Terra Sigillata & Slips in Woodfiring

Alan Willoughby describes his methods of applying terra sigillata and slips to his work intended for the wood kiln

Ewer and Cups with Serving Tray. *1999. Wheel-thrown porcelain decorated with clay wash, terra sigillata, slip trailing and glaze, fired in a wood/salt kiln. Ewer: 28 x 25.5 x 9 cm. Tray: 6.5 x 43 x 17.5 cm.*

AS ARTISTS we seek the defining characteristics of our individual voices and the techniques by which to best express this vision. Technique by itself has little meaning. However, often in the interplay between vision and technique we are able to take steps forward, at one moment pushing technique to stretch our vision, and at another pushing our vision to stretch the technique. Looking back in retrospect, we are amazed by this evolution.

There is an exciting and diverse range of possibilities in terra sigillatas and slips fired to high temperatures in a wood kiln. These processes lie somewhere in the middle of the spectrum between the natural ash glazed pots of anagama firings and the beautiful more subtle glazed ware fired in wood kilns. In this article I discuss the technical processes I have been working with in this 'middle range', while referencing the personal and artistic issues which have taken me on this course of investigation. Additionally, I will attempt to place these processes within the current woodfiring movement.

Woodfiring has become increasingly popular in the past 10-15 years. This was witnessed at the 1999 International Woodfire Conference held at the University of Iowa in Iowa City, Iowa, USA, with many of the progenitors of woodfiring in both the USA and abroad attending. It was a wonderful experience to spend several days discussing woodfiring, making contacts and learning about the pursuits of many fine ceramic artists. What was somewhat puzzling for me at the conference was the dominant aesthetic focus on heavy ash build up as typical in a classic anagama firing. However, beginning with the opening address by Louise Cort, there was a call for discussion and exchange of information on glazed woodfired pots and by the fourth day of the conference the 'Decorative Treatments: Slips and Glazes' panel served as a catalyst for informal discussions on other woodfiring decorative processes and were a welcome counter balance to the preponderance of ash glazed pots.

It is quite natural that with increased popularity a movement such as woodfiring becomes identified with a predominate focus. This phenomenon is a catalyst for growth but can be somewhat misleading. There are many other areas of exploration taking place in woodfiring and with time I am confident

that we will see an increase in the written and visual documentation of these processes. This phenomenon is reminiscent of the high fire reduction pots which swept this country in the late '50s and '60s which with time expanded into a wide variety of high-fire options. In retrospect such an initially narrow focus was a part of the catalyst for change within the ceramics movement in the US and abroad, contributing to the vitality, growth and expansion of the studio ceramics movement. Perhaps, with woodfiring, we are in the early stages of a change which with time will gain a new historical significance not yet fully comprehended.

Several concurrent issues sparked my interest in woodfiring. First, I was searching for a firing process in which wet to dry surfaces were equally pleasing and appealing to the touch, where the clay, slips and glaze could all be a part of the surface of a piece and have a tactile appeal. Secondly, I wanted greater involvement in the firing process. I believe this has been a quest to develop an understanding of the primary elements in making pots: clay, air, water and fire. Fire transforms, fire is ritual, fire is a vital and irreversible part of the process of making ceramics and I was separated from it through the use of electric and gas kilns. There is irony for me in the fact that wood has always been a part of my life but only in the past 10 years have I become attuned to the importance of wood in firing my pots. As a child and teenager I was cutting wood for heat and now I have a wood stove in my home. When I light a fire each wintry night the scent sends me back to my most recent woodfiring and to my early childhood experiences and thoughts of transformation and change.

Before coming to woodfiring, I had worked extensively with slips in high temperature, mid range, and most recently, earthenware, firing in both electric and gas kilns. Processes I was working with included slip-trailing, multiple layering of slips and paper resist. I was applying slips on leather-hard clay because I liked the integration and interaction between the clay and slip that was possible when both were pliable, including carving through the slip into the clay and scraping the clay up into the slip(s). This process of making and immediately decorating work requires intense concentration and focus, and

Left: ***Decanter.*** *1999. Wheel-thrown porcelain clay decorated with clay wash, terra sigillata, slip trailing and glaze, fired in a wood/salt kiln. 38 x 35.5 x 12.5 cm.*
Right: ***Covered Jar.*** *1999. Wheel-thrown porcelain clay decorated with clay wash, terra sigillata, slip trailing and glaze, fired to cone 11 in a wood/salt kiln. 35.5 x 23 cm/diam.*

