



## Szerelmey Faience - Hand Made Production Processes

Different suppliers will vary slightly in their production methods, but will have the same general processes involved, of which the following is a summary.

### Concept and Design

The process begins with an initial consultation between Szerelmey and the architect/client to discuss the concept, design, colours and textures. We will advise on feasibility, offer workable solutions to design issues, advise on structure build up if necessary and consult with our suppliers. At this stage we would normally take the client to visit our supplier. Not only does this help the client to understand the production process but it also gives them the opportunity to view the colour laboratory and discuss their bespoke colour/finish options.

Our Design and Technology Department will produce scale drawings and begin designing the installation methods and fixings using AutoCad, Revit and Inventor software, which allows them to carry out static analysis testing. In the early stages of a project our supplier will typically begin producing sample elements to fine tune the colour/glaze and shapes.

### Model and Mould Making

Our suppliers generally create models using CAD software – these are CNC produced in polystyrene from which a reverse plaster mould is created in the traditional way. The moulds are air dried in special temperature and humidity rooms. The CNC method is an extremely quick and efficient way of producing the model and the polystyrene is 100% recyclable. Whilst most shapes can be formed using the CAD software, some are too complex for this method. In which case the model is created by hand, by highly skilled craftsmen; once the model piece has been created the mould will be produced in the traditional way.

### Clay Casting

There are three main types of clay casting:

**Hand Pressed** – the clay is pressed into the mould by hand, which can be time consuming but very accurate. This is typically used for highly detailed elements.

**Ram Pressed** - this uses a hydraulic press - the clay is placed on the die and hydraulically pressed into the form. This process does not produce the same level of detail as hand pressing.

**Slip Cast** - a liquid slip (clay) is poured into preconditioned moulds to a tightly controlled thickness. When the clay is partially dry the piece is removed from the mould and finished by hand. This method offers consistent performance specifications and wall thickness and strength, and is a reliable method of casting. This method is typically used for less intricate elements.



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### Hand Finishing

Before the clay dries completely, it is removed from the mould and finished by hand, by craftsmen using traditional methods and tools. Finished pieces are allowed to air dry naturally at room temperature for between 2-21 days depending on their size and complexity. Next they are transferred to fully automated, humidity-controlled drying rooms to ensure that all moisture has been removed.

### Glazing and the Colour Laboratory

Szerelmey's specialist suppliers have their own colour laboratories where unique colours and finishes are developed. Developing the exact colour and finish can be a long process and generally starts at the beginning of the project, before the elements have even been created. Szerelmey's suppliers produce custom colours for each client, developing a chemical formula for each colour. This ensures that the colours retain consistency across the project.

Colour is applied in the form of an engobe - a thin opaque clay slip - and/or a glaze/s. Multiple layers of glaze may be applied to deepen the colour or to achieve certain effects such as mottling or feathering. Typically, multiple glaze layers are applied and fired once. The different compounds in the glazes react with each other and to the heat of firing to achieve the colours/effects.

Other methods of application such as brushing, ragging, rolling and the traditional spraying can be used to achieve different finishes.

Standard glazes are transparent. This means that with multiple layers, there is the effect of "looking through" the glaze which gives the colour depth.

If an engobe is applied to the body of the clay first, the glaze applied on top will be more opaque - this gives rise to a denser, flatter colour finish.

Another way of achieving opacity is to add an elemental material to the glaze, such as zircon or tin. These will produce a more "solid" colour.

The glazes are applied by hand, by craftsmen. Colour, complicated patterns and texture can also be achieved through the use of heat-applied transfers to the faience. In addition, our suppliers can produce a range of finishes from high gloss to mat black. Hand glazing will not necessarily achieve a completely uniform colour across the piece. On shaped pieces the glaze will run off high points leaving a slightly paler line. The effect is artisan and hand done. Clients wishing to achieve a completely flat and regular colour distribution should use an extruded faience product.



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### Twice Firing Glazes

Some glazes such as those with a very small lead content have to be fired at a lower temperature than the clay needs to be fired at to achieve its specifications. This is because the lead reacts to a lower heat, and the colour is not optimised if it is fired too high. In these cases, a twice firing process needs to happen; there are some cost implications in this.

First the clay body is fired at normal temperature (around 1200 C) to achieve its correct specifications, then the glaze is applied and the element undergoes a second firing at a lower temperature to fix the glaze.

### Colouring Clay

Certain colours can be achieved through adding colour to the clay mix itself, rather than through glazing. This method is often used to create the “brick red” or “traditional terra-cotta” colours that are seen and results in a through body colour i.e., the colour is consistent all the way through the clay.

### Kiln Firing

After glazing, the pieces are fired in state of the art computer controlled kilns. Firing times might vary, but are generally approximately 30 hours at temperatures of around 1200°C to meet the performance criteria for BS and ASTM. The size, shape and configuration of kilns will vary from supplier to supplier and may affect the size and shape of pieces they can facilitate. We are very familiar with all our suppliers and can advise on the one most suited to each individual project.

### Quality Control and Dry Laying

Each piece is individually numbered and checked for quality and consistency before being dry laid in the sections they will appear on the façade for the client to check. At this point the client can decide if they want to move pieces around before they are fixed into place.

### Fixing and Installing

The Szerelmey Design Team become involved early in a project and can provide invaluable advice in the initial stages of a project. The team can help with issues such as thermal engineering and testing in relation to the fixings and backing structure and will look at the construction as a whole.

The team will work with the client to reach workable solutions for every design.

Szerelmey’s specialist team custom design all the fixings and installation methods for the external and internal faience cladding to accommodate virtually any design.



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### Fixing and Installing continued

Our specialists can enable faience installation to an existing building, in most instances, or to a new block work build up or steel carrier frame system.

Each faience unit is fixed with a minimum of four stainless steel, custom designed fixings and is self-supporting.

Typically, though not always, the team will drill dowels (6mm) and attach fixings on site. This allows our installers to minutely adjust every element to ensure optimum installation.

Installation is generally undertaken using either an open jointed rain screen system, or a fully grouted partially load bearing system.

Grout can be carefully colour matched to the faience units to blend in. Normally a lime mortar grout is used.

Joints will range from 5-10mm given the tolerances of the material.

A depth of 50mm should be allowed for our fixings. Very occasionally and depending on the building, this might be reduced to 35-40mm.

Typically faience elements for cladding are 40mm thick, although this might be reduced to 30mm depending on the design.