Dura Stone®

Manufacturing and Fabrication Guidelines

ACS International, Inc.

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Chapter One: Introduction to Dura Stone®

Dura Stone combines the look of natural stone with the strength of man-made materials. Comprised of a filler base of 100% alumina tri-hydrate, Dura Stone offers excellent stain resistance and tooling characteristics. In addition, when exposed to high levels of heat, alumina tri-hydrates release water—making Dura Stone a fire resistant product.

Designed especially for counter top applications, Dura Stone is also well suited for many other uses such as wall panels, decorative trim, and tub and shower surrounds. For ease-of-use, Dura Stone can be cut and machined with conventional wood working tools. A variety of finishes can be obtained from matte to a luxurious high gloss using orbital sanders.

Dura Stone Standard Color Selection

Dura Stone is available in a variety of premium large chip and standard chip colors.

Color Name	Color Code**
Apple Wood*	DGLC875
Arctic Melange	DGLC700
Aurora	DGC402
Autumn*	DGLC925
Avalanche	DGLC855
Aztec Gold*	DG030
Basil	DG503
Black Forest*	DG320
Cape Cod	DGLC850
Cashmere	DG602
Cherry Wood	DGLC900
Clear Creek	DGLC865
Clove Pepper	DG800
Coral Reef	DGLC710
Corona	DGLC920
Country Side*	DG511
Dove Gray *	DG040
English Toffee	DGLC885
Egyptian Sand*	DG820
Everest	DGLC462
Flannel*	DGLC715
French Burgundy*	DG630
Frost	DG070
Gold Rush	DGLC890
Hearth	DGLC880
Hunter Green*	DG360
Kilamanjaro*	DGC463
London	DGLC805
Mahogany*	DGLC895
Magna Platinum*	DGLC483
Magna Rosetta*	DGLC485
Magna Sahara	DGLC486
Magna Savannah	DGLC489
Midnight*	DG010
Mocha*	DG810
Pepper Ivory*	DGLC466
Rocky Mountain*	DGLC609
Ruby*	DG310
Sahara	DG508
Sandstone	DGC415
Sea Shell	DGLC915
Sedona	DGLC860
Sheer Linen	DG607
Sierra Sky*	DG340
Silver Expressions	DGLC720
Spice	DG505
Spring Rain	DGLC870
Sterling*	DG020
White Silk	DG606
Winter White	DS010

*These Dura Stone colors contain no (or very little) pigment. They may be mixed with marble resin and used behind gel coat to achieve granite looking product. An advantage to casting Dura Stone in this method is that a fabricator does not have to worry about porosity, expensive vacuum mixers and other solid surface equipment. The disadvantage is that Dura Stone is designed as a solid surface product, and is intended to be sanded to expose cross sections of the chips in the product. Thus, achieving the appearance represented by sample squares or brochures.

**Please note that color numbers containing an "LC" are the premium, large chip selections.

Dura Stone Custom Colors

Custom colors are available by special order. Please contact ACS directly at 520-889-1933 or toll free 800-669-9214.

Chapter Two: Preparation

Mold Surfaces

The following materials work well as mold surfaces:

- Fiber glass
- Stainless steel
- Aluminum
- Laminate
- Tempered glass
- Cold rolled steel

Sanding the finished product after de-molding is recommended for counter top applications regardless of the mold surface used. Therefore, counter top molds may utilize a wide variety of textures since the surface appearance of the finished part will be determined by the type of finish applied during fabrication. See chapter seven for more detailed finishing information.

Resins

Most resin manufacturers are producing resins recommended for use with non-gel coated applications. After testing a variety of different resin types, the following conclusions have been reached regarding factors contributing to optimum results for Dura Stone. Remember that some resins require a post cure in order to achieve a hard stain resistant surface.

A few tips to remember when selecting a resin are:

1. **The resin should have good color consistency.** A clear resin is preferable for the solid color Dura Stone so that the resin tint does not influence the color of the finished part. Typically, a non-clear resin may cause the white colors to have a shade of pink, brown, or green. With the granite Dura Stone this slight tint is usually not noticeable.
2. **A thin (600 cps to 800 cps) resin has the best air release properties and wets out the filler quicker.**
3. **Gel time is important when considering a resin.** A preferred gel time should be under 30 minutes. You will find that the clear resins will gel slower. The reason they are clear is due to the lack of promoter in the resin. So there is somewhat of a trade off between gel time and clarity.
4. **BPO catalyst system resins will work with Dura Stone.** Be aware that BPO promoted resins will yellow quickly when exposed to the weather and will yellow faster than MEKP resin systems in indoor applications. Contact your resin supplier regarding application information.

Mixers

The use of a vacuum mixer is highly recommended when mixing solid surface material. It is possible to mix Dura Stone without a vacuum mixer, however optimal results will not be obtained.

Setup

Make sure the entire mold surface is waxed evenly. Release lines will result from areas of the part that stick to the mold. Also, allow room for shrinkage, which is usually 1/16" to 1/8" per linear foot, but will vary depending on resin used and initiator levels.

Chapter Three: Mixing Instructions

Gel Test Procedures

A gel test should be performed at the beginning of each day to determine the proper catalyst level that will produce a 20 minute gel time in the poured solid surface product. A separate test should be performed for solid and granite matrices.

Solid surface resins can be very sensitive to temperature and humidity. When a change in temperature occurs, a new gel test should be performed to establish a new catalyst benchmark.

This test is also good to check for chip settling as large chip colors fall if resin ratio is too high. Once a set of benchmarks are established a chart may be created for future reference.

Catalyst Chart (8 ounces of resin)

	.5%	1%	1.5%	2%	2.5%	3%	3.5%	4%	4.5%	5%
cc's	1.1	2.2	3.4	4.5	5.7	6.8	7.6	9.1	10.2	11.4

Gel Time Test Procedure

Equipment Required:

1. Safety glasses and protective gloves should be worn when working with chemicals.
2. Note pad—for casting record keeping, see chapter four.
3. Thermometer
4. Accurate ounce/gram scale
5. Stirring stick (tongue depressor)
6. Timer
7. 4x4 inch pyrex baking dish
8. 32 oz mixing cup
9. Syringe (cc) or accurate measuring cup
10. Accurate pound scale

See appendix for an expanded catalyst chart as well as a resin ratio chart.

Testing Procedure

1. Record ambient room temperature, resin temperature and filler temperature on note pad for future reference.
2. Weigh-out Dura Stone, Resin and catalyst at the same ratios as intended for production run.
3. Add catalyst to mix, 2% in cooler conditions (temperatures below 77° F), 1% in warm conditions (temperatures above 80° F). NOTE: Some resins require greater amounts of catalyst. Use manufacturers recommendations.
4. Record the time that the catalyst was added on the designated note pad.
5. Add filler and stir (8 oz for granite and 10 oz for solid color filler).
6. Cast a Pyrex dish in the same conditions as production. For best results the test pour should be the same thickness as normal production parts.
7. Observe the test pour material and record the time elapsed for material to gel. The proper amount of catalyst will yield a 20 minute gel time.
8. Sand the mold side as would be done during production. Observe the following:
   Test 1: Is the sanded area showing chip dispersal as desired?
   Test 2: Does the sanded area have the desired background color?
   Test 3: Cut the sample in half. Does the chip show to be evenly dispersed from top to bottom throughout the sample?
   Test 4: If not, warping may occur during production. If any of these tests do not show color, chip placement or does show other problems, adjust initial ratios and/or call ACS for technical assistance at 800-669-9214.

