

GLAZING TECHNIQUES

Edited by Anderson Turner

Ceramic Arts Handbook Series



Glazing Techniques



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Edited by Anderson Turner
The American Ceramic Society
600 N. Cleveland Ave., Suite 210
Westerville, Ohio 43082
www.CeramicArtsDaily.org

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Preface

A long time ago, a friend who was a gallery director shared with me the insight that, "We make art for our friends." I take this to mean that we make art that has meaning to our peer group and colleagues. That meaning can have something to do with subject matter or content, but it can just as easily have something to do with craftsmanship, finish, or in the case of ceramics—glaze. Through the last fifty years of studio ceramics that peer-to-peer sharing has helped to create a bevy of technical knowledge that grows a little bit every day.

We have so many options in glazing today. Even though the mystery of what happens in the kiln has long since gone by the wayside, glaze is still hard for many of us to conquer. Too often an artist makes a poor glaze choice when a quality choice was within their reach.

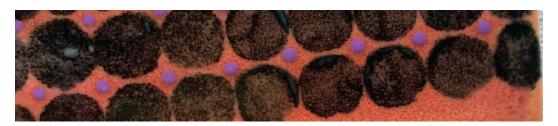
It's as if we forget all of our training and go crazy with color. Or perhaps we reject color and forget how it can assist in meaning, dimension and the overall spirit of a piece. Our process in clay does not end with the forming of an object. In order to connect with others or our peers, we must consider all aspects including glaze; or our work, unfortunately, will have a difficult time transcending time and obtaining a life of it's own to share with friends yet to come.

This book contains information on all aspects of glazing from the simple to the complex and highly technical. We've included the research of several different artists that I hope will inform and inspire you to reach and discover more about glaze on your own.

Anderson Turner

Basic Techniques and Tools CREATIVE COMMERCIAL GLAZING

by Deanna Ranlett



I often find there is a stigma surrounding using commercial glazes or a lack of confidence about what they can do beyond what the directions say. It's important to remember that the directions are a general guideline, this means that you'll need to test for success even with commercial products. Just because a jar says three coats of a glaze are needed, that doesn't mean two, four, or even five coats might not work better for you.

When using commercial products, many people struggle with the idea that their piece might look exactly like someone else's who bought the same product. Others say they have trouble applying them in ways they like or that the glazes don't look like the test tile. But hey, that's why you have to test them on your clay body and in your kiln! Don't just crack open a jar and expect perfection.

So, how do you make them your own? I experimented with wax resist, stencils, paper resist, and underglaze to change the way the commercial glazes are commonly applied. This led to a lot of new ways to use the commercial glazes I already had in my studio.

What's in the Jar

Here's what commercial glazes have going for them:

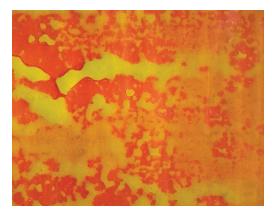
- Teams of researchers and testers have already worked out the kinks.
- A brand's glaze line tends to be very compatible for layering, and using in combination with multiple techniques.

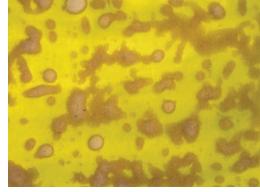
- Extra binders, brushing mediums, and additives are added to help adhesion, application, and even drying.
- Commercial glazes are very smooth—they've been ball-milled, sieved, and mixed better than we're capable of in our own studios.
- Many glazes have a wider range than the directions indicate—low-fire products can often fire up to cone 6.

Preparation and Application

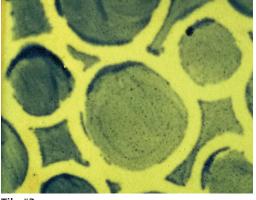
Always prepare the ceramic piece you want to apply commercial glazes to by bisque firing it first to cone 04—a hotter bisque firing drives off organic materials that can cause problems in the glaze firing and makes the ceramic slightly less porous. I also wipe it down with a damp sponge to make sure it's free of oil and dust.

You can apply commercial glazes by pouring, dipping, or spraying, and you can also adjust their thinness or thickness depending on your needs. Commercial glazes can also be brushed on using anything from a hake or fan brush for wide coverage to a soft script liner if you're doing detail work. Remember that colors could mix during the firing, so what you see in the jar might not always be what you get when you open the kiln. For example, brushing purple over green might make the purple appear more brown than you expected.