Split Vase. *1999. Wheel-thrown and handbuilt porcelain clay, decorated with clay wash and glaze. 35.5 x 23 x 10 cm.*

the timing of slip application on the leather-hard clay is critical (clear glazes are applied later to bring out the colour in the slips). As I began woodfiring I wanted to simplify my slip application methods and also take the pressure off having to decorate the work at the time it was made. I was ready for a shift in my studio rhythms. Adjusting my slip recipes, I began decorating on bone-dry greenware. This allowed me to fill my studio with pots and then focus on their surface treatment. The adjusted slips for bone-dry clay application held and I was off and running in my first firing of woodfired pots, combining a clay wash to enhance flashing, painted slips, slip trailing and glazes.

The aspect of this decorating I did not like was brushing and painting slips on the bone-dry pots. In the application of the slips there was a chalky quality in contrast to the natural flow of slips on leatherhard clay. Additionally, slip trailing across a painted slip often ended with a clogged slip trailer. Just when I was about to begin experimenting with additions to the slip recipe to improve the methods for brushing and painting, I took another turn. On my previous earthenware pieces I had begun working with terra sigillata on areas of the pieces where I wanted colour and a satin surface. I was attracted to the working qualities of terra sigillatas, how they paint on greenware, as well as the fired sheen so unique to terra sigillata. Why not try terra sigillata in high fire? With my first stroke of terra sigillata on a bone-dry greenware porcelain pot I knew this was going to work.

I have two methods for preparing terra sigillatas. The first is to mix a large batch of OM #4 Ball Clay and, after settling, ladle off the water on top and then pour off the fine particled terra sigillata. With one or two cup quantities of this base sigillata I mix high temperature Mason Stains (see formulas). My other approach is to mix coloured terra sigillatas using different clays and adding oxides. After leaving it to settle for several days, ladle off the water and pour off the fine particled terra sigillata. Depending upon the oxides used it is sometimes a good idea to ball mill the mix before decanting to eliminate streaking and spotting from the oxides in the sigillata. Both methods result in terra sigillatas that high-fire to a rich tactile surface, somewhere between a slip and a glaze. The possibilities of colour are endless. In applying terra sigillata, I use both smaller paint brushes and sponge brushes. It is important to apply

the sigillata with a firm, distinct stroke, returning to overlay where necessary. At the same time I don't belabour the application, being careful not to build up too heavy a thickness. Remember, we are applying a wet sigillata to a dry (greenware) pot and to achieve a strong adhesion the sigillata cannot be too thick or it will have trouble holding on to the clay once it dries. On top of the terra sigillatas I often use slip-trailing to create a series of lines, outlines, symbols, marks, etc. These coloured slips are slip-trailed on the clay, on a wash over the clay and on terra sigillata. Because of the fine particle character of terra sigillata, slip trailing moves smoothly across the sigillata surface.

As an artist I can't resist decorating on a three dimensional surface. I look forward to the exploration and risk involved in finding the right drawing, pattern or mark(s) for the right form. Some forms dictate a minimum of decoration and other forms reach out for multiple images, patterns or marks. Additionally, there are often multiple solutions to the same form and it is in the dynamic interaction and relationship between form selection and surface treatment where we find our individual expression. The strongest pots bring these two components of form and surface treatment together in a unification unique to the creator – influenced and affected by time and place, and the

Top: ***Basket****. 1999. Wheel-thrown porcelain decorated with clay wash, terra sigillata, slip-trailing and glaze, fired to cone 11 in a wood/salt kiln. 23 x 30.5 x 18 cm. Above:* ***Oval Tray****. 1999. Wheel-thrown porcelain decorated with clay wash, terra sigillata, slip trailing and glaze, fired in a wood/salt kiln. 12.5 x 51 x 12.5 cm.*

materials, forming methods and firing processes used. The range of decorating processes I use in woodfiring work well individually and together. I have created pots with only a wash and glaze, pots with only terra sigillatas and slip, and pots which include a wash, terra sigillatas, slips and glaze. In surface treatment there is opportunity for a simple, direct statement and the opportunity to develop a more complex multiple layered effect.

