ceramic decorating

tool techniques

how to use clay pencils, slip trailers, glaze pens, and carving tools to decorate ceramics
We all love tools, especially pottery tools, and we normally think about forming when we talk about tools for ceramics, but the most useful tools we have, besides our hands, are tools for decorating our work. A decorative surface, of course, is the first thing noticed about a piece of pottery, and as with all things made by hand, the right tools make all the difference. Regardless of what kind of surface decoration you are interested in, or currently practice, there is always a way to make your tool box or bag of tricks bigger. Ceramic Decorating Tool Techniques: How To Use Clay Pencils, Slip Trailers, Glaze Pens, and Carving Tools to Decorate Ceramics explains those tools in detail and shows you how to use them for the greatest effect for your own ceramic surfaces. Make your own ceramic colored pencils, or try using a combination of dry and wet decorating techniques to get maximum depth out of your work.

Decorating Ceramics with Clay Pencils, Wax Crayons, Glaze Pens, and Slip Trailers

By Robin Hopper

There are so many ways to decorate the ceramic surface, and this overview of several decorating tools used to apply color to clay includes recipes for making your own pencils and crayons, as well as how to approach using each type of decorating tool.

Slip Trailer Techniques for Decorating the Ceramic Surface

By Robin Hopper

Using only a simple slip trailer and a few colored slips, you can achieve many different types of surface decorations and patterns in a short period of time.

Using Simple Tools to Decorate Ceramics with Complex Designs

By Molly Hatch

Sometimes the simplest objects are the best tools for decorating pottery. Using a pencil and laminated paper stencil, Molly Hatch walks you though how to transfer a design to a pot and then layer color onto the surface for a striking result.
Decorating Ceramics with Clay Pencils, Wax Crayons, Glaze Pens, and Slip Trailers

By Robin Hopper

For those who are excited about the graphic possibilities of the ceramic surface and enjoy using drawing implements that have something of a sharp, scratchy or linear nature, the marks made by pencils, pens, crayons and trailers likely will make them favorite tools of expression. These tools are the foundation of written or pictographic communication in Western civilization, whereas the brush is the foundation of mark making for most Eastern civilizations. Those raised in the Western traditions usually feel more affinity with scratchy drawing tools than with the soft, calligraphic brushes. Fortunately, the range of ceramic decoration tools encompasses both soft and hard possibilities.

Ceramic Pencils

Regular pencils, with what we call “leads,” actually are made from graphite of various degrees of hardness from 6H (extremely hard) to 6B (extremely soft). Marks made with graphite pencils on ceramic surfaces will burn out in the firing, which can be very convenient, as the firing erases the guidelines or grids used for painting or drawing on patterns and designs in ceramic pigments. Guidelines also can be painted on with vermilion watercolor paint, which also burns away.

Pencils for ceramic use (to make marks that don’t burn out in firings) are made with combinations of refractory materials, clays, and colorants and are usually only commercially available in one level of hardness that would probably equate to the HB rating of a graphite pencil. HB hardness is midway between 6H and 6B. Companies that produce ceramic pencils have a habit of coming and going, but most ceramic supply houses usually will be able to find and supply them. Pencils are commercially available in a very limited variety of colors.

Ceramic pencils are normally used on bisque-fired clay that has been sufficiently hardened to withstand the pressure needed for satisfactory mark-making. Since the pencil “lead” may be quite fragile in use, the smoother the clay surface, the better the drawing. Bisque surfaces
can be smoothed by sanding with wet and dry silicon carbide or aluminum oxide papers, or the surface of the greenware may be sprayed or brushed with a terra sigillata coating prior to the bisque firing to provide a harder working surface. Ceramic pencils may be used on the ceramic surface just like their graphite equivalent on paper. Although sharpened points tend to wear quickly on the abrasive ceramic surface, the combination of pencil tip marks, side-of-pencil marks, and the opportunity to create tones through finger-rubbing or smudging the soft image gives wide potential for drawn imagery development.

If the commercial underglaze pencils are too soft for satisfactory use, it is quite easy to make your own and harden them to a more satisfactory and less friable state. Ceramic pencil drawings can be fired onto the bisque-fired clay to harden them before glazing, or, alternatively, they can be fired on unglazed high-fired clays, such as porcelain or stoneware, without the need for a glaze coating.

The selection of colorants or mixtures of colorants used in the coloring of the “lead” will control the effectiveness of the drawings at high temperatures, but most will tolerate cone 10.

