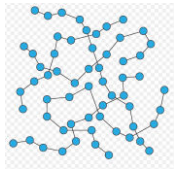
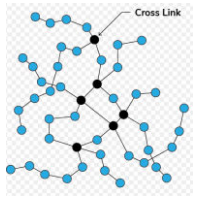
KS3 Design and Technology

Polymers unit

Material classifications

Thermoforming polymers 	**Thermoforming** polymers can heated and formed repeatedly. They are **pliable** and **recyclable**
Thermosetting polymers 	**Thermosetting** polymers are **brittle** and can only be formed once. They are hard to recycle. They are good **insulators** and are resistant to heat and chemicals

Materials and their properties/ uses

Thermoforming polymers–Acrylic, HIPS, Polypropylene, HDPE	
Acrylic 	**Properties**- Hard with good plasticity when heated so can be folded well, resists weather well, is brittle and scratches easily, available in lots of colours. **Uses-** Car headlights, visors and baths
HIPS 	**Properties-** tough, low cost, easy to form, fabricate. It has high impact strength. **Uses-** yogurt containers, plastic cutlery, salad bowls
Polypropylene 	**Properties-**Lightweight but strong and tough, good heat and chemical resistance **Uses-** Computer game cases, chairs, children's toys and food packaging film
HDPE 	**Properties-**Stiff, strong but lightweight, good plasticity when heated with excellent chemical resistance. **Uses-**Washing-up bowls, pipes, chairs, buckets and detergent bottles
Thermosetting polymers– Melamine formaldehyde	
Melamine formaldehyde 	**Properties**-Excellent heat resistance as well as being resistant to scratching and staining, hard and strong **Uses-**Laminates for worktops, picnic tableware, baby tableware

Processes, Tools and equipment

	**Strip heater-** Used to heat thin pieces of plastic so they can be folded.
	**Scribe-** Tool that is Used to mark out on plastics and metals
	**Wet and dry paper**- A waterproof abrasive paper that is used to improve the finish of plastic
	**Vacuum former-** A machine used to form sheets of plastic over 3D forms
	**Files**- used to shape woods, metals and plastics after being cut
	**Buffing Wheel**- A machine used to polish the edges of materials including plastics
	**Coping Saw-** Used for cutting woods and plastic, Thin blade means it can cut curves