I have been firing my pots in kilns which are based on the noborigama kiln design. My interest and pursuit of woodfiring is directly connected to the emergence of noborigama style kilns in the US. Any type of woodfiring is labour intensive, but these kilns are efficient, suitable for firing in several days or one day. They have an ability to be both responsive and forgiving, the atmosphere can be heavily reduced, neutral or oxidised. As I become familiar with the unique nature of the kiln and each chamber, I stack the pots according to the desired effect sought, considering hotter and cooler locations, heavier and lighter ash build-up, heavier to lighter reduction locations (in a reduction firing) or neutral to oxidising locations (in a neutral firing).

Terra Sigillatas

Base Terra Sigillata

800 gm Kentucky Ball Clay
8 cups warm water
22.5 gm calgon

Mix calgon in warm water and then add ball clay. Sieve several times and then let settle out for several days to a week. Siphon off water and then pour off and reserve the top layer of fine clay. Mix this fine clay with high-fire stains to create coloured terra sigillatas for use on bone-dry greenware. To each cup of decanted terra sigillata, add the following amount of Mason stain:

6600 Black 40 gm
6313 Medium Blue 15 gm
6131 Titanium-iron-brown 40 gm
6485 Titanium Yellow 60 gm
6242 Bermuda Green 60 gm
6379 Cerulean 60 gm
6363 Sky Blue 60 gm

Clay, Slip, and Glaze Recipes

Cone 11

Porcelain Clay

#6 Tile clay 12.5
Edgar's Plastic Kaolin 12.5
Tennessee #10 Ball Clay 25
NC-4 Felspar 22
Flint (200 mesh) 20
Molochite grog (200 mesh) 4
Plastic Vitrox Clay 4

Wood/Salt Flashing Wash

#6 Tile clay 80
Nepheline syenite 20
Bentonite 2.5
Used on pieces where I want to heighten flashing. I apply this wash on bone-dry greenware. Terra sigillatas and slips can be applied directly over this wash.

More Terra Sigillatas

Grey

Water 800 gm
Kentucky Ball Clay #4 200
Iron chromate100
Calgon 10

Black

Water 800 gm
Cedar Heights Red Art 200
Manganese dioxide 10
Cobalt carbonate 15
Black copper oxide 10
Calgon 10

