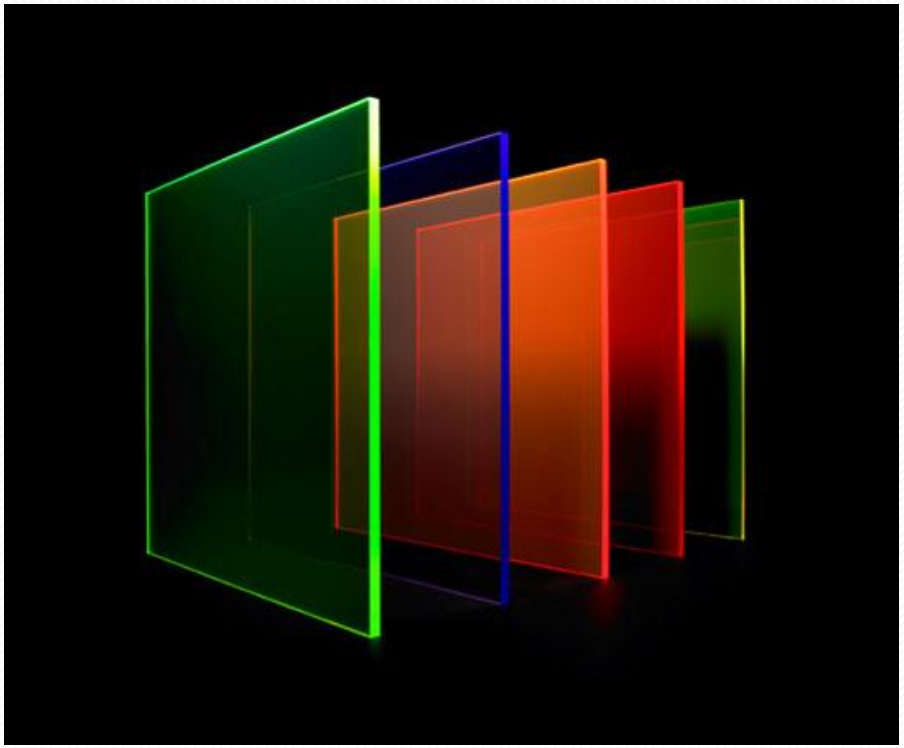
Other Materials

1. Plastics

Properties of Plastics

- Good chemical and weather resistance.
- Do not corrode or rust.
- Long lasting.
- Good insulator of electricity.
- Easy to bend and shape when heated.



Types of Plastic

- Plastic can be divided into three categories

1) **Thermoplastic**: can be reheated, moulded and shaped **any number of times**

2) **Thermosetting plastic**: can only be heated and formed **once**

3) **Bioplastics:** renewable and biodegradable

Examples of Thermoplastics

Acrylic/Perspex

Uses:

- Car lights, CD/DVD cases, safety glasses, machine guards, boats, baths, greenhouses

Polyvinyl Chloride (PVC)

Uses:

- Rain coats, hose pipe, shower curtains, inflatable dingies, water pipes, window frames

Examples of Thermoplastics

Polyethylene/polythene

Uses:

- Buckets, toys, bottles, machine parts

Polystyrene

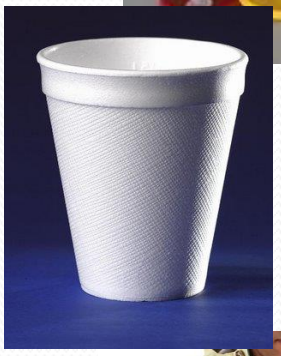
Uses:

- Insulation, inside of helmets, disposable cups, and plates, egg boxes

Nylon

Uses:

- Gears and bearing of machines, clothing, carpets



Examples of Thermosetting plastics

Urea-formaldehyde resin

Uses:

- Adhesive of timber, doorknobs, bottle caps

Polyester resin

Uses:

- Canoes, garden pools, car bodies, electrical parts

Epoxy resin

Uses:

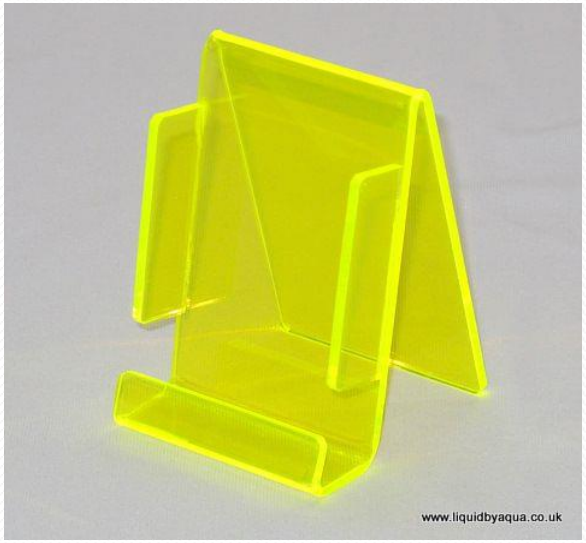
- Adhesives, drums, tools

Working with Perspex and Acrylic

- Perspex is the most popular plastic in the woodwork room and very useful for project work.
- It is important that you know how to work with plastic as it is very different to the material of wood

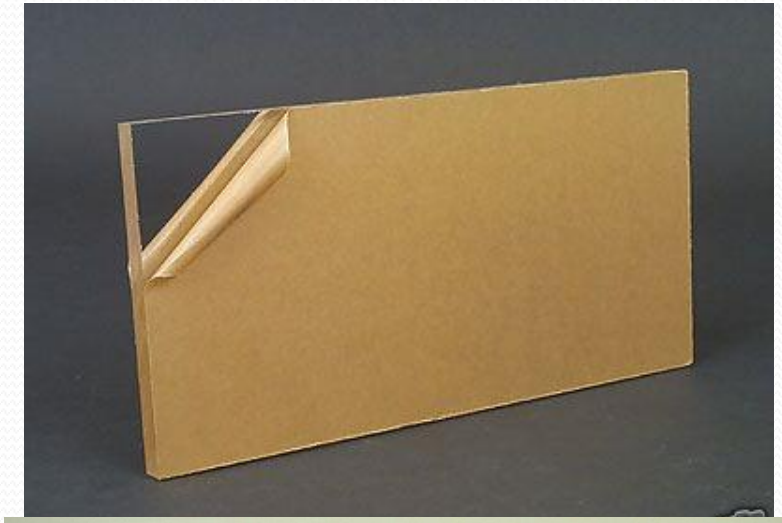
Important steps to know about plastic

1. Marking out
2. Cutting
3. Drilling
4. Filing
5. Finishing
6. Bending and folding



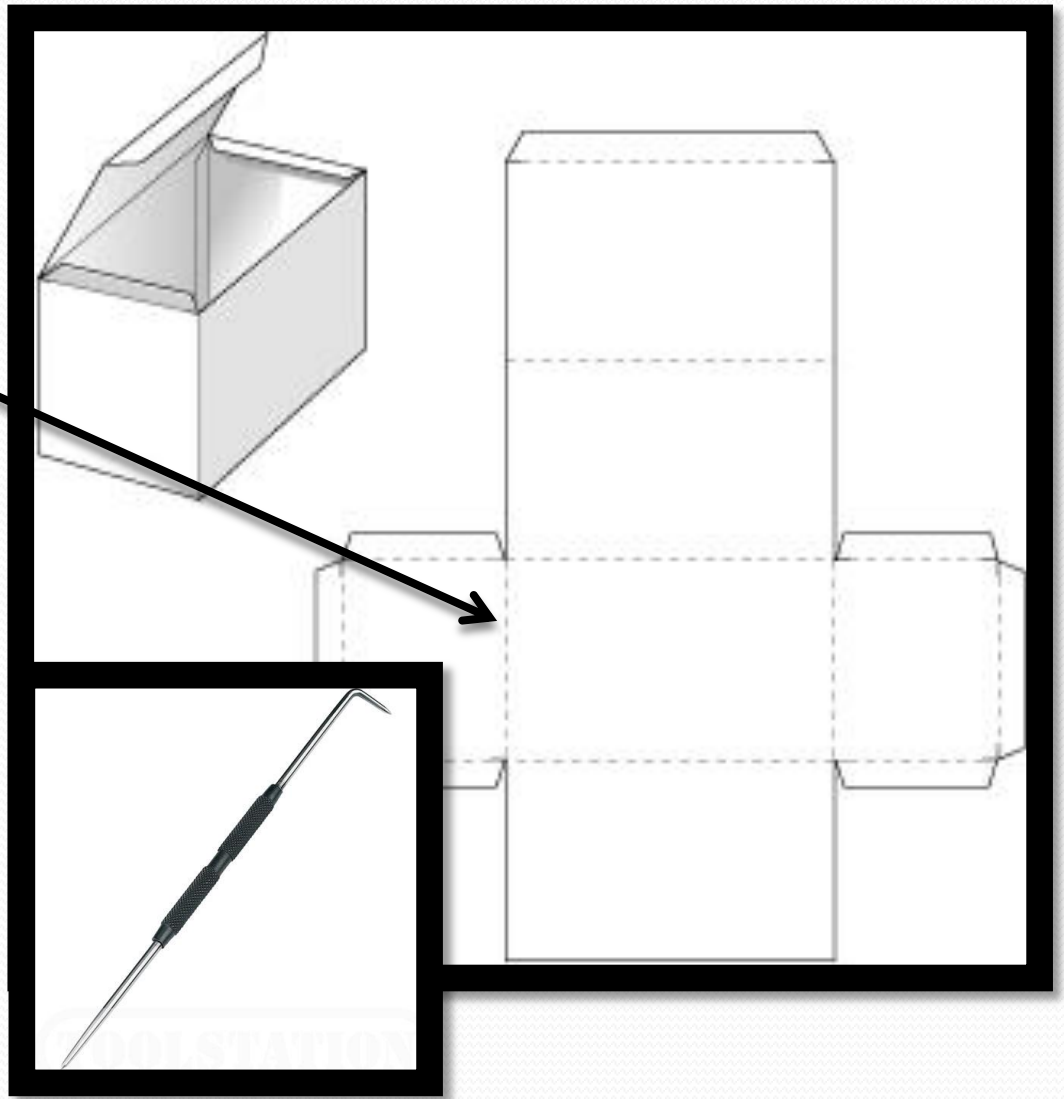
Preparation