Tile #1



Tile #2



Tile #3

Tile #4

Wax Resist Combinations

We've all used wax resist on bisqueware before glazing, but you can also combine it with commercial glazes for dramatic results.

Tile #1: I started by brushing on two coats of Mayco Foundations Deep Red FN-035 glaze and allowed it to dry, then I sprayed wax resist over it using a hairspray atomizer and allowed it to dry. Next, I brushed a coat of Mayco Foundations Green FN-007 glaze on the tile and let it bead up. After the green glaze dried, I mixed together a small amount of Mayco Stroke & Coat SC-6 Sunkissed (yellow) with a small amount of Forbes wax directly together (DON'T do this in your glaze jar). I brushed this mixture over the whole tile and fired it to cone 05. The green fully melted into the red and created a lovely orange effect.

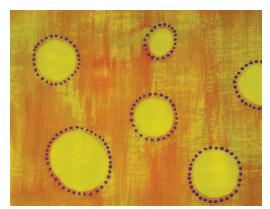
Tile #2: I brushed two coats of Mayco Founda-

tions Green FN-007 glaze, then sprayed wax super close to the tile and allowed it to dry. Next, I took ½ cup of Amaco Clear Transparent LG-10 glaze tinted with 1 teaspoon of PSH (The Pottery Supply House) Lilac underglaze and applied a single coat over the top then fired it to cone 05.

Stencil Applications

Pre-cut stencils can be taped to a flat or curved surface using blue painters tape to achieve multiple layers of decoration with commercial glazes. This technique provides a ton of visual interest with endless possibilities for exploration.

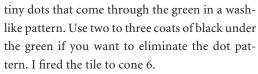
Tile #3: I brushed one coat of Mayco Stoneware Glaze Mirror Black, then taped a pre-cut stencil over the dried surface, and applied two coats of Mayco Stoneware Glaze Green Opal. The opal is very nice over the black because the black has



Tile #5



Tile #7

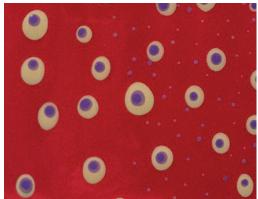


Tile #4: I brushed one coat of Mayco Foundations White FN-001 glaze over a single layer of Mayco Foundations Green FN-007 glaze in a striped pattern. I then used stencils to sponge on decorative shapes in a transparent purple glaze (from the recipe in tile #2). To add definition, I waxed over the flags in a cloud-shaped pattern then carved through them using a fine-tipped needle tool. Finally, I rubbed Amaco Black LUG-1 underglaze into the sketched lines and wiped off any extra black lying on the surface outside the lines. I fired the tile to cone 05.

Tile #5: I applied two coats of Mayco Foundations Green FN-007 glaze. While the second coat was



Tile #6



Tile #8

damp, I adhered paper circles onto the surface. Then, I applied a third coat of the Mayco Foundations Green FN-007 glaze. When that dried, I drybrushed Mayco Stroke & Coat SC-88 TuTu Tango (coral) glaze over the top of the entire tile. Finally, I slip trailed tiny purple dots using PSH Lilac underglaze around the stencils. When those dried I removed the stencils and fired the tile to cone 05.

Screen Printing and Slip Trailing Ideas

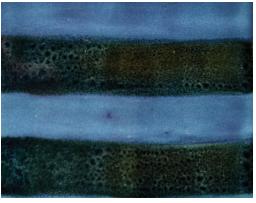
Tile #6: I screen-printed Amaco LUG-1 black underglaze patterns and slip trailed drawings using Mayco Designer Liner Black SG-401 glaze. Then I slip trailed a small amount of transparent PSH Lilac underglaze mixed with Amaco Clear Transparent LG-10 glaze to create faux drips running down the tile even though it was fired flat to cone 05.

Tile #7: I screen-printed Amaco LUG-1 black





Tile #9



Tile #10



Tile #11

underglaze patterns, drew with Mayco Designer Liner Black SG-401 glaze, then coated the drawings with three coats of Mayco SW-201 Turquoise glaze before firing the tile to cone 6.

Tile #8: I applied three coats of Mayco Foundations Deep Red FN-035, then slip trailed dots of Mayco Foundations Tan glaze FN-022. While those were still wet, I applied PSH Lilac underglaze over the tan dots and fired the tile to cone 05. Tile #9: I brushed three coats of Amaco Celebration Amethyst HF-171 glaze over the full tile, then slip trailed a beehive pattern with Mayco Designer Liner Black SG-401 glaze on top, and fired it to cone 05.

