

## Metals

Metals come from ores in the ground. **Stock forms** are sheets, bars and rods

Ferrous Metals contain iron and are magnetic and rust		
Material	Key info	Examples
<b>Low Carbon Steel</b>	Tough and ductile and easily machined and welded	Construction, screws, cars
<b>High Carbon Steel</b>	Hard and wears well	Tools, blades and knives
<b>Cast Iron</b>	Hard but brittle. Easily cast but hard to machine	Pots, pans, vices

Non-Ferrous Metals do not contain iron, aren't magnetic and don't rust		
Material	Key info	Examples
<b>Aluminium</b>	Light, high strength to weight ratio and ductile	Pots, pans, cars, cans
<b>Copper</b>	Ductile, malleable and good conductor	Plumbing supplies and cables
<b>Tin</b>	Soft, malleable and good conductor	Used as a protective coating

## Alloys

**Alloys** are mixtures of 2 or more metals to get the best of their properties

Material	Key info	Examples
<b>Brass</b>	Malleable and easy to cast	Musical instruments, plumbing
<b>Stainless Steel</b>	Doesn't rust, hard and smooth	Cutlery, medical tools, etc

## Plastics

Plastics come from crude oil. **Stock forms** are sheets, powders, granules and rods

Thermoplastics can be reheated and reshaped and infinite amount of times		
Material	Key info	Examples
<b>PET</b>	Easily <b>blow moulded</b> , food safe and easily recycled	Bottles, packaging, etc
<b>PVC</b>	Flexible, tough, easily <b>extruded</b>	Pipes, tape, hard hats
<b>HIPS</b>	Flexible, lightweight, food safe and easily <b>vacuum formed</b>	Containers and yoghurt pots
<b>Acrylic</b>	Tough, brittle, easily scratched	Car lights, baths, displays/ signs

Thermosets once heated and set <b>cannot</b> be reshaped		
Material	Key info	Examples
<b>Melamine Formaldehyde</b>	Food safe, hygienic, hard and brittle	Kitchenware and work surfaces
<b>Urea Formaldehyde</b>	Good insulator, hard and brittle	Electrical casings, buttons and handles
<b>Polyester Resin</b>	Strong, heat resistant, can be transparent	Coatings, casings

### Primary Processing of Metals and Alloys

Metals are mined from the earth and then go through an extraction process. Extraction happens by putting the ore in a blast furnace. The metal is then separated from the waste material.

### Primary Processing of Plastics

Crude oil is extracted from the earth and then processes into different types of fuels, etc. This is called **Fractional Distillation**. A process called **Cracking** then converts the large hydrocarbon molecules into plastics.