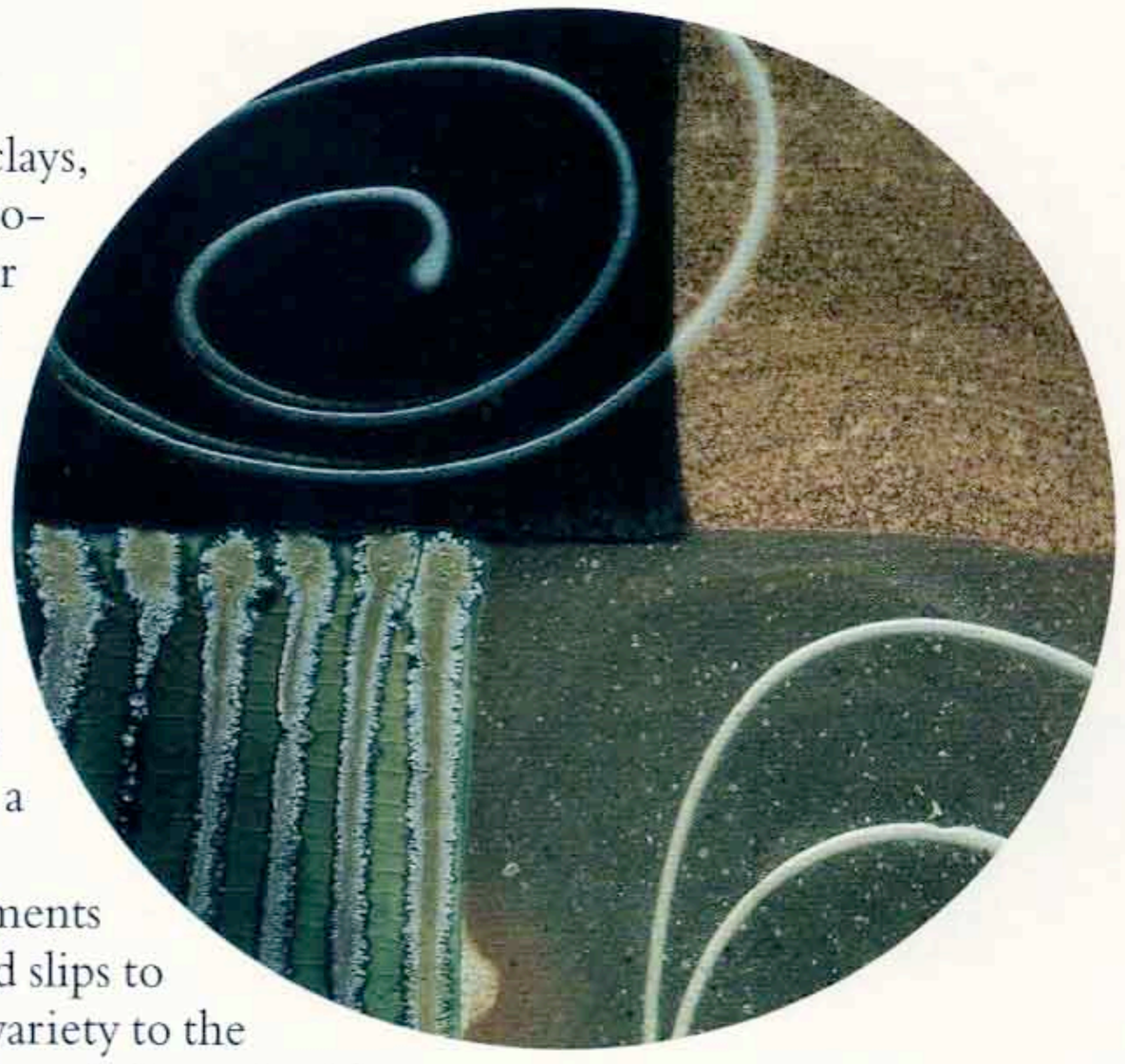
Earth Red

Water 800 gm
Kentucky Ball Clay #4 200
Red iron oxide 20
Calgon 10

If possible, ball mill the terra sigillata in which the oxide is added before decanting. Ball milling increases the amount of useable terra sigillata and helps improve the colouring oxide particle size, rendering a more complete mix in the sigillata.

With an interest in colour and the use of specific clays, washes, slips, terra sigillatas and glazes, the firing atmosphere becomes an important consideration. Colour is influenced and affected by reduction, neutral firing and oxidation. Along with understanding these atmospheres to affect colour, an important part of woodfiring is learning to work with the natural flame paths which deliver ash to the pots and create flashing on the sides of pots. This 'mark of the fire' speaks of the cycles of nature and of transformation. Flashing and ash build-up across washes, terra sigillatas, slips and glazes can evoke a multi-dimensional world.

Woodfiring includes a broad range of surface treatments from natural ash glazing to washes, terra sigillatas and slips to classical glazes. Within this realm there is incredible variety to the processes and techniques which can be explored, and through this exploration gain knowledge of oneself and the world in which we live.



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SLIPS

Cone 9-11 slips are for bone-dry greenware application. Colour quality comes from firing to cone 9-12 in a wood/salt kiln.

Alan's Cone 9-11 White Slip Colour Base
Tennessee #10 Ball Clay 11.5
Edgar's Plastic Kaolin 5.5
Calcined kaolin 16.5
Whiting 15
Nepheline syenite 23
Flint (325 mesh) 23
Soda ash 5.5
Zircopax 10

To this colour base add high temperature stains 5 – 25%. Add .0125 (1/8 of 1%) Calgon as a deflocculent. Mix calgon in warm water before adding dry mix.
Four that I use:
6600 Black 10%
6313 Medium Blue 5%
6131 Titanium Iron-brown 20%
6485 Titanium Yellow 25%

GLAZES USED IN WOOD/SALT KILN

Cone 9-11 Transparent—1-2-3-4
Tennessee #10 Ball Clay 10
Whiting 20
Flint (325 mesh) 30
NC-4 Felspar 40
Bentonite 4

Cone 9-11 Rob's Green
Edgar's Plastic Kaolin 16
Flint (325 mesh) 45
Whiting 28
Nepheline syenite 11
Add:
Copper carbonate 7%
Black copper oxide 3.7%
Bentonite 2%

Cone 10-12 Vinny's Green *– this glaze likes heat.*
G-200 Felspar 41
Whiting 21.5
Edgar's Plastic Kaolin 21.5
Flint (325 mesh) 16
Rutile (light) 3
Copper carbonate 1.5