



KS3 Product Design Polymers / Plastics



Categories

Thermosetting polymer



Thermo Polymers

Thermosetting (thermoset)

Cross link

- Polymer chains held together by **strong covalent cross-link bonding** that does not break on heating.
- **Remains hard when heated**

Non recyclable

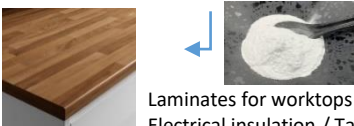
Examples

Urea Formaldehyde



Electrical sockets
Handles / Control knobs

Melamine Formaldehyde



Laminates for worktops
Electrical insulation / Tableware

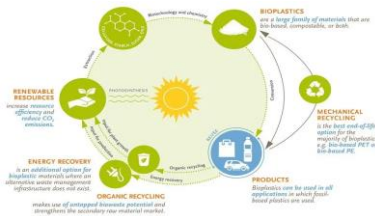
Phenol Formaldehyde



Others:
Epoxy Resin (adhesive i.e. Araldite)



All plastics have the Mobius Loop symbol that categorises them for the potential of recycling. Not all plastics can be recycled.



Thermosoftening (thermoplastic)

- Tangled polymer chains
- No cross-links between chains
- Weak forces of attraction between chains
- **Softens when heated**

Recyclable



Examples



Acrylic

H.I.P.S (High Impact Polystyrene)



L.D.P.E
Low Density Polyethylene

Others:
PP Polypropylene
HDPE / MDPE



Video QR LDPE



Tools / Machinery and Equipment

Marking Out:

- Chinagraph pencil
- OHP marker
- Pair of Compasses
- Steel rule
- Template
- Tri Square

Cutting:

- Coping Saw
- Hegner Saw
- Junior hacksaw

Shaping and Wasting:

- Bandfacer / Linisher (sanding)
- Flat File
- Half Round file
- Round (Rat tail) file
- Strip Heater – line bending
- Tools and Equipment link
- Technology Student



Key Skills:

- Accuracy
- Cutting
- Drilling
- Measuring
- Shaping
- Wasting

Drilling:

- Cordless / Battery powered drill
- Pillar Drilling machine
- Twist Drill bits
- Wheel Hand Drill

- LINKS – Science:**
- Ecology
 - Environmental
 - Monomer
 - Polymer
 - Renewable
 - Sustainable

Work Holding:

- Bench Hook
- Carpenters vice
- Engineers vice
- G Cramp
- Machine Vice
- Spring Hand clamp

Pic of completed Key Ring Y8/

LINKS – History:

- Designers
- Design movements
- Design Styles
- Materials

LINKS - Mathematics:

- Addition
- Converting measurements – cm to mm
- Division
- Multiplication
- Subtraction
- Arc
- Circumference
- Diameter
- Radius
- Symmetry / Symmetrical



Health & Safety:

Eye Protection – safety goggles / safety spectacles EN166

Use all guards on machinery

Apron MUST be worn

Long hair tied back

Only ONE person at a machine at any one time