Determining Weight Requirements

Once the percentage of catalyst (see paragraph below on Dura Stone Material Calculator) is determined, the dry material required for mixing can be weighed out. At ½" thickness, a square foot of material weighs about four pounds and weighs six pounds at ¾" thickness. With this information, the amount of material needed can be calculated. The resin-to-filler ratio will vary depending on the viscosity of the resin used.

Dura Stone Material Calculator

				Thickness Converter	
1	Top Dimensions	Length	48 inches	1/4"	2
		Width	24 inches	3/8"	3
		Thickness	1.00	1/2"	4
				5/8"	5
	Square Inches	1152	Sq Inches	3/4"	6
	Square Feet	8.00	Sq Ft	1"	8
2	Ratio	Filler	40 %		
		Resin	%		
3	Total Filler Needed	3.20	pounds		
	Total Resin Needed	0.00	pounds		
	Total Pounds of Part	8.00	pounds		

Dura Stone - Resin Conversion

	Pounds of Resin Needed	0.00 pounds
4	Quarts of Resin Needed	0.00 quarts
	Gallons of Resin Needed	0.00 gallons

* assume 1 gallon resin = 9.5 pounds

A good rule of thumb is 40% resin and 60% filler by weight with a vacuum mixer. Without a vacuum mixer, a 50% resins to 50% filler ratio is recommended for small chip products (not recommended for large chip products). Therefore, using a ½" thick panel as an example, approximately 2.4 pounds to filler per square foot is required with 1.6 pounds of resin. A 50% ratio will also work and may save money in instances where the cost of resin is lower than the cost of filler.

The formula for determining total weight is:
Sq. Ft x 4 = Total mix weight for ½" thickness
Sq. Ft x 6 = Total mix weight for ¾" thickness
Total mix weight x 0.40 = Resin weight at 40%
Total mix weight x 0.60 = Filler weight at 60%

Remember that the percentage of resin to filler needs to remain constant in order to assure a consistent color match.

Dura Stone Material Calculator: ACS offers an easy to use worksheet that allows fabricator to plug-in the dimensions and resin to filler requirements and easily obtain the correct resin, catalyst and filler portions needed. The worksheet is available in MS Excel® available on our web site. Please contact ACS at sales@acstone.com or call 520-889-1933 if you are unable to access the web.

Mixing

A single mixing time is impossible to predict due to the variety of mixers on the market today. Some mixers may appear to be identical, however one may spin 1⁄3 slower, thereby requiring 50% longer mixing time to achieve the same results. However, there are some simple guidelines to follow.

Dura Stone should be mixed for a minimum of fifteen minutes before adding the catalyst. Mix for an additional five minutes after adding catalyst. When opening the vacuum mixer to add the catalyst, it is important to scrape the back sides of the blades with a trowel to remove under mixed material, trapped in the vortex of the paddle.

The small particles in the matrix often tend to form lumps that can take some time to disperse in the low shear mixer. These lumps may be impossible to notice with a simple visual inspection of the matrix while it is in the mixer. You may have to dip a trowel in the matrix and visually examine the material closely to see the smaller lumps.

If you are experiencing problems with undispersed pigment in solid colors, you may have to increase mixer shear. To help increase shear on a low shear mixer, retain/remove approximately 25% of the resin from the mix for the first 15 minutes of mixing. The thicker mix will increase the shear and tearing action of the mixing matrix, aiding significantly in pigment particle breakup.

ONLY after there are no visible lumps in the mix is the catalyst added. Then, blend catalyst in thoroughly (five minutes minimum) and pour.

Pouring

Pour material in an even pattern across the mold. Make sure your mold surface is level and that material is distributed in an even thickness on the mold with a trowel. Do not vibrate the mold until the entire surface is completely covered over. This will eliminate any casting lines.

It is good practice not to scrape the material from the mixing blades into the mix pot before pouring . There may be undercatalyzed material trapped on the back side of mix blades.

It is very easy to get an uneven thickness if you do not distribute the matrix carefully. Vibration while pouring is not recommended, but may help even-out the material after it has been completely poured. Resin should not separate out of the mix with minimal vibrating (30 seconds to one minute).

Chapter Four: Casting

Vibrating

When using low viscosity densified resins, ***vibrating time should be kept to a minimum***. About thirty seconds is sufficient. The granite Dura Stone colors may form a resin film on the surface of the part due to over vibrating which allows the granite chips to sink. This film can be eliminated by closely monitoring vibrating time.

Curing

Gel time should be 20 to 30 minutes. Most resins require a post cure oven to achieve best results. Check with your resin supplier for details. Keep the panel on a flat surface during the curing process.

Storage of the finished panel should be on a well-supported flat surface to insure that warping does not occur.

Chapter Five: Fabrication

Handling and Safety

The following instructions should be read carefully and should be fully understood to avoid injury and to prevent accidental damage to sheet stock!

1. Dura Stone should always be stored flat and evenly supported while in storage.
2. Always carry sheet good in the vertical position. Wearing leather gloves will prevent accidental injury from sharp edges and corners.
3. Safety is a top priority! Always wear the following protective equipment when working with fusion materials, catalyst and sheet material:
   a. Safety glasses
   b. OSHA approved dust mask
   c. Rubber gloves when mixing or working with any chemical product.

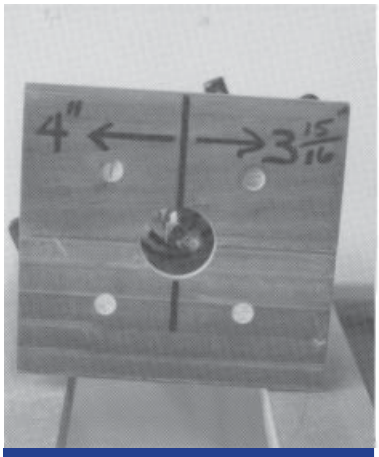


Figure 5a


Figure 5b

For custom fabrication, Dura Stone is best joined with **Acrybond**™ solid surface adhesives. See cross reference chart for appropriate color.

When working with resins the following safety procedures should always be followed:

1. Read all instructions before use.
2. Observe the lot numbers and resin expiration date to make sure materials are acceptable.
3. Do not eat or smoke around the materials.
4. Work in a well-ventilated area.
5. Use an OSHA approved respirator.
6. Wear safety glasses.
7. Wear rubber gloves when handling or mixing.

Abrasive Planning (Belt Sanding Procedure)

Dura Stone granite and solid colors should cure to an absolute minimum of 1⁄16" (1.5 mm) greater thickness than the desired finished thickness.

Sheets should first be back sanded to develop a flat surface for installation, always leaving 1⁄16" to 1/8" thicker than the desired finished dimension. Turn the sheets and finish sand the faces to approximately 180 grit (80 micron) until desired thickness is achieved.

Finish sanding should be done after fabrication is completed.

Solid color Dura Stone and granite color Dura Stone should be sanded to remove all resin film that is left on the sheet to obtain true color qualities.

ALWAYS inspect all materials for physical defects and color consistency prior to fabrication into the finished product.

Machining Seams

The following tools and material are recommended to produce an outstanding seam:

1. Good quality 1½ to 3 hp router with square base.
2. High quality straight edge
3. Lint-free rags (white)
4. Denatured alcohol
5. C clamps to hold straight edge
6. ½" shank, double-fluted carbide router bit.
7. Cornstarch

There are several methods and variations for machining quality seams.

