



The Heavy-Metal Breakfast

There is enough iron in your body to make a 10 cm nail – but how does it all get there?

This experiment takes a closer look at the iron contained within a popular breakfast cereal.

You will need

- A box of *Special K*™ cereal
- A neodymium or 'rare earth' magnet*
- A small bowl of water
- A mortar and pestle
- A piece of white card
- A magnetic stirring device†

*Available from science hobby or internet stores

†Or, a magnet taped to the end of a stirring rod or wooden spoon

Steps

1. Gently float a flake of the *Special K*™ on the surface of the water.
2. Hold the magnet near to the flake, and try to drag it around the bowl.

3. You should find the flake follows the magnet as it moves.
4. Next, finely crush a handful of the cereal with the mortar and pestle.
5. Spread the crushed flakes, in a thin layer, over the piece of card.
6. Drag the magnet around underneath the card, noting any movement in the crushed flakes.
7. Try hovering the magnet over the flakes, to see if any pieces stick to it.

Follow-up

Iron plays an essential role in the human body: 60–70% of it is found in our **haemoglobin** – a protein in our blood that transports oxygen.

We obtain our iron from our food. Breakfast cereals which have added iron are a particularly rich source.

Some – such as *Special K*™ – contain small particles of the mineral in its pure form. This 'elemental' or 'reduced' iron is strongly magnetic.

Tiny iron pieces can even be extracted from the cereal. To do this, mix the crushed cereal with water, and place it in the magnetic stirring device.

After 5 minutes or longer, take out the magnet, and examine its surface with a magnifier. You should see dark-coloured filings of iron.