Layering Effects

Tile #10: I applied a base coat of Mayco Stoneware Glaze Mirror Black then brushed Mayco

Stroke & Coat SC-74 Hot Tamale (red) on top in an X pattern and fired it to cone 6. The glazes mottled depending on the amount of glaze on the brush and the weight of the stroke.

Tile #11: Two coats each of Amaco Celebration Amethyst HF-171 glaze and Mayco Stoneware Glaze Mirror Black were brushed on in a stripe pattern. Then two coats of Mayco Turquoise SW-201 were brushed on top of that before the tile was fired to cone 6.

Tile #12: I brushed one coat of Mayco Foundations Deep Red FN-035 mixed with Mayco Stroke & Coat SC-6 Sunkissed (yellow). Then I brushed on one coat of the Sunkissed glaze/wax mixture. Finally, I screen printed a coat of Amaco Black LUG-1 underglaze on top and made purple dots with a slip trailer using PSH Lilac Underglaze. The tile was fired to cone 6.

2

Graphic Patterns and Imagery

by Jay Jensen

The flat planes of the forms that I build create the perfect space to fill with pattern and design. Fired red earthenware has a beautiful color, which can also be a perfect backdrop for the glaze pattern.

My surface patterns are derived from sources such as the Modernist design movement, architecture, machines, and even sheet-metal design. My surfaces complement and contrast these references in congruent and sometimes incongruent ways. They are often inspired by textile and wallpaper designs from the early 20th century or even shower curtains and wrapping paper from the 21st century. I like the way they fill the open surfaces of my pottery and create visual interest while creating curiosity for the viewer.

I use Adobe Illustrator to design the patterns in silhouette. Again, a computer isn't necessary to make a resist pattern; you can make similar stencils with an X-Acto knife and clear contact paper.

After I've chosen a design, I send them to a sign shop to have them cut out of vinyl. I find that smaller shops welcome my business and are willing to work with my smaller orders. I get my vinyl cut in 24×24-inch sheets.

Applying the Surface Pattern

Start by adhering a layer of clear contact paper (the same stuff you buy for lining cabinets and drawers) to the vinyl patterns. The clear contact paper is necessary to keep the design intact. If you peel the backing off without it, it's impossible to put the



Ewer, handbuilt with red earthenware, decorated with cut-vinyl-resist pattern and glaze. *Photo courtesy of Schaller Gallery.*

sticker on the pot. Also if the design has parts that are "floating," the clear contact paper layer keeps the design together. Cut new templates (one each for the spout, funnel, and body) from the combined sheets of vinyl/contact paper using the templates originally used to make the ewer parts (figure 1).

The next step requires some practice and trial and error. Peel off the backing from the contact paper to reveal the sticky adhesive, then adhere it to the pot and use a hair dryer to smooth out any wrinkles and help it conform to the surface of the bisque (figure 2). Now carefully remove only the clear contact paper (figure 3). Next, decide whether you want to remove the negative or positive pieces of the design (figure 4). I try to mix it up on my work since my designs work well both ways. Now you're ready to glaze.



1. Apply contact paper/vinyl to the pot. Use a hair dryer to adhere the sheet.



2. Remove the contact paper from the form, leaving behind the vinyl stencil.



3. Remove either the negative or the positive shapes of the vinyl to reveal a pattern.



4. Apply the glaze over the vinyl stencil with a brush. Allow the glaze to dry.

Glazing can be done by dipping or brushing as well as adding slip, this depends on your own working preferences. I like use a brush for my low-fire glaze applications, this way I only need to mix very small quantities of glazes. Brushing glaze tends to work better for many low-fire glazes that have a little more forgiveness, while most high- and midfire glazes require a very even coating of glaze and dipping is preferred. Once the glaze is dry, use the tip of an X-Acto knife to gently lift off the remaining vinyl pieces (figure 5).

Since glazing in this manner exposes the bare clay, it's important that the clay have a nice fired color and surface on its own. I use a glaze recipe that contains a high-percentage of lithium and fumes onto the raw clay making the clay an even richer dark color.



