

## **SPA COSMETIC REPAIR WITH THE *MMA* SYSTEM (GRANITE, PEARL, METAL, or MARBLE COLORS)**

### **DESCRIPTION**

The *MMA* repair system has been formulated for repairing marble and solid color spas. It is commonly used by manufacturers, since it can be buffed and polished to provide a very high quality surface finish. Since manufacturing plants frequently contain airborne contaminants that interfere with the coating quality, it is important to be able to sand, buff, and polish to achieve the finest surface. Repairing granite spas utilize a unique system, but it is included here in order to provide a complete procedure for any color spa.

Multi-Tech Products also provides a “Quick Glaze” system for repair. It is designed for professional use in a clean environment. It is designed as a “spray and go” system. It can be buffed if sufficient time is allowed for total curing. Please visit us at [multitechproducts.com](http://multitechproducts.com) for more information as well as procedures for repairing other types of spa defects, such as blisters and delamination.

Multi-Tech Products offers repair materials that match all popular colors and textures that are commonly sold in the industry. Refer to our website for more specific information on colors that are available. Repairs to spa surfaces start with a special filler, designed to avoid failure problems seen with polyester body fillers and putties due to the effects of hot water, spa chemicals, and sunlight. A high performance acrylic resin is the recommended filler for spas. It should always be used when there is long exposure to water and spa chemicals. We also offer an improved polyester filler, primarily for bathtubs, but it can be used for spa repairs that are not exposed to these conditions. See the Bath Repair procedure to learn how to use it. The filled repair is then spray-coated (using an air brush) with a color matched basecoat. Toners allow adjustment of the basecoat color to be lighter or darker. The repair is finished by applying a protective, clear topcoat. We offer clear topcoats in both the *MMA* and Quick Glaze systems, and they are very suitable for bath applications. There are two choices for a clear topcoat in each system. The *MMA* clear topcoat is an acrylic-based coating. The K2000 topcoat is a polyurethane based coating. We strongly recommend using the K2000 topcoat for spas, since it resists the spa environment best, and the acrylic-based coating can discolor after extended spa conditions exposure. Care must be exercised in buffing to avoid creation of color lines. These repair coatings allow the damaged surface to be repaired to an appearance almost like new.

While there is no implied warranty the materials and techniques described in these procedures have been designed to withstand the normal operating conditions of spas. However, success of the final repair also is dependent on the experience and skill of the individual repair technician.

NOTE: The use of conventional automotive repair products such as polyester type fillers (Bondo, Evercoat, Akemi and Duraglass), lacquer spot putties and primers (although labels may read “acrylic” or “water-proof”) absorb water and are not recommended with this system, especially in spa applications. Substitution of alternate products can have a severe detrimental effect on the performance and durability of the repair.

### **MATERIALS**

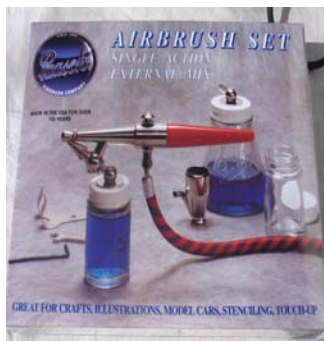
- A special high performance, white acrylic filler with catalyst
- A special granite filler for granite spas with catalyst
- Primer (used only with pearl/metal colors)
- *MMA* Basecoat(s) matched to the spa color
- *MMA* Basecoat thinner (one of three offered based on application temperature – Low = <70°F, Medium = 70° to 90°F, and High = > 90°F)
- *MMA* Acrylic Finishing Solvent
- K2000Topcoat, thinner/reducer, and hardener, or *MMA* Topcoat with a monomer thinner
- Hand glaze, a non-silicone/non-wax cleaner
- Toners for adjusting color for a better match (optional)
- Rubbing compound
- Isopropyl alcohol



## EQUIPMENT

The equipment listed below is needed to use the **QUICK-GLAZE** repair system. Similar equipment made by other manufacturers may be substituted. This equipment is available from Multi-Tech or local paint supply houses. A working knowledge of the equipment and application techniques is assumed for these repair procedures.

