MULTI-TECH PRODUCTS
EXCELLENCE IN SURFACE REPAIR PRODUCTS

Spa Cosmetic Repair for Granite, Pearl, Metal or Marble Colors

DESCRIPTION

The ***QUICK GLAZE*** Repair System has been formulated for repairing marble and solid color spas. It is commonly used by professional repair people, since it can provide a high-performance repair, and can be completed quickly. However, a clean environment is required to avoid airborne contaminants from affecting the appearance of the repair. If necessary, the finished repair can be buffed and polished if it is allowed to fully cure, which takes a few hours.

Multi-Tech Products also provides a "MMA" system for repair. It can be buffed sooner to provide maximum surface gloss and smoothness. Even though it is designed primarily for factory use, it must be fully cured before it is buffed. However, it is only recommended for repairs that do not extend into the wet areas of the spa.

Please visit us at **www.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 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 repair areas 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, polyurethane, clear topcoat. 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
- A special granite filler for granite spas
- Primer coat (used only with pearl/metal colors)

- Hardener for Primer coat and Base coat
- Base coat(s) matched to the spa color
- Top-coat, thinner/reducer, and hardener
- Toners for adjusting color for a better match or used as an accent color for marble
- Quick Glaze Finishing Solvent for Primer coat and Base coat
- Hand glaze, a non-silicone/non-wax surface cleaner
- 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 Products. 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 3-inch diameter 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 spray cups for mixing and utilizing different colors may be necessary.
- For large (> 1 sqft.) repair areas, a Touch Up Spray Gun with siphon cup is useful. The spray gun can also be gravity fed.
- High pressure (45 to 55 psi) and airflow (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 (industrial quality) - purchase the pad first and then match it up to the appropriate buffer.
- Rubbing Compound or Buffing Bar.
- Clean wiping cloths or white 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.

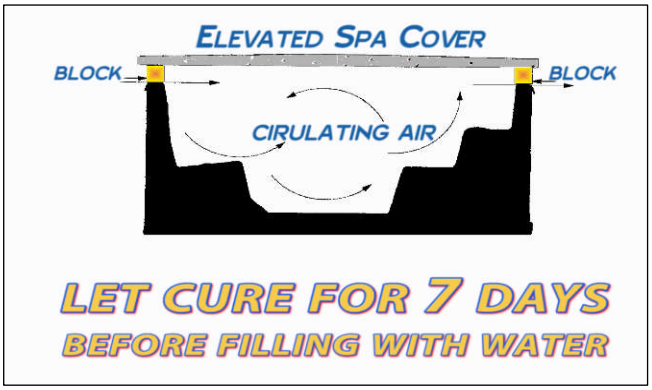
PROCEDURE

Before a repair can begin, the spa must be drained of water, and be dry and clean. Before beginning a spa repair, the jets and other areas that should be protected from overspray and should be masked. The steps used to repair a surface crack are (Spa surfaces should be clean and dry):

1) Crack Preparation (grinding and sanding)
2) Filling the crack
3) Applying the spa color coating
4) Applying a protective clear topcoat

It is recommended that the surface be completely dry for at least 7 days before water is reintroduced into the spa. Place the spa cover in a position that allows 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 cure quality and time.



Crack Preparation and Filling

Spas are produced using a plastic (normally an acrylic) sheet that is reinforced from the back using a fiberglass composite or other strong plastic. 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's environment.

Please keep in mind that this is a two-part resin.

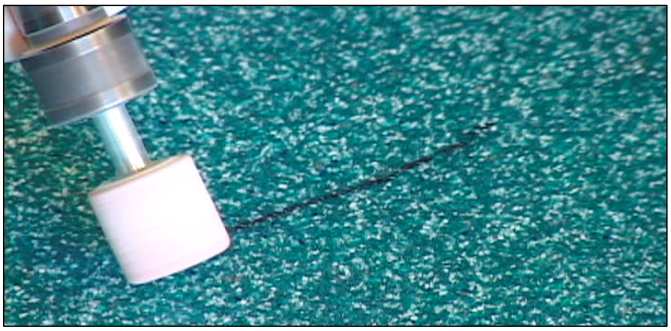
Above-the-Waterline Repairs

Multi-Tech's Poly-Filler is available for jobs where the repair will not be constantly exposed to water, moisture or chemicals. It uses a cream hardener and is easier to grind and sand.

