they don't just sit there. They react together in a process called **neutralisation**. This is a **chemical reaction**—a change where atoms rearrange to create completely new substances. The most important thing to know is that **acids** and **bases** cancel each other out, creating neutral substances.

Think of it like a playground argument: when an angry friend (the acid) meets a calm friend (the base), they talk it out and both become peaceful (neutral). The argument disappears, and something new—friendship and peace—takes its place.

## What Gets Created?

When an **acid** and **base** mix, they produce two main things: **salt** and **water**. Yes, **salt**—the stuff you put on chips! It's not created just from salt shakers; it's created from **chemical reactions** too. The type of salt depends on which **acid** and **base** you mix together. For example, mixing **hydrochloric acid** with **sodium hydroxide** (a base) creates **sodium chloride** (table salt) and water.

## Energy and Heat

Here's something cool: **neutralisation reactions** often release **energy** as **heat**. Sometimes the mixture gets noticeably warm. This is why chemists are careful when mixing strong **acids** and **bases**—the reaction can be intense!

Think of it like mixing hot and cold water: when opposite temperatures meet, the energy balances out, and you feel warmth in the middle.

## Why Does This Matter?

Understanding **neutralisation** is crucial in real life. Doctors use it to treat **acid reflux** (heartburn) with antacids—which are bases that neutralise excess stomach acid. Farmers use it to balance soil **pH**. Even your body constantly balances acids and bases to keep you healthy. This simple reaction is happening everywhere around you!