- A ¼" Die Grinder (electrical or pneumatic) with cylinder grinding points (Dremel-type tools typically are not robust enough for this job)
- Industrial Heat Gun (Again, a hair blow dryer is not sufficient)
- A ⅜" Variable Speed Drill (electrical or pneumatic)
- A rubber disc assembly for the drill (similar to the Roloc Disc pad)
- 3" Sanding Discs - 50, 36, 24 grit. (50 grit is optimum.)
- Wet/dry sandpaper in 80, 100, 220, 320, & 400 grit
- A single action airbrush with a "3" or "5" tip (kits include a 2½ oz. and a ½oz. spray cup, a cloth braided hose). Extra cups for mixing may be necessary.
- For large (> 1 sqft.) repair areas, a Touch Up Spray Gun like the Binks Model #115 with siphon cup is useful. The spray gun can also be gravity fed.
- High pressure (75psi) and flow(1 CFM) air source – A compressor needs to be a tank-type, to provide adequate CFM
- Variable Speed, Heavy Duty Polisher/Buffer - at least 2500 – 3500 rpm capability is recommended
- Buffer Pad - purchase the pad first and then match it up to the appropriate buffer.
- Clean wiping cloths or paper towels
- Vapor/Particulate Respirator - NIOSH/MSHA TC-23C.



Airbrush Set



Industrial Heat Gun



Grinder & Drill



Heavy Duty Buffer

## SAFETY PRECAUTIONS

Spa repairs require personal contact with a variety of components, each having its own unique characteristics. When handling these materials, read and follow the safe handling procedures on the labels and the applicable MSDS. During grinding, drilling, sanding, etc., eye and hand protection is required. Do not breathe vapors or mists. Individuals with a history of lung or breathing problems should not use or be exposed to this product. Keep away from heat, sparks and flame. Vapors may cause a flash fire. Close containers after each use. Dispose of properly.

Wear a vapor/particulate respirator (NIOSH/MSHA TC-23C) while mixing hardener with coatings, during application (especially when overall refinishing) and until all vapors and mists are exhausted. Individuals with a history of lung or breathing problems or prior reaction to isocyanate should not use or be exposed to this product. Do not permit anyone without protection in the painting area. Follow the respirator manufacturer's directions for respirator use.

## PROCEDURE

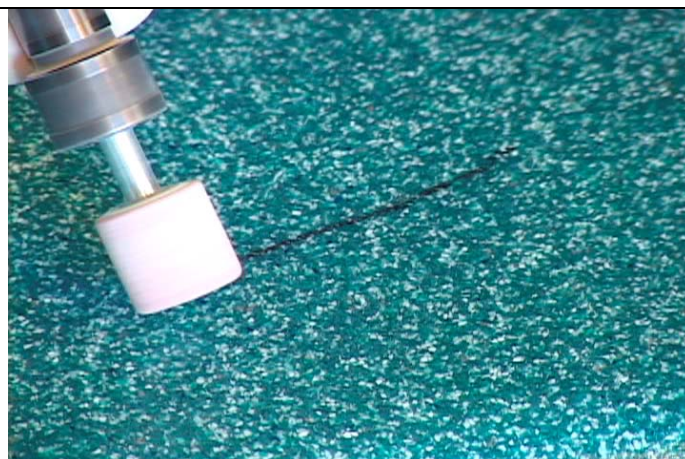
<p>Before a repair can be started, the spa must be drained of water, and be dry and clean. The steps used to repair a surface crack are:</p>	<p>Spa surfaces clean and dry</p>
<ol style="list-style-type: none"> <li>1) Crack preparation (grinding and sanding)</li> <li>2) Filling the crack</li> <li>3) Applying the spa color coating</li> <li>4) Applying a protective clear topcoat</li> </ol>	
<p>It is recommended that the surface be allowed to fully cure for at least <b>7 days</b> before water is re-introduced to the spa. Place the spa cover in a position to allow air ventilation during the drying process. Cool temperatures will lengthen the cure time. If condensation occurs on the repair coatings during curing, it will affect the quality and time to cure.</p>	<p>7 days of drying before adding water</p>
<p>Before starting a spa repair, the jets and other areas that should be protected from overspray should be masked.</p>	
<p><b><u>Preparing the crack and filling</u></b></p>	
<p>Spas are produced using a plastic (normally an acrylic) sheet that is reinforced from the back using a fiberglass composite or other strong plastic.</p>	
<p>Preparation and filling of the crack are the same regardless of the color or texture of the spa. As a general rule, we recommend using only the acrylic filler on spas. This provides a very hard, non-porous surface that resists the spa environment.</p>	
<p>It is a two-part resin.</p>	

A poly-filler is available for jobs where the repair will not be constantly exposed to water & chemicals. It uses a cream hardener, and is easier to grind and sand.