- Acrylic/ Perspex can be easily scratched and therefore is coated with a protective masking or film.
- We can use this to mark out on.



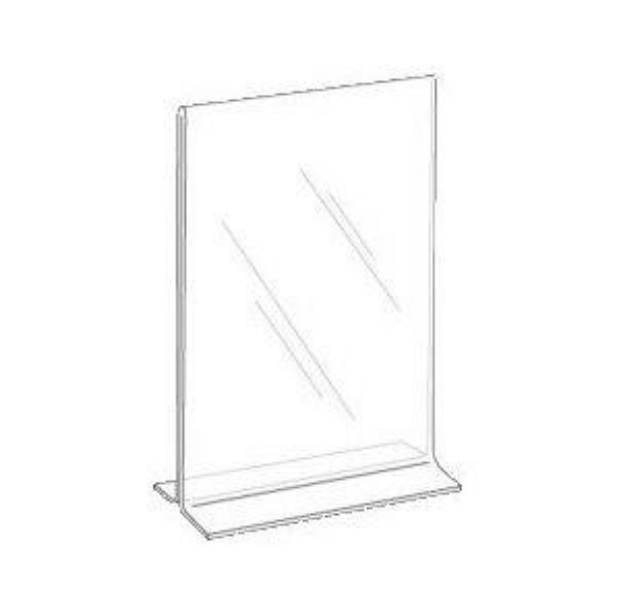
1. Marking out

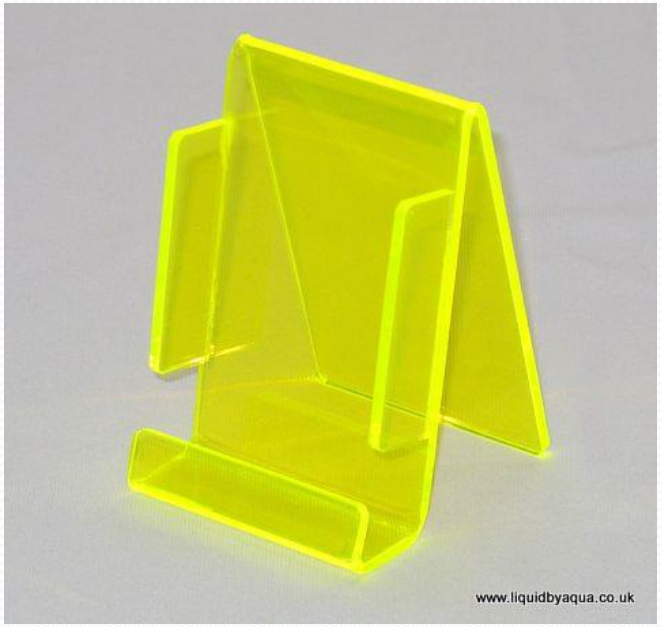
- A **development** of the piece is first marked out on the sheet of plastic.
- Fold lines should be dotted.
- Lines are marked with a non-permanent marker or a scriber.
- Lines can be directly drawn onto the plastic film or carbon paper can be used to transfer a design.



