

What is an alloy?

Alisha Kakar: We use alloys every day, like when we open a can of beans or pick up a key.

But, what is an alloy?

An alloy is a mixture of two or more elements where at least one is a metal.

It's this mixture that makes it stronger or more useful.

Let's start with pure metals like iron.

In a pure metal, all the atoms are the same size and packed in a regular arrangement.

These layers can slide over each other easily.

That's why pure metals are soft and can be bent or shaped.

But what happens if we add atoms that are a different size from another element?

The layers become distorted.

They don't line up neatly anymore and it makes them much harder to slide.

For example, carbon atoms are often added to iron atoms to create steel, an alloy that's much harder than iron on its own because the layers can't slide as easily.

Let's try a quick challenge.

It's over to you.

What happens to the layers of atoms when a metal becomes an alloy?

Do they become more regular?

Do they distort and can't slide easily?

Or do they simply disappear?

When a metal becomes an alloy, atoms of different sizes distort the layers.

Instead of being in a neat regular arrangement, they are distorted.

They cannot slide as easily and become harder.

Let's recap.

Pure metals have a regular arrangement.

Atoms are in a neat repeating pattern.

Their layers are stacked together and can slide, which makes them soft.

Adding atoms of different sizes distorts the layers, which prevents them from sliding, making alloys harder.

When it comes to alloys, at least one element is a metal.

The tins of beans in your kitchen cupboard or this key are made from metals mixed together with other elements combine to make it stronger and more useful.