The steps for preparing the crack for filling are:

1) Terminate the crack by routing it out from one end to the other using the rotary grinder.



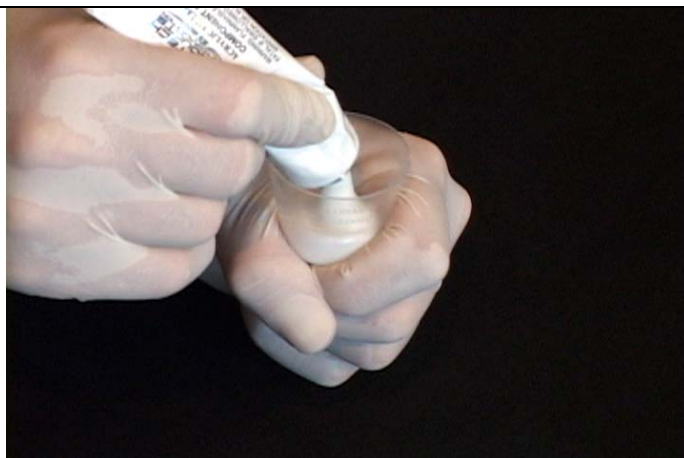
2) Remove all loose fragments from the edge by sanding with 100 grit wet or dry sandpaper. Control the sanding to the immediate area of the defect to minimize the size of the repair.



3) Clean the area with a soft cloth or paper towel slightly dampened with isopropyl (rubbing) alcohol.

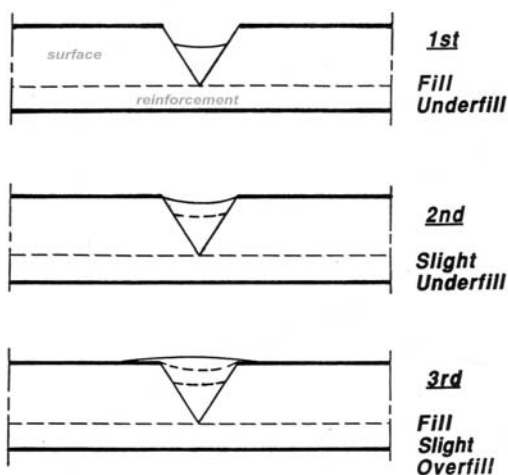
4) Chemical components should be at room temperature.

5) Prepare the acrylic filler by dispensing the desired amount of component "A" into a plastic graduated mixing cup. Add 30 drops of component "B" per each ½ ounce of "A". Mix thoroughly with the wooden stirrer. Use immediately, since it will harden within 15 minutes.



30 drops of catalyst ("B") to ½ oz. filler ("A")

6) Fill the crack with the acrylic resin to slightly below the spa surface. Use gentle continuous heat with the heat gun around the edge of the crack, without pointing the gun directly on the crack. This will accelerate the curing process. Allow to cure for 5 to 10 minutes. Now, immediately, fill again. Filling should still be below the spa surface.



7) Grind any excess white acrylic filler from around the crack to avoid bleed-through in the final repair. Repeat the curing process.

Use 36 to 50 grit sanding discs.



8) Immediately, fill again (3<sup>rd</sup> time) so that the fill is slightly above the spa surface. Sand with 100 grit wet or dry sandpaper if more than 15 minutes expire between applications. The filler should be soft to the fingernail. This promotes adhesion of the separate coatings. Using too much filler in a single coat can result in excessive heat, which may result in air bubble formation.

9) After final filling and curing, grind the filled area with the

grinder. Use a slow speed to prevent excessive heat buildup. Continue until the surface is flat and even with the spa surface.

10) Sand slightly with 100 grit wet or dry sandpaper.

