

5 WS - Soda ash w. yellow
Salt with say like make
Salt glazes and engobes

Salt glazes tend to be glossy to satin in texture due to the effect of the sodium atmosphere fluxing the surface of the glaze. Matt glazes will tend to remain somewhat consistent to the way they would look in a normal reduction firing, due to the materials which cause a matt surface such as, barium, MgO and alumina.

It is possible to achieve a wide range of glaze colors in the salt kiln. As a general rule, it takes a higher percentage of coloring oxides to achieve the desired color than does a high fire reduction kiln. Firing procedure is somewhat different than a high fire kiln since an oxidation atmosphere is generally sought in salt firing, thus, color will be dictated by this approach. Colors may vary from yellow, yellow-green, green-blue to blue.

The use of engobes and coloring oxides lend themselves to a variety of techniques and colors. The use of rutile and uranium produce some very exciting color effects. Uranium salts a warm orange to yellow. Rutile ranges from tan to blue forming a crystalline iridescence. A variety of commercial stains have proven to be quite effective in the salt fire. Naples yellow used straight on a bisqued piece will salt blue to violet and under an albany slip glaze will salt yellow. Harshan blue-green will remain fairly consistent to the color indicated. Crimson stain number 161 salts to a light blue-violet both under a glaze and the exposed surface. Vanadium stain number 440 will also salt yellow on the exposed clay and under a glaze.

IRIDESCENCE BY FUMING

Iridescence, according to R. Charan, is the property of exhibiting colors like those of the rainbow and is produced by the reflection of light from both upper and lower surfaces of a very thin transparent layer of varying thickness.

In order to have proper iridescence it is necessary that the piece to be iridized be heated uniformly over the entire surface. Too low a heat will cause mattness and too high a heat will produce a scumming effect.

Stannous chloride is the most successful salt used for iridescent effects. In itself it can be used for ordinary effects. When colors are desired use other substances such as strontium nitrate, barium chloride, cobalt nitrate, bismuth nitrate, silver chloride, silver nitrate, iron chloride, chromium nitrate and cupric chloride.

Fuming is done after the kiln has been salted and allowed to cool to a dull red heat approximately 700 degrees centigrade. When the kiln has reached the desired fuming temperature of 700 degrees centigrade one burner is turned on low. The angle iron which is used for salting is pushed through the salt port and is heated to a dull red heat, at which point the burner is turned off and the angle iron is pulled out and the fuming salts are placed on the angle iron and then immediately pushed back into the kiln. The kiln should be sealed not to allow the fuming salts to escape too rapidly. Glazed test rings are then drawn to evaluate the fuming results. Approximately 75 grams are initially used during this procedure. As previously mentioned temperature is a critical factor in obtaining desired results. When fuming is done in a large kiln it is difficult to obtain an over-all even temperature. Generally the kiln is cooler toward the bottom and fumes the best. A fast cooling cycle will promote a more even temperature throughout the kiln and will be more responsive to fuming.

SALT GLAZING TECHNIQUE

(Elements to consider for a better salt)

- (1) A mature body generally takes a better salt glaze than does a porous one.
- (2) Soaking periods up to six hours before salting improves the quality of the salt. Soaking for long periods before salting are sometimes difficult due to glazed ware which may tend to run if held at cone 10-11 for long periods of time.
- (3) Water added to the salt tends to dissociate the salt into sodium oxide and hydrochloric acid. It is also possible to add saw dust and wood shavings to the salt which will hold moisture and also create a textured surface on the ware during salting.
- (4) Colored salt glazes may be produced by mixing metallic coloring chlorides in the salt. A yellow-brown glaze may be produced by adding 1-2% manganese chloride to the salt. One percent cobalt chloride will produce a blue salt glaze. The addition of 2% zinc will produce green, and over a blue body will produce yellow. The addition of lithium or potassium chlorides will also produce better salt glazes.
- (5) Cooling process is an important factor in producing body color. The blue or grey salt is directly related to the fast cool. The kiln is fired in an oxidation atmosphere, salted and then cooled as fast as possible. This fast cooling is best accomplished by taking several courses of brick down from the kiln door. The primary

and secondary air should be closed not to allow air to enter the kiln, but only to escape through the door. It was found that the rush of outside air tended to give the glaze a dry matt surface. When the kiln has cooled down to dull red heat, the door should be replaced and cooled slowly through the inversion process.

(6) For a general over-all good salt additions of borax seems to have the most desirable qualities. First borax tends to darken the color of the body and secondly improves glaze fit. A glaze which has a higher thermal expansion than the body (crazing) was corrected when refired and borax was added. Too high a percentage of borax tends to eliminate "pig skinning" or the typical orange peel texture. Borax tends to produce a smoother surface since borax lowers the surface tension or flow enough to cause it to flow more evenly over the salted ware. The best results were obtained when borax was added during the last salting. Approximately 10% borax was added to the salt.

(7) Soda ash will also produce a similar effect as using salt and borax, however, the darkening effect was not as prevalent as it was when borax was used. The glaze produced was very smooth and quite thin which indicates more soda ash is needed to produce results similar to that of salt.

It should be noted that the addition of coloring oxides and chlorides may contaminate the fire box, thus producing various colored salt glazes in the following firings.

ANDREA'S "SUPERMIX" (SALT SUBSTITUTE)

10 SODA ASH

5 CALCIUM CARB

2 POTASSIUM CARB

1 LITHIUM CARB

1.5 BORAX (OMIT FOR ORANGE PEEL SURFACE)