



Durat® Surfaces

Fabrication Manual

I Introduction

This manual is for professionals who have prior experience in solid surface materials or in carpentry. We expect the reader to have skills to operate the machinery required.

If there are any inquiries, please see the contact list in the end of this manual.

Material

Durat® is a solid polyester-based material used for custom made surfaces in public and private interiors. It contains recycled plastics and is fully recyclable. Durat® sheets and sinks are used to create coherent surfaces without clearly visible joints and seams, of any length with various forms of edge designs and intarsia patterns. Durat® can be worked with woodworking tools and joined by standard solid surface adhesives to create various surfaces and custom products.

The material needs to be inspected before fabrication to make sure it meets the standard qualifications and that it has not been damaged during transportation. Durat® does not compensate work done with substandard material.

Joining Durat® material from two different batches is not recommended as slight color variation between batches is possible.

Darker colored solid surfaces are not recommended for high traffic installations as they may show scratches more easily. Please reach out to us for a test piece if you are considering this kind of application.

Durat® sheets and sinks

The standard Durat® sheet is 2900 x 800 x 12 mm. (31.5" x 114" x .5") [Durat is also available as 9 and 15 mm thick sheet]. Durat® sheets are sanded to grit 320 and finished with Scotch-Brite. Durat® sheet weighs approximately 45 kg. (99lbs)

General design guidelines

As a general rule, a Durat top is 30 mm thick, comprised of a 12 mm Durat sheet with 18 mm support board. It's not recommended to use a Durat top without a support board.

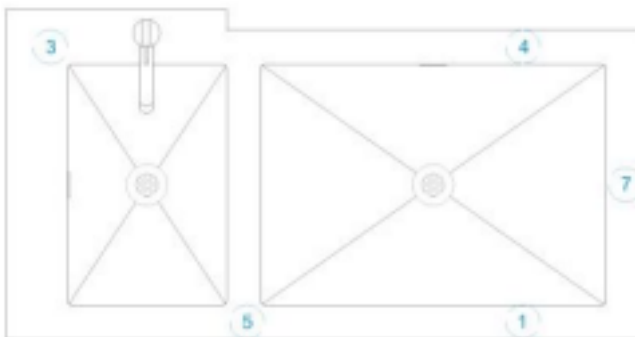
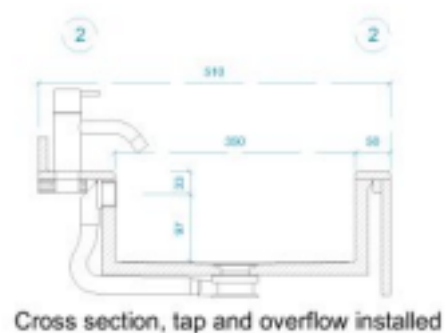
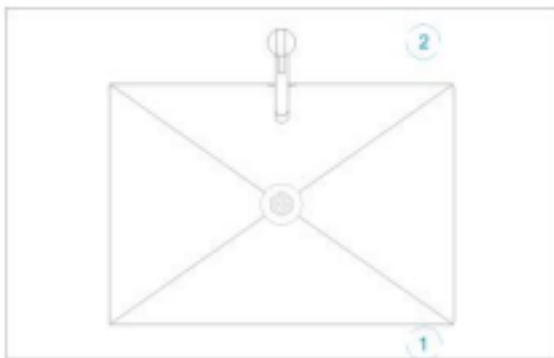
When installing Durat® between walls, please allow a 2-3 mm gap between the wall and Durat®. The gap is to be filled with silicone sealant. Never place seams near heat-extracting

appliances like oven or dishwasher. Plan your work carefully to ensure best result and minimum material waste.