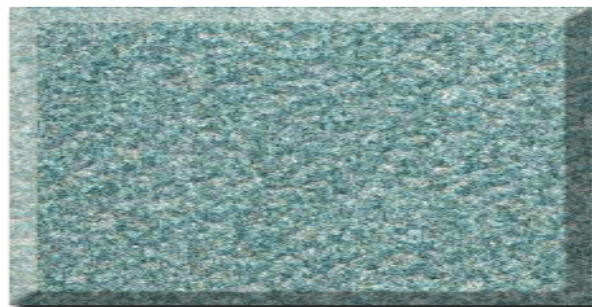
11) Now you may wipe the surface with a very thin coat of a new batch of the acrylic filler to fill in imperfections such as pin holes or grinder marks. Do not use anything other than the acrylic filler for this purpose.

12) Allow a few minutes for curing, and then begin sanding with a progression from 220 to 320 to 400 grit wet sandpaper. Now the surface is ready for application of the spa color matching system.



**Repairing Granite Surfaces**  
 Granite surfaces are generally the easiest to repair.

An acrylic resin, with colored particles like the sheet, is used to match the appearance and texture of the surface. These particles are acquired from the sheet manufacturer. Multiple particle size ingredients can be ordered from Multi-Tech to better match the particles in the spa, which have been deformed in the manufacturing process.



Aristech Teal

1) Starting from a crack filled with the white acrylic resin, grind a depression that is about 1/16" below the spa surface.

This void will be filled with the colored filler. In fact, the colored filler can be used for the entire filling process for small cracks, etc.



2) Using the mixing cups, combine component "A" with component "B" in the ratio of 30 drops of "B" to each ½ oz. of "A". Mix well.



3) Apply this material in the depression and fill so that it is above the spa surface.



4) Allow it to cure for about ½ hour. The heat gun can be used to accelerate. Direct heat to the immediate surrounding area, and not directly on the filler.

5) Grind the area smooth with the drill and disc pad. Use a 50 to 36 grit disc.



6) Sand the surface to the desired smoothness using a progression from 100 to 320 grit sandpaper.



Now you are ready to apply the protective, clear topcoat. We recommend using only the K2000 product since it withstands the effects of spa water and chemicals. The required components include a hardener, thinner/reducer, and the topcoat.

The MMA topcoat can be used in areas that will not be continuously exposed to water. See the procedure below on solid colors for the procedure for the MMA topcoat.



1) Pour an ample amount of K2000 topcoat into a mixing cup or airbrush bottle. Add the hardener in the ratio of 1 part hardener to 3 parts topcoat.

1 part hardener to 3 parts topcoat



If desired, a texture enhancer can be added. It is added in the ratio of 1 part enhancer to 32 parts topcoat.

2) Apply this mixture to the repaired area by dabbing with a small paintbrush.



## Finishing a smooth, solid color, pearlescent or metal spa surface crack

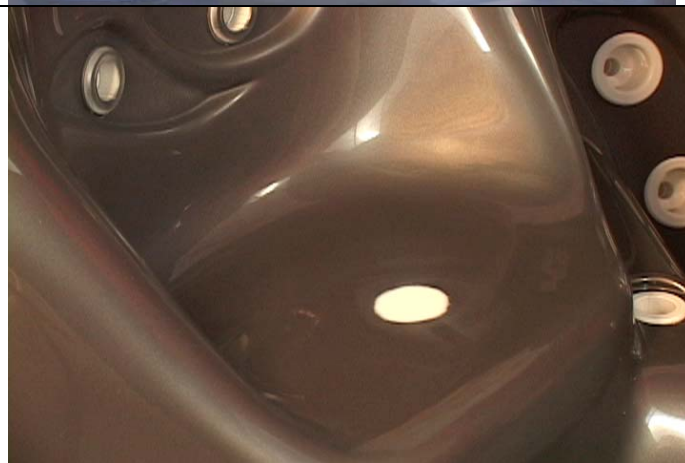
The materials needed to complete this repair include a primer, a basecoat, and the K2000 topcoat system. Three thinners are available for the primer and basecoat based on ambient temperature. One is for low temperatures of less than 70°F, one for temperatures from 70° to 90°, and one for high temperatures above 90°F. These thinners are needed to adjust spray viscosity. The MMA finishing solvent is required to allow “feathering” to minimize the paint “halo” effect.



The K2000 topcoat, hardener, and thinner/reducer are also required. The thinner/reducer also serves the purpose of a finishing solvent for the topcoat. A hand glaze cleaner minimizes static and film from the surface. A primer coat is only used for pearlescent colors. We will explain this process.

