

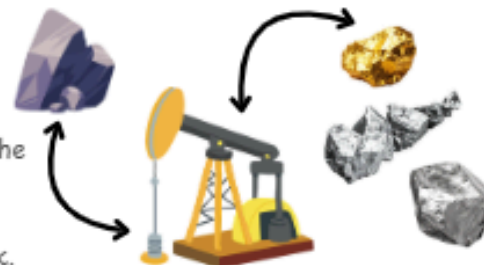
Metal Sculptures



- Many metals can be recycled again and again without losing quality.
- Recycling reduces the need for mining and saves energy.

Source/Origin

- Most metals are found in ores, which are rocks that contain metal compounds.
- These ores are dug out of the ground through mining.
- They are then processed to separate the metal from rock.



- A few metals occur naturally as **pure elements** because they don't react easily.
e.g. Gold, Silver, Platinum
- Metals are refined and shaped into usable forms

Alloys

- is a mixture of two or more metals,
- or a metal mixed with a small amount of another element.
- made to improve the properties of a pure metal
- stronger, harder, lighter, or more resistant to rust.
- Examples include bronze (copper + tin) and brass (copper + zinc).



Brass (Copper + Zinc)

- **Properties:** Strong, corrosion-resistant,
- **Products:** Musical instruments (trumpets), door handles, plumbing fittings.



Stainless Steel (Iron + Chromium + Nickel)

- **Properties:** Very strong, doesn't rust, hygienic, shiny surface.
- **Products:** Cutlery, kitchen sinks, medical tools.



High-speed steel (Iron, carbon and others)

- **Properties:** Very hard, keeps a sharp cutting edge, heat-resistant, tough, wear-resistant.
- **Products:** Drill bits, saw blades, lathe tools, milling cutters.

Ferrous

- metals that contain iron.
- most ferrous metals are magnetic and can rust if they are not protected.
- Common examples are steel and cast iron.
- used in construction and tools because they are usually strong and tough.



Mild Steel

- **Properties:** Strong, tough, easy to weld, can rust.
- **Products:** Car bodies, nails, building frames.



Cast Iron

- **Properties:** Very hard, brittle, excellent at withstanding compression.
- **Products:** Manhole covers, vices, cookware.



High-Carbon Steel

- **Properties:** Very hard, keeps a sharp edge, can be brittle, less ductile but harder than mild steel.
- **Products:** Cutting tools, chisels, knives.

Non- Ferrous

- are metals that do not contain iron.
- means they do not rust and are not magnetic.
- often used for products that need to be lightweight, corrosion-resistant, or easy to shape.
- Examples include aluminium, copper, zinc, and tin.



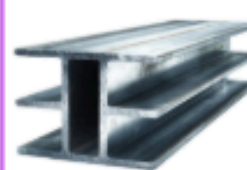
Aluminium

- **Properties:** Lightweight, corrosion-resistant, good conductor of heat and electricity.
- **Products:** Drink cans, aircraft parts, ladders.



Copper

- **Properties:** Excellent electrical conductor, corrosion-resistant, reddish colour.
- **Products:** Electrical wires, pipes, circuit boards.



Zinc

- **Properties:** Corrosion-resistant, low melting point, often used as a coating.
- **Products:** Galvanising steel, batteries, die-cast toys.

Tools

Tin snips



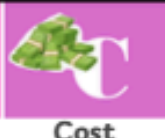
Metal file



Hack saw



Aesthetics



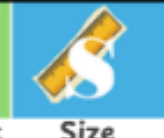
Cost



Customer



Environment



Size



Safety



Function



Material