Standard Butt Seams

1. Use a good quality 1½ to 3 hp router. Refit standard base with square base. Two dimensions on the base allow you to turn base and remove an additional 1⁄16". Always use a ½" shank, double-fluted carbide router bit.
2. Set the router flat against straightedge. Lubricate with cornstarch to minimize friction between router base and straightedge. Move router with an even fast speed. Allow router sound to indicate rate of feed.
3. After routing edges, dry fit to assure a flat, true edge. In the dry fit process the seam should virtually disappear. If the seam is not done correctly, re-do by taking off an additional 1⁄16". Check by dry fitting again.
4. After routing, check again for a quality dry fit. Only after you have achieved a good dry fit, should you proceed.
5. With 80 grit sandpaper on a hardwood block, lightly score the edges to be fused together. This step aids the adhesion between the two surfaces. Make only one or two passes. Be careful not to sand the top edge or to round the top edge.

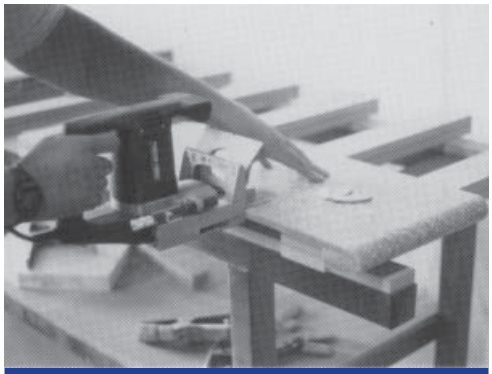


Figure 5c: Plate Joiner Method

Plate Joiner Method

When using a plate joiner for seam assembly, it is important to remember that standard wafers may show through in applications where lighter colored sheets are used. To avoid this, either set the cutter to well below center,


Figure 5d:
Single Pass Method

or obtain clear plastic wafers. Always check the dry fit for true alignment before assembly. Also, always place wafers well away from edges to avoid exposure when machining edge details. Wafers should be spaced approximately 6" to 9" on center.

Single Pass Seam Cutting (Mirror Cutting)

Clamp both pieces to be joined ¼" apart and with the front edges perfectly aligned. Place straight to one side of the seam so that ½" straight cutter will remove 1⁄8"of material from both pieces simultaneously.

This method will produce a superior seam and will deliver a balanced load to the router.

Wavy-Edge Bit Method

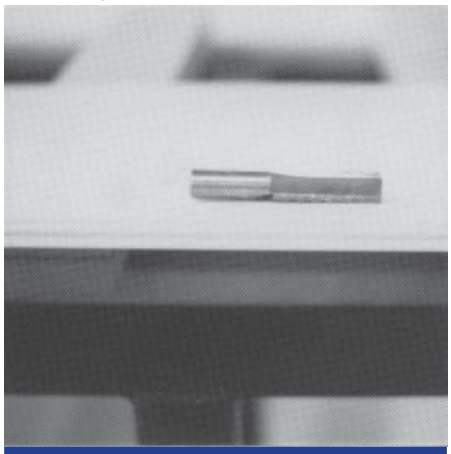


Figure 5e: Wavy-edge bit

Using the wavy-edge system by Porter® Cable or Pinske® Edge or Bosch® A-Line, provides excellent vertical alignment of seam and a stronger seam due to the increased surface area for bonding. This method eliminates the need for "biscuits" and has proven to be just as strong.

The following instructions provided with the system and using an accurate straight edge, make a "high-side" pass on one edge surface and one "low-side" pass on the other edge surface. Always dry fit the parts together before bonding the seam. After this check, scuff the surface of the edge with a course Scotch Brite pad or 100 grit sandpaper, taking care not to touch the very edge of the seam.

Fusing with Acrybond™

Acrybond methyl methacrylate adhesive is specifically formulated for the solid surface industry—ensuring a secure bond with each application. Acrybond offers excellent adhesion to many types of solid surfaces, including densified cast polymers, acrylic solid surface and polyester blends (acrylic modified solid surface). In addition, Acrybond has a 10:1 ratio and is UV stable.

Over 60 standard colors are available in addition to any custom color desired, created by ACS's adhesive specialists. When selecting the right color for the job, refer to the color cross reference charts on the ACS web site (www.acstone.com/products/acrybond.html).

Detailed product guidelines are available for Acrybond, however there are a few essential things to remember when using Acrybond adhesives.

1. Storage temperature is between 50° and 70° F.
2. Shelf life of one year from manufactured date
3. Dura Stone sheets to be adhered should be at room temperature.

Working with Acrybond

As with any adhesive, the ambient temperature plays an important role in the amount of workable time offered by the product. When working with Acrybond, there are a few guidelines to consider.

- Acrybond solid surface adhesive has a working time of 10 to 15 minutes.
- Material seamed with Acrybond may be moved and handled after 30 minutes.
- Fabrication of bonded parts (sanding, finishing, routing) about an hour after assembly of parts.

Temperature vs. Gel Time: When using Acrybond it is important to consider the ambient temperature. Higher temperatures cause the adhesive to gel or cure more quickly. Lower temperatures cause the adhesive to gel or cure more slowly. Situations to consider prior to using the Acrybond adhesive are:

- At what temperature has the adhesive tube been stored?
- Was the adhesive transported in an air-conditioned vehicle, or was it in the back of a pick-up truck—which usually has an environment of very warm/hot in the summer and very cool/freezing in the winter.
- Take note of the field location temperature. Is the environment appropriate for application?

The purpose of considering the above situations (and others that one might incur in the field) is to prepare for how the adhesive will gel when used. If the adhesive is not at the recommended temperature, the fabricator/installer will then be prepared for either very rapid catalyzation, high temperatures or very slow catalyzation, low temperatures.

Use of Adhesive Tube: When using a fresh, unopened tube, squirt a little material out (with no tip attached) to ensure that there is both adhesive and catalyst flow. Many fabricators squirt this out into their trash can or onto a piece of paper. Then attach the tip, squirt out into the trash a little bit of adhesive and begin seaming or buildups.

Material Preparation

When preparing an area for bonding, it is extremely important to do each step—sanding, cleaning, applying adhesive, positioning—in sequential (and immediate) order.

- When preparing to install a sink using **Acrybond**™ adhesive, it is important to make sure the rim of the bowl is level. Then, follow a few steps in preparing to adhere the bowl.
- Sand the surface of the bowl to be adhered using an 80-grit sandpaper to rough up the surface area. Many fabricators use a block of wood and adhere the sandpaper to the block and gently swipe the area.
- Clean the surface areas after sanding by wiping with denatured alcohol immediately prior to seaming in order to remove dust or oily films left from contact with skin.
- Immediately after cleaning the area, apply two thin beads of Acrybond to the surface area. This will allow for proper coverage of the adhesive and ensure proper bonding.

Seams and Build-ups (edge treatments):

- Always use mirror-cutting techniques to cut the seam. Router mirror cut seams provide the cleanest seams and often help reduce gaps due to router chatter. A few steps should be considered during preparation (see previous sections).
- Always dry fit seams. If seam is not visible when it is dry fit, it will most likely not be visible when the adhesive is applied.
- For best bonding strength, use a 80 to 120-grit sandpaper to rough up the seam areas. Many fabricators use a block of wood and adhere the sandpaper to the block and gently swipe the seamed area roughing up the edges to be seamed.
- CAUTION should be used to not round the top edges of the seam area.
- Clean the surface areas after sanding by wiping with denatured alcohol immediately prior to seaming in order to remove dust or oily films left from contact with skin.

Figure 5g illustrates the proper technique in using seam blocks when making deck and horizontal seams. The use of seam blocks will assure that seams do not open up.

Figure 5g: Seam blocks

Seam blocks should be a minimum of four inches wide and must run the full length of the seam, being held back to within ¼" of the edge.

