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Airbrushing for Ceramics

Airbrushing is an excellent surfacing method for application of color, pattern, and/or imagery to either pottery, tile or ceramic sculpture. The airbrush is a tool that can be used with ceramic pigments as well as with traditional drawing and painting materials. The following information is a guideline for those with an interest in incorporating the airbrush with ceramics. This technical information is designed to get you started.

Choosing an Airbrush: The choice of an airbrush can be compared to selecting a camera or any other hand held tool. The way that the airbrush feels is a consideration as well as cost, and design. There are a number of excellent, recognized brands of airbrushes on the market including those produced by the Paasche Airbrush Co. (established in 1904), and Badger Air-Brush Co. (started in 1963). Since ceramic materials are abrasive it is better to purchase a brush with metal parts although plastic airbrushes are now available (i.e. Iwata). Other considerations specific to using ceramic materials with an airbrush are ease of cleaning granular materials, and control of the tool for possible use on three dimensional forms.

There are three types of airbrushes: single-action external mix, single-action internal mix, and dual-action internal mix. Single-action describes the way in which the airbrush triggers. The single-action trigger when depressed sprays a pre-set amount of fluid. The amount of fluid to be sprayed is regulated by adjusting the nozzle or needle screw (depending on the brand). External mix refers to the manner in which the air and pigment come together; outside of the head or fluid assembly. This causes the dot size to be larger than that of internal mix airbrushes. Conversely, internal mix designs produce a thoroughly atomized very fine dot spray since the mix of air and pigment occurs within the head assembly.

I have found that the Paasche F-#1 Siphon Feed, Single action, External mix airbrush, is an excellent tool for beginners and for ceramists. The Badger Model 350 Bottom Feed, Single action, external mix is comparable. The F-#1 airbrush is available with three sizes of tips, a fine (H-1), a medium (H-3), and a tip for spraying heavy liquids (H-5). The medium tip works well for spraying ceramic underglazes. The large tip can be used with slips. The fine tip with bisque stains or acrylic pigments. It also can be used with a variety of pigment jars and cups. Tips, the trigger, the hose and other accessories can be replaced and purchased separately.

This Paasche model, is an external mix. Cleaning an external mix is easier than the "internal mix" airbrush design. The tip of the brush which screws onto the front of the brush is removed for cleaning. The airbrush is moved manually in the air to create tighter and looser sprays. This can be an advantage when spraying three dimensional forms. (In contrast, the dual action airbrush design is one where the trigger can be moved forward and backward while depressed to change the diameter of the spray). The orifice of the spray (which controls the diameter of the mark) is changed by screwing or unscrewing the nozzle tip. Small adjustments of the nozzle can make a large difference in the width of the mark.

The Paasche, F-#1 airbrush is durable and the kit economically priced. A basic instruction booklet "*Paasche 22 airbrush lessons*", comes in the kit. These instructions describe some basic exercises which can be done to familiarize yourself with this tool. The booklet also contains airbrush drawing and painting projects. Additionally, I have found some excellent general airbrush books on the market. These are helpful in describing process, and color layering techniques. A book that I recommend is titled, "*Airbrush: The Complete Studio Handbook*", written by Radu Vero. (available through Bennett's Pottery and Ceramic Supply, Oviedo, Florida). This book has a diverse gallery of color plates as well as excellent information about masks and free-hand painting techniques using a shield. The books that are available for ceramists on airbrushing are elementary and can also be informative at the start (i.e. *The Art of*

Airbrushing; for ceramics and crafts, by G. "Maynard" Clark). Articles are available through Ceramic Monthly magazine. A new book which includes information on airbrush techniques is titled "Resists and Masking Techniques, author Peter Beard (AC Black Publishers, available through The Potters' Shop, Massachusetts). The "Duncan Product Reference Manual" offers a brief description of airbrush technique pages 37 and 38. "The Instruction Manual" by Duncan also suggests on page 44 that Thin 'n Shade is an excellent medium to use (as an extender vs. water) with an airbrush.

Note: For other brands and accessories refer to airbrush magazines, or ask your local art supply retailer (Central Florida Office Supply, locally).

* Paasche Airbrush Co. 7440 W. Lawrence Avenue, Harwood Heights, Illinois, 60656-3497.

* Badger Air-Brush Co. 9128 W. Belmont Avenue, Franklin Park, Illinois 60131.