The optimum area for the use of Multi-Tech's Poly-Filler on a spa's surface would be on the outer lip where the cover does not retain moisture.

The steps to prepare 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 any loose fragments from the edge by sanding with wet or dry 100 grit sandpaper. Control the sanding to the immediate area of the defect to minimize the size of the repair.

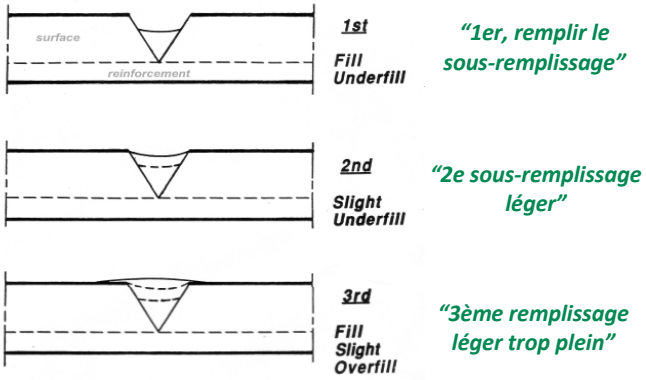
3) Clean the area with a soft cloth or paper towel lightly moistened with isopropyl (rubbing) alcohol.

4) The chemical components must be kept 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".

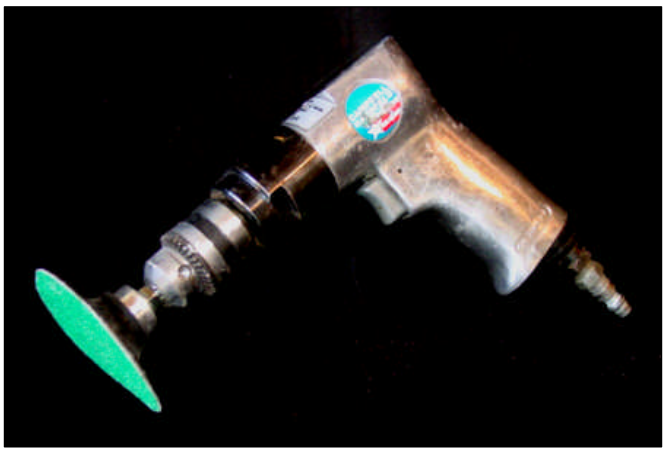
   Mix thoroughly with the wooden stirrer. Use immediately, since it will harden within 15 minutes.

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.

8) The use of 36 - 50 grit sanding disc(s) is recommended.



9) Immediately, fill again (3rd 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 mostly cured but still soft to the fingernail at the tack coat. This promotes adhesion of the separate applications. Using too much filler in a single coat can result in excessive heat, which may result in air bubble formation.

10) This stage filling process is the same for the acrylic filler and granite paste repair systems to avoid air pockets. The green granite surface is used for demonstration purposes although it does not represent the marble effect.

    After final filling and curing, grind the filled area with the grinder. Use a slow speed to prevent excessive heat buildup and melting. Continue until the surface is flat and even with the spa surface.

11) Dry sand lightly with 100 grit sandpaper.

12) Now you can wipe down the surface with a very thin coat of a fresh batch of the acrylic filler to fill in any imperfections such as pinholes or grinder marks. Do not use anything other than acrylic sealant for this purpose.

13) Allow a few minutes for curing, then begin wet sanding with a progression from 220 to 320 to 400 wet / dry sandpaper. The surface is now ready for application of the Spa Color Matching System for marbled, solid, and pearlescent colored acrylic effects.

