CAIE Chemistry IGCSE

9.3 Alloys and their properties

Flashcards

What is an alloy?

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A mixture containing a metal and another element (metal or non-metal).

Alloys are stronger and harder than pure metal so are more useful

Give examples of alloys

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Brass - mixture of copper and zinc

Stainless steel- mixture of iron and other elements such as chromium, nickel and copper

Why is gold jewellery often an alloy?

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Gold is very soft so it must be alloyed with another metal to make it harder and more suitable for jewelry.

How and why is zinc used to make brass?

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Zinc is alloyed with copper to increase the strength and hardness of the material.

How is iron able to form steel alloys with different properties and uses?

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Different additives can be added to iron to make different forms of steel. The amount of carbon added to the iron affects how hard the alloy is.

Mild steel has 0.25% carbon and high carbon steel has 2.5% carbon. Which steel is harder?

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High carbon steel is harder because there are more carbon atoms distorting the uniform layers of iron atoms.

Why is stainless steel used to make cutlery?

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Stainless steel is used to make cutlery as it is harder and resistant to corrosion.

Whereas pure iron is soft and rusts easily

Draw diagrams to show the structure of an alloy

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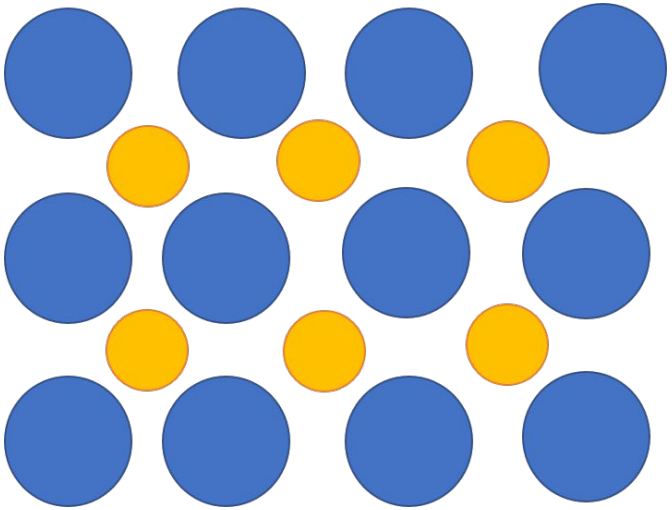

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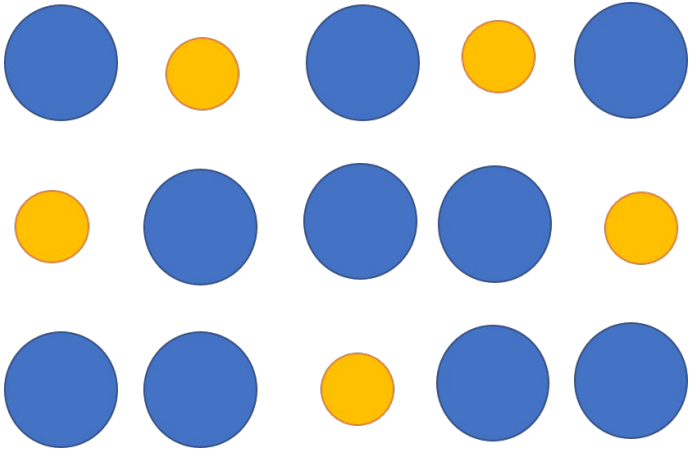

The atoms in alloys are different sizes

Why are alloys harder than pure metals, using explanations of their structure? (extended only)

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Atoms in pure metals are arranged in uniform rows which can slide over each other easily, making them very malleable.

The atoms in alloys are different sizes which distorts the layers meaning they are unable to slide over one another, increasing hardness.

Draw diagrams to compare the structure of brass (alloy) and copper (metal) (extended only)

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