5. Remove the remaining vinyl pieces using an X-Acto knife to peel up the edges, then fire the piece.

3

Creating Layers and Depth

LAYERED DECORATION

by Adero Willard

A primary creative idea behind my decoration techniques is manipulating real or illusory depth through relationships between different textures, patterns, colors, and proportions. Using different techniques and tools on the same piece adds to the contrast. Quilts are one of the many inspirations I draw from. Separate patches create repeating patterns that ultimately become a complete and unified form. Translated to clay and glazes, the patchwork appearance and depth comes from layering of underglazes and the revealing of layers through masking (using wax resist). Using underglazes gives one the immediacy of working with color in painterly ways.

Another important element in my decoration is the role of organic or nature-inspired themes, and their contrast with geometric shapes. Having grown up in a major metropolis, maybe it comes from how I loved the park as a refuge in the city! In my work, I try to create decoration that interrelates with the character of the form. I alter forms on the wheel (and sometimes add handbuilt elements) to introduce the dynamic of asymmetry and to evoke details from textiles, like a ruffle or a seam.



Platter Planning

A larger form like a platter allows more surface for contrasting decoration to inhabit. I create a double lip, and then alter the shape of the form by pulling and stretching the edge to vary the degree to which the two conjoin (figure 1). Consideration of how these alterations affect the character of the form helps inspire the mapping out of the decoration: which areas of decoration will be contained inside the form, which will extend to some, but not all edges, and so on. Using an X-Acto blade, I map out areas so contrasting patterns will collide, intersect, and overlap (figure 2). It may be helpful to make a separate sketch on paper and keep it nearby in case you lose track of the order of the layers during the application of underglazes.



1. Throw and alter a platter form on the wheel, stretching the clay to create decorative and asymmetrical edges.



3. Leaving areas bare, apply black underglaze as background color. Paint shapes with wax resist to create the first layer of pattern.



2. Use an X-Acto knife to map out different decoration areas. You may want to make a separate sketch on paper for reference.



4. Apply white underglaze to the entire surface. Once dry, retrace your decoration map.

Layers and Masking

I apply a layer of black underglaze once the form is leather hard. I leave the clay body exposed in specific places based on my decoration map. The next step is to introduce the first wax-resist element once the underglaze is dry to the touch (figure 3). Here, leaf shapes are painted onto the surface using wax. If you haven't worked with masking, you may find it helpful to think of applying wax as preserving whatever is directly underneath it, even as more underglaze is applied. The first pattern I create uses relatively large shapes, which will appear as black-on-clay-body. When the wax is dry, the entire surface is covered in white underglaze (figure 4). When that layer is dry to the touch, I use a dry sponge to remove the underglaze that beads up on the waxed

areas to prevent glaze defects (repeat this after every application of underglaze to a waxed area).

Creating Patterns with Sgraffito

At this point I use the X-Acto blade to retrace the lines of my map, as the underglaze may obscure them. The next decoration I apply using sgraffito. I use the side edge of the tip of the blade, carving away the upper white layer to reveal the black layer beneath. In some areas, I create a vine pattern, which sweeps and loops around itself and between the mapped-out areas, echoing the waved edge of the altered form (figure 5). I also use sgraffito to begin a pattern of a contrasting geometric style in adjoining areas (figure 6). Note: Clear away the dust created by the carved underglaze with a dry brush;



5. Using the side edge of an X-Acto blade, create sgraffito decoration. The ivy pattern accentuates the platter's irregular edges.



7. In one area of the ivy pattern, use cross-hatching to make the ivy decoration dark-on-light (positive space).

don't clear it by blowing it away, as it's harmful to inhale. I like to create contrasting dimension in a piece by alternating between carving the positive shape of the vine in some areas, and carving away the negative space in others (figures 7–8).

Variations on Technique

Recall that some areas had no black underneath the white underglaze: these will show as white-on-clay-body, where the rest will show as white-over-black. (The thickness of the white layer determines how dark or light the resulting combination will be.) In the area with white-on-clay-body, I use a slip-trailing bottle to create decoration that is suggestive of writing without being overly literal (figure 9). This black design element contrasts with the larger black leaf shapes created by the initial wax application.



6. Create a contrasting, geometrical sgraffito pattern in adjoining areas, per your map. Clear away shavings with a dry brush.