Repairing Granite Surfaces Granite

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. Multiple particle ingredients can be ordered from Multi-Tech Products to better match the particle size in the spa, which have been deformed during the manufacturing process.

1) Starting from a crack filled with white acrylic resin filled in stages like the filling procedure above, grind a depression that is approximately 1/16 of an inch 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, or when acrylic filler is not available.

2) Using the mixing cups, combine component “A” with component “B” in a ratio of 30 drops of component “B” for every ½ ounce of component “A”.

   Make sure to mix well.

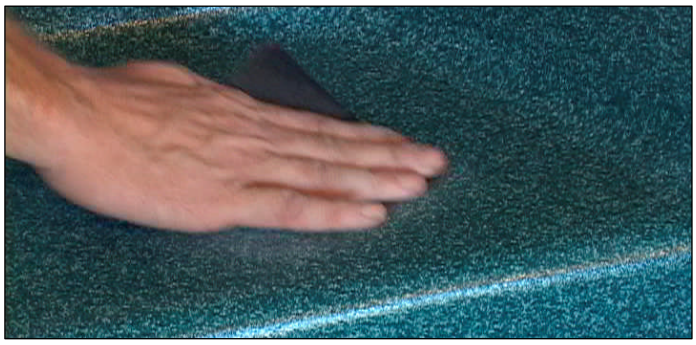
3) Apply this material in the depression and fill it so that it is above the spa surface.

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

5) Grind the area smooth with the drill and disc pad.

   Recommend the use of a 50 - 36 grain disc.

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



TOPCOAT

You are now ready to apply the protective, clear coat. We recommend only using Multi-Tech's K2000 product as it is resistant to the effects of spa water and chemicals. The required components include hardener, thinner/reducer and topcoat.

1) Pour an ample amount of K2000 topcoat into a mixing cup or airbrush bottle.

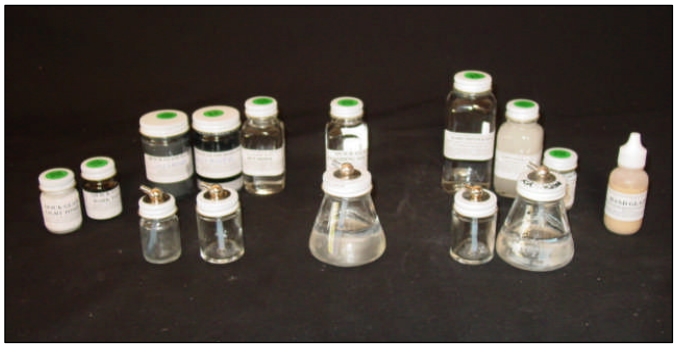
   Add the hardener in a ratio of One (1) part hardener to Three (3) parts topcoat.

2) If desired, a texture enhancer can be added. It is added in the ratio of One (1) part activator to Thirty-Two (32) parts topcoat.

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

   Important to allow up to Seven (7) days before filling the spa with water. Keep the surface dry to avoid damaging the repaired surface until it is ready to be filled. (See beginning of procedures).

FINISHING A SMOOTH, SOLID COLOR, PEARLESCENT OR METALLIC SPA SURFACE DEFECT



The materials needed to complete this repair include a primer coat, a base coat, and the K2000 topcoat. The ***QUICK GLAZE*** hardener is substituted with the K2000 hardener for the primer coat and base coats. The Quick Glaze Retarder is used to thin these color base coats in all temperature environments in replace of the ***QUICK GLAZE*** Reducers. The ***QUICK GLAZE*** Finishing Solvent is required to allow "feathering" to minimize the paint "halo" effect on the color base coats as well. The K2000 topcoat, hardener and thinner/reducer are required for protection and finishing. A hand glaze cleaner minimizes static and film from the surface. The primer color coat is only used for pearlescent colors. Explanation of this process will follow below.

