Workshop from Home with Kate Marotz
Resources for August 20, 2025

- Kate's studio is a 24 x 24-ft (7.3 x 7.3-m) attached garage. Her electric kiln is located here along with her art festival storage (tent, weights, tables, etc.), as well as some unrelated tools and materials that shouldn't freeze in the detached garage during Wisconsin winters (pressure washer, chainsaw, etc.).
- She uses Standard Clay Company's 266 Umbria stoneware, and purchases it through The Potter's Shop in Waukesha, WI, which is 3 hours from her studio and home.
- Kate bisque fires to cone 04 and glaze fires to cone 5.
- Kate uses OM4 terra sigillata and Red Art terra sigillata. She adds Mason Stains and/or oxides to adjust the color. Recipes and more information is in this handout on the following pages.
- Kate uses a liner glaze recipe she found on digitalfire.com. See below for the recipe.
- Coil and pinch are Kate's preferred building techniques.
- Kate does not have an assistant or apprentice currently but is something that she is considering for the future.

Kate's Favorite Tools

My hands!	Kemper Swb Scratch Wire Brush
Wooden knife	Scoring tool
X-Acto knife	Silicone tip tool
Ribbon tools (varied size/shape)	Brushes

Liner Glaze Recipe

Original Alberta Slip Amber/Honey Glaze
Cone 6

Alberta Slip Calcined	40%
Alberta Slip	40
Ferra Frit	20
	100%
Add:	
Red Iron Oxide	3%

Links from Kate Marotz:

www.instagram.com/kate.marotz
www.marotzceramics.com

Rehydrating Clay Tips from Webinar Guests:

- Liz Credio: If you put the clay in a bag and spray it with a little water, put it in a waterproof bag, and sink it into a bucket of water. This will work.
- Glynnis Ritchie: If you have a 5gal bucket, you can fill it with water, put a quarter cup of water in your clay bag, then close the bag and submerge in the bucket of water—the pressure from the water outside the bag in the bucket pushes water into the clay body! Sometimes faster than just putting damp towels in the bag
- Lilianna Paxton: I have taken the full leather hard clay or even bone dry clay, put water in the plastic bag making sure there are NO holes. Then, tie the top of the bag and submerge the entire bag with the clay and water into a five-gallon bucket. Leave it for a week or so and your clay will soften for sure. The submerged clay will cause a nice suction around the clay in the bag that has the water in it.

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https://ceramicartsnetwork.org
Ceramic Arts Network
P.O. Box 1555
Westerville, OH 43086-1555

Kate's Surfaces: *Terra Sigillata and Borax Wash application*

MY STEPS:

1. Complete pots and allow them to reach the "bone dry" stage

2. Brush terra sigillata: I apply a base color and then brush on the blue or red accents

3. Distress edges: I use a damp sponge to to lightly distress edges, revealing the dark clay

4. BISQUE FIRE

5. Glaze interiors of pots

6. Brush "wax resist" pattern on the exterior surface: I brush on a target pattern

7. Melt some Borax in a pot of hot water and brush over the surface: there should be a white hazy residue left behind on the pot
(If the residue is almost opaque, then there will be a stark contrast with the wax resisted areas. You can water down your melted Borax if desired. If there is no residue, then you need to add more Borax to the water.)

8. Pour some Borax in a bowl of cool water and brush over the surface: the tiny unmelted borax crystals will create the speckling seen on my pots

9. GLAZE FIRE

Terra Sigillata

Kate Marotz

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WHAT IS TERRA SIGILLATA?

Terra Sigillata is roughly translated as "sealed earth" or "clay bearing little images". This ancient technology has historically been used in lieu of glaze and is simply a highly refined slip. Applying terra sigillata to a piece of pottery creates a more water-tight surface than the average raw clay surface (but is not as water-tight as a well-fitting glaze). An example of this material used historically is the ancient greek red or black figures depicting mythology or daily life in great detail.

DO I WANT TO MAKE TERRA SIGILLATA?

If you have never used terra sigillata and aren't sure about whether or not you want to tackle learning how to make sig, I recommend buying some and testing it before taking on this task. This is a great way to determine if sig is right for you and will also give you a good understanding of what the consistency of the material should be like. This will be really helpful when making your own. Pre-made terra sigillata can be purchased from ceramic suppliers and ordered online.

