Introduction to Foil Saggar

By Peter Flynn

Just when one thinks they have tried everything in ceramics something new and exciting manifests itself. I have been playing in the clay for 30 years and have a tremendous respect for the evolution of the creative process. Some like Raku, others cone 10 reduction. Whether it's porcelain, red clay, shiny or matt, we are as clay people, drawn in by the fusion of earth and fire.

Foil saggar is a process of fuming by using tin foil as the saggar. I have achieved, through testing, a dramatic palate of colors. A blend of earthy organic, rustic pastels, as well as bright vivid collages of color, the possibilities seem endless. (Even testing is fun.) I have included some formulas, and a list of materials, that have been thoroughly tested. Consistency and predictability are somewhat allusive. Out of the multitude of pieces completed there are no two alike. That's why I find the process so intriguing and will continue to explore the dynamics of foil saggar.

There are a variety of raw materials that will work with foil saggar. Some are hazardous and should be handled with care. There are a variety of materials that I have not yet tried. Have fun trying new things.

Clay bodies are a significant factor in foil saggar. All my testing was done with smooth body clay, b-mix and porcelain. The finishes are different with sand or grog in the clay. White clay is preferable, clay that has iron or other colorants will greatly affect the finishes. The pottery should be burnished or treated with Terra Sigilatta for a shiny polished surface and bisque fired to cone 010.

Foil Saggar; Materials and Techniques

Materials;

- Ferric Chloride fluid: (Also known as PC etching solution)
  40% - water, 60 % - ferric chloride or full strength (wear rubber gloves) various shades of orange, rust to maroon
- Cobalt Sulfate granluar:
  70 grams cobalt sulfate, to 1 pint Water. (Wear rubber gloves) Various shades from grey black to bluish lavender. The hotter it is fired the more blue it will be.
- Potassium Dichromate granular: (used in photo development) 100 grams per pint of water. Various shades of green from mint to dark green. It will not completely dissolve, shake vigorously before using. After the fluid is used the granules can be used to make green dots.
- Egg Shells (do not rinse or hard boil)
- Peanut Butter (Smooth or chunky)
- Honey
- Plant Leaves (Some leaves work better than others)
- Copper brillo pads. (use single strands, makes wavy black lines.)
- Heavy Duty Tin Foil, double wrap. The tin foil is your saggar and if there are any holes in the foil the fuming can be compromised.
- Clear Paste Wax or tile sealer. (Avoid car wax, it contains detergents)
  Use to polish piece after rinsing. If piece is warm polishing is easier.
- Rubber Gloves

Application Techniques;

- Washes can be brushed or dipped, avoid spraying because the chemicals are very toxic. Thin applications (1 or 2 coats) will produce lighter pastel colors, 3 to 4 coats produces vivid darker colors.
- All these chemicals can be layered to achieve variations in color. Example: 2 coats Cobalt Sulfate, then 2 coats of Potassium Dichromate will produce a beautiful teal green.
- Mix eggs to spread on the tin foil for Cobalt Sulfate and Potassium Dichromate. Spread honey on the tin foil when using the Ferric chloride. Sprinkle egg shells, sea salt, copper sulfate, (miracle grow), plants and other organic materials after applying the egg or honey.
- Variations will occur depending on which wash is applied first.
- Predictability can be illusive; Discrepancies in firing temp, applications of materials, and fast or slow firing will affect the colors.
- I have tested many other materials that produce varied effects; Granular sea salt, baking powder, sea kelp, shredded brillo pads to name a few.

Clay Bodies;

- White, smooth body clay works the best, dark clay mutes the colors.
- When using a clay body with sand or grog take extra care to burnish to creat a smooth surface.
- Smooth clay bodies work the best because the surface can be sanded prior to applying the terra sig, if sandy clay is not burnished the surface will be textured. It also makes it difficult to polish.
- Burnished or terra sigged pieces will brighten the colors, and when polished result in a glassy finish.
- Terra Sigliatta can be applied to make burnishing easier.
- After pieces have been saggared, rinsed and dried apply several coats of floor polish to achieve a glassy finish. Apply 1 thin coat then polish and repeat until a glossy surface is achieved. Tree Wax or Min Wax work well, avoid car wax because it usually contains detergent.

Sources to obtain materials;

Ferric Chloride: (also referred to as PC Etching fluid) Circuit Specialists, Mesa (480-464-2485) Only available in 1 gallon quantities. Also available at Fry's Electronics in 1 quart quantities.

Cobalt Sulfate Granular: Laguna Clay, it can be ordered thru Marjon Ceramics (602-272-6585)

Potassium Dichromate Granular: Seattle Pottery – 1800-522-1975

Copper Sulfate Granular:

White Terra sig Formula: This formula will make about 1 gallon, adjust for smaller batch. 2.5 gallons water

6.5 pounds EPK kaolin
2 grams soda ash
2 serving spoons of sodium silicate
Optional: 15 to 30 grams of colorant to 1 pint of white terra sig to make colored terra sig.

- Measure the water carefully, add the sodium silicate and soda ash and stir.
- Add the EP kaolin and mix aggressively with a drill mixer until smooth. No lumps.
- Allow the mixture to set undisturbed for 24 hours.
- Remove the water from the top of the mixture. (about 3")
- Then remove the middle portion into a separate container. THIS IS THE USABLE PART OF THE MIXTURE. Be careful not to use the thicker material at the bottom of the bucket.
- The mixture should be the consistency of skim milk, you may need to add or remove water to achieve the right consistency.
- There should be about 3" of thicker material in the bottom of the bucket, discard this portion of the mixture.
- Be careful not to disturb the mixture when removing the usable part of the mixture
- Application: Apply 2 coats and buff with soft plastic bags, (I like to put a sponge in a soft plastic bag, or use food handler plastic gloves) or a soft shammy. Repeat with 2 more coats and buff, the surface will become shiny and sealed. A third coat can be applied if necessary. As soon as the 2 coats are applied start buffing. If the terra sig is to dry it will not buff properly. If the coat is sticky or wet when buffing, wait until the surface is not sticky. Terra sig is very thin and watery, drips are almost impossible to avoid, try to disperse quickly. If the mixture is to thick the terra sig will crack / craze .

Be sure to prepare in advance for this workshop, it can take some time to get through all the steps. Pieces should be fired to cone 08, NO HOTTER. Marjon's will fire your pieces for those who have no way to fire their work, there will be a 15.00 charge to fire 4 pots. Marjons will provide Terra Sig to anyone that needs it, please bring suitable container to transport. The formula above makes about 1 gallon of terra sig so you may want to decrease the volume to half of the original formula. You may want to make a few extra pieces in case of breakage during terra sig application or transportation. Be very carful when applying the terra sig, the pieces become very fragile from all the water in terra sig.
Do your best to avoid excessively thick pieces, there can be cracks if pieces are to thick. Any questions about this workshop should be directed to peter@marjonceramics.com Please don't call Marjons for technical questions, the retail staff will not be able to answer them. Call Marjons only to register for the workshop.