To make ceramic pencils and pastels, use a porcelain-type slip with 50 percent white firing ball clay or plastic kaolin. For dry strength in the green state, 3 percent macaloid or 5 percent bentonite should be added.

**Ceramic Pencil Slip Recipe**

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>White firing ball clay</td>
<td>50 %</td>
</tr>
<tr>
<td>Potash feldspar</td>
<td>25 %</td>
</tr>
<tr>
<td>Silica</td>
<td>25 %</td>
</tr>
<tr>
<td>Add: Macaloid (or 5% bentonite)</td>
<td>3 %</td>
</tr>
<tr>
<td>Colorant (maximum)</td>
<td>15 %</td>
</tr>
</tbody>
</table>

The materials, including colorants, should be dry sieved through an 80-mesh screen to ensure thorough blending. For color, you can use mineral oxides, carbonates, and prepared stains. A variety of combinations will produce a wide range of colors, although it’s important to select colorants that won’t burn out at high temperatures; not many will, but cadmium/selenium and potassium dichromate are likely to do so.

The amount of colorant can be up to 15 percent. More than that will cause loss of plasticity in the raw state, making it difficult to form the pencils. The more colorant used, the more intense the color.

Mix the dry materials with approximately 45 percent water, to which 1 percent of sodium silicate per 100 grams of dry material mix has been added. This will slightly deflocculate the slip, giving additional green strength while also intensifying some of the colorants.

Form the pencils by drying the colored slip to a plastic state, and then either rolling out coils or extruding lengths of the desired thickness. These then can be left as pencil lengths or cut into shorter 1–2 inch lengths. When dry, fire the pencils to between 1472°F (800°C) and 1742°F (950°C), depending on the desired hardness. A lower firing will produce softer “lead”; higher firing, harder “lead”. The short lengths can be placed in a claw grip drafting pencil (the Koh-I-Noor No. 48 drafting pencil can hold leads up to ¼ inch in diameter).

Pastels normally are used from the greenware state and are not prefired unless they prove too friable for convenient use. To make pastels, use the basic recipe above and simply form the clay into coils or extrusions to the desired size for use. If they prove too fragile, they can be fired to between 1112°F (600°C) and 1472°F (800°C) without making them excessively hard. Ceramic pastel drawings should be fired on the ceramic object to harden them before a glaze is applied; otherwise, the powdery surface likely will be spoiled in glaze application or handling. Surface powder also
might cause crawling through lack of glaze adhesion.

**Crayons**

To make wax crayons, mix the dry recipe above with ordinary commercial wax resist. Form the crayon, and let it dry. Since the crayon will contain some latex, it will also have a slight resist effect on the work, particularly when used on bisque-fired ware. For a crayon with greater resist qualities, stir colorants into wax, let cool, roll the wax into rods of different widths, and cut the rods in convenient lengths.

**Underglaze Pens**

Underglaze pens are like superfine trailers containing an “ink” that gives good flowability for drawing. They are available commercially from a number of producers, or you can make your own with the fine trailers that are available. You can also dip any form of “nibbed” pen, from fine-pointed mapping pens, to quills or sharpened bamboo, into ceramic ink.

**Black Ceramic Ink Recipe**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium borate</td>
<td>30</td>
</tr>
<tr>
<td>Potash feldspar</td>
<td>30</td>
</tr>
<tr>
<td>Ball clay</td>
<td>25</td>
</tr>
<tr>
<td>Silica</td>
<td>15</td>
</tr>
<tr>
<td>Add: Bentonite</td>
<td>5</td>
</tr>
<tr>
<td>Mason Stain 6600</td>
<td></td>
</tr>
<tr>
<td>or other black stain</td>
<td>10</td>
</tr>
</tbody>
</table>

100%

Thoroughly dry-mix these ingredients, then add a mixture of water and 5 percent sodium silicate (100 milliliters water to 5 grams sodium silicate). Pass it through a 100-mesh sieve twice. Thin the ink as appropriate for your use. This ink should work at all temperatures up to cone 12. It can be thinned to produce pen and wash-like drawings or used with a ceramic watercolor or glazes. Other colorants also can be used with this base.

**Ceramic Watercolor Recipe**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>White firing ball clay</td>
<td>50</td>
</tr>
<tr>
<td>Potash feldspar</td>
<td>25</td>
</tr>
<tr>
<td>Silica</td>
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<td>3</td>
</tr>
<tr>
<td>Colorant (maximum)</td>
<td>15</td>
</tr>
</tbody>
</table>

100%

For watercolors, the materials are mixed together, then enough water is added to make a slip, which is passed through an 80-mesh sieve and poured onto a plaster surface. When dry to the touch, watercolor cakes can be made by forming rounds or squares of the colored slip and letting them dry completely. They then can be used like ordinary children’s watercolors by wetting the surface with water and applying with a brush.