Clamping

Figure 5f: Air clamps

It is always best to use spring clams or Dani clamps when making seams or build-ups. Jorgenson clamps or screw clamps can put too much pressure on the seam, squirting out the adhesive excessively, resulting in a dry seam. It is always best to lay two small beads down, rather than one large thick bead. Having two smaller beads ensures that there is sufficient catalyzation.

See figures 5f, 5h, and 5i for examples of clamping techniques.

Figure 5h: Clamping

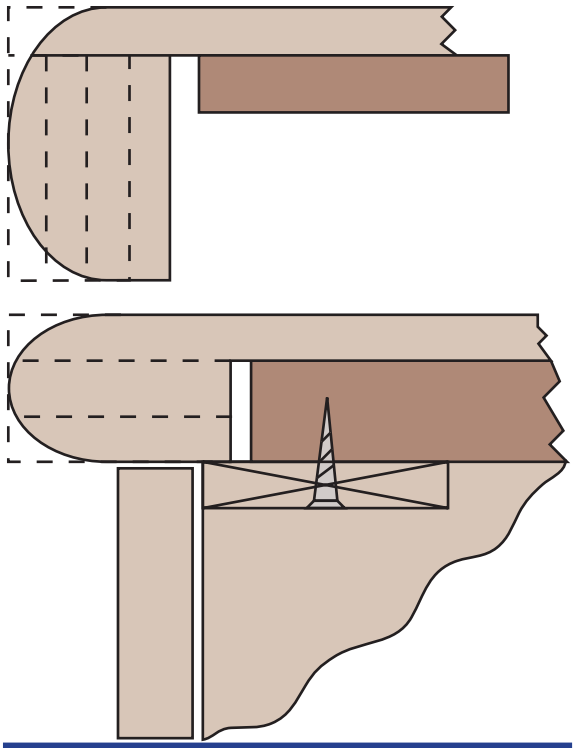
Drop Edges

Prior to applying edge build-up, edge material should be separately fabricated for best results, unless you have the ability to pour an integral built up edge.

Figure 5i: Clamping

Single thickness drop edges are discouraged due to the weakness of the butt joint and the potential for damage before and after installation (see illustration below).

No matter which method is chosen for build-up, (stacked or vertical seam), the build-up pieces should be machined well—no chips or kerf marks. In addition, all build-up pieces should be dry fit to check for gaps. Dry fitting is especially important when working with complex shapes requiring multiple pieces.



The lower—incorrect—method is how settled chip lines are created. See figure 5j for a result of this effect.

Remember—no amount of technical expertise can mask a badly done job.

Tools required:

1. The preferred machines for cutting build-up strips and making long rip cuts in sheets are the table saw or panel saw. Blades should be carbide tipped. Saws should be at least 2 hp but

Figure 5k: Uneven Cast

three is better. Blades with a triple chip grind are recommended and should have a hook of 10 to 20 degrees positive, with at least six teeth per diameter inch.

2. Radial arm and miter saws seem to produce the best results with zero to 10° positive hook.


Figure 5l

3. Spring clamps (total run length/3=total number spring clamps required)
4. Denatured alcohol
5. Appropriate matched Acrybond adhesive color
6. 80 or 100 grit sand paper and sanding block

Procedure for Laminating Build-up Material


Figure 5m

1. After determining the amount and size of your build-up pieces cut the material at least 1/8" wider than the finished size. This will allow sufficient excess material to be machined after fusing.
2. Using 80 or 100 grit hand block, scuff both the front and back of the pieces to be joined. Brush or blow off excess dust and clean surfaces with denatured alcohol.


Figure 5n

3. Apply two thin beads of **Acrybond**™ along one of the mating surfaces.
4. After all clamps are in position, turn the piece over and stand it on the clamp handle tips. At this time examine the edge for any dry spots and scrape off excess adhesive. This process will provide for a smooth surface to facilitate easier machining after the material has fully set.
5. If necessary, clamps may be removed after initial set, ranging from 30–45 minutes, depending on temperature and humidity, as long as the material is not placed under any stress and is handled carefully. After fully cutting, the build-up may be machined using a table saw or abrasive planer (wide belt sander). Hand power planes may also be used, although maintaining a true straight edge can be difficult.

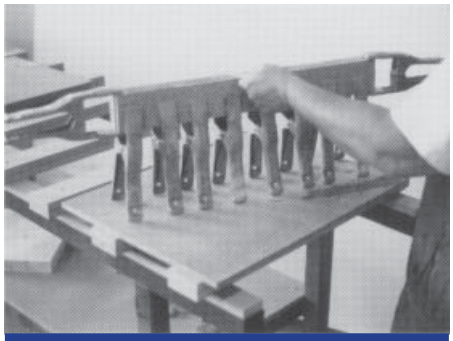


Figure 5o

See figures 5l through 5o.

NOTE: Do not attempt to adhere more material than can be clamped up in eight to ten minutes or before adhesive begins to cure! Spring clamps should be set 3" on center. Failure to use enough clamps may result in inferior edge joints.

Applying Build-up

Tools and materials required:

1. Clean rags
2. Denatured alcohol.
3. Spring clamps (enough for al least 3" on center).
4. Sanding blocks
5. Miter saw
6. Matching Acrybond™ adhesive. See cross reference chart in appendix, or on-line.
7. Cups and mixing sticks.

Procedure (figure 5p):

1. Using sanding block, lightly scuff areas to be joined.
2. Examine both the deck and the build-up pieces for nicks and kerf marks.
3. Cut and fir all inside radius blocks and joints prior to joining.
4. Once all pieces have been dry fit and marked, clean all surfaces with denatured alcohol.
5. Apply enough bonding agent to thoroughly wet all surfaces.
6. Adhere surfaces together and place spring clamps no more than 3" on center being careful to evenly set the clamps. If not set the square with the work, the lateral pressure any cause the bonded pieces to move.
7. After the bond has set, clamps may be removed and the edge may be machined to the desire profile.

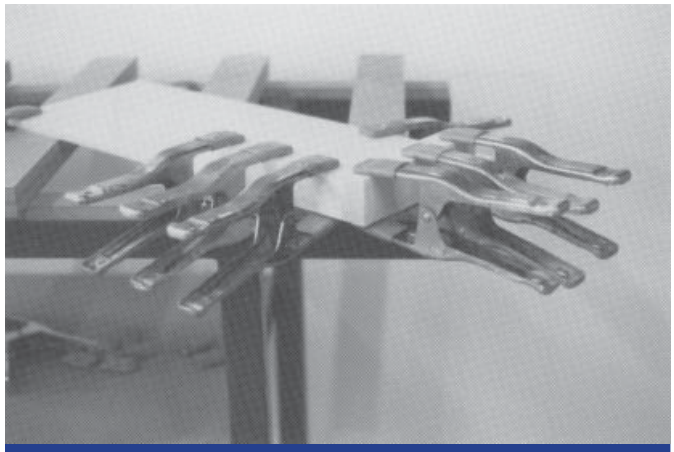


Figure 5p

Machining Drop Edges

For decorative edge treatment, a router of at least 1½ hp is required and a three hp router is best. Use only a sharp clean carbide cutter. If a pilot bearing is used, check for signs of wear, which will require valuable time to repair.

Depending on the amount of material to be removed, it is often best to perform the cut in two or three passes. This promotes an enhanced finished product and gives longer tool life.

Feed speed should be kept moderate—cutting overheating and a high feed rate can cause tear-out of the material, which can be costly to repair. See figure 5q for examples of decorative edge treatments.

