

Materials



- Timber
 - Hardwoods
 - Softwoods
 - Manufactured boards
- Paper and board
- Plastics
 - Thermosetting plastics
 - Thermoplastics**

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!

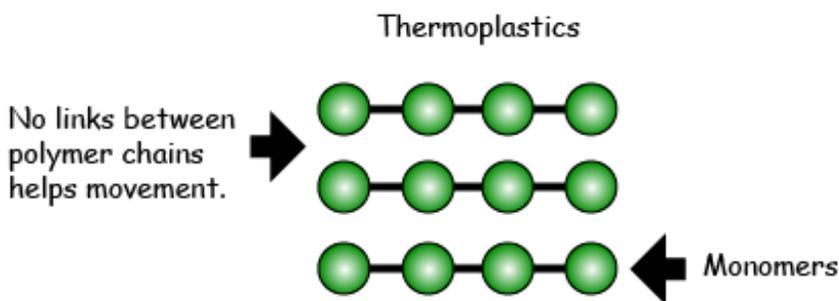
[View the 3 miute test page >>](#)

Thermoplastics



Thermoplastics

Thermoplastics can be heated and shaped many times. Thermoplastics will soften when it is heated and can be shaped when hot. The plastic will harden when cooled, but can be reshaped because their is no links between the polymer chains. Some common thermoplastics are ABS (acrylonitrile butadienestyrene), Nylon (polyamide), acrylic (polymethyl methacrylate), uPVC (polyvinyl chloride), polystyrene, polypropylene and cellulose acetate.



| Name | Properties | Main uses | Example product |
|--|--|--|-----------------|
| Polymethyl methacrylate (Acrylic) | Stiff, hard but scratches easily, durable, brittle in small sections, good electrical insulator, machines and polishes well. | Signs, covers of storage boxes, aircraft canopies and windows, covers for car lights, wash basins and baths. | |
| High impact polystyrene (HIPS) | Light but strong plastic. Widely available in sheet softens at about 95 degrees. | Vacuum forming. Common for school projects which include products outer casings or packaging. | |
| Polypropylene (PP) | Light, hard but can scratch easily, tough, good resistance to chemicals, resists work fatigue. | Medical equipment, laboratory equipment, containers - especially with built-in hinges, 'plastic' seats, string, rope, kitchen equipment. | |
| Polythene: - low density (LDPE) | Tough, good resistance to chemicals, flexible, fairly soft, good electrical insulator. | Packaging, especially bottles, toys, packaging film and bags. | |

| | | | |
|--|--|---|---|
| Polythene: - high density (HDPE) | Hard, stiff, able to be sterilised. | 'Plastic' bottles, tubing, household equipment and milk crates. |  |
| PVC | Stiff hard wearing. Plasticiser can be added to create a softer more rubbery material. | Air and water pipes, shoe soles, blister packaging. |  |



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 thermoplastics in your own words?
- 2). What are the properties of acrylic?
- 3). What is HIPS used for?
- 4). What does HIPS stand for?
- 5). What is low density polythene used for?
- 6). Plasticiser is added to what to make it more soft?
- 7). What are air and water pipes made from?
- 8). What does LDPE stand for?



[Click here for a printer friendly pdf of this page >>](#)