

Reactivity

Harry Brearley - a Case Study

Science - Key Stage 3

Mr Littlewood



Complete this sentence: Brearley invented.....

- A. A machine to make steel
- B. The first cutlery
- C. Stainless steel cutlery
- D. A gun used in WW1



Harry Brearley gained a good
reputation for solving metal
problems.



What was Harry Brearley researching when he discovered stainless steel?

Option 1

How to make gun barrels more resistant to erosion

Option 2

How to increase steel production at his father's factory.



How was the new stainless steel cutlery an improvement from steel cutlery?

Stainless steel doesn't need polishing as it is resistant to rust.



What is an alloy?

An **alloy** is a mixture of elements, including at least one metal.



Which element did stainless steel not contain?

Option 1

Iron

Option 2

Chromium

Option 3

Oxygen

Option 4

Carbon



Independent Practice

Match each element to its % composition of stainless steel and what properties it brings to stainless steel.

Iron

Most of the alloy

Adds hardness and strength

Chromium

0.24%

Adds chemical corrosion resistance

Carbon

12.8%

Forms the bulk of the alloy



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What is rose gold good for making?

Jewellery



Why is rose gold good for making jewellery?

It is pretty, expensive and not reactive



What are aluminium alloys good for making?

Aeroplanes



Why are aluminium alloys good for making aeroplanes?

Lightweight, malleable, hard

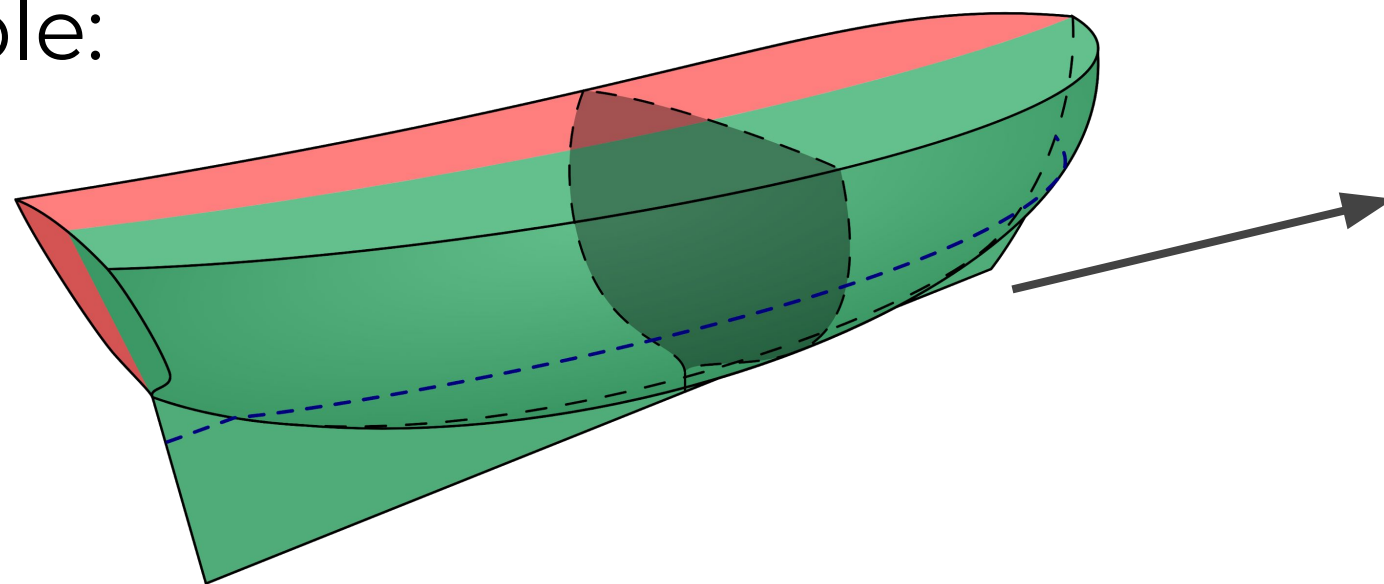


Independent Practice

Put together all of the information you have learnt about metals.

1. Draw a diagram of a metal object of your choice.
2. Label your diagram with what metal / alloy you have chosen to use and why.

Example:



Copper - nickel alloy.

Nickel adds strength.

Copper is malleable so the boat can be shaped.
Copper is low down on the reactivity series so
won't react with the water.

Source: Ship hull, F l a n k e r, Wikimedia