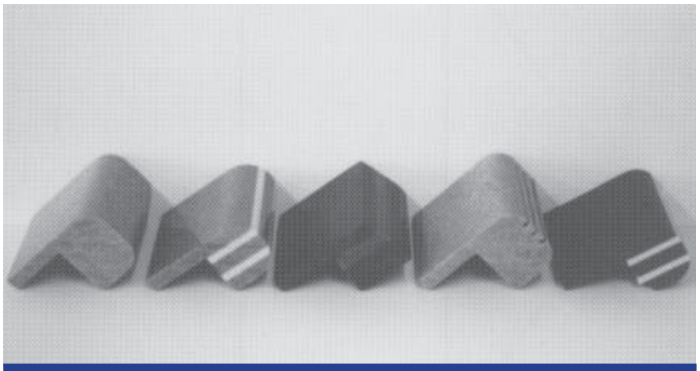


Figure 5q

Chapter Six: Installation

The following tools are required for installation:
1. 1" x 4" wood strips
2. Caulking gun
3. 100% clear pure silicon (extreme temperature rated)
4. Heat conductive tape

Check List:
1. Read and follow all handling and safety instructions carefully.
2. Make sure all seams, sink, and appliances are fully supported.
3. Do not use a continuous bead of silicone; use fingernail sized dabs 18"–24" apart.
4. All cantilevered areas must be supported to prevent deflection/ breakage.

Runner Method

The *runner method* works best when installing Dura Stone counter tops. Solid substrate is not recommended when a heat source is present.

Procedure:
1. The runner method uses 1x4" supports that run parallel to the length of the cabinets. The ¼" supports are placed front, center and rear and require cross supports every 18"–24". Cross supports are still required at bowl and stove cutouts.
2. For stove top support, cross supports should be placed within 3" of the cutout, but no closer than 1".
3. Sink, stove, and bowl cutouts should always be done with a router. Corner must be rounded to prevent jagged edges, which may lead to stress fractures. -Always leave ¼" clearance on all four sides. -Always cross support bowls and stoves.
4. Wrap heat conductive tape around all cutouts where a heating appliance will be installed, at least 4 mm thickness (3M® #1267). -Double the tape downward to form a metallic curtain. -Appliances or sink screws should have a wooden or laminate shim placed between it and the Dura Stone.

Notes to Remember:
1. Never place seam at cut-outs.
2. Never place butt seam at corner.
3. Always radius corners in cutouts and inside surface tops ¼" minimum.

Large Spans and Overhangs

Many newer style sinks require wide spans of up to 48". Built-in desks and computer station are also very common in modern homes and commercial installations.

The easiest way to deal with this problem is to use square steel tubing for support. When using the *runner method*, the steel tube can be installed in the voids. Generally, the steel supports should be at least twice the length of the span and centered to evenly divide the load.

Bar tops and similar overhangs can be handled using a similar procedure. The steel supports should run perpendicular to the overhang and should be three times the length of the overhang.

In many cases a welded steel frame is the best solution for custom applications. These methods of support will eliminate the need for corbels.

Installation Tips

1. Support material during fabrication and transportation.
2. Achieve a good dry fit before fusing.
3. Always advise customers of proper care and maintenance. Leave a "Do's and Don'ts" chart.
4. A carrying board should be clamped to pieces for transportation. This will prevent accidental breakage.
5. After strips are mechanically attached and level, place separation paper at seam locations. This separation paper should be long enough to wrap around the build-up in the front and to keep adhesive from leaking out the back.
6. Remove hardened flash line with router on skis and a flush bottom cleaning bit.
7. For backsplashes and other vertical installations, dabs of silicone should be placed every 8" to 10". Using hot melt glue can help hold the vertical surface in place until the silicone has set.

Vertical Surface Installation

Tools required for installation:
1. Silicone caulk
2. Caulking gun
3. Spacing shims (Popsicle sticks will work)

Checklist:
1. Read and follow all handling and safety instructions carefully.
2. Place on a good, clean, stable surface
3. Do all cutouts with router and double fluted router bit.
4. Use adequate amount of silicone to hold in place.
5. Seal joints with silicone
6. Allow room in corners to allow for thermal expansion.
7. Brace in a plumb position while silicone sets.
8. Any vertical installation exceeding 6' should be secured in place using silicone and mechanical fasteners.

Procedures:
1. Wall should be plumb and appropriate material. Green board, plywood, dura-rock, etc. -Clean wall surface of any protrusions and irregularities. -Place silicone every 8" to 10" on vertical surface.
2. Place wood stick shims (approximately 2.5 mm) under vertical panel and stand panel erect. -Hold panel in place by bracing off floor or wall. -Allow silicone to dry and remove wood stick shims. -Apply silicone bead between vertical and horizontal surface.
3. Always place back wall panels first. -Always allow 1/8" clearance in 6' on both side walls for expansion and contraction. -A fixed seam on back walls is acceptable but will have to be done in the horizontal position and then stood vertically (more difficult). -A flexible seam of silicone between vertical panels may be the easiest way or the seam can be covered with a matching batten strip.
4. After panels are in place seal all corners and

tops edges from moisture penetration with silicone caulk. Place a small bead of caulking around tub or shower handle of spouts to prevent moisture from seeping behind panels.

Chapter Seven: Finishing

Surface Inlay Techniques for Poured Product

For producing color inlays in a poured product, a template of the inlay can be placed directly in the mold before the pour. If the template is to be used for multiple units, it must have good release characteristics (i.e., non-porous). Multiple step inlay processes can be done resulting in several colors, and can be quite intricate, especially if combined with routing and/or sandblasting.

A specially designed sandblasting machine is available along with custom templates for a variety of unique inlay designs.

Procedure for Pouring Contrasting Colors

1. Make sure surface is level prior to pouring inlay.
2. Examine cavity for contamination or defects. Make required repairs if needed.
3. Surround area to be poured with a dam—silicone bead, masking tape, or rope caulk all work well. Dam should be 1/8" over surface level.
4. If using a multi-step pour, place template in cavity and secure with hot melt glue.
5. Over pour colored resin or granite mix by at least 1/8" to eliminate voids and to allow for sufficient air release.
6. After all pouring and curing has been completed, surface the inlay with a time saver sander or mill-routing method.

Color Inlay

ACS offers an easy-to-use color inlay kit called **Acryline**™, specifically designed for use in solid surface applications. Each kit is ready to use and contains resin, filler, a mix cup, mixing stick and complete instructions. Acryline resin is 100% acrylic and is ready to sand within 60 minutes of mixing.

Sold separately, a wide range of colors are available in both solid colors and granite tones. In addition, the Acryline colors are matched to many of the popular name brands available. Acryline ensures minimal shrinkage in a non-porous finish from matte to high-gloss.

If the decision is made to create the inlay, without the Acryline kit, the following steps should be followed:

Materials needed for inlay:

1. Resin (low viscosity)
2. Pigment (U.T.C.)
3. Catalyst
4. Stirring stick
5. Mixing container
6. Rope caulk, silicone or masking tape

NOTE: Dura Stone granite, solid color or non-pigmented may be combined with resin and catalyst for outstanding color inlay results.

Procedure:

1. Route out slot for color inlay. Should be minimum of 1/8" depth.
2. Contain over-pour by placing rope caulk, silicone bead, or masking tape around slot.
3. Add color pigment to resin (3 to 4 drops).
4. Add catalyst and mix thoroughly
5. Pour mixture into prepared slot.
6. Over pour by 1/8" to eliminate low spot.
7. Thoroughly dry before attempting to finish.
8. Metal inlays: Glue the metal to the bottom of the groove with Krazy® Glue. It may then be over poured with clear resin.