Examples of Projects

TASK: Sketch what the development of these simple objects would look like





2. Cutting Plastic

- Pressure must be applied to the plastic to prevent it vibrating and breaking
- Clamping the plastic to the desk or machine prevents this.

Tools used for cutting:

- Tennon saw,
- hacksaw,
- Coping saw
- scroll saw
- Bandsaw

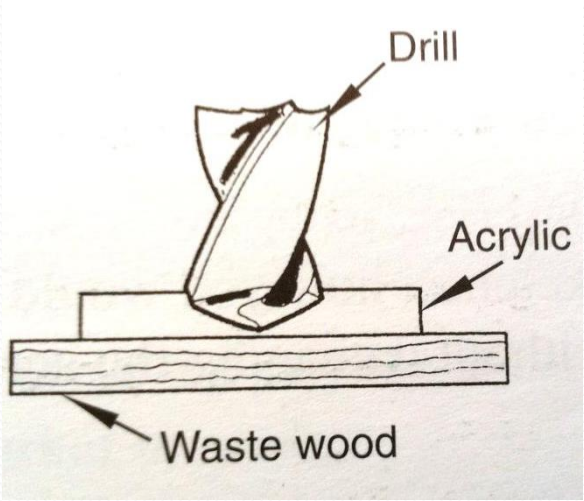
} **Used for curves**

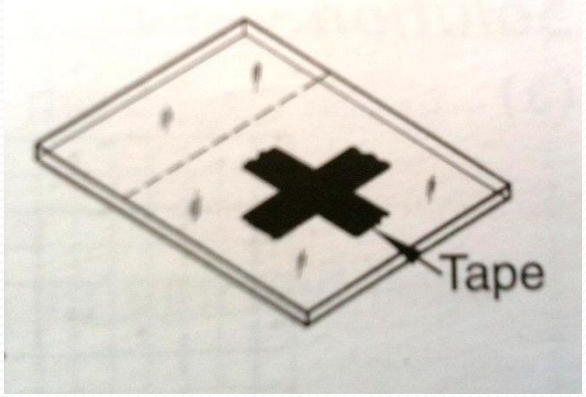
3. Drilling Plastic

- The plastic should be held securely in a machine vice or with clamps.
- This prevents the drill bit from dragging the piece up and vibrating causing it to crack

3. Drilling Plastic

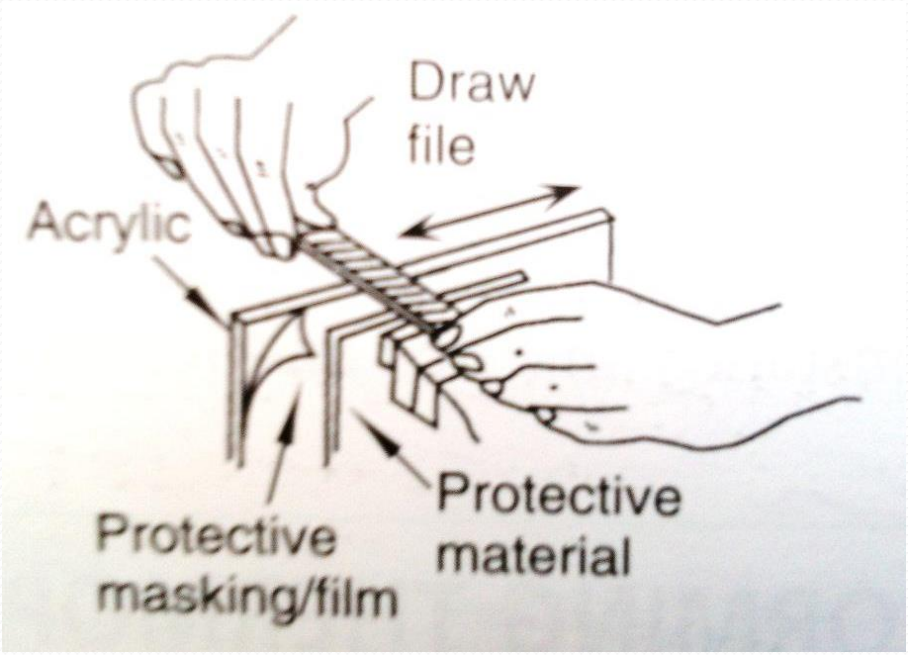
- Drill at a low speed using waster timber underneath to prevent it cracking.
- A piece of tape can also be used to prevent cracking.
- A dot punch can also be used as a starter hole for the drill bit.





