

Design & Manufacture

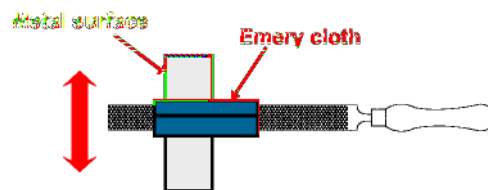
Homework 40

Metalwork-Finishes

Finishes on metal are used to both protect and decorate the surface. If left unprotected most metals tarnish and eventually corrode.

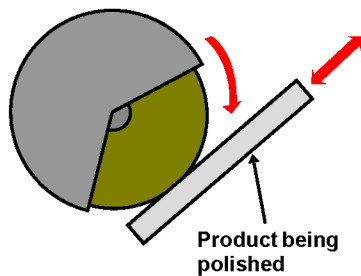
Preparation

It is important that the surfaces are cleaned up by removing any dirt, grease and tarnish. The most common method is to use **Emery cloth** (blue or black coloured grit stuck to a cloth backing). The cloth can be wrapped around a file and then rubbed over the surface, up and down in one direction, to give a clean looking finish.



Polishing

Further prepare the surface by using a finer grade or worn piece of emery cloth to get a smooth matt finish. Polishing can then be done by hand using liquid metal polish and a cloth, or on a **Buffing machine**, by holding the surface against a revolving mop, lightly coated with an abrasive wax.



Safety note

Always use the underside of the buffing wheel so that the product being polished is thrown away from you if it is pulled out of your hand. Never hold the product with a rag, it can catch in the wheel and drag your hand into the machine.

Painting

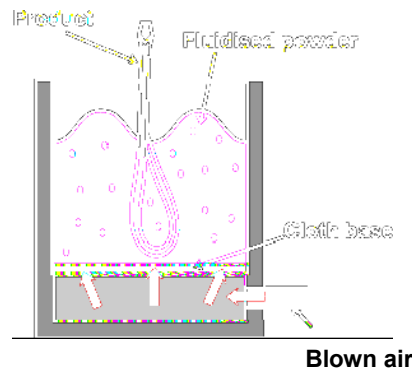
The surface should be thoroughly degreased using white spirit. A special primer coat for metal can then be applied. Although normal gloss paint can be used over the primer, an **enamel** gloss is best, as it is less likely to flake off. The toughest paint finish is **Hammerite**. This paint does not require a primer coat, except on aluminium, and can be painted over rust.

Lacquering Lacquering metal is similar to varnishing wood. A thin layer of cellulose gum is brushed on the cleaned surface, giving a clear protective coat that will allow the colour of the metal to show through.

Plastic Coating A plastic coating is a tough and waterproof finish that comes in a range of colours.

The product to be coated is heated in an oven, or by a blow torch, to a temperature between 200°C and 400°C. It is then plunged into a fluidised bath of polyethylene powder for a few seconds. When it is removed the product should be rotated slowly as the plastic cools and sets, so that no drips occur.

Fluidising is blowing cold air through the powder so that the powder bubbles like boiling water.



Enamelling

Enamelling is using powdered coloured glass, which is melted, flows over the surface and then bonds to it. It is normally used as a decorative finish on copper for items of jewellery.

On steel, **Vitreous enamel** is a coating that is used for the casing of washing machines and refrigerators etc.

Anodising

Anodising is used on aluminium and is a method of producing a dense, clear oxide layer that resists corrosion. The layer can be dyed with coloured inks.

Electroplating

Electroplating is using a process called electrolysis to coat one metal with a thin layer of another metal. For example, covering brass with chromium for bath taps and nickel with silver (silver plate) for an ornament.

Questions

1. Explain the best way of cleaning metal so that it is ready to receive a finish.

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2. In what way can a buffing machine be a dangerous machine to use?

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3. Why is enamel paint better than standard gloss on metal.

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4. What sort of finish would you give brass so that the shiny yellow surface can still be seen?

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5. Explain, with diagrams, how the handle of a junior hacksaw can be plastic coated.

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6. What method could you use to decorate a pair of copper earrings?

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