

CRYSTALLINE SURFACE CHALLENGE

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Problem In Lieu of Thesis Prepared for the Degree of

MASTER OF FINE ARTS

UNIVERSITY OF NORTH TEXAS

May 2004

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Rostagno, Nicholas, *Crystalline Surface Challenge*. Master of Fine Arts (Ceramics), May 2004, 12 pp., 4 illustrations.

Ever since I became interested in the world of ceramics, crystalline glazes have been the most fascinating and challenging to me. Even though crystalline glazes are the most difficult and elusive to potters, their spectacular results (when done right) keep me coming back. Over the last year I have developed a crystalline glaze that yields consistent and excellent results. During this period, I have worked with these glazes in the traditional manor, being that they are only applied to smooth porcelain vessels. My proposal will be to attempt crystalline glazes on different surface textures.

INTRODUCTION

Ever since I became interested in the world of ceramics, crystalline glazes have been the most fascinating and challenging to me. Even though crystalline glazes are the most difficult and elusive to potters, their spectacular results (when done right) keep me coming back. Over the last year I have developed a crystalline glaze that yields consistent and excellent results. During this period, I have worked with these glazes in the traditional manor, being that they are only applied to smooth porcelain vessels.

Statement of the Problem

My proposal is to challenge this traditional way of applying crystalline glazes to smooth porcelain surfaces. To challenge this traditional way, I will begin by applying the crystalline glaze to four different surfaces on two different clay bodies. I will also be adding different minerals to achieve new results. With these experiments I will have to compensate for the fluidity of the glaze by altering the catch dishes, which are little bowls that the vessels are fired inside in order to catch the glaze. The two clay bodies I have chosen are stoneware and porcelain.

Questions

1. How will the addition of quartz from stained glass effect the growth of the crystal's color and fluidity? (illustration 1)
2. How will the addition of sand effect the running and growth of the crystals within the glaze? (illustration 2)
3. Will the incised relief in the vessel collect too much glaze and cause a matt surface preventing crystal growth? (illustration 3)
4. Can I create a pattern or design on the vessel to control the formation of the crystals? (illustration 4)

METHODOLOGY

The first surface experiment was with crushed, colored stained glass. I began by crushing the glass into coarse particles approximately the consistency of sand. Next, I added the glass to a white slip, which was applied to one porcelain vessel. Then, apply the same slip to one stoneware vessel. These vessels will be approximately twelve inches in height. It was important for the traditional catch dishes to be larger than usual in order to catch the glass as well as the glaze. The second surface experiment was done in the same fashion, but the glass will be replaced with sand. The idea was to create a surface texture consistent with sandpaper. The catch dishes will need to be larger than usual, because I imagine this sandpaper like surface will absorb twice as much of the crystalline glaze. The third surface experiment was with a relief design on two vessels. My theory is that whenever there is relief design, the crystalline glaze will be thicker, since most of the crystals form where the glaze is thick. Eventually, I would like to achieve particular images or patterns with crystals. Finally, the fourth surface experiment was the opposite of the third and was a raised relief. As with the third surface, the idea is to control where the crystals will gather and form. It was important to watch for too much congealing of the glaze when applying it to the vessels. All the vessels will use a proven crystalline glaze and a consistent firing schedule.

RESULTS

Results of Crystalline Surface Challenge

The first series to be discussed are the two vessels which contain stained glass, one stoneware, the other porcelain. The results of the stoneware vessel were unimpressive. Analyzing the stoneware piece, the large shards of the stained glass melted out after the firing process leaving a crater like impression. From these impressions, streaks of glass ran down the sides of the vase creating a waterfall effect. Even though it has an interesting effect, no crystals formed throughout the vase. Another interesting thing was the variety of colored glass that was lost, leaving behind only tones of blues, which is the original color of the applied glaze. The lack of crystals suggests the addition of large amounts of quartz, from the stained glass inhibited the growth of crystals. This also suggests that the firing temperature needs lowering in order to preserve the presence of the stained glass.

Looking at the porcelain vessel next, my results were completely different, and much more desirable. Instead of using large pieces of stained glass, fine powdered particles of glass were used to coat the entire surface. Although once again the original color of the glass was lost, I achieved a beautiful waterfall effect that contains hundreds of tiny crystals with an opaque background. The major difference with this vessel is the size and shape of crystals. Instead of large crystal snowflakes that usually appear, the addition of the powdered glass limited the crystal growth to small intense circular crystals. Concluding that the addition of quartz from the stain glass can achieve

interesting and sometimes desirable results, but the addition of too much quartz prevents the growth of crystals.