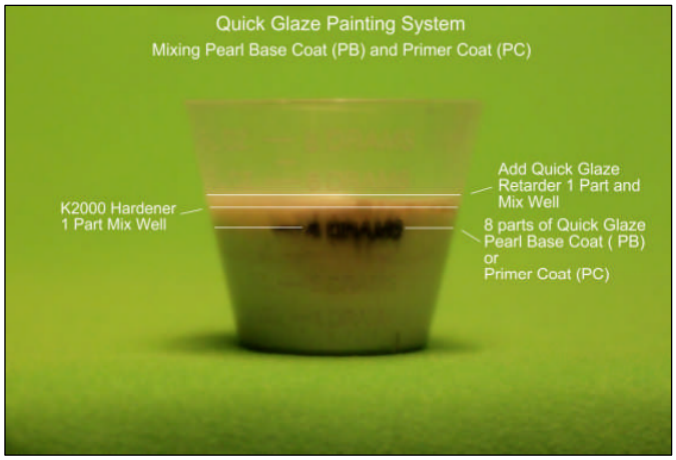
PEARL COLORS

1) Starting with a smooth, filled crack, the first step is to apply the primer coat. It is recommended to mix all product required at the start of the spraying process to speed up the procedure. When the application begins, the procedure requires that each coating layer be sprayed in rapid succession. Keep in mind that there are time constraints to achieve optimal results.

2) <u>PRIMER COAT</u>
   A. Pour an ample amount of the primer coat into a mixing cup. ½ ounce is a good place to start.
   B. Add the K2000 hardener to the primer coat at the ratio of one (1) part hardener for eight (8) parts primer. Mix well.
   C. Thin the mixture by adding the ***QUICK GLAZE*** retarder in the same ratio of 1 part retarder to 8 parts Primer Coat / hardener mixture. Mix again.

NOTE: *When using K2000 Topcoat, its hardener is replaced in Quick Glaze products for the primer and base coats.*

3) <u>BASE COAT</u>
   A. Pour an ample amount of the base coat into a mixing cup. ½ ounce is a good place to start.
   B. Add the K2000 hardener to the cup in the ratio of one (1) part hardener to eight (8) parts base coat. Mix well.
   C. Dilute the mixture with the ***QUICK GLAZE*** retarder in the same ratio of 1 part retarder to 8 parts base / hardener mixture. Mix again.



Note: *Primer and Base Coat have the same mixing ratios.*
Tip: *During the mixing step, we found that the Dram scale on the plastic graduated mixing cup was easy to read and understand.*

4) Perform a spray test on paper or another substitute. Additional thinner with QUICK GLAZE retarder may be required. If so, add an additional 25% more of QUICK GLAZE retarder to achieve a smoother spray out with the airbrush.

   Note: This must be done in the primer and base coat spray steps.

5) Finishing solvents are used with each coating to promote good wet out and gloss in the spraying process.

   The ***QUICK GLAZE*** Finishing Solvent is used for the primer and basecoat.

   An ample amount should be poured into a separate, larger airbrush bottle.

6) <u>TOPCOAT</u>

A. The topcoat should be prepared before starting the process to avoid excessive time between coats. Pour desired amount of K2000 topcoat into mixing cup or airbrush bottle (Three (3) parts topcoat).

B. Add the K2000 hardener in a ratio of one (1) part hardener to three (3) parts topcoat. Mix well.

C. Add some of K2000 thinner/ reducer in an amount equal to approximately 10% of the volume of the topcoat mixture. Mix again.

D. Test Spray. Additional thinner / reducer can be added to increase thinning, if necessary. Add more in 10% increments to avoid over-dilution.