8. In the other areas, cross-hatch around the ivy to create a light-on-dark decoration (negative space).

Second Resist Layer

With the sgraffito and slip-trail decoration complete, I apply the next wax decoration to preserve elements at this level before applying more colors of underglaze. Between the large leaf shapes preserved by the first layer of resist, I add a second vine-like pattern using wax (figure 10). Over the grid, I introduce a corresponding geometric element of wax circles that accentuates the curvilinear aspects of the form (figure 11). The wax also serves purely as a mask to preserve areas where the decoration is complete.



9. Use a slip-trailing bottle to decorate the bare area, contrasting delicate strokes against larger bold elements.



10. Apply a second ivy pattern with wax resist. Although constrained within the map, this creates the appearance of endless flow.



11. The second wax pattern contrasts by its geometric nature, as well as contrasting circles against the sgraffito grid.



12. Apply yellow underglaze in the gridded areas. Remove any underglaze that beads up on the waxed areas with a dry sponge.

Expanding the Palette

I introduce other colors at this point; areas masked by wax will not be affected. Using wax as a mask protects against the brush slipping or drips. Use a dry sponge to remove the underglaze that beads up on the wax after every step. The geometric area has two layers of color; the first is yellow-over-white, with the wax circles showing through the yellow (figure 12). Then, I apply a third level of resist over parts of the yellow, introducing a spiral that relates geometrically but contrasts in scale and gesture (figure 13). The organic area will have red-over-white, with the brush-applied vine showing through the red (figure 14). Once the wax spirals dry, the white-over-yellow layer, with the spirals showing through the white, completes the geometric area (figure 15).

Two Firings

The platter must be bisque fired before glazing. After the initial firing, I use a non-stick-pan scrubbing pad to sand off the flaky residue that the wax leaves behind, then I dunk the entire piece in glaze to seal the decoration and make the colors more vivid. I glaze fire to cone 03 in an electric kiln.

Materials and Recipes

I use terra cotta from Sheffield Pottery in Massachusetts. I coat the interiors of my vessels with Bill's Basic Liner glaze and cover the exteriors with Pete Pinnell's consistent and reliable clear glaze.

For underglaze, I use Spectrum's 501 White, Amaco's V309-Deep Yellow, LUG-1 Black, V383-Light Red, and their V387-Bright Red.



13. A second wax pattern, also geometric but similar in character to the ivy, is applied over the yellow underglaze.



14. Apply red underglaze to the second ivy area. The wax decoration will show through. Remove any underglaze that beads up on the waxed areas with a

BILL'S BASIC LINER GLAZE

Cone 04-2

Ferro Frit 3124	65.8 %
Kona F-4 Feldspar	17.1
Nepheline Syenite	6.3
6 Tile Clay	10.8
· ·	100.0 %
Add: Bentonite	2.0 %
Rutile	0.5 %
Zircopax	14.0 %

Use less Zircopax for a less-opaque white liner glaze. I use 10%. Substitute Minspar 200 for Kona F-4 feldspar.



15. Apply a layer of white underglaze over the yellow. Remove any underglaze that beads up on the waxed areas with a dry sponge.

PETE PINNELL CLEAR

Cone 04-2

Magnesium Carbonate	10%
Ferro Frit 3195	73
EPK Kaolin	10
Silica	7
-	100 %
Add: Bentonite	2.0 %
For Amber Tones	
Add: Nickel Carbonate 0.5-	-1.0%
For Aqua to Turquoise Green	
Add: Copper Oxide 0.5-	-2.0%
This glaze fires as high as cone 2 with good resu	lts.

When I use a variety of decoration techniques on forms with greater dimensionality, such as a lidded jar, the interplay and contrast are both revealed and disguised.



4

Specialized Techniques

MASTERING MICA

by Kate and Will Jacobson

For the past year, we've been exploring the subtle luster and compelling color palette of mica as a glaze element. We usually teach naked raku, but wanted to give our students some other low-fire techniques to explore. While preparing for a workshop, we tested the reaction of various terra sigillatas, colored porcelain slips, and even acrylic paint in the ferric chloride saggar process.

Why did we try a copper-colored acrylic paint? We discovered the pigment in the copper color is mica coated with titanium and iron. We thought it would be a good source for these oxides. Turns out, it was a good source of mica.

Mica, a mineral often used in cosmetics for it shimmery essence and in electronics for its insulating properties, is a very refractory mineral. It easily withstands the 1472°F (800°C), (cone 015), temperature a lot of bare-clay firing techniques call for, making it ideal for using in several low-fire techniques such as naked raku, ferric chloride saggar, horsehair firing, clay saggar and pit-fired ceramics. Detailed explanations of these firing techniques are well covered in the book *Naked Raku and Related Bare Clay Techniques* published by The American Ceramic Society (www.CeramicArtsDaily.org/bookstore).