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Sink positioning minimums for a Durat top:

1. Minimum distance 50 mm (2") between sink and front edge.
2. Minimum distance 110 mm (4.33") between sink and back edge with standard overflow and tap.
3. Minimum distance 80 mm (3.15") between sink and back edge with tap and no overflow.
4. Minimum distance 50 mm (2") between sink and back edge with overflow.
5. Minimum distance 50 mm (2") between two Durat® sinks.
6. Minimum distance 60 mm (2.4") between sink and front edge when Durat® top is placed on furniture and front edge does not cover sink
7. Minimum distance 50 mm (2") between Durat® sink and wall.



Workspace, machinery and tools

To work with Durat® solid surface material, the workspace can be a normal carpentry workshop with heavy duty machinery installed. Required machines include sliding table saw and other circular saws, routers and other hand operated machines and sanders with a proper

dust removal system.

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Recommended machinery:

1. Sliding table saw
2. Mitre saw
3. Hand operated routers, minimum 900 W
4. Hand operated planer
5. Drills
6. Random orbital and corner sanders

Tool requirements

All cutting and routing machinery blades and mills must be equipped with tungsten carbide bits or solid tools. Recommended for sliding table saw is a 300 mm blade with 96 to 120 triple chip grind diamond bits.

Sanding machines must be random orbital machines, electric or pneumatic with 3-5 mm stroke. Abrasives must be suitable for composite material sanding with grit range from 100 to 400, finishing is done with 360 to 1000 grit finishing pads.

Other tools needed include clamps (bar clamps, spring clamps, pipe clamps, flooring clamps etc.), chisels, and templates for cut-outs and round shapes, jig saw and other normal woodworking tools.

The workshop should have steady temperature of 63° F to 73°F (17-23° C).

II Fabrication

1. Handling and storing Durat®

Extra care must be used when handling Durat®. Standard 9.51x2.62x0.04 inch (2900 x 800 x 12 mm) Durat® sheets weigh approximately 99 pounds (45 kg). When carrying Durat® sheets, it is required to have one person on either end of the sheet and the sheet on the longer side in vertical position. This way you lower the risk of damaging the sheet and handling is easier. Gloves are necessary because of the sharp edge of the sheet.

Durat® can be stored for long periods without any effects on the material. Durat® must be stored in a cool and dry place. Sheets must be supported on full length, preferably in the package they were delivered in on level ground or a shelf. If Durat® is stored outside, bring sheets indoors to warm to room temperature before being worked on.

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2. Cutting, routing and drilling

Always follow all local work safety regulations when working with Durat® solid surface material.

Be sure to wear eye and hearing protection. Cutting Durat® may produce small and sharp fragments of Durat® flying from the cutting tool so protective eyewear is mandatory. Do not use excessive milling speed or pressure to avoid damaging machines and Durat®. It is not recommended to route over 12 mm deep Durat when using hand tools. When routing a hob cut-out into 24 mm thick Durat, do two or three rounds.

In case screws need to be used, drill preliminary holes in the surface before screwing. The diameter of the pre-drilled hole should be 0.5 mm smaller than the screw.

When drilling larger holes in the Durat® material like tap holes for example, it is recommended to use drills for composite materials with tungsten carbide bits. Tools and mills will dull quicker than working with wood. Durat® recommends using freshly sharpened or new tools for the best results and ease of work.

