Exercise walk-through

Uses of metals ▪ 9.2

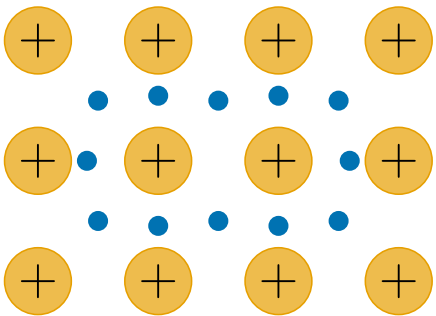
eXercise

You must be able to

- link a use to the property that makes the metal suitable
- explain the uses of aluminium and copper

Method — Property → use

- **aluminium** — low density (aircraft); low density + conductivity (overhead cables); resists corrosion (food containers).
- **copper** — good conductor + ductile (electrical wiring).

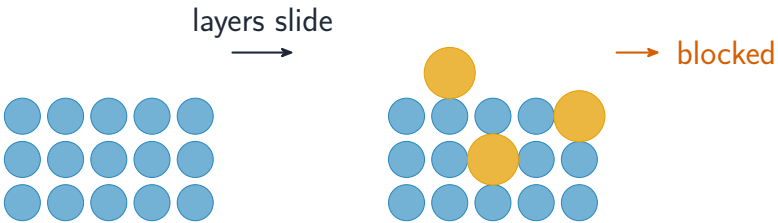


‘sea’ of **delocalised electrons**, free to move and carry charge

positive metal ions in a fixed lattice

A metal’s structure of positive ions and free electrons

Method — Property → use



pure metal
same-size atoms; layers slide easily (softer)

alloy
different-size atoms stop the layers sliding (harder)

Most metals are used as alloys

Practice 2.1 ▪ 1 mark

State why copper is used for electrical wiring.

Solution 2.1

Method: Property → use

Worked steps

it is a good electrical conductor (and ductile) B1.

Practice 2.2 ▪ 1 mark

State why aluminium is used to build aircraft.

Solution 2.2

Method: Property → use

Worked steps

it has a low density (it is light) B1.

Exam-style 3.1 ▪ 1 mark

Aluminium is used for overhead power cables mainly because it is:

A very dense

B low density and a good conductor

C magnetic

D very reactive

Solution 3.1

Method: Property → use

A very dense

B low density and a good conductor ✓

C magnetic

D very reactive

Worked steps

B. Low density and good conductivity suit overhead cables.

Exam-style 3.2 ▪ 1 mark

A metal is needed for food and drink cans.
(a) Name a suitable metal.
(b) State the property that makes it suitable.

Solution 3.2

Method: Property → use

Worked steps

(a) aluminium B1.
(b) it resists corrosion B1.

Exam-style 3.3 ▪ 2 marks

Explain why copper, rather than aluminium, is normally chosen for the wiring inside a house.

Solution 3.3

Method: Property → use

Worked steps

copper is a better electrical conductor than aluminium **M1**; and it is ductile, so it can be drawn into wires **A1**.