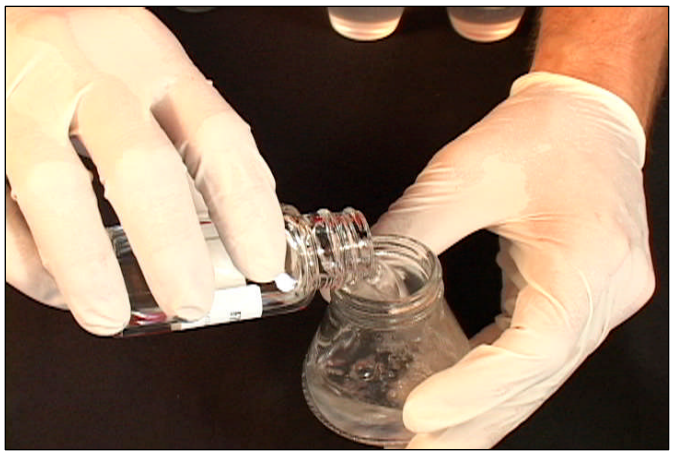
Tip: *During the mixing step, we found that the Dram scale on the plastic graduated mixing cup was easy to read and understand.*

Note: *For better pearlescent color blending effect, add a few drops of Base Coat (PB) to K2000 TopCoat for better a match with the surface coated.*

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

Note: K2000 Thinner / Reducer is only used with the topcoat and not the basecoat or primer.

Note: K2000 Topcoat should be applied no later than 30 minutes after completing the basecoat spraying, immediately followed by topcoat solvent.



8) Prepare an area around the repair that is significantly larger than the repair by cleaning with a soft, clean cloth dampened with isopropyl alcohol. This removes any oils or silicone that may be on the surface.

9) With a clean cloth, apply a generous amount of hand glaze to the cleaned surface. Apply the hand glaze only to the area surrounding the acrylic filled area. Avoid placing the hand glaze over the acrylic filled area. Feather it into the sanded area.

With another clean cloth, work the hand glaze into the surface to achieve a nice clean and glossy surface. It may take several clean cloths to achieve a film-free finish.

Make sure to extend the cleaned area much larger than is expected to spray. For example, if the repair is in the center of the lip, clean the entire length of the lip in both directions. For seat areas, clean the entire seat, stopping at the next appropriate radius beyond the anticipated spray area.

Important step: Use a tack cloth to remove any dust or foreign particles as this debris will show up in your repair area.

Note: *When using a compressor; Before coating application, clear the compressor tank of water and moisture. Use an inline desiccant filter at the hose to filter out any residual moisture, this will yield dry air to the coated surface through the pipe.*

10) Begin spraying the primer coat by holding the air brush approximately 2 to 3 inches from the surface. With the air pressure set between 45 and 55 psi, feather the coating from the center to the outer edge. When canned air is used, the psi rating is 7 to 9 PSI. The goal is to achieve a shine in the center of the sprayed area covering the acrylic filler. The outer edge will feather out with a diminishing effect.

Note: Typically, two passes are required for full coverage. A dry film thickness of 0.002 "is generally adequate. Thinner coats will greatly increase the drying time.

Remember that when you start this coating process, there is a time constraint.

11) Immediately upon completion, to wet out the dry spray, apply a moderate to heavy amount of ***QUICK GLAZE*** Finishing Solvent to the outside edge of the spray area. The finishing solvent can be used at any convenient time to promote a good final gloss appearance and to wet out the coating.

Note: *Too much finishing solvent applied to the point of flooding the coating, will distort the spray job. For best results, hold the air brush 12 to 16 inches from the surface with the brush fluid setting at air to about ¾ open.*

12) Begin spraying the pearl base coat by holding the air brush 2 to 3 inches from the surface. Feather the pearl base coat from the center, again covering the primer coat to the outer edge. Two passes are usually required.

Use the ***QUICK GLAZE*** Finishing Solvent again, especially on the outside edges for wet smooth out.

13) With the base coat(s) applied evenly and smooth, you are now ready to apply 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 base coat.

The spray application should be the same techniques as color coats. Use the K2000 Thinner / Reducer for the finishing solvent. Make sure to cover the entire coated area to achieve a good even gloss with the clear coat.

