Terra Sigillata in MODD FIRE by Alan Willoughby

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As ceramic artists, working in clay engages us with the four primary elements: earth, air, fire, and water. I've no doubt that it is the deep and direct interaction with these elements that brought me to clay and then to wood firing. However, it was a serendipitous moment in which I discovered the possibilities of using terra sigillatas in wood firings. I was transitioning in my work from low fire to wood fire. I had many containers of terra sigillata in the studio and as I was preparing pots for my next wood firing, I wondered what would happen to a terra sigillata at high temperature. Since that first moment, I have never looked back, and have continued to explore the exciting and diverse range of colors and surface treatments possible in their use.

Demonstrating Unique Qualities

Terra sigillatas are made from the finest particles of deflocculated clays. When burnished and fired at low temperatures, terra sigillatas develop an incredible sheen and richness, with a soft buttery feel to the touch. At high temperatures, terra sigillatas begin to melt. In wood firings, they develop a glossy to silky-satin surface that shares characteristics with low-fired surfaces, while also demonstrating unique qualities. I work with light-burning clays, including a white stoneware clay and a porcelain. Light-colored clays create an excellent ground and foundation for the color in terra sigillatas.

I apply terra sigillatas to greenware. Using graphite, I begin by mapping out the areas to be covered with different colored terra sigillatas or, if I am using a detailed pattern, I draw it directly onto the greenware. I apply terra sigillatas with sponge brushes or by spraying. I use a bristle brush on smaller, hard-to-reach areas but avoid using them on larger areas, as the bristle marks often reappear after firing and can be distracting. I am careful to build up multiple layers, with a brief drying time between coats. It is important to apply the terra sigillata in a thin to moderate thickness to ensure adequate adhesion to the clay body and to avoid excessive shrinkage.

Vulnerability and Fragility

When I first began decorating on greenware, it was intimidating to handle the pots when they were so fragile. With time and practice, my attitude has completely turned around. I've come to look forward to decorating at this stage. It has opened up a very personal and intimate time in the making and decorating process for me, perhaps because of this knowledge of vulnerability and fragility.

Another method of application is to create designs with wax resist on greenware and then apply terra sigillata over the waxed pattern, being careful to sponge off any residual terra sigillata left on the wax. This creates a great pattern between the colors of the base clay and the terra sigillata. I have found the best terra sigillata and glaze combinations by trial and error, as some are amazing and others tend to wash out.

Terra sigillatas can also be used as underglazes. I've done a more limited application of terra sigillatas to bisqueware. Sometimes I







 Tea for Two, 12 in. (30 cm) in height, wheel-thrown white stoneware, Bermuda Green terra sigillata beneath Rob's Green glaze, fired to cone 11-12 in heavy reduction, recycled African pallet wood with inlaid tile, 2017.
A series of greenware bowls with painted wax design and an application of terra sigillata, 2017. 3 Serving bowl, 14 in. (36 cm) in diameter, wheelthrown white stoneware, base and Albany Slip terra sigillatas, white slip trailing, Munn's Tenmoku glaze, fired to cone 11-12, 2017. 4 Tumbler set, 20 in. (51 cm) in length, wheel-thrown and handbuilt white stoneware, off-white terra sigillata, black slip trailing, variation of Bruce Dehnert's Celadon, fired to cone 11-12, 2018.





5 Pair of tumblers, 9 in. (23 cm) in width, wheel-thrown white stoneware, off-white terra sigillata, black slip trailing, glaze, fired to cone 11–12 in moderate reduction, recycled African pallet wood with inlaid tile, 2018. **6** Bowl from a set of three, 8 in. (20 cm) in diameter, wheel-thrown white stoneware, base and off-white terra sigillatas, fired to cone 11–12, 2016.

spray a terra sigillata onto bisqueware to build up an additional layer and thickness on top of a terra sigillata I've already applied. On occasion, I've brushed terra sigillatas onto bisque ware, after adjusting the viscosity to compensate for the more rapid absorption characteristics of bisque ware.

Interacting Dramatically

It has been my experience that terra sigillatas respond and interact dramatically with the flame and wood ash in wood firings. They can be temperamental, but they can also produce incredible results. Terra sigillatas work in both oxidation and reduction firings, with brighter, lighter, more spontaneous color quality in oxidation and darker, richer, deeper colors in reduction. They also respond well to a light salting in the wood firing. Each application of terra sigillata, the thickness of the layers of glaze, length of firing, the final temperature, and the kiln atmosphere play an important role in determining the results of the finished work.