4. Filling plastic

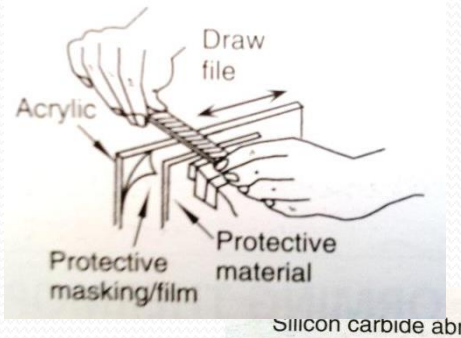
- Filling is done to make the edges of the plastic smooth.
- When filling plastic keep the piece low down in the vice and draw file (back and fort) to get a smooth finish
- Keep the file or plane at slight angle for best results

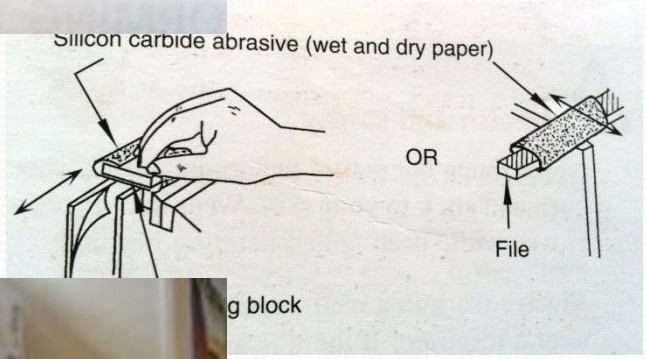


5. Finishing Plastic

Steps

- 1. File the edges
- 2. Smooth edges with sandpaper and a sanding block.
- 3. Polish the edge with brasso
- 4. Remove polish with soap and water.



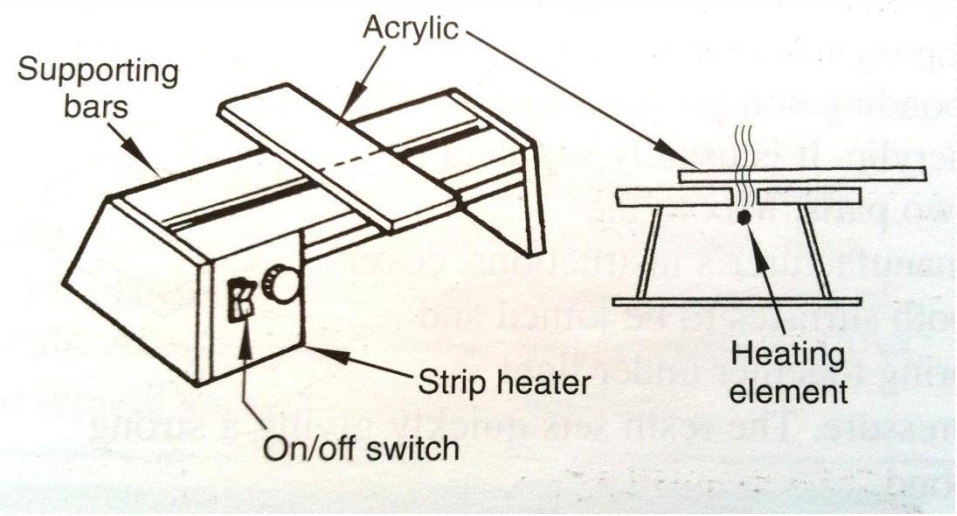


6. Bending/Folding Plastic

- A strip heater is a machine used to soften the plastic enough to bend or fold into the required shape

Steps

1. Plastic is placed onto supporting bars.
2. Folding lines marked out on the plastic are placed over the heating element to soften the plastic.



6. Bending/Folding Plastic

Steps

3. Wait until the plastic can be bent with a little pressure.
4. Do not force or it will crack
5. Place the soft fold line over a former or mould.