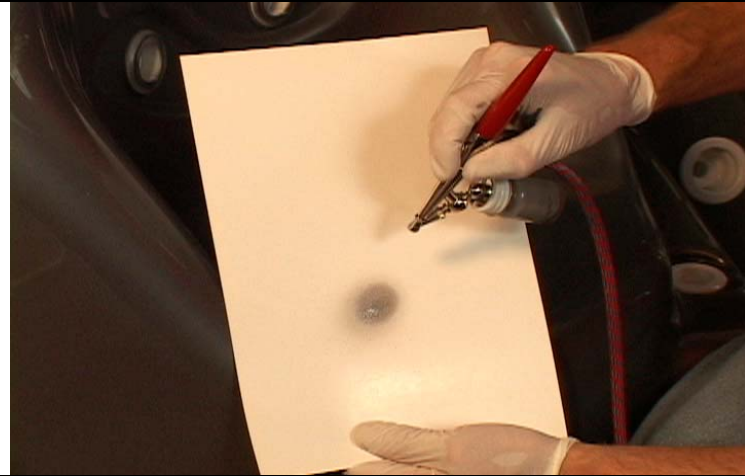


1) Starting from a smooth, filled crack, the first step is to apply the primer coat



2) Start by pouring an ample amount of the primer coat into a mixing cup. Add the MMA thinner (appropriate temperature) to the cup in equal parts of basecoat and thinner. Mix well.

3) Perform a test spray on paper or other substitute. Additional thinning is possible if required.



4) Now prepare the basecoat that matches the color of the spa surface in the same procedure as the primer. Perform a test spray.



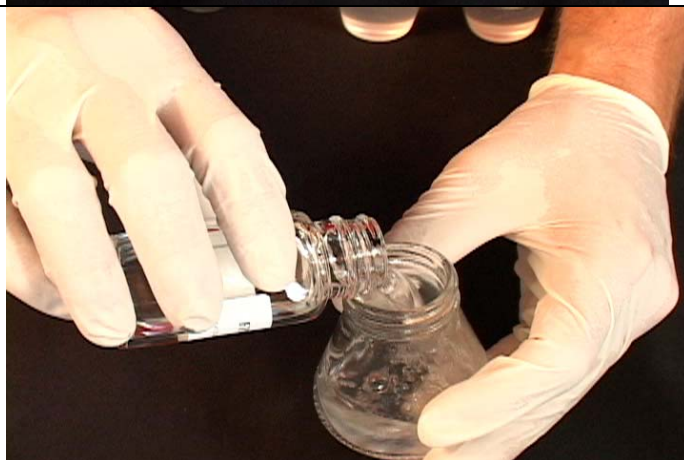
4) Finishing solvents are used with each coating to promote good wetting and gloss. The MMA finishing solvent is used for the primer and basecoat. An ample amount should be poured into a separate airbrush bottle.



5) The topcoat should be prepared prior to starting the process to avoid excessive time between coats. Pour the desired amount of the K2000 topcoat into a mixing cup or airbrush bottle. Add the K2000 hardener in the ratio of 1 part hardener to 3 parts topcoat. Mix thoroughly. Now add some of the K2000 thinner/reducer in an amount equal to about 10% of the topcoat volume. Mix again. Test spray. Additional thinner/reducer can be added to increase thinning, if required. Add more in 10% increments to avoid over dilution.



6) The K2000 thinner/reducer is used as the finishing solvent for the protective, clear topcoat. Pour an ample amount in a separate airbrush bottle.



7) Prepare an area around the repair that is significantly larger than the repair by cleaning with a clean soft cloth moistened with isopropyl alcohol.

8) With a clean cloth, now apply a generous amount of hand glaze to the cleaned surface. With another clean cloth, work the hand glaze into the surface achieving a nice clean and glossy surface. Use a tack cloth to remove any dust or foreign particles.



7) Begin spraying the primer coat by holding the air brush 2 to 3 inches from the surface, with the air pressure set at 45 to 55psi. Feather the paint from the center to the outer edge. Typically, two passes are required for complete coverage. A dry film thickness of 0.002" is generally adequate. Thicker coats will greatly increase drying time.



8) Immediately upon completion, spray some of the Quick Glaze finishing solvent on the outer edge of the sprayed area. The finishing solvent can be used at any convenient time to promote a good final appearance.



