Name:	S1 and S2 Craftwork	Photo Frame
Class:		

Technical Education

Some Facts:

1. Plastics

Natural plastics, such as shellac, wax, horn and bitumen have been known for thousands of years. Man made or synthetic plastics have been in existence for a much shorter period of time and the basic raw materials used in their manufacture are coal, oil and natural gas.

Plastics are classified into two main groups:- Thermoplastics and thermosetting plastics.

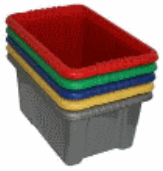

Shellac


Bitumen


Horn

2. Thermoplastic

Thermoplastic materials soften when heated, can then be shaped and hardened when cool. The ability of thermoplastics materials to return to its original shape on reheating is known as PLASTIC MEMORY. Examples of thermoplastics are acrylic, nylon, polystyrene, P.V.C, etc



3. Non Thermoplastic

Thermosetting plastics harden when heated, set and cannot return to their former state. Examples are epoxy resin, urea formaldehyde, polyurethane, etc

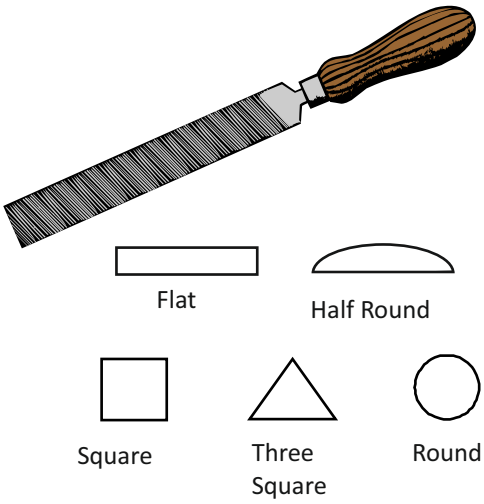
4. Acrylic

Acrylic is a thermoplastic material and is usually supplied to the school in clear or coloured sheets. Although it is available in rod or tube form. Acrylic is fairly tough and light weight. However, it tends to be brittle, but with care, can be worked with most hand and machine tools used for wood and metal.

Acrylic is easily scratched and therefore sheets are usually covered on both sides by protective paper or thin polythene. Acrylic becomes soft and pliable when heated to about 150°. Heating is normally carried out in a thermostatically controlled oven for general forming or over the electric element of a strip heater for local bending. Wooden formers or jigs are very useful when forming bends and folds.

5. Files

Files are made from high carbon steel and are used for the removal and smoothing of metal and plastics. Due to specialised heat treatment the blade is made very hard whilst the tang is left in a relatively soft state to prevent if from being easily broken. The teeth of the file are shaped so that it cuts on the forward stroke only. Files come in a variety of shapes and sizes as shown.



Safety Note

File tangs can be dangerous and files should always be used with the handle fitted.

6. Hole Saw

This tool is used to drill big holes in wood or plastic and is generally fitted to an electric drill. The hole saw has a centre drill attached which is called the PILOT drill. It is called the pilot drill as it pilots the larger diameter cutter to exactly the right location.

7. Abrasives

After the edges of acrylic have been cut and filed they then have to be finished with emery cloth, wet/dry paper and finally polished to a high shine.

Emery cloth is a type of coated abrasive that has emery glued to a cloth backing. Emery is a dark granular rock which largely consists of the mineral corundum. It is crushed in to different grit sizes to make a range of coarseness. The grade is printed on the back of each sheet in the form of a number. For example P220, P150, P120, P100,P80, etc

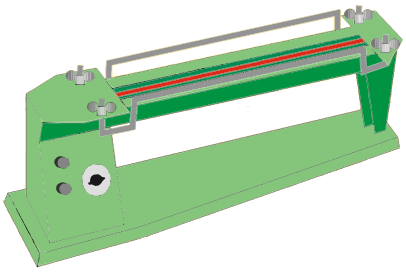
Emery Cloth

Wet/Dry paper is an abrasive paper that has a waterproof backing on it. It is used almost always wet using water with a little soap added to prevent the paper from clogging up. It comes in also in various grades. Most commonly P100, P320, P400, P600, P800, P1200, P2000. These very fine grades make it suitable for polishing and also rubbing down paintwork.

Wet and Dry Paper

8. Strip Heater

The purpose of the strip heater is to heat only a narrow strip of acrylic to allow local bending. Before bending the acrylic the protective coating is removed and then area to be bent is marked with a pen. After heating it sufficiently the acrylic can be shaped, preferably using a suitable former or jig.



Skills Involved:-

- Marking out
- Cutting
- Drilling
- Filing
- Bending
- Finishing

Basic Materials:- Acrylic

160 x 60 x 3
Or
Sizes as available

Technical Education

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Name:	S1 and S2 Craftwork	Photo Frame Progress Test
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Technical Education

Answer **ALL** questions

1. Plastics which are soften when heated and harden when cooled are know as

- [ ] thermosetting plastics
- [ ] thermoplastics
- [ ] soft plastics
- [ ] setting plastics

2. Acrylic sheet

- [ ] is very porous
- [ ] bends easily when heated
- [ ] is flame resistant
- [ ] bends easily when cold

3. An acrylic sheet 3mm thick is best cut by using a

- [ ] tenon saw
- [ ] hacksaw
- [ ] panel saw
- [ ] rip saw

4. Acrylic sheet which has had the protective covering removed is best marked with a

- [ ] felt tipped pen
- [ ] biro pen
- [ ] pencil
- [ ] scriber

5. Acrylic will begin to soften at about

- [ ] 150°
- [ ] 90°
- [ ] 350°
- [ ] 130°

Answer **ALL** questions

6. The edges of acrylic are best finished using

- [ ] file, glasspaper
- [ ] surform, glasspaper, polish
- [ ] rasp, emery cloth, polish
- [ ] file, wet/dry paper, polish

7. Which of the following is a plastic material?

- [ ] aluminium
- [ ] nylon
- [ ] balsa
- [ ] tinplate

8. The protective covering on acrylic sheet should

- [ ] be removed after heating
- [ ] not be removed
- [ ] washed off with oil
- [ ] be removed just before heating

9. A 50mm diameter hole is to be cut in an acrylic sheet. What is the name of the tool below?

- [ ] centre drill
- [ ] twist drill
- [ ] hole saw
- [ ] centre bit

10. A basic raw material used to manufacture plastics is

- [ ] wood resin
- [ ] timber pulp
- [ ] latex
- [ ] oil

Total	/10