The second series I will report on are the vessels with sand paper like surfaces. These vases are the most interesting by far, even though there are very little differences between the stoneware and porcelain. When creating the pieces, I strategically applied the sand to the upper half of the vase only, leaving the bottom half free of sand. This allowed the glaze to run over and through the sand particles onto a smooth surface for easy recognition between the two surfaces. Under close observation, the sand acted as a sort of sieve and redistributed the glaze changing the composition of the crystals. After the firing process, it was completely surprising to find both pieces completely covered with crystals, including the coarse section of the vase. On the stoneware piece, the glaze seems to have thinned out and allowed only small star-shaped crystals to form. This includes the lower half, which is the smooth portion of the vessel. By contrast, on the porcelain piece, the crystals remained open and large in size, retaining the snowflake shaped composition.

The main problem with using this sand paper technique was clearly the application of the glaze. When applying the glaze, the sand absorbed twice as much glaze than usual. In a sense, the sand acted as a sponge, and this caused major cracking and flaking of the glaze. To correct this, a wet paintbrush was used to adhere the glaze. Although the results still allowed for crystal growth, the overall appearance was not very desirable.

The next vessels discussed are the incised pieces. Starting with the porcelain vase, a large amount of crystals developed. The glaze responded as imagined by filling the carved areas allowing for the pooling of the glaze. From these pooling areas, the glaze flowed evenly leaving behind streaks of crystals covering the entire piece. Although there is an abundance of crystals, the large amount of glaze collected in the relief areas once again changed the distribution of the crystals. The effect resulted in very little space between the crystals, which created complex areas with overlapping crystals. The overall impression created is a busy surface, which does not allow for the individual growth of the crystals. It is interesting that the upper half of the vessel, which contains most of the carved design, is very visible, almost transparent. In most of these areas, the glaze turned transparent, leaving behind crystals that seem to hover over the design.

Moving onto the stoneware vessel, the results completely differed and were less desirable. Once again, the relief areas collected an abundance of the glaze, resulting in extensive amounts of the glaze running. In this case, there is a lack of crystals throughout the piece; however, the amount of crystals present opened into the traditional snowflake pattern. On one section of the vessel, my name was carved in hopes of spelling it with crystals, but the results were disappointing. The glaze filled the letters with a beautiful range of blues, but no crystals formed. The overall impression of using the incised relief method is unsuccessful. Crystals can form with relief texture, but the glaze filling these areas created an inconsistent thickness

resulting in some interesting areas as well as areas that are less interesting and free of crystals.

The fourth and final series discussed are the two vessels with added relief. The first piece addressed is the stoneware vessel. The idea was to create a raised surface to channel the molten glaze along specific directions, in hopes it would result in a flowing design of crystals. The results are inconsistent, with some crystal following the relief and others unaffected by the relief. The glaze, which followed these patterns, pooled once again and created interesting runs, but very little crystals formed in these areas. All the crystals formed at the bottom of the vase where the surface was smooth. These crystals formed large snowflakes, which is consistent with the normal use of the glaze. Although the added relief created a more interesting vessel, trying to control the placement of the crystals was impossible.

Moving onto the porcelain vessel, a combination of low relief texture as well as raised relief was used. By adding rutile to the glaze, it created a more fluid glaze to fill the textures as well as flowing more easily along the raised relief. The combination of the rutile and relief created interesting results. Again, the texture seems to sieve the glaze creating extremely small star-shaped crystals. The addition of the rutile did work as the glaze flowed along the ridges more easily, but the absence of crystals resulted in too much pooling of the glaze. This created an opaque surface free of any crystals. It is also important to note that the addition of the rutile changed the entire color of the glaze. Instead of a cobalt blue color, the piece took on a baby blue color with a brown

background. Once again, the lack of crystals and their small size inhibits the beauty one can achieve with crystalline glazes.

CONCLUSION

Being a potter that uses crystalline glaze in the traditional sense with predictable results, straying from the normal application was challenging and exciting. Although the results for the most part were undesirable, this leads to a better understanding of crystalline glazes. After working with the glazes in a nontraditional fashion, the practice of the traditional techniques does allow for better crystal formation. Although observing very little differences between the uses of stoneware and porcelain the use of porcelain allows larger and clearer crystals to form. The addition of foreign substances as well as texture and relief to the vessels created new and surprising results. The experimentation resulted in limited growth of the crystals if not deterring them entirely.



stone

porcelain

Illustration 1



stone

Illustration 2

porcelain



stone

Illustration 3

porcelain



stone

porcelain

Illustration 4