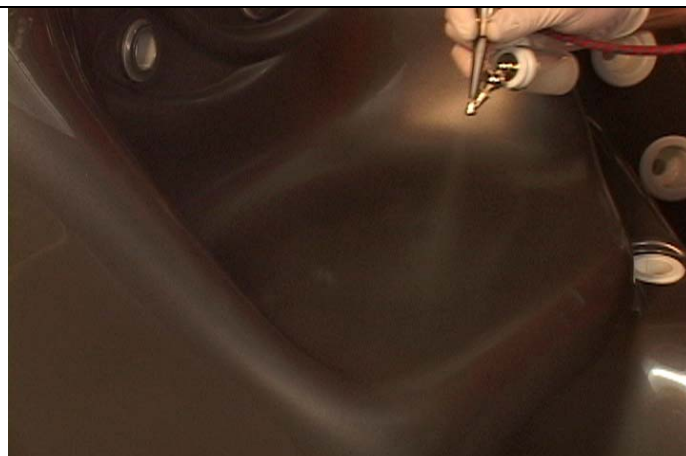
9) Begin spraying the pearl basecoat by holding the air brush 2 to 3 inches from the surface. Feather the pearl basecoat from the center, covering the primer coat to the outer edge again. Two passes are generally required. Use finishing solvent again, particularly on the outside edges.



10) Now you are ready for applying the clear topcoat, supplied as a matte finish for metals or a gloss finish for pearl-like colors. It should be applied no later than 30 minutes after completing the basecoat. Apply it using the same techniques, and use the K2000 thinner/reducer for finishing. Be sure to cover the entire coated area, and feather the product to create a smooth transition.

A good tip is that adding a little basecoat to the clear topcoat can help achieve a better pearl effect.

The topcoat should be tack-free in ½ hour.



The polyurethane clear topcoat can be buffed and polished provided at least 3 hours are allowed for curing, and the buffing stays within the sprayed areas to avoid line formation.



### Procedure for using the MMA Topcoat

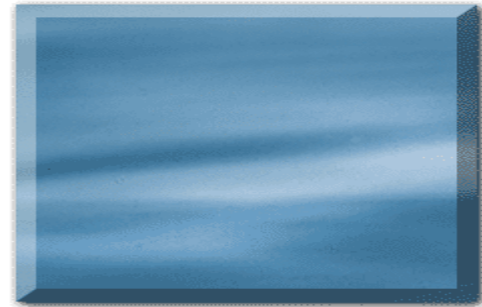
- 1)) Dilute the MMA clearcoat with the monomer thinner using 2.5 parts thinner to 1 part clear topcoat. You can test spray to confirm that the viscosity produces a fine spray.
- 2) Spray several thin coats using procedures similar to above. Stay within the sanded area, but allow each coat to dry. Heat can be used to accelerate drying.
- 3) Allow the final coat to dry for 15 minutes before attempting to sand, buff, and polish. It can be wet sanded with 400 and/or 600 grit sandpaper to improve gloss and smoothness. Frequently, you can skip 400 and go directly to 600 grit. Buff at 2500rpm with rubbing compound.



The airbrush should be disassembled and cleaned after each use.

**Finishing a multi- colored, random- patterned marble or swirl spa surface crack**

Marble colors are made using a combination of two or three colors that are poorly mixed creating a random pattern in the spa surface. Forming the flat sheet into the spa shape will cause additional variations in the appearance. Repair of these surfaces are the most challenging of any spa repair, and typically require a well-trained professional to duplicate these colors and patterns. Visit our website for additional techniques and training assistance.

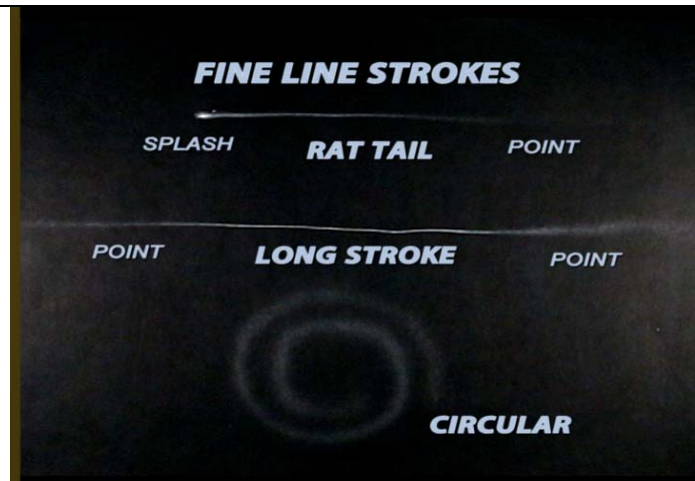


Aristech Navy

The process for repairing a marble pattern has been simplified by defining several different airbrush strokes used to duplicate the appearance.