ABOUT: BURNISHING

Terra Sigillata is most often applied to bone dry clay/pots and can be burnished to create a high gloss surface (seen on the Greek vessel above). A variety of tools or materials can be used when burnishing: smooth stones, a metal spoon, or even a piece of plastic wrapped around your finger. After brushing on the sig, the preferred tool is used while the surface appears damp, moving in small circles or a single direction to acheive the desired shine. It should be noted that the temperature at which the work is fired to can impact the final shine of the material. If a super shiny surface is desired, the surface will need to be fired at or below cone 04 after it is burnished or you will lose the shine as the temperature increases for nearly all terra sigillatas. *Burnishing is not a requirement of using terra sigillata. This is not something that I utilize in my work.*

Above: Mugs by Kate Marotz, 2023
Cone 4 electric fired
Dark brown stoneware (Standard 266), terra sigillata, with a borax wash
no burnishing used

Pete Pinnell's Terra Sigillata
5 gallon recipe

OM4 Ball Clay . . . . . 14 lbs
Water . . . . . 3.5 gal
Sodium Silicate . . . . . 2 - 3 tbsp

Color: This base recipe is white and can be used as is or with colorants: *I recommend 1-5 g of body mason stain per ounce of sig*

Firing: Above cone 04 this terra sigillata will slowly lose its shine as you increase temperature.

Cedar Heights Redart Terra Sigillata
5 gallon recipe

Cedar Heights Redart . . . . . 14 lbs
Water . . . . . 3.5 gal
Sodium Silicate . . . . . 2 - 3 tbsp

Color: This base recipe is red-orange and can be used as is or with colorants: *I recommend 1-5 g of body mason stain per ounce of sig*

Firing: As you increase firing temperature of this terra sigillata it will become more glaze-like. At cone 4 it as a nice silky finish without vitrifying into glaze, fired to high temp it will become a glaze.

Don't want to make that much? No problem! Divide each material by 2 to create a smaller amount.

Making Terra Sigillata

WHAT WILL I NEED TO MAKE SIG?

Materials: Ball clay or Redart, sodium silicate
optional: mason stains

Tools: Scale, measuring cup, tablespoon, 5 gal buckets, 1/2 flexible tubing, immersion blender or drill with mixing attachment
optional: crock pot, rock tumbler

MIXING

Measure out water into an appropriately sized container - I mix batches in 5 gallon buckets using the recipes above. I add 2 tablespoons of my defloculant, sodium silicate, to the 3.5 gallons of water. I then add the 14 lbs of dry clay and use an immersion blender of drill attachment to mix thoroughly.
Note: Make sure that you are taking the proper precautions when handling dry clay: good ventilation and a particulate respirator should be used. Also, the age of your sodium silicate can change the potency of the material. Continue reading to learn more.

SETTLING

As soon as you have finished blending the mixture, note the time, and *place the container on a raised table or shelf. Leave it undisturbed for 24 hours*. It will be advantageous to have the bottom of the container at least two feet above the floor. Do not move or agitate the container in any way during the settling time or during the siphoning process outlined below. If agitated, you will need to remix and restart your timer to make good terra sig. Over the next 24 hours the mixture will settle out into layers, depending on the dry clay used, you may be able to see three somewhat distinct layers.

SIPHONING

I use a ½ inch flexible tube to siphon out everything but the heavy sediment, known as sludge, at the bottom of the container. I even keep the layer of “water” at the top because it can hold some of the finest particles of terra sigillata. When making sig with ball clays, it can be harder to feel and/or see where the sludge begins, I can siphon out the top two thirds in these cases. With clays like Redart there is a more distinct layer of sludge that determines how much is siphoned out of the bucket. If you siphon out any of the sludge along with the middle and top layers, your sig will not be good quality. If you siphon to low, you can remix everything and re-siphon again in 24 hours.
Note: Once you have siphoned your terra sigillata, you should test the quality by brushing some onto a piece of bone dry clay, if your terra sigillata isn't shiny and doesn't feel smooth when you drag your finger over the surface, this means 1 of 2 things. 1.) The potency of your defloculant, sodium silicate, my not be ieal. You will need to add more defloculant (1 more tablespoon), remix, let it sit for another 24 hours, siphon, and re-check. Repeat until it is the correct consistency. OR 2.) That you siphoned

some of the sludge out of the bucket. You will notice that your sig is VERY thin, don't worry! This is expected and can be resolved by following the information in the "concentration" section.