Finish Sanding

Dura Stone sheet sock from the factory will be surfaced with a 220 grit wide belt sander leaving linear sanding lines. After fabrication into the final product, the desired finish can be obtained using a random orbital sander. Micron finishing self-adhesive wet/dry sand paper is recommended. This paper has better size control and will produce fewer deep swirl scratches than standard grit papers thereby shortening the amount of sanding time required to produce an even finish. A conversion chart from micron to grit sizes is provided below.

Micron Size	U.S. Mesh Size	Finish Produced
9	1200	Reflective Gloss
15	600	Medium Gloss
30	400	Shiny Matte Finish
60	220	Matte Finish
80	180	Rough
100	150	Rough

Solid Colors

Solid colors will also have a resin film to sand off. Sanding time will be minimal and can be started with a finer mesh size than the granite material. An initial sanding with 60 micron and a finish sanding with 30 micron will yield a matte finish. The material can be polished with a buffer from this point or sanded with a finer micron size.

Granite Colors

Once the film of resin is removed, change to the 80 micron then 60 micron, until the desired finish is reached. Remember to wipe the surface clean before using a finer size of paper. ***Machine buffing is not recommended for granite colors.*** To obtain a high gloss, use the sander down to the 9 micron size. Once the micron size is smaller than 30, wet sanding will work best.

Chapter Eight: Care and Maintenance

Patching Dura Stone®

In the event of damage to an installation, it is always wise to have saved a sample of the actual material from the original job. It is much more difficult to try to match a color at a later date.

Matrix that has not catalyzed can be held back from the original pour and assigned a lot number that can be given to the customer, or preferably, a cook top cutout can be mechanically fastened to the back of a cabinet so that it will not become misplaced. With this material almost any normal repair can be achieved.

Tools (Figure 8a) required for a "liquid patch"

1. Matching color matrix (retained from original mix cross reference by lot number) that has not been catalyzed.
2. Catalyst
3. Mixing container
4. Stirring stick
5. Denatured alcohol
6. Masking tape
7. Sander for vibrating
8. Heat lamp (100 watt light bulb)


Figure 8a: Tools

Using the drill or Dremal® (figure 8b), clean the damaged area to remove any imperfections or foreign material, approximately 3/16" in depth. Be sure to serrate the edge of routed area to help blend in patch material.


Figure 8b: Drill

Next, use the blade to create slanted and irregular sides on the edge of the hole (Figure 8c). This is a very important step as it ensures the proper fill of the patch material, and will help the repair appear less conspicuous. Then, remove any residual particles that may have been generated from the drilling and scraping process. It is best to thoroughly clean the area with denatured alcohol and allow to dry completely.


Figure 8c: Slanted edge

Once the area preparation is complete, the Dura Stone granules and resin may be mixed (Figure 8d). The patch mixture should be made using a clear gel ISO NPG gel coat at a 60% loading to 40% Dura Stone. MEKP catalyst at a 1–2% should be stirred into the mixture for at least a minute to ensure a thoroughly catalyzed mixture. Make sure the matrix is thoroughly mixed before applying to surface area.

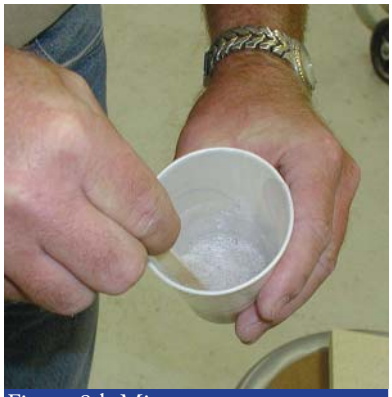


Figure 8d: Mix

Using the broken stick (for larger repairs a different device should be used) drip the mixed matrix into the hole as shown in figure 8e. Be certain to overfill the area in order to allow any air bubbles to rise above the surface of the repaired area.

Curing time may vary. It is highly recommended that a heat gun (or hair dryer) be used in the curing process. This enables the patched area to obtain similar high exothermic temperatures that the original matrix did—creating a superior patch with a better color match.


Figure 8e: Fill

Once the patch is completely cured, the area may be sanded (Figure 8f). Follow the same sanding procedures that normally would be used in finishing a solid surface area. Adhering masking tape around the patch will assist in determining the sanding progress. Once the patch is close to even with the surface, switch to a fine grit sand paper that matches the surface finish of the repaired part. For matte finishes this is typically 220 to 320 grit. For high gloss surfaces a 600-1200 grit paper will be required and possible some polishing compound as a final step.

Finally, the patch is complete and should blend into the surrounding area (Figure 8g).

Product Care and Maintenance

One of the benefits of using both Dura Stone® and Poly Stone™ as surfaces is the ease of care that both products provide. Each product is available in matte, satin and gloss finishes, requiring basic routine care. Simply clean each


Figure 8f: Sand

surface type regularly with soapy water. It's that simple. Have a more difficult stain to remove? Follow the guidelines below for each surface finish and your cultured stone surface will look like new.

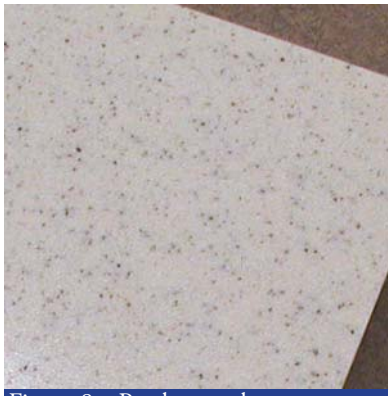


Figure 8g: Patch complete

Matte Finishes
For difficult stains, use a mild abrasive cleaner (results shown above), or by using a mix of one part bleach to one part water. If there are minor cuts and scratches in the matte finish, use a Scotchbrite® pad (white or gray pad preferred) with the spritz of a little water upon the pad. Then, go over surface until scratches are removed. If the surface has received deeper cuts, the services of a professional are required for repair.

Satin Finishes
Just as with matte finishes that couldn't be cleaned with soap and water, satin finishes require a stronger solution. Use a cleaner such as Soft Scrub® or try a solution of one part bleach to one part water. A white Scotchbright pad may be used on satin finishes for more stubborn stains.

If you're looking to enhance the shine of the surfaces' satin finish on your Poly Stone or Dura Stone surface, use a nonabrasive polish such as Hope® Counter-top Polish or Protectall's Quick Shine®.

Gloss Finishes
The benefit to a gloss finish is that it is generally more difficult to stain, however that same quality makes gloss finish more difficult to remove stains from. First try using the solution of bleach and water as mentioned above and let it sit for a few minutes before scrubbing. Then, with a soft sponge, use circular motions to clean—for up to fifteen minutes. After fifteen minutes, remove the bleach and water solution with clean water. Never use abrasive cleaners or Scotchbright® pads on gloss finishes.

As with most surfaces there are a few precautions that should be observed.

- Do not use a counter top as a cutting board
- Use a pot holder or other heat/cold absorbing device for setting hot pots or frozen foods directly on your work surface
- Use trivets with rubber feet
- Run cold water in sinks made with Poly Stone or Dura Stone before using a colander
- Avoid contact with strong chemicals, such as paint thinner, oven cleaner, drain cleaner, etc. (such items may damage the surface color/finish).

A separate product care and maintenance brochure can be obtained from the ACS web site at www.acstone.com (on the Tech Info page), or by contacting ACS directly at 520-889-1933. It is advised to leave this brochure with the end-user of the Dura Stone product.