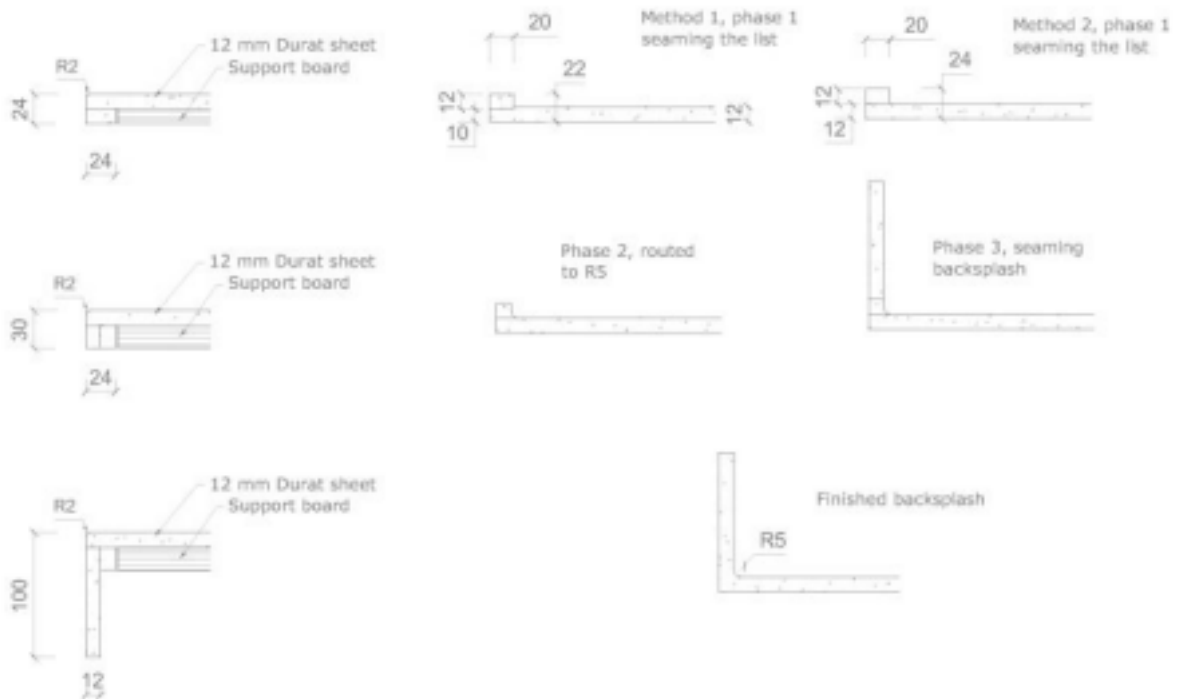
3. Edges, Cut-outs and 3rd party sinks

3.1 Edges and backsplashes

The most common seaming is the front edge of a countertop. We strongly recommend to use double thickness Durat® for edges from 30 to 50 mm. For higher edges, we recommend to use a list of Durat® seamed to the edge piece as shown in the picture.

Backsplashes can be done by two different methods, butted or covered backsplashes. We strongly recommend using the covered backsplash method. Method used by the manufacturer is to first seam a 20 mm list on the top sheet, then route an R5 arc leaving a 12 mm list and then seam the backsplash list. See drawing on the next page.

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The visible edges of the countertop should always be routed to R2 or more to avoid sharp edges. On edges which are not visible, it is recommended to lightly sand off the sharpness on the edge.

3.2 Cut-outs

Cut-outs should always be done by the fabricator in the workshop. Cut-outs should always be milled into 24 mm thick Durat®. This is absolutely mandatory with hobs and under-mounted steel sinks.

