EARNSHAW STATE COLLEGE

7 T.M.T. (UNIT 1: KEY RING)

Procedure

Introduction to material (Polymethylmethacrylate or Acrylic)

1. Comes with **paper** to reduce the likelihood of scratches. Paper to be removed when job is completed.
2. Available in a range of **finishes**, i.e. clear, translucent (colour tint) and opaque (solid colour).
3. Characteristic. Material is very **hard/brittle**. Demonstrate.

Marking out

1. Whilst referring to the selected design from section 4 of the task sheet, use a pencil only to draw up chosen design.

Waste removal – **Cutting**

1. **Tools** Rqd. – Coping saw, "V" cutting board, holdfast.
2. Clamp board to workbench having the **holdfast arm** positioned on the right.
3. **Introduction to coping saw** namely,
    - Saw parts – Handle, frame, blade (which is easily broken)
    - Three fingers (of dominate hand) around handle
    - Index (pointing) finger against frame
    - Thumb on opposite side
    - Position saw so that blade moves vertically
    - Practice "up-and-down" action with students
    - Hold plastic securely with non-dominate hand (left hand for most students)
    - Cutting is to occur on the outside of the line of the drawn design. DO NOT CUT ON THE LINE.
    - Reasons for blade breakages.
        - Trying to turn the saw 90° whilst it is stationary.
        - Removing the saw whilst NOT moving it up and down.

Waste removal – Cross filing

1. Hand files (rectangular – green, blue, white)
    a. First cut / smooth – Blue
    b. Second cut - Green
    c. Bastard file (course) - White
    d. Rat tail (round) (small and large)
    e. Triangular file (small &n large)
    f. Half-round (small and large)

g. Warding
h. File card – for cleaning files

2. Piece to sit low in the vice to minimise flex.
3. Choose file. There are different filing techniques. File is to be held with two hands.
4. Files only works on push stroke.
5. Cross filing - file through the piece, lift up and pull back to start then push through on the piece again. Repeat until flush with the shape line.
6. Continue until desired shape is achieved.
7. Use a file card to clean the fine plastic out of the groove of files so it continues to remove waste.
8. File to be horizontal as it is used.
9. Stand in front of the vice.

Exit ticket – quiz about files, drill press, how to leave the workshop when finished etc

Waste removal – Drill press (Teacher/Aid to hold material)

1. Mark the area that waste needs to be removed.
2. No one inside the line at the drill press, only the operator permitted.
3. Safety glassess, hair tied back.
4. On and off switch demonstrated.
5. Plastic is brittle, i.e. breaks easily. Drill must come down slowly consequently.
6. Waste backing leaves holes so extremely important not to drill through into the stock table.
7. Drill must be on a fast speed.
8. Wastage is called ‘swarf’.

Waste Removal – Draw filing

1. Choose appropriate file
2. Stand adjacent to the vice.
3. Hand in close holding the file across the length with index fingers and thumbs.
4. Short, rapid little strokes up back and forth to achieve smoothness.

Waste Removal – Wet and Dry (320 and 600 grit)

1. Prepare a container of water filled with a few cms to dip the wet and dry.
2. Start with 320 grit sanding the edge along the line of the length of the piece making sure to to frequently dip the wet and drip into the water to clean and refresh.

3. Hold the wet and dry under the placing downward pressure while rubbing back and forth.
4. Continue around the perimeter of the piece ensuring that the surface is clean and even. The goal is to prepare the surface ready for the 600 grit.
5. Once the piece is showing consistent smooth surfaces, it's time to move on to the 600 wet and dry. Repeat the process for 320 grit.

Buffing Machine – FInal polishing

- Left wheel - rag: Cutting compound (for initial buffing).
- Right wheel – loose leaf: Finishing compound (for final shine).

1. Safety precautions:
    a. Ensure loose clothing and long hair are secured.
    b. Use safety glasses to protect against debris.
    c. Keep fingers away from the spinning wheel.

2. Start with the left wheel (cutting compound):
    a. Hold the piece firmly but do not apply excessive pressure.
    b. Move the piece across the wheel in a controlled manner.
    c. Ensure it is positioned in the bottom quandrant of the wheel to ensure an 'bite' of the wheel will project it downward away from the face.

3. Switch to the right wheel (finishing compound):
    a. Use the same technique to achieve a high-gloss finish.

4. Inspect the final piece for uniformity and shine.