Chapter Nine: Trouble Shooting

Trouble Shooting

The following trouble shooting section gives suggestions on resolving the following issues:

- Color matching issues
- Contaminates—solid colors
- Inadequate seams
- Installation problems

Color Matching Issues

A problem may occur that the colors do not match even though the same lot number of filler and resin were used. This problem is common to all solid color filler materials even if you use a paste or liquid pigment. It is largely caused by inconsistencies in temperature of the filler, resin, air, mold surface, and final mixture, during the manufacturing process. The hotter the temperature, the more promoters get burned off in the curing reaction. This usually results in a lighter final color.

To solve this issues, the following procedures should be taken.

1. Begin by making certain that there is enough filler and resin from the same lot number to complete the entire job. Plus, there should be an additional amount to complete repairs.
2. If possible, pour the entire job in one mix. If the job is too large to be poured in one mix, try to pour all of the pieces that will be seamed together in one matrix and pour other pieces, such as islands or other not connected pieces separately.
3. Take notes of the air temperature, resin temperature, mold surface temperature, resin to filler ratio, catalyst level, mix time and *most importantly*, the mixture temperature at the time of the pour.

   It is not very apparent, but the larger the mix size, the hotter the mix will get during the mixing process. A 200 pound mix can get five degrees hotter than an 80 pound mix when mixed for the same amount of time. This small difference in temperature will result in a color difference. Therefore, to ensure an exact color match, the 80 pound batch will have to be mixed for a longer time than a 200 pound batch to match the same mix temperatures.
4. To guarantee an exact color match the following variables must be kept the same for every pour:
   - -Filler lot number
   - -Resin lot number
   - -Catalyst lot number
   - -Air temperature
   - -Mold temperature
   - -Catalyst level
   - -Resin ratio
   - -Mixture temperature
   - -Filler temperature
   - -Resin temperature
5. Allow 48 hours for the color to stabilize after de-molding. Often times the color of the finished product will gradually lighten over the next two days. A panel poured on a Monday may not match the one poured on a Wednesday until the second panel has post cured for two days.

Contaminates

Often times the dry pigment used in the Dura Stone solid colors agglomerates into small clumps which resist wet-out in the low shear mixers used in the industry today. The eliminate this problem from occurring, follow procedures below.

1. Mix time can be increased to a minimum of 20 minutes. This alone does not always solve the problem.
2. Increase the shear in the mixer by holding back on some of the resin added to the mix. In most cases, allowing the material to mix for a period of 15 minutes while holding back on 25% of the resin to be added to the mix will produce enough shearing effect in the mixer to completely tear apart any dry clumps. This will result in more thorough resin wet-out and pigment distribution. Add the retained resin along with the catalyst and mix for at least an additional five minutes.
3. Prior to adding the catalyst, inspect the material closely. Dip a trowel into the mixtures and look at the mix closely against the trowel. If there are still dry clumps, they will only appear against the dark background such as a trowel blade.
4. When adding the catalyst after the material has mixed for at least 15 minutes, stop the mixer and ***scrape the back side of the mixing paddle or blades***. This is very important since there is almost always a small pocket of dry material directly behind the mixing blades. This partially wet-out material can be a source of dry clumps and un-dispersed pigment. Taking this step will save a great deal of time. Mix for at least five additional minutes after adding the catalyst. ***At this point it is critical NOT to scrape the mixing paddle/blades!***

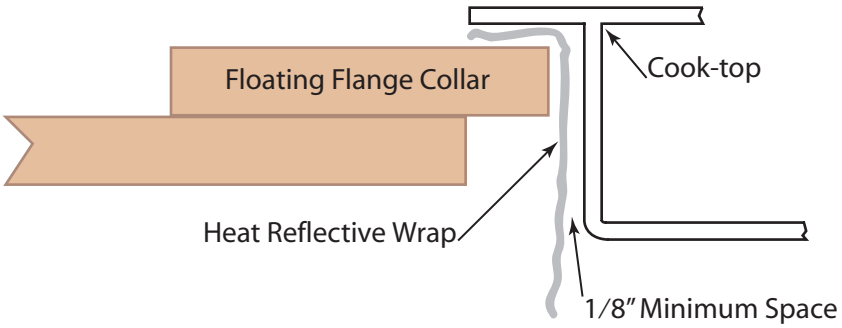
Following these steps should insure that there will be no dry pigment in the finished product.

Inadequate Seams

1. Contamination of seam with oil or debris
2. Improper machining
3. Resin material used was too old or material surfaces were too cold. High humidity, insufficient cure time, expired resin or catalyst, or not enough catalyst used.
4. Too much clamping pressure forced fusing material from the seam
5. Movement of seam prior to being fully cured

Installation Problems

Many of the newer **European style cook tops** and tubs have a square chassis and very narrow top flanges. This makes corners with a radius



impossible in many cases. Another special installation issue may arise with **commercial applications** such as steam tables and refrigerated compartments which create drastic temperature conditions, and can lead to failure of the finished product.

To overcome this problem the best solution is to mount a floating flange or collar at the mounting location. The flange can be made from narrow (2") strips and secured to the deck with silicon. This serves to isolate the appliance from the deck and any thermal movement can be absorbed by the collar. See illustration below.

It is important to remember that the flange must not be rigidly adhered to the deck. Use silicone only and never use a continuous bead.

Appendix

Resin Ratio Chart

40% Resin		
Total lbs	Resin lbs	Filler lbs
5	2	3
10	4	6
15	6	9
20	8	12
25	10	15
30	12	18
35	14	21
40	16	24
45	18	27
50	20	30
55	22	33
60	24	36
65	26	39
70	28	42
75	30	45
80	32	48
85	34	51
90	36	54
95	38	57
100	40	60
105	42	63
110	44	66
115	46	69
120	48	72
125	50	75
130	52	78
135	54	81
140	56	84
145	58	87
150	60	90

45% Resin		
Total lbs	Resin lbs	Filler lbs
5	2.3	2.8
10	4.5	5.5
15	6.8	8.3
20	9	11
25	11.3	13.8
30	13.5	16.5
35	15.8	19.3
40	18	22
45	20.3	24.8
50	22.5	27.5
55	24.8	30.3
60	27	33
65	29.3	35.8
70	31.5	38.5
75	33.8	41.3
80	36	44
85	38.3	36.8
90	40.5	49.5
95	42.8	52.3
100	45	55
105	47.3	57.8
110	49.5	60.5
115	51.8	63.3
120	54	66
125	56.3	68.8
130	58.5	71.5
135	60.8	74.3
140	63	77
145	65.3	79.8
150	67.5	82.5

Glossary of Terms

BMC: Bulk Molding Compounds. Composed of polyester resin, catalyst, release agents, colorant, fillers and reinforcements. Mixed then forming a fibrous putty capable of being molded directly.

Catalyst: Initiator agent in composites industry that acts as an initiator to process. Promotes curing of product.

Centipoise (cps): A measurement of viscosity. Water is the standard by which all fluids are measured. Water is 1 cps @ 70°F. Typical casting resins range from 600–1500 cps.

Denatured Alcohol: Also known as ethyl alcohol or ethanol. Contains some benzene, which removes the trace amounts of water from its original form (ethanol).

Gel: Partial cure stage in plastic resin where the liquid material reaches a viscous, jelly-like state and starts to transform into a solid.
Gel coat: A specialized form of polyester/vinyl ester resin, which is used as an in-mold applied-surface coating. Provides a cosmetic finish and weathering resistance to composite products.

Matrix: Material containing fiber reinforcements of composite system.

MEKP: Methyl Ethyl Ketone Peroxide. Catalyst added to polyester resins and vinyl ester resins.