Glazing with Mica

There are several ways to use mica as a glaze element in low-fire techniques. Wearing a dusk mask, mix 5 grams of mica powder into one cup of terra sigillata made from OM4 ball clay.



Life Aquatic, sponged and painted with copper colored "mica paint" and block printed on the surface, ferric-chloride fired.

This will give you a starting point for your color. The more mica you add, the more saturated the color becomes.

Next, brush two coats of plain terra sigillata on a bone dry piece. Then apply a topcoat of the mica sigillata. This can be brushed, sponged, painted, stamped, sprayed, etc. (figures 1 and 2).



1. Applying mica paint (matte acrylic medium mixed with ½ gram of colored mica powder) with a stamp.



2. Brushing a top coat of Jacobson's Super Copper mica sigillata on top of 2 coats of regular OM4 sigillata.



3. Wave, OM4 sigillata, copper-colored mica paint sponged on surface, ferric chloride fired.



4. Applying colored mica dry rub onto a slightly dry, textured clay surface with a soft bristle make-up brush.

When dry, burnish with a piece of plastic wrap and bisque fire to 1382°F, (cone 017). Your piece is now ready to be used in one of many low-fire techniques. The mica gives an added luster and subtle sheen that emanates from within the clay. This application also works well with any bare clay technique that fire at or under 1472°F.

Making Mica Paint

Another way to use mica is to mix your own mica paint. This is particularly effective in ferric chloride, aluminum-foil saggar firings. Mix two tablespoons of matte acrylic medium (available at art supply stores) with ½ gram of colored mica pow-

der. Paint or sponge this mixture onto an already bisque-fired pot that has been coated with either regular OM4 terra sigillata or mica sigillata.

Once dry, and wearing latex gloves and a respirator, paint or pour ferric chloride on the piece. Then, wrap the piece with two layers of aluminum foil, making sure you get a tight seal. Fire the piece rapidly to 1472°F, then back off the temperature to 1382°F and hold for 10 minutes. Warning: Wear an appropriate respirator when firing with ferric chloride as you must take extreme caution to not inhale the fumes.

After firing and unwrapping the piece, take a soft brush and remove some of the residual dust.



5. Pineapple, 10 inches (25 cm) in height, Laguna Amador Clay, mica dry rub, heated and smoked.

In order to fix the surface, use a UV-resistant fixative spray to seal and protect (figure 3).

We have discovered that one of the properties of mica is that it does not trap carbon. This is good news because it allows for contrast between the clay and mica in a smoke firing. This technique works well with highly textured forms. We like to call this the 'dry rub' technique. Use a soft bristle make-up brush to scrub dry mica powder onto a not-quite-leather-hard pot (figure 4). The mica is pushed into the clay and then the excess is brushed off. Bisque fire the piece to cone 017. Now it's ready to fire in a raku kiln followed by reduction in a smoke chamber. The result is shimmering mica embedded into the clay juxtaposed against the matte black of the carbon-infused clay (figure 5).

Mica Sources

- www.TKBTrading.com: TKB Trading has hundreds of colors to choose from. We have tried about 50. The reds seem to change or fade. The greens hold up nicely. The blues change a little but hold up okay. The copper, gold, and the silver colors hold up the best. The ferric chloride saggar technique is the hardest on the mica and causes more fading and color change. The colors we recommend are Breath of Spring, Deep Blue, Pearl Green, Emerald, Pennsylvania Green, Swiss Chocolate, Patagonia Purple, Glitter Siena, and Gold Lamé.
- www.EarthPigment.com: From Earth Pigments, we recommend Super Copper and Sterling Silver.



Anderson Turner has edited books for the American Ceramic Society since 2003. He received a BFA in Sculpture from the University of Arizona and went on to earn an MFA in Ceramic Art from Kent State University (Ohio). He is currently Director of Galleries at Kent State University. He lives with his wife and three children on their farm in Garrettsville, Ohio.

When it comes to glazing a ceramic surface we have many options, and *Glazing Techniques* covers a wide range of possibilities. In this book, you'll discover how dozens of talented artists approach glazing using a variety of techniques, materials and firing ranges to achieve stunning surfaces that are sure to inspire your work.

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