



INTRODUCTORY INSTRUCTIONS FOR METAL CLAY ENAMELLING

The art of enameling is the process of fusing glass to metal. This can mean the addition of colour alone or with time, patience and skill, the creation of a masterpiece. These instructions are meant to be an introduction to enameling only. As you progress, you may wish to learn additional techniques and skills. There are some excellent books available on enameling. Linda Darty's book "The Art of Enameling" is highly recommended.

Safety

Common sense is always the best safety tool. The advice listed here is an overview and it is assumed that the reader is familiar with washing enamels before using them, and also transferring pieces in and out of a hot kiln. Working with both kilns and enameling can be hazardous and appropriate safety equipment, which includes protective glasses when looking into a kiln and heat resistant gloves when taking pieces in and out of the kiln, should be worn. We do not stock or sell Lead Enamels but all Enamel powder is powdered glass and can be irritating to your nose, throat and lungs. Wearing an appropriate dust mask during enameling is recommended. Do not eat, drink or smoke in your enamel work area and never lick your fingers. Wash your hands regularly. Work in a well ventilated area and as an alternative to vacuuming, use a wet mop or wet cloth to wipe down surfaces.

Design

Ideally your metal clay work should provide an edge to enclose or "stop" the enamel. The depth should be no more than 1-2mm and the area to be enameled should have a uniform thickness.

Metal Clay Preparation

Assuming you have fired your metal clay in the normal manner, performed any finishing and burnishing. Only one more step is necessary to prepare it for enameling. Prefire it to remove any oil caused by handling. There is no need to ramp from room temperature – put it directly into the kiln at approximately 650C for one to two minutes. After the piece has cooled down to room temperature, enamel can be applied by several procedures.

Sifting

Sifting is a way of dropping enamel particles and catching them in a controlled manner. Fill a sifter about one third full. If the piece being coated is flat, sifting can be started immediately. If the piece has curved surfaces, a holding agent is most helpful. Klyr- Fire is the standard in the industry. It may be used full strength, or diluted as much as three parts of water to one part of Klyr-Fire. Use a small brush to apply a thin coat to the piece. Hold the sifter in one hand a few inches above the surface being coated. Any movement or tap on the sifter initiates the enamel fall. This may be accomplished by finger and/or wrist movement of either one or both hands. Intensity of this movement, along with the mesh size of the sifter must relate to the amount of enamel, as well as the area and surface to be covered. Sift until the enamel just covers the metal and then

sift a bit more to obscure the colour of the metal beneath. Sifting is the best way to apply a simple coat evenly to a large flat surface.

Wet Packing

This method enables you to juxtapose one intricate pattern against another, with good control. Place a small amount of enamel powder into a shallow container; add a few drops of water and a drop or two of Klyr-Fire to make a paste the consistency of cream. Pick up some of the mixture with an enameling spatula – held in your non writing hand. Holding a bent wire spreader or small brush in you're your writing hand, push some of the enamel off and into place on your metal piece. Agitate and spread the wet enamel with the spreader/brush so that it is smooth and even. Establish a well defined or well delineated edge with a small tipped brush. Then lay the next colour so that there is a perfect join between the two. Continue in this way to complete the coating. If using a brush instead of a bent-wire spreader – it is easy providing it is used as a carrier of enamel and an agitator, rather than a traditional painting brush. Only the tip of the brush should be used. The brush agitates the mixture so that the particles of enamel fall out of suspension. If the bristles move the enamel rather than the liquid, the pattern of that movement is seen. It must be remembered that when applying the enamel to cover an area that the successive gathers of enamel are place into each other, and then moved together, they are not set side by side and then moved together. Thin lines are achieved with a thick mixture. Larger lines are achieved with a thinner mixture. The coating must be dried completely prior to firing. This can be accomplished by setting the piece on top of the hot kiln. However a heat lamp or other sources of heat may be used providing the temperature does not exceed 150C. Steam must not be formed during the drying operation.

Firing

Enameling is usually done between the temperatures of 760-788C. The dried enamel goes into the hot kiln and the fired enamel is removed from the hot kiln. If the piece is coated on one side only, it can lay directly on the rack, If the piece is coated completely, set it on a trivet. The trivet will leave three small rough spots. It is wise to plan ahead prior to coating your piece and decide how the piece is going to be supported during firing. Use the firing fork or firing tongs, to place the firing rack or trivet with the coated piece, into the kiln. If you were watching the progress of the firing, the coating would look dark and granular, then it takes on some colour and appears grainy, followed by an "orange peel" texture and then finally smooth and glossy. It is wise to under fire slightly to the "orange peel" state until what you believe to be the last fire, which is usually to a smooth, full glossy surface. Allow the piece to cool on the trivet or rack, preferably until it can be removed with a bare hand.

Firing is a matter of "heat work", a time and temperature relationship. Generally two to four minutes will be required to obtain the desired results. Larger pieces need more time. Subsequent coats can be applied. The number depends on their thickness and the design of the piece. This information is only the introduction to the art of enameling and we have barely scratched the surface. There is much more to learn about enameling and we hope you go on to create amazing works of art!