Pigment: A substance used as coloring.

SMC: Sheet Mold Compounds. Two plastic film tapes which are continuously coated with resin. Fiber reinforcement is continuously chopped and placed onto one of the film tapes. Film sheets are then brought together with the fiber and paste between them, creating one complete sheet.

Specific gravity: The comparison of a substance's density to that of water.

Viscosity: The measure of the resistance of a fluid to flow.

Wet-out: Complete saturation with resin.

Catalyst Chart

lbs of Resin	Percent of Catalyst in cc's										
	0.50%	0.75%	1%	1.25%	1.50%	2%	2.50%	3%	3.50%	4%	5%
10	23	34	45	57	68	91	114	136	152	182	228
12	27	41	54	58	82	109	137	163	184	218	273
14	32	48	63	90	95	127	159	190	216	255	319
16	36	57	72	91	109	145	182	218	247	291	364
18	41	61	81	102	122	164	205	245	279	327	410
20	45	68	90	114	136	182	227	272	311	364	455
22	50	75	99	125	150	200	250	299	343	400	501
24	54	82	109	137	163	218	273	327	374	436	546
26	59	88	118	148	177	236	296	354	406	473	592
28	64	95	127	159	191	254	318	381	438	509	637
30	68	102	136	171	204	273	341	408	470	545	682
32	73	109	145	182	218	291	364	436	502	582	728
34	77	116	154	193	231	309	386	463	533	618	773
36	82	122	163	205	245	327	409	490	565	654	819
38	86	129	172	216	259	345	432	517	597	690	864
40	91	136	181	227	272	363	454	545	629	727	910
42	95	143	190	239	286	382	477	572	660	763	955
44	100	150	199	250	300	400	500	599	692	799	1000
46	104	156	208	261	313	418	523	626	724	836	1046
48	109	163	218	273	327	436	545	654	756	872	1091
50	114	170	227	284	340	454	568	681	788	908	1137
52	118	177	236	296	454	472	591	708	819	945	1182
54	123	184	245	307	368	491	613	735	851	981	1228
56	127	190	254	318	381	509	636	763	883	1017	1273
58	132	197	263	330	395	527	659	790	915	1054	1319
60	136	204	272	341	409	545	682	817	946	1090	1364
62	141	211	281	352	422	563	704	844	978	1126	1409
64	145	218	290	364	436	581	727	871	1010	1163	1455
66	150	224	299	375	449	599	750	899	1042	1199	1500
68	154	231	308	386	463	618	772	926	1074	1235	1546
70	159	238	317	398	477	636	795	953	1105	1272	1591
72	163	245	326	409	490	654	818	980	1137	1308	1637
74	168	252	336	421	504	672	840	1008	1169	1344	1682
76	173	258	345	432	517	690	863	1035	1201	1381	1728
78	177	265	354	443	531	708	886	1062	1233	1419	1773
80	182	272	363	455	545	727	909	1089	1264	1453	1818
82	186	279	372	466	558	745	931	1117	1296	1490	1864
84	191	286	381	477	572	763	954	1144	1328	1526	1909
86	195	292	390	489	586	781	977	1171	1360	1562	1955
88	200	299	399	500	599	799	999	1198	1391	1598	2000
90	204	306	408	511	613	817	1022	1226	1423	1635	2046
92	209	213	417	523	626	836	1045	1253	1455	1671	2091
94	213	320	426	534	640	854	1067	1280	1487	1707	2136
96	218	326	435	545	654	872	1090	1307	1519	1744	2182
98	222	333	445	557	667	890	1113	1335	1550	1780	2227
100	227	340	454	568	681	908	1136	1362	1582	1816	2273

Acrybond™ Color Cross Reference Chart

The following cross reference chart is current at the time of this manuals printing. In the event that new colors are added or revisions made, please contact ACS for a new chart or see our web site at www.acstone.com.

ACS International, Inc.

Revised: 9/22/04

Dura Stone Solid Surface Color to Acrybond Cross Reference Chart

Dura Stone Color	Code	Acrybond
Apple Wood	DGLC875	Taupe 2390
Arctic Melange	DGLC700	Glacier 2020
Aurora	DGC402	Ivory 2060
Autumn	DGLC925	Icicle 2340
Avalanche	DGLC855	Arctic 2010
Aztec Gold	DG030	Tan 2080
Basil	DG503	Silver 2090
Beechnut	DG725	Silver 2090
Black Forest	DG320	Clear 2000
Black Ice	DGLC705	Black 2140
Blue Velvet	DG601	Glacier 2020
Blue Willow	DG510	Silver 2090
Bone	DS030	Bone 2040
Cabernet	DG330	Clear 2000
Candlelight	DS071	Cream 2050
Cape Cod	DGLC850	Cameo 2030
Cashmere	DG602	Glacier 2020
Champagne	DG509	Rose 2070
Chenile	DG608	Glacier 2020
Cherry Wood	DGLC900	Pearl 2200
Clear Creek	DGLC865	Thunder 2270
Clove Pepper	DG800	Cameo 2030
Cobalt	DG512	Sapphire 2160
Coral Lace	DG370	Rose 2070
Coral Reef	DGLC710	Ivory 2060
Corona	DGLC920	Natural 2190
Countryside	DG511	Thunder 2270
Crepe Velour	DG603	Rose 2070
Denim	DG507	Silver 2090
Dove Gray	DG040	Silver 2090
Egyptian Sand	DG820	Tan 2080
English Toffee	DGLC885	Cream 2050
Everest	DGLC462	Glacier 2020
Fashion White	DS020	Cameo 2030
Flannel	DGLC715	Tan 2080
French Burgundy	DG630	Clear 2000
Frost	DG070	Glacier 2020
Georgette	DG604	Glacier 2020
Gold Rush	DGLC890	Bronze 2750

Dura Stone	Code	Acrybond
Greystone	DG506	Silver 2090
Hearth	DGLC880	Pearl 2200
Heather Rose	DG350	Silver 2090
Hunter Green	DG360	Verde 2130
Indigo (disc)	DG735	Sapphire 2160
Irish Moss	DG501	Glacier 2020
Kilamanjaro	DGC463	Tan 2080
London	DGLC805	Thunder 2270
Magna Antarctica	DGLC481	Arctic 2010
Magna Platinum	DGLC483	Silver 2090
Magna Rosetta	DGLC485	Rose 2070
Magna Sahara	DGLC486	Cream 2050
Magna Savannah	DGLC489	Cameo 2030
Mahogany	DGLC895	Thunder 2270
Midnight	DG010	Black 2140
Mocha	DG810	Taupe 2390
Mojave	DG502	Silver 2090
Mont Blanc	DGLC465	Silver 2090
Pepper Ivory	DGLC466	Silver 2090
Pine Meadow	DG740	Verde 2130
Pyrenees	DGC407	Emerald 2110
Rocky Mountain	DGLC609	Clear 2000
Ruby	DG310	Rose 2070
Sahara	DG508	Ivory 2060
Sandstone	DGC415	Tan 2080
Sangria	DG504	Glacier 2020
Sea Shell	DGLC915	Cameo 2030
Sedona	DGLC860	Icicle 2340
Sheer Linen	DG607	Glacier 2020
Sierra Sky	DG340	Periwinkle 2100
Silver Expressions	DGLC720	Silver 2090
Spice	DG505	Rose 2070
Spring Rain	DGLC870	Icicle 2340
Sterling	DG020	Silver 2090
Tweed	DG605	Rose 2070
White Silk	DG606	Arctic 2010
Winter White	DS010	Arctic 2010

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