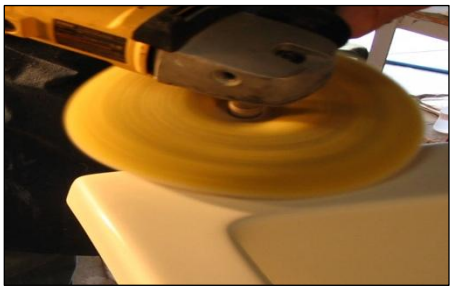
Feather the clear topcoat to create a smooth transition around the outside edge into the final gloss finish. Immediately spray the Thinner / Reducer for the Finishing Solvent liberally to achieve a smooth gloss and remove overspray. Be sure to wet the dry areas to match the original finishing gloss.

TIP *- Adding a little Pearl Base coat (PB) to the clear topcoat can help achieve a better pearl effect.*

The topcoat should be tack-free within ½ hour.

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

   Please reference the Buffing & Polishing training video available upon request from Multi-Tech Products.

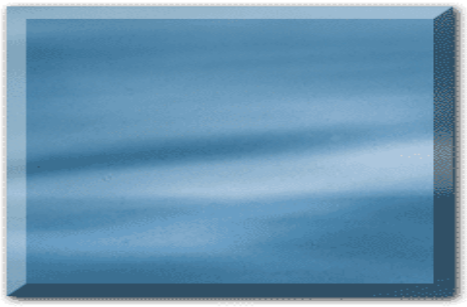


2) Allow a minimum of 7 days before filling the spa with water, keep the surface dry during the drying period. (See beginning of procedures.)

   Note: *When elevating the spa cover for optimal cure. Be sure to use foam blocks to avoid damaging the spa surface.*

   The airbrush should be disassembled and cleaned after each use.

FINISHING A MULTI-COLORED, RANDOM PATTERNED MARBLE OR SWIRL SPA SURFACE DEFECT



Marble colored sheets (spas) are manufactured by using a combination of two or three colors of liquid resins that are poorly mixed, creating a random pattern on the surface of the sheet.

Forming the flat sheet into the shape of the spa will cause additional variations in how it is stretched in a mold.

Repairing these surfaces is the most difficult of all spa repairs, but these random, multi-color patterns can be closely reproduced by well-trained repair professionals using two or three base colors and special air brush techniques. Visit our website for additional techniques and training assistance.

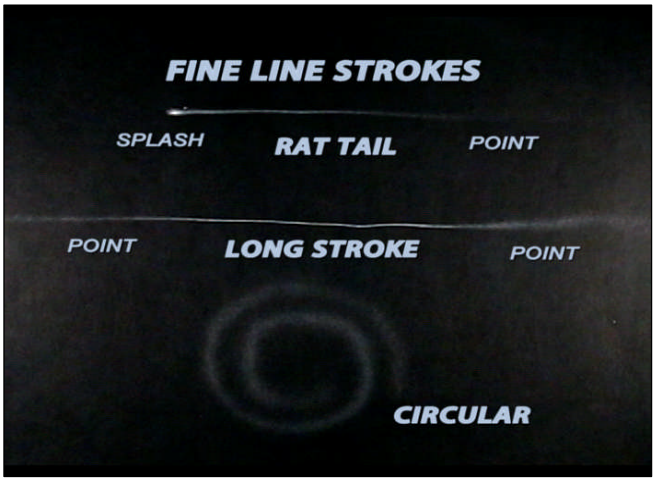
The following airbrush techniques have been developed to recreate these effects. We recommend that you practice the defined airbrush strokes on a separate sheet of paper to perfect the technique.

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

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

Airbrush Stroke Variations

Basic stroke is produced by adjusting the airbrush tip to yield a fine line when held very close (1/8 inch) to the surface. The rat tail stroke begins with a splash and ends with a point. The long stroke begins and ends as a point.



Increasing the distance between the tip and the surface, and opening the tip to produce a wider pattern, creates a spray pattern that fades. You use a slight fade adjustment to create the circular stroke.

