



Food



Product Design



Graphics



Electronics



Materials



Manufacturing



Textiles



Software

Materials



Timber

Hardwoods

Softwoods

Manufactured boards

The timber tree poster

Material finishes

Paints

Wood finishes

Other finishes

Adhesives

Paper and board

Paper and board types

Plastics

Thermosetting plastics

Thermoplastics

Metals

Metals



How are metals made?

Metals are made by mining ore from within the earth. Metal is then extracted out of the rocks in an extremely large scale industrial process. There are three main types of metals ferrous metals, non ferrous metals and alloys.



Mining for ore



Magnet

Ferrous metals

Ferrous metals are metals that consist mostly of iron and small amounts of other elements. Ferrous metals are prone to rusting if exposed to moisture. Ferrous metals can also be picked up by a magnet. The rusting and magnetic properties in ferrous metals are both down due to the iron. Typical ferrous metals include mild steel, cast iron and steel.

Non-ferrous metals

Non-ferrous metals are metals that do not have any iron in them at all. This means that Non-ferrous metals are not attracted to a magnet and they also do not rust in the same way when exposed to moisture. Typical Non-ferrous metals include copper, aluminium (coke cans), tin and zinc.



Aluminium cans

Metal Alloys

Alloys are substances that contain two or more different metals and occasionally other elements. The metals are carefully chosen and mixed to achieve specific properties these include reducing the melting point making the alloy light weight, etc, etc.

Metal properties

There are a lot of properties which need to be thought of when deciding what metal to use:

Property

Hardness – resistance to scratching, cutting and wear.

Elasticity – the ability to get back to its original shape after it has been misshapen.

Malleability – the ability to be easily pressed, spread and hammered into shapes.

Work hardness – when the structure of the metal alters as a result of consistent hammering or strain.

Ductility – the ability to be stretched without breaking.

Brittleness – it will break easily without bending.

Compressive strength – very strong when under pressure.

Tensile strength – very strong when stretched.

Toughness – resistance to breaking, bending or deforming.

Useful web links



Wikipedia

Read a Wikipedia article about metallic materials.

[View the Wikipedia metal page >>](#)

BBC Bitesize

Revise more about metals at the BBC bitesize site.

[View the bitesize timbers page >>](#)

Technology student

Ferrous and non ferrous metals explained by technology student..

[View the tec student metal page >>](#)



Metal sizes

Metals are available in various sizes and thicknesses and can be supplied as solid or hollow. Metals can be supplied as flat bar or hollow tube and metals even come as flat sheets.

Metal tube



Quiz time!

Mr DT says 'Read the text above and then answer these questions below'. Write your answers on a sheet of paper, dont forget to write your name on the sheet!:-

- 1.) How do we get metal?
- 2.) What is a ferrous metal?
- 3.) What is a non ferrous metal?
- 4.) What is an alloy?
- 5.) What is a metals hardness?
- 6.) What is a metals Malleability?
- 7.) What is a metals Toughness?
- 8.) What metal sizes are available?



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