These special strokes are called the rat tail, long stroke, and circular stroke.

The basic stroke is produced by adjusting the airbrush tip to yield a fine line when held very close (1/8”) to the surface. The rat tail stroke starts with a splash and ends as a point. The long stroke starts and ends as a point. Increasing the distance between the tip and surface, and opening the tip to produce a wider pattern, creates a fading spray pattern. You use a slight fade adjustment to create the circular stroke.



A useful deviation from these basic strokes is a larger fade adjustment. Here is what the rat tail and long strokes look like with a fade adjustment.



Here is what the circular stroke with a fade adjustment looks like.



Finally, a fog coat is produced with an open tip and a gap of 10 to 12 inches between the airbrush and surface. You use the long stroke for this effect.




The materials required for this procedure are:

- MMA basecoats in each of the primary spa colors
- Appropriate MMA thinner
- MMA Finishing Solvent
- K2000 Topcoat, Hardener, and thinner/reducer
- Light & Dark Toners
- Lacquer Thinner
- Rubbing alcohol

Jets and other areas that need protection from overspray should be masked off.

Starting from a filled and sanded defect, you are ready to start the procedure.



<p>1) Prepare the basecoat(s) in each color and the K2000 clear topcoat as described in the pearl procedure. Intermediate colors and tones can be created by combinations of the basecoats.</p>	
<p>2) Check the color match of these basecoats by dabbing some on the spa surface near its color. Let it dry. Adjust colors as needed. Refer to our website for more information on this subject. The dried paint dabs can be removed using lacquer thinner.</p>	
<p>3) Clean an area around the repair with isopropyl alcohol.</p> <p>The steps to create the marble pattern are:</p> <ul style="list-style-type: none"><li>a) Create a body</li><li>b) Add lines to the circumference of the body</li><li>c) Fade the edge of the body using feathering</li><li>d) Connect the lines through the body</li><li>e) Darken</li><li>f) Blend</li></ul>	
<p>4) Use a test spray to confirm the ability to duplicate the brush strokes, and to verify the quality of the spray.</p>	
<p>5) Start spraying the basecoat (lightest color first) with the airbrush as you would spray over the filled area on a pearl or solid pattern. The second layer should create a gloss area over the filled area covering any minor pinholes and sanding marks. This will create the "body".</p> <p>The heat gun should not be used to accelerate drying, but the airbrush can be used.</p>	

The airbrush should include a desiccant filter to avoid introducing moisture.



6) Liberally use the Quick Glaze finishing solvent to assist the wetting of the coating and eliminate orange peel.

7) Now use the rat tail stroke to create lines from the body center to the right edge, and then from the center to the left edge.



8) Now, using a fade adjustment with the rat tail stroke, feather the paint from the center to the outside region of the repair. Spray enough so the outline of the body disappears.



<p>9) The darker color is now applied. Look for a dominating linear line (streak) running through the repair area. This becomes the reference line. Often, it is the center of the body. Now, using the dark color, and the long stroke, spray a similar line connecting the end points through the repair. Following the reference line pattern, continue to create lines from the reference line, which are consistent with the overall orientation of the pattern. Work from the reference line out to the right edge. Repeat this process on the left side. This should be continued until a satisfactory duplication of the marble pattern is achieved. The finishing solvent should be used to improve lay down and control orange peel and to generate a glossy surface.</p>	
<p>10) Sometimes the light and dark toners are needed to recreate all of the existing tones and cross patterns. This is accomplished while maintaining consistency in the overall look of the spa surface pattern.</p>	
<p>11) A final layer of the initial light color is now sprayed using a light to heavy fog spray to soften the lines, and blend the various color tones.</p>	
<p>12) Finally, apply the K2000 protective topcoat as described, previously. Try to complete this entire process within 30 to 45 minutes.</p>	
<p>The repair is finished, so allow it to dry before putting into use.</p>	

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TOLL FREE 800-218-2066

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