These images were taken within a couple minutes of brushing OM4 sig onto bone dry stoneware. The sig has not completely dried but it is dry to the touch.

You can see the soft shine in these pictures taken from different angles. When dragging my finger over the surface of the sig it is very silky/smooth compared to the raw stoneware.

HOW DO I SIPHON?

Take a 5 - 6 ft section of 1/2 inch flexible tubing and fill it with water. Place a thumb tightly over one end of the tube and lift this end higher than the other end of the tube. This will hold the water in the tube, even with the lower end uncovered. I place an empty bucket on the floor next to the stool with my settled-out mixture sitting on top. *(Tip: You can draw a line on the bucket to confirm how low you can siphon: measure the height of the total liquid, divide it by 3, and draw a line measuring that height across the bucket.)* Place the open end of the tubing in the lower/empty bucket. Next, slowly lower the hand that is plugging the other end of the tubing into the settled-out mixture. Be careful not to disturb or siphon out the bottom layer of sludge, it's better to leave behind a little terra sigilla than to siphon out some sludge along with the desired material. With your thumb still plugging the end of the tubing, place your hand about halfway into the liquid. Make sure the opening of the tube is facing the wall of the bucket (not facing straight down to the bottom) to avoid sucking up sludge. Slowly lift your thumb off of the end of the tubing. If you created a good seal and were able to keep the tube full of water, then the tube will begin siphoning out the sig. If it didn't work, slowly lift your hand out of the bucket, refill the tube with water and try again! *Make sure you understand and follow the information in the section above as you siphon.*

CONCENTRATION

When your terra sigillata is first separated from the sludge, the consistency of the material will be much too thin. You can concentrate terra sig by waiting for evaporation or speed things up with heat, but don't do it on direct heat, like a stove burner or hotplate. The sig will solidify directly on the bottom of the pot, and the metal will burn. I use a crock pot set on medium heat with the lid off. The rate of drying will depend on the atmospheric humidity and the amount of heat applied. It will take some experimentation to learn the ideal conditions. It is important to remember that slips and glazes settle as they sit, make sure that you mix up your terra sigillata before you pour any into a crock pot

to thicken it. I begin by filling my crock pot with sig (right up to the rim) and run it overnight. In the morning the sig level is much lower. I then test the consistency of the sig by mixing what is in the crock pot and brushing some onto a piece of bone dry clay. It is important that sig is not too thick when you use it. Too thick and it will flake off of the surface, too thin and you will need to apply several layers. Your terra sig is a good consistency if it takes 1 - 2 layers of brushing to acheive coverage on a bone dry pot. If you notice any texture from brushing on the sig, then it is too thick. You can add water or some too-thin sig to get the desired consistency. I store terra sigillata in glass or plastic containers with rubber gaskets. Some people use a hydrometer to measure the specific gravity of the material, I prefer to go be the feel/visuals of testing.

Note: Terra sigillata can be completely dried and stored to be rehydrated and used at a later date. When I make large batches, I will set out a 1 gallon bucket of sig and let it dry out completely (through evaporation) in my studio. Once the puck of terra sig is completely dry, I put it in a zip-lock bag. To rehydrate, place the puck of sig (or just part of the puck) into water.

APPLICATION

Terra sigillata can be applied to bone dry clay and sometimes leather-hard clay. Terra sigillata does not shrink much as it dries, this means that a dry piece of clay is the ideal condition. Some clay-bodies and terra sigillatas will cooperate with shrinking together while others will simply flake off before or after firing. Brushing sig on leather-hard clay can also be challenging, the thin cosistency of terra sigillata brushed onto clay with moisture generally won't have good coverage. Testing is necessary to learn more about the clay and sig combinations you are specifically working with. For these reasons, I apply sig to bone dry or nearly bone dry clay. I use wide brushes to cover large areas and watercolor brushes for small areas/decoration. Any brush that can hold water can be used with sig.