Terra sigillatas never cease to amaze me, as they are very versatile. I've often said that they have a mind of their own. They will tell you what's right and will let you know if something isn't working. The exploration of this technique continues to open new avenues of discovery for me, with each kiln unloading being met with great anticipation and excitement. I invite you to explore their infinite possibilities.

the author Alan Willoughby, who retired from his role as executive director of the Perkins Center for the Arts, lives and makes pots in southern New Jersey. He fires his work in a noborigama kiln built as a community resource. His work and writings have been featured in Ceramics Monthly, Ceramics Art & Perception, Ceramics Technical, and Studio Potter, as well as in galleries and collections around the country. He is taking part in the Asparagus Valley Pottery Trail April 27 and 28, and his work will be shown at the studio of Frank and Francine Ozereko. Learn more on Instagram @alanwilloughby1 or online at www.shustermanwilloughby.com.

Terra Sigillata Recipes



OFF WHITE TERRA SIGILLATA Cone 04–11 Oxidation/Reduction

Talc	35.29 %
EPK Kaolin	17.65
OM 4 Ball Clay	47.06
	100.00 %
Add: Zircopax	. 11.76 %
Water	8 cups



WARM EARTH TONE SIGILLATA

Cone 04–11	Oxidation/Reduction
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Nepheline Syenite	19.51 %
6 Tile Kaolin	78.05
Sodium Hexametaphosphate	2.44
	100.00 %
Add: Warm Water	8 cups



BASE TERRA SIGILLATA Cone 04–11 Oxidation/Reduction

OM 4 Ball Clay	97.56	%
Sodium Hexametaphosphate	2.44	
	100.00	%

Add: Water 8 cups

This is a great flashing terra sigillata, from warm red to dark brown. For different colors add the following amount of stain to one cup of terra sigillata: 40 grams Mason stain 6600 Best Black; 60 grams Mason stain 6242 Bermuda; or 40 grams Mason stain 6131 Iron Titanium Brown Spinel.

Making Terra Sigillatas

Mix deflocculent (I use sodium hexametaphosphate, a fabric water softener from the Dharma Trading Company) in warm water, preferably in a blender, pour into a container with correct quantity of water and add dry materials. After sieving, ball mill the terra sigillata 6–8 hours to increase the amount produced in a measured batch and reduce waste. After ball milling, let the terra sigillata settle for a week or more in a clear container, ladle off the clear water layer on top, then pour off the middle layer of terra sigillata. A layer of larger clay particles will have settled on the bottom of the container.

Glazing Over Terra Sigillatas

After bisque firing, the sigillata surface is less absorbent than the clay. When dipping and pouring glazes I adjust the glaze for the correct thickness on the bisque clay and then brush a light coating of additional glaze over the areas with the sigillatas. This includes when I am using the sigillata as an underglaze and where a glaze and sigillata overlap. Additionally, where there is an overlap, a light burning terra sigillata (Base, Off White, or Warm Earth Tone) will disappear and be absorbed into the glaze, with very little noticeable effect, while the oxide-rich sigillatas can be used as underglazes.



ALBANY SLIP SIGILLATA Cone 04–11 Reduction

Albany Slip	97.56 %
Sodium Hexametaphosphate	2.44
	100.00 %
Add: Warm Water	8–10 cups

At cone 10–11 this sigillata is a natural Albany Slip glaze, which is enhanced when fly ash or salt interact with it. Making it into a sigillata is more for the

working properties of a sigillata in the application

process than the finished result.

Glaze Recipes



ROB'S GREEN Cone 9–11 Reduction

Bariun	n Carbonate	9.26 %	6
Gerstl	ey Borate	4.63	
Whitir	ng	16.66	
Cornv	vall Stone	23.15	
Custer	r Feldspar	46.30	
		100.00 %	6
Add:	Black Copper Oxide	. 0.93 %	6
	Copper Carbonate	. 7.41 %	6
	Bentonite	. 1.85 %	6

This glaze has great versatility. Bermuda (see Base Terra Sigillata) works well as an underglaze with Rob's Green. Fired to cone 11–12 in the wood-salt chamber of a noborigama, this glaze develops a very rich surface and depth of color.



MUNN'S TENMOKU Cone 9–11 Reduction

Whiting	20.5 %
Custer Feldspar	27.0
EPK Kaolin	7.0
OM 4 Ball Clay	14.0
Silica (325 mesh)	31.5
	100.0 %

Add: Red Iron Oxide 9.0 %

This glaze is great in the wood chamber of a noborigama. Albany Slip Sigillata is an excellent underglaze with Munn's Tenmoku. The glaze has a honey-amber (light reduction) to rich-iron (heavy reduction) appearance.



BRUCE DEHNERT'S CELADON Cone 9–11 Reduction

Dolor	nite	23.63	%
Neph	eline Syenite	71.56	
OM 4	Ball Clay	4.81	
		100.00	%
Add:	Superpax/Ultrox	11.20	%
	Copper Carbonate	0.96	%
	Bentonite	0.28	%

This glaze works great in both the wood and woodsalt chambers of a noborigama. It really likes heat, cone 11-12, or a soak at cone 10. It has a great range of color through varying the atmosphere, thickness of glaze, and temperature.