

**Materials**



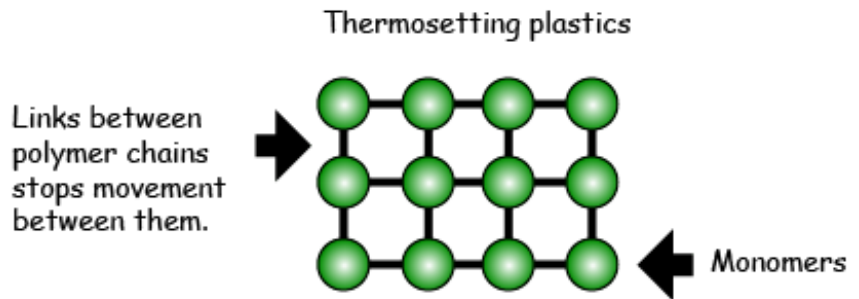
- Timber
  - Hardwoods
  - Softwoods
  - Manufactured boards
- Plastics
  - Thermosetting plastics**
  - Thermoplastics

**Thermosetting plastics**



**Thermosetting plastics**

Thermosetting plastics can only be heated and shaped once. If re-heated they cannot soften as polymer chains are interlinked. Separate polymers are joined in order to form a huge polymer. The main thermosetting plastics are epoxy resin, melamine formaldehyde, polyester resin and urea formaldehyde.



**Useful web links**



**BBC Bitesize plastics page**





View the BBC bitesize site and take a bite size test to see how much you know!

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

**3 minute plastics quiz!**

A fantastic quiz by Warren Design and Technology. Take it and see what you know in 3 minutes!

[View the 3 miute test page >>](#)

Name	Properties	Main uses	Example product
<b>Epoxy resin (Epoxide, ER)</b>	Good electrical insulator, hard, brittle unless reinforced, resists chemicals well.	Casting and encapsulation, adhesives, bonding of other materials. Used for printed circuit boards (PCB's) and surface coatings.	
<b>Melamine formaldehyde (MF)</b>	Stiff, hard, strong, resists some chemicals and stains.	Laminates for work surfaces, electrical insulation, tableware.	
<b>Polyester resin (PR)</b>	Stiff, hard, brittle unless laminated, good electrical insulator, resists chemicals well.	Casting and encapsulation, bonding of other materials, car bodies, boats.	
<b>Urea formaldehyde (UF)</b>	Stiff, hard, strong, brittle, good electrical insulator.	Electrical fittings, handles and control knobs, adhesives.	

**Phenol formaldehyde (PF, Bakelite)**

A colourless polymer - coloured with artificial pigments to produce a wide range of different colours.

Dark coloured electrical fittings and parts for domestic appliances, bottle tops, kettle handles, saucepan handles.



**Quiz time!**

**Mr DT says 'Read the text above and then answer these questions below'. Write your answers on a sheet of paper, don't forget to write your name on the sheet!:-**

- 1). Describe thermosetting plastics in your own words?
- 2). What are the properties of epoxy resin?
- 3). What are the uses of melamine formaldehyde?
- 4). What polyester resin used for?
- 5). Why is urea formaldehyde used for plugs?
- 6). What is Phenol formaldehyde used for?