These are my favorite brushes to use when applying sig.
Princeton velvetouch 1/2" Oval Mop brush and Xiem Tools 2" and 1" brushes

COLORANTS

My favorite material for staining terra sigillata is clay body mason stains. Each mason stain has a different strength and will need to be tested to create the desired hue. I begin by testing 1 ounce of sig with 1 g of stain, then 2.5 g, and finally 5 g. This has been a good place for me to start testing and to understand the potency of each mason stain. Further testing is completed after review these results. I have used as little as 0.4 g of mason stain per ounce of sig and as much as 5 g per ounce. Ball milling is recommended to break down the large particles of mason stain.

BALL MILLING

Adding mason stains, especially higher amounts of stain (like 5 grams per ounce) can cause your beautiful sig to become a bit grainy. Ball milling your stain will break down the stain into smaller bits

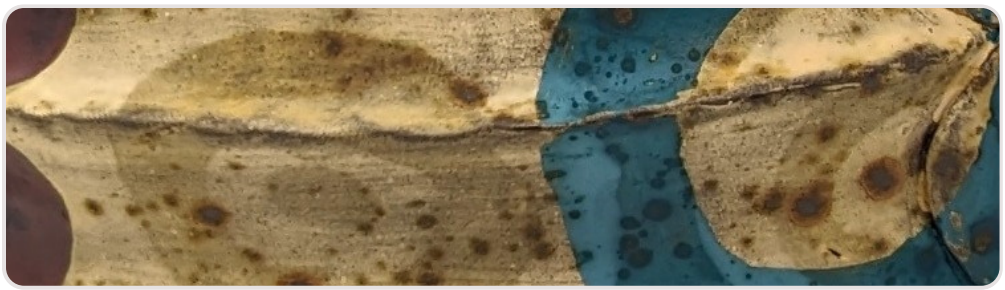
to keep your sig smooth and help prevent streaks of color from appearing as you brush on your sig. Ball milling will ensure a more homogenous mix.
Tip: Don't have access to a ball mill? Buy a rock tumbler! I purchased a large rock tumbler and porcelain shot (you can make your own porcelain shot if you want). I pour 12 oz of sig along with the correct grams of stain into the tumbler and run it for 2 - 4 hours depending on the amount of stain. This amount of sig fits perfectly into my glass storage containers.

WASHES

Washes are an excellent way to add more variation to your sig surface and give an atmospheric look to electric fired work. So, what is a wash? A wash is a solution that is applied to the surface prior to glaze firing. The material melts, creating additional sheen/texture. There are a variety of materials that can be used to create a wash, here are a few: Borax, salt, lithium carbonate, soda ash. Common ratios are 1 part material to 3 - 6 parts water. Hot/boiling water can be used to dissolve the material for a more even/consistent application if desired.

WHAT DO I DO WITH THE SLUDGE?

I wish that I had a better answer... but I do have a few recommendations. 1.) Mix the sludge into your reclaim and just incorporate that into your normal clay body. It should be noted that this is low temp clay and that it can affect the color of your clay. A small amount of this clay mixed into a mid or high temp clay won't impact the overall firing temperature, but a large quanity of sludge with a small amount of your clay can make an impact. 2.) Find someone who wants/will use it. You can reach out to area potters or schools. 3.) Reclaim the sludge into workable clay and make some low-temp ceramics. *If you have any other ideas/recommendations for what to do with sludge, send me an email!*



Kate's Experience with Sig

There is so much to learn about terra sigillata and so much more than what is outlined here. Terra sigillata is an amazing material that can be tricky to get the hang of making. I have had my fair share of frustration with learning the nuances of making and working with this material, but it has been well worth it! I'm sure that I will experience new struggles as I keep making and I look forward to continuing to learn more!

Have questions? Need help trouble-shooting? Send me an email and I will get back to you as soon as I can.

Recommended resources: Rhonda Willers' book Terra Sigillata
Kate's Patreon: https://www.patreon.com/KateMarotzCeramics