Comparing the processes

ed decoration

Stage 1: For all process a copper plate needs to be engraved, etched, or stippled

Engraving means using a sharp steel tool called a burin, creating a pattern of lines cut into a small sheet of metal, usually a copper plate for use in ceramics. **Etching** uses acid to bite into the surface of the copper. The plate is first coated with a wax which protects it from the acid and is known as a ‘resist.’ The design is then lightly scratched through the wax. The plate is then exposed to the acid. The acid bites into the copper wherever the design has been scratched through the wax. **Stipple engraving** is a method of creating tone in a design by means of dots grouped more or less closely together – more and closer means a stronger darker effect, fewer dots further apart means a lighter effect. The dots are effected by means of a punch tool which may create single or multiple dots when applied to the copper plate and struck with a hammer.

These processes can be used singly or in combination to produce the finished design.

engraved lines create strong images

dot punched or stippled engraving gives a delicate tonal range

etching results in free-flowing lines th resemble a pencil drawing

Glue Bat Printing

Stage 2 Transferring the design from the copper plate to the glue bat

The bat printer did not heat the copper plate. Boiled linseed oil was rubbed into the lines of the plate. The surface of the plate was carefully wiped clean, so that oil remained only in the lines. A sheet of gelatine, known as a bat, was then pressed on to the copper plate. This transferred the oil from the plate to the bat. The flexible bat was then peeled off from the plate.

Hot Press Printing

Stage 2 Transferring the design from the copper plate to the hot press printing paper

In the hot press method, the printer heated the copper plate and rubbed a mixture of pigment a heavy, sticky oil into the engraved lines. Heating the plate made the mixture run better into the lines. The printer carefully wiped the mixture off the surface of the plate, leaving it only in the lines. The printer then placed a dampened sheet of tissue paper on the plate and passed the two together through a hand-printing press. This transferred the sticky mixture from the copper plate to the tissue paper. The paper was then carefully peeled off.

Stage 3 Transferring the design to the pot: glue bat printing

In the glue bat method, the next step was to support the flexible bat, oily side up, on a cushion. Then the pot was carefully pressed down on to the bat. If the pot had a curved surface like a mug or a jug, it was rolled on to the bat, which then curved around the pot and stuck to it. This transferred the oil from the bat to the pot. Then the bat was peeled off the pot. The pot now had the design printed invisibly on it in oil. Powdered color was then lightly dusted over the pot. The color stuck only to the parts that were oiled. The design could then be seen on the pot.

Stage 3 Transferring the design to the pot: hot press printing

In the usual hot press method, the next stage was to trim the printed paper with scissors so that the design would fit the pot. Then the paper was placed on the pot and rubbed hard to transfer the sticky design on to the pot. The paper was then washed off.

Alternative processes included:

Brolliet's way of hot press printing : One of the earliest descriptions of ceramic printing, by Brolliet, describes a different method. The sticky mixture printed on to the paper was almost entirely oil, with just a trace of **colored** pigment to show where the design was. Powdered pigment was then lightly dusted on to the paper. The pigment stuck only to the parts that were oiled. The paper was then placed on the pot and rubbed to transfer the design.

Spode's 'Pluck and Dust' method:Again the mixture printed on the paper was almost entirely oil, with just a trace of colored pigment. The paper was pressed on to the pot, transferring the design in oil on to it. The paper was carefully peeled off. Powdered pigment was then lightly dusted on to the pot. The pigment stuck only to the parts of the pot that were oiled.

Stage 4: Fixing the print on the pot

How the print was fixed on the pot depended on whether this took place before or after the pot was glazed.

Before glazing

If the print was applied to the pot before it was dipped in glaze, this was an underglaze print. It was given a very light firing known as ‘hardening-on’, before the pot was dipped in glaze and then fired at high temperature. The print was then protected by the fired glaze and would not wear off.

After glazing

If the pot had already been dipped in glaze and then fired before the print was applied, this was an overglaze print. It was fixed by firing at about 750 degrees Celsius, a lower temperature than that of the glaze firing, which was at least 1000 degrees Celsius. The print was therefore less firmly fixed than the glaze below it and might be damaged by wear over time.