Note: *The coating liquid or color being sprayed may need more reduction to create finer lines and smooth fade strokes. A 25-50% product reduction may be required.*

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

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

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

KIT MATERIALS REQUIRED FOR THIS PROCEDURE ARE:

- Quick Glaze Basecoats in each of the spa's primary colors
- Quick Glaze Finishing Solvent
- K2000 Topcoat
- Hand Glaze
- Light and Dark Toners
- Quick Glaze Retarder
- K2000 Hardener
- K2000 Thinner / Reducer

MATERIALS NOT INCLUDED IN THE KIT:

- Lacquer thinner for clean up
- Isopropyl alcohol 50-90%
- Tack cloth
- Five (5) separate airbrush bottles are needed.

Jets and other areas requiring protection from the spray should be protected with high quality tape.

From a repaired area filled with finished acrylic, you are now ready to begin the procedure.

1) Prepare the base coat(s) in each color and the K2000 Clear Topcoat as described in the Pearl procedure. Intermediate colors and tones can be created by combining base coats with light and dark toners. Toners can also be used alone as base coats to achieve color effects and blends.

Note: *It is recommended that you mix all paints now as you will need them in quick succession as you go through the repair process.*

2) Check the color match of these base coats by dabbing them on the spa surface near its color. Let it dry. Adjust the colors as needed. Refer to our website for more information on this. Dried coating dabs can be removed using lacquer thinner.

See our spa repair video for a more detailed demonstration of this.

3) Clean an area around the repair with isopropyl alcohol, apply and wipe off the hand glaze as instructed in the pearl section.

The steps to create the marble pattern are:

a) Create a body to cover the filled area
b) Add lines around the body circumference
c) Blur the edge of the body using feathering
d) Connect the lines through the body
e) Darken
f) Blend

Note: *before application, be sure to use a tack cloth to remove any dust.*

4) Use a test spray to confirm the ability to duplicate the brush strokes, and to verify the quality of the spray.

Note: *Air pressure set to 45 – 55 psi.*

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".

   The heat gun should not be used to accelerate drying, but the airbrush can be used by blowing air onto the sprayed coating.

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

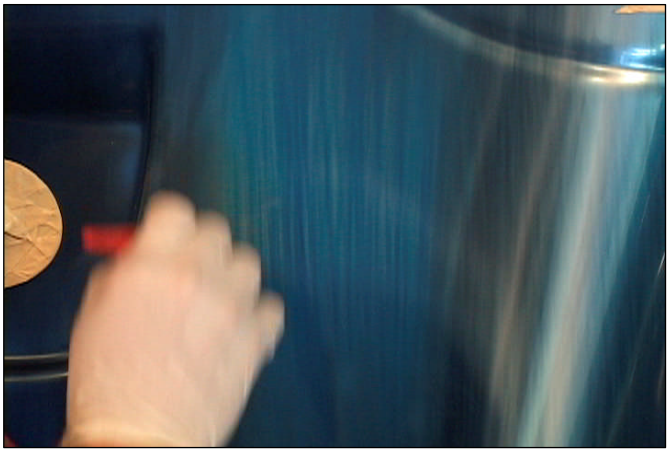
6) Liberally use the Quick Glaze finishing solvent to assist the wetting of the coating and eliminate orange peel between any of the color coats. Now use the rat tail stroke to create lines from the body center to the right edge, and then from the center to the left edge.

   Be sure to use the flow of the lines and follow the direction of the pattern with the creation of the lines.

7) Now, using a fade adjustment with the rat tail stroke, feather the coating from the center to the outside region of the repair.

   Spray enough so the outline of the body disappears.

8) 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.



9) 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.

10) 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. At any step of the color application, colors and effects can be repeated and or sprayed over.

11) Finally, apply the K2000 protective topcoat as described in the pearl section, utilizing the K2000 thinner/reducer finishing solvent to wet out the edges of the complete spray area.

"Try to complete this entire process within 30 to 45 minutes."

THE REPAIR IS FINISHED

Allow up to 7 days before filling spa with water, keep the surface dry during the curing period. (See beginning of procedures.)

Note: *Make sure to use foam blocks to prevent damage to the spa surface.*

DISCLAIMER

MULTI-TECH® PRODUCTS

EXCELLENCE IN SURFACE REPAIR PRODUCTS

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