

Stained Glass as an Art and Craft

Few people understand the amount of work that goes into a good stained glass window. Now that fabricated 'stained' glass with stick-on lead and clear acrylic paint features in modern double-glazing the art of the craft is becoming further debased. What follows is a description of the processes involved in even the smallest piece.

First the design is made on a small scale for approval and the glass is selected from sample pieces to the client's and artist's tastes from sample pieces. The glass used can either be cheap machine-made glass or the more expensive *Antique* glass (which is made in the traditional fashion - i.e. hand-blown and hand-coloured). *Antique* glass has unique variations in colour and texture that give it more beauty and interest.

After that a full scale '*cartoon*' in pencil or colour is made to show all cut/lead lines of the piece with the width of leads involved and any details in painting and staining. Then the designer makes a cut-line trace from the '*cartoon*' which is used as the template for the whole panel. Pieces of glass are cut to size from flat sheets and put into context on a light box. After this any applied processes are done on the surface of the glass. These may include any of the following:

- **Acid etching** uses *Flash* glass – glass especially hand-blown with a thin layer of coloured glass flashed onto clear. This layer can be masked out and put in diluted Hydrochloric acid until the colour is gone from the exposed areas. This process is very dangerous and needs special facilities. However, *sandblasting* will remove flashed surfaces more safely but less subtly. Also it leaves a frosted texture that will need *fire polishing* (heating until the surface texture melts) to render clear again (see below).
- **Staining** uses silver oxide on clear glass then fired in a kiln. The heat transfers colour to the glass and makes a variety of transparent yellows from pale gold to deep amber.
- **Painting** is done in stages as each element of the design needs firing before it can be worked on again. Glass paint comes in various shades of lead oxides as a fine opaque powder. It can be used thickly as line for painted detail or thinly as a *matt* – a finely brushed tone applied with a badger brush to shade the coloured glass. *Matting* is used to modify the amount of light coming through the panel and create modelling on the figurative elements. The *matt* can be scratched into for other effects before firing – in glass of the Middle Ages this was traditionally called *grisaille*. Firing to 560°C makes the surface of the glass melt and fuse with the paint for a permanent finish. Illustrative details on glass may need 3 or more firings to build up the levels of tone and texture.
- **Enamelling** may be done at the next stage where areas of discreet transparent colour can be added to the glass. This also needs to be fired in the kiln to a high temperature to melt the powdered enamel and fuse it to the glass surface.
- **Sandblasting** is done last as it will melt in the high temperatures used for paint and stain. Sand under high pressure is blasted onto the glass surface and makes a frosted white effect that can also be textured and patterned with masking.

When the pieces of glass are finished they are assembled on a glass easel with wax or Plasticine® to make sure the final results are as required and make any final adjustments against natural daylight. The black lines to indicate the lead are painted on the easel for better effect. Finally the glass pieces are fixed together with different widths of lead *came*. The lead is stretched and cut to fit in sections. The panel is then soldered, puttied, and cleaned.

The more processes on a panel of glass the more expensive the piece. Leaded glass without any other work is costed at about £150 per sq.ft. But this depends on the complexity of the design and the quality of the glass. Painted, etched and stained glass costs considerably more depending on the amount of processes involved - at least £250 per square foot.

Some of the decorative glass in exhibited in this website is made in *Applique* - where the pieces are cut and the edges polished before being bonded to clear plate glass using clear epoxy resin. This is good for more complex work and creates a modern look. On toughened glass it is particularly suitable for entrance doors and hallways.