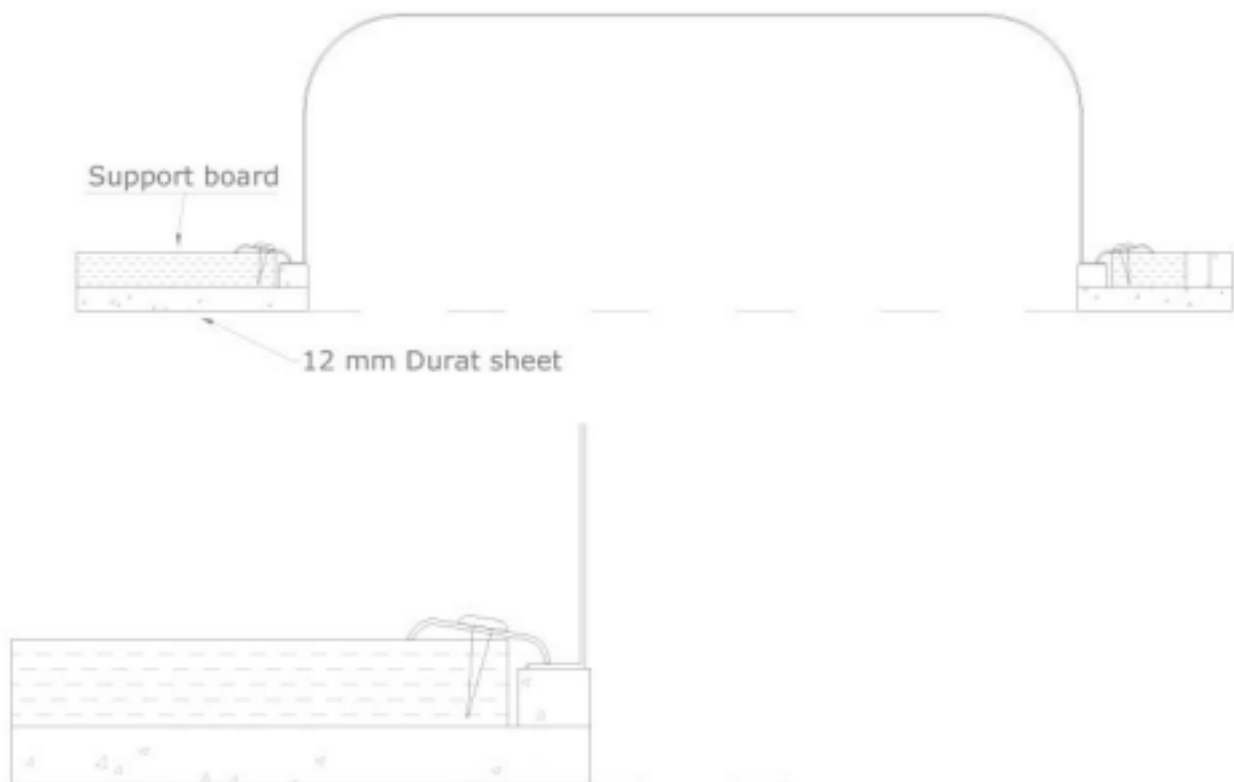
If the factory is equipped with a CNC milling machine, it is highly recommended to mill cut-outs with the CNC. Cut-outs can be done by hand-operated routers with routing templates. It is always best to measure each sink before milling to get accurate dimensions of the cut out.

Corners of the cut-out should be as round as possible and a minimum of R6. Edges of the cut-out must be sanded or routed so that no defects remain. Continuation seams must not be near cut-outs.

Please follow sink suppliers instructions on installing 3rd party sinks.

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4. Thermoforming

Durat sheets thermoform at a lower temperature than other solid surface materials. Heat Durat to 212-230°F (100°-110°C) before clamping it to a pre-made jig, let cool while clamped to jig. When cooled to room temperature and removed from the jig, the sheet might pull back a little but is easily bent back to the required shape. The minimum radius for a full sheet of Durat is 98" (2500 mm), and the minimum radius for a half width sheet of Durat® is 40" (1000 mm). Smaller radii are possible, as you cut the strips into smaller widths. Narrow strips, 1-1.5" (20-30mm) can be thermoformed to 5.5" (220mm). Please also note that thinner sheets of Durat (9mm) may be thermoformed more easily, but these may be special order, so please check with your distributor on lead times.

Thermoforming oven temperatures may vary. A thermoforming press is more efficient, requiring a shorter time. Solid surface fabricators are familiar with their equipment and can determine the duration using these guidelines. In a platen oven 20-22 minutes is sufficient.

No yellowing of the material should occur at 230°F, however if the temperature exceeds 250°F, some yellowing may occur, and the material may expand.

5. Seaming Durat®

5.1 Clamping

Before clamping, check that the pieces fit together well and are clean of dust and markings. It is advised to lightly sand any markings by hand, especially with lighter colours such as 100 and 910 white.

It is important to clamp the surfaces within five minutes of applying the adhesive. 6