**Trailers**

A wide range of trailers for slip, ink, glaze or overglaze uses are available from ceramic suppliers, kitchen stores, and drugstores. They usually consist of a rubber or neoprene bulb or container and a nozzle with a fine-aperture tip, or sometimes multiple tips. The simplest to find is usually either a hair coloring applicator bottle or a child’s nasal bulb aspirator from a drugstore.

Ceramic suppliers often have fine-tipped trailers, sometimes with interchangeable tips of differing aperture. The aperture of the tip required depends on the thickness of the material being squeezed through. Thin inks will go through a fine tip without clogging, but a wide tip may be needed for slips or glazes to flow properly.

As with any tools, you’ll need to practice to get the correct “feel” to achieve the best results. Keep a thin needle tool nearby when working with trailers, because the fine ones tend to clog quite easily.

This article was excerpted from Robin Hopper’s *Making Marks* published by The American Ceramic Society.
Slip Trailer Techniques for Decorating the Ceramic Surface

By Robin Hopper

To trail slip in lines or dots, the slip should be thick enough to stand up and not run, but it should be very smooth and consistent.

Apply a base coat of slip that is thick enough to remain wet for a while, but thin enough to spread into an even, smooth layer.

Pour out the excess slip after you have covered all desired areas, and clean up any over-run.

You can comb through the slip with a tool or fingers. The thickness of the slip determines the clarity of the marks.

Trailing on top of the base slip offers many decorative options. You could simply trail slip and let it sit on top of the base color as applied.

Combing through trailed slip makes a simple design very complex in short order. This takes practice to do smoothly, without hesitation.

The more complex you get with your initial slip design, the more options become available, but balance the trailing with the combing.

Because this trailed design was a bit more complex, a single line is pulled through selective areas with a single reed or feather quill.

Designs can get as free as you feel, so don’t think geometry is the only option.

Free-form designs are good for marbling. Gently shake the piece to move the slip.

You can stick with dots only, layering them up to increase contrast.

Any design can be flattened by very gently tapping the piece to settle the slip.
I have always been interested in drawing. As an undergraduate, I focused on drawing for the majority of my time in school. It wasn't until my final year that I was shown surface decoration techniques for clay that are similar to printmaking and drawing processes. It was this marriage of drawing and clay that has driven the development of my current work.

There’s something magical in the ability to interpret what I see through my hands. I think of drawing as a visual language similar to writing; both can be communication tools. I am often surprised by the small narratives that appear in the patterns I draw on the surfaces of my pots. Each bird has its own distinct personality and expression . . . . A moth will buzz around a peony. The patterns I draw are always my interpretation and representation of an already existing pattern. I sometimes combine elements of different patterns, in turn creating new patterns. I play with the scale of the pattern on the pot. How the pot frames the image often dictates the pattern itself.

I spend a large amount of time looking at historic fabrics as source material and I’m always collecting new patterns to add to my repertoire. I pull out new patterns when I need a challenge and I draw the pattern on paper a few times to familiarize myself with it before experimenting on my pots. I use porcelain for my work for its durability and translucence. I love the similarity of pure white porcelain to a blank piece of paper. My forms are inspired by contemporary product design, 18th century European factory ceramics as well as the English ceramics of the Leach/Cardew studio tradition.

Throwing a Blank Canvas
When I’m throwing, I think of the pots and their forms as that blank piece of paper. I strive to keep my forms simple, quiet, and uncomplicated. This simplicity allows the drawing to become the major focus of each pot, rather than a competition between form and surface.

The simplest and most popular pot I make is a tumbler form that I refer to as a beaker. I use about a pound of clay to make the beakers pictured in this article. When throwing, I use very few tools other than
my hands. I use the crook of my forefinger and middle finger to shape the lips of my pots. When I do use tools, my favorite rib is a square rib fashioned after a Michael Cardew design and made for me by my husband who is a woodworker (figure 1). I’m careful to use the rib as little as possible because I enjoy the pots much more when there’s evidence of my hand in them. When I’m trimming, I usually use a bat dampened slightly with a sponge. I tap the pot I’m trimming on center and then, using the slightly damp surface of the bat, I apply pressure to the base of the pot, which creates a slight suction and secures the pot to wheel for trimming. When using this trimming technique, it helps to keep one hand on the pot at all times to catch it in the event that the suction gives way.

**Image Transfer**

Mishima is a traditional Korean slip-inlay technique. The Korean pots you see with mishima decoration typically use several colors of slip inlaid into the same piece. I basically use the same black slip recipe for all of my mishima drawing. I always refer to a pattern when I’m drawing on my pots and sometimes use a template to transfer a detail of the pattern (figure 2).
Apply a layer of stained slip over the drawing using a wide brush.

Wipe the excess slip from the surface of the pot using a clean sponge.

Use a vitreous engobe mixed with a brushing medium to create color accents.

Though it fluxes a bit at higher temperatures, the engobe can be used to fill in color areas on the bottom.

Inlaying the Color

All of my mishima is done when the pots are a firm leather hard. Usually they are ready to draw on just after trimming is finished. To follow this technique, start the transfer by gently wrapping the laminated

Drawing Tools

There are many tools you can use to incise the surface of the pot for mishima. I have gone through stages of preferring particular tools—pencil-style X-Acto knives, commercial stylus carving tools (sold in ceramic supply stores), African porcupine quills (available at Santa Fe Clay) among others. My current drawing tool of choice is a calligraphy pen with interchangeable metal tips. It’s the same kind of pen that you dip in ink and would use to do traditional calligraphy; I just use it on clay instead.
At this point let the pot dry completely and then bisque fire it.

**Adding Color**

On many of my pots, I add color accents to the mishima pattern through painting. I do all of my painting after the pot has been bisque fired and before I do any glazing. For the color, I use a cone 04 vitreous engobe that I mix myself, but commercial underglazes also work well. If you use an engobe, combine it in a 1:1 ratio with brushing medium using a palette knife until it is well mixed. The mixing-medium helps make the engobe more brushable and thins it out so that you can build up color in layers, similar to painting on canvas. This layering makes for more solid colors with less visible brush strokes.

The engobe recipe that I use tends to flux a bit at cone six but it can still be used to fill in the line drawings on the bottoms of pots after the pot has been fired (figure 10). After I finish adding the color, I use a clear glaze over everything except the bottom of the pot, then fire the work in oxidation to a hot cone six.

**Recipes**

**Andrew Martin’s Brushing Slip**  
(available on Etsy)

Ferro Frit 3110 .... 30 %  
Ball Clay ............ 20 %  
Mason Stain 6600 (black) .... 50 %  
Total .............. 100 %  

Add: CMC ........... 2 %  

This is the slip I use for the mishima inlay areas on my work. Be sure to mix it thin enough that it fills in all of the fine lines. If using a coloring oxide (like iron oxide, manganese dioxide, chrome oxide, cobalt oxide, cobalt carbonate or copper carbonate, for example) instead of a commercial stain, the amount of colorant needed may be less than in the above recipe.

**Vitreous Engobe**  
(Cone 04–6)

Talc ................. 15.3 %  
Ferro Frit 3110 .... 18.4 %  
Kentucky OM4 Ball Clay .... 15.3 %  
EPK Kaolin .......... 5.1 %  
Glomax (Calcined Kaolin) .... 25.5 %  
Silica ............ 20.4 %  
Total .............. 100.0 %  

Add: CMC ........... 1.0 %  
Macaloid ........... 1.0 %  

Add stains to the above base at a ratio of 1:1. I use this on bisque ware.

**Brushing Medium**

To make a brushing medium for use with the Vitreous Engobe, slake a 50/50 mix of Macaloid and CMC in hot water and blend together until smooth. To combine the engobe with the brushing medium, start with a small amount of each and use a palette knife to mix them together. Add more medium or engobe until you get the right consistency for brushing.

**Val Cushing Clay Body**  
(Cone 6)

Nepheline Syenite .... 23 %  
EPK Kaolin ............ 35 %  
Tile 6 Kaolin .... 15 %  
XX Sagger Ball Clay .... 5 %  
Silica ........ 22 %  

Total .............. 100 %  

Add: Bentonite ........ 3 %  

I use a commercial cone 6 porcelain from Sheffield Ceramic Supply, however, this Val Cushing cone 6 body is great.
Making Marks is about ceramic surface enrichment, the processes used for achieving it, and the thought concepts, idea development and personal research behind it. “Making marks” is a generalized term used through the visual arts when referring to the alteration of any surface by any of the tools that artists employ. In using this term for the title of this book, Hopper refers to the huge variety of marks that may be achieved through ceramic decoration processes, at any or all of the varied and various stages that the clay object goes through in its transformation from soft, wet, malleable clay to heat-hardened, impermeable ceramic.

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