Mechanics (The F-#1): Basically, the tip or nozzle screws in and out, and controls the size and width of the spray itself. To compress the spray move your hand toward the surface. The mark made will be smaller and tighter. To expand the spray move the airbrush away from the surface (the single action brush, only). The airbrush is moved manually in the air to create the color surface. This can be an advantage when spraying three dimensional forms. Color can be graduated easily. Multiple colors can be mixed by layering one color over another. Subtle color graduations are possible. Color can be stippled by half pressure on the single action button. This will take practice to feel. A similar effect can be achieved by lowering the air pressure on the compressor. An average air pressure is 35 lbs PSI. A spatter effect can be created by running the pressure at 10 to 15 Lbs PSI.

Compressors: A source of air for your brush can be provided either through use of: canned air, small paint compressors (i.e. Sears), large industrial sized paint compressors (i.e. 3.5 horsepower), and silent airbrush compressors (i.e. Badger Silent II). All vary in cost, size and serviceability. The most dependable compressors are large sized tanks, that can sustain air pressure for longer periods of time. However the larger the tank, and motor, the louder the sound while pressure is built. Depending upon location, monetary, and space considerations a variety of products are available to use when airbrushing ceramics.

Prices for the air source can range from a nominal amount for canned air to approximately \$350.00 for a middle sized industrial paint compressor. If this type of compressor is purchased it can be used with air tools and other spraying equipment. It is recommended that the industrial compressor have an oil filter accessory for use with the airbrush.

Maintenance and Care: Care of the airbrush is very important to dependable operation of this piece of equipment. The brush must be cleaned when changing colors. It must be washed thoroughly running a couple of containers of water through the brush until it sprays clear water. Underglazes and slips clean up easily. Bisque stains dry more quickly and can dry within the nozzle tip if left standing. If the tip of the airbrush clogs you can: (1) use a needle tool to clear the nozzle tip, (2) fill the cup with clean water and run water through the brush, (3) spray water through and pinch the nozzle tip closed to create back pressure, (4) remove the nozzle and tip, dis-assemble and wash. All water based products can be sprayed using the same airbrush. If oil based pigments are being used as well I recommend that a second airbrush be purchased.

An ultra-sonic pen cleaner can be used and is recommended to keep the tips and needle in excellent/clean condition. Another option is to boil the metal parts in a tablespoon of Mr. Clean and a cup of water. After ½ hour the results will be the same as an ultra-sonic cleaner.

Accessories: A variety of accessories are available for airbrushes including; hoses, hose tapes, filters, splitters (to run multiple lines), brush hangers, plastic containers, portable spray booths, laser cut stencils, storage shelves. Most of these items can be found in airbrush and art supply magazines, and/or

through your local retailer.

Masks, Stencils, and Resists: The resist materials that I most often use on **bisque ware** are: tapes (of various widths), paper stencils, liquid latex, and self sticking stencils. Masking tape and Chartpak graphic tape (for designers and architects) are valuable stenciling materials. Chartpak tapes are made in many thicknesses ranging from 1/16 of an inch to 3/4 of an inch. Tapes made increase in size in 1/16 inch increments. Masking tapes and graphic tapes stick easily to the surface of the bisque ware. Tapes can be used to create grids, bands, hard rectangular edges, and so on (note: Found objects that are patterned or lace-like can be used as stencils. Thicker tapes can be cut to create a variety of edges, shapes, and or patterns.

Traditional friskett stencils do not adhere to the chalky, bisque ware surface. Although not transparent self-sticking shelf liner is used by some ceramists. I use label paper made by the Avery Company as a stenciling material. It is easy to cut, yet has enough body to resist curling after sprayed. I also use construction paper (which is taped into place) for my stencils. Liquid latex and products like mask 'n peel (Duncan Company) are also good resist agents for ceramics. Also available is waxed stencil paper made by the Duncan Color Company and sold by local mold shops (Frazier Ceramics).

I cut my stencils using small pointed scissors in much the same way that Chinese paper cutting artists use their small scissors. Exacto knives which swivel also can be used as a stencil cutting tool.

Pigments and Extenders:

- An extender refers to the medium mixed with the pigment to thin it. Water, thin 'n shade, glycerin and water (50/50 ratio) are the media I have used to thin ceramic pigments; underglazes and slips.
- Underglazes are an excellent color source for airbrushing since the color is well mixed, finer grained, and stays in solution during the airbrushing process. Underglazes are manufactured in the United States by the Duncan, Amaco, Mayco and Reward Color Companies. Underglazes are products that are designed to be applied under glazes on either greenware or at the bisque stage. Each company has a variety of products designed for specific application states (leather, bone dry, or bisque clay) and for translucence and/or opaque color effects. I have applied underglazes to green ware and to bisque ware. I recommend a base coat of color only at the green ware stage. I have found that re-wetting large scale sculpture by spraying underglaze at the bone dry state risky; it may cause stress and eventual cracking. I have found that the thin layers of color applied with the airbrush disappear into the clay surface and diffuse when applied to greenware. The makes it impossible to see rendered form and detail. I airbrush underglazes on bisque ware for ease of handling, safety, and the ability to see color layers.

Some products like Amaco Velvets are designed or can be used with or without a glaze coating. If a dry color surface is desired I suggest testing, to determine color and melt without a glaze. However, most products gain color intensity with a clear, matte, satin, or gloss glaze application and firing. Duncan commercial glazes, and others, as well as, shop glazes can be used as a final glaze coat.

Colors can be used in thin and thicker solutions with water or Thin 'n Shade (commercial extender) without settling problems, or clogging the airbrush. Duncan products are more chalky in consistency and extend very easily. They tend to be more opaque than Amaco underglazes. Duncan underglazes can be layered to cover up mistakes. I add a third water to two thirds pigment to get a good spraying consistency. Amaco underglazes are more gel-like; they are design to be applied by paint brush. They require sieving to pass through an airbrush. I sieve all Amaco underglazes with a 100 mesh talisman test glaze sieve and top off each container with a

teaspoon of water to achieve an optimal spraying consistency. I use Duncan products as under colors and Amaco products as over colors when layering. If additional colors are desired underglazes can be mixed; Duncan with Duncan pigments, Amaco with Amaco pigments, and Duncan and Amaco pigments. Testing is advised when mixing new colors. It is a good idea to spray the pigment onto your test tiles and to record the number of coats applied. I have found that 6-7 seven sprayed coats (using the consistencies described above) give full color density. Earth colors are pigments which are stronger and 2-4 coats will show the color. Pastels and reds will usually burn out if less than 5 sprayed layers are applied.

E-Z strokes, Design Coats, Cover Coats, and Amaco Velvets can be sprayed onto the bisque surface of a ceramic piece even though greenware application is recommended). The airbrushed pigment is so thin that these materials adhere to the surface, even though certain of them are recommended for greenware only. It is recommended that the bisque be dampened with water prior to beginning the airbrushing process. This will allow for better absorption.

- Metallic washes and majolica stains can be sprayed with an airbrush. The biggest challenge working with these materials is to keep the metallic oxides and glaze stains in suspension. Frequent mixing and the addition of CMC gum into the liquid will help to keep the materials from settling out.
- Decorative slips or engobes can be sprayed through an airbrush if the largest tip is used. Slips should be selected for the correct stage of application; leather hard, greenware, or bisque ware slips can be used. Testing and experimentation is recommended.
- Bisque Stains are acrylic stains which are produced by the Duncan Company. They are acrylic dyes which do not require firing. They can be airbrushed onto bisque surfaces or onto matte glazed surfaces as over layered colors used to heighten the glazed color effects.
- Lusters are another coloring material that can be sprayed through an airbrush. Although I have not tested this personally I have noted the others have do so. I recommend spraying in a spray booth and use of a respirator and protective visor when spraying these materials.
- Overglaze enamels and China paints can also be sprayed through an airbrush. Amaco manufactures both water and oil based enamels. China paints can be mixed with a thinning medium so that the pigments can be sprayed. Ron Nagle has layered airbrushed china paints on recent cup forms.

Sealers and Ceramic Fixatives: If an underglaze coating chips or prints a sealer or home made ceramic fixative can be applied to prevent this. A layer of Thin 'n Shade can be spray over the airbrushed surface before the glaze is brushed or sprayed with a spray gun (i.e. Paasche spray gun). A 50/50 mixture of glycerin and water can be sprayed for similar results. If the glaze application is sprayed with a gun I recommend that the final coating of CMC Gum and water be sprayed on as a home made fixative to prevent mars in the glaze when loading the kiln.

Safety: I recommend the use of a double cartridge respirator and spray booth when airbrushing. The Badger Air-Brush Company sells a double cartridge respirator designed to meet OSHA requirements and provide protection against mists and vapors. Paint stores and local hardware stores might be able to provide an OSHA approved respirator which protects against: mists, paints, lacquers, and enamels, not more than 1,000 parts per million organic vapors by volume, or any combination thereof. I also recommend using latex gloves if you find that your hands are becoming covered with pigment. I make sure I work near a sink and have plenty of paper towels for clean up.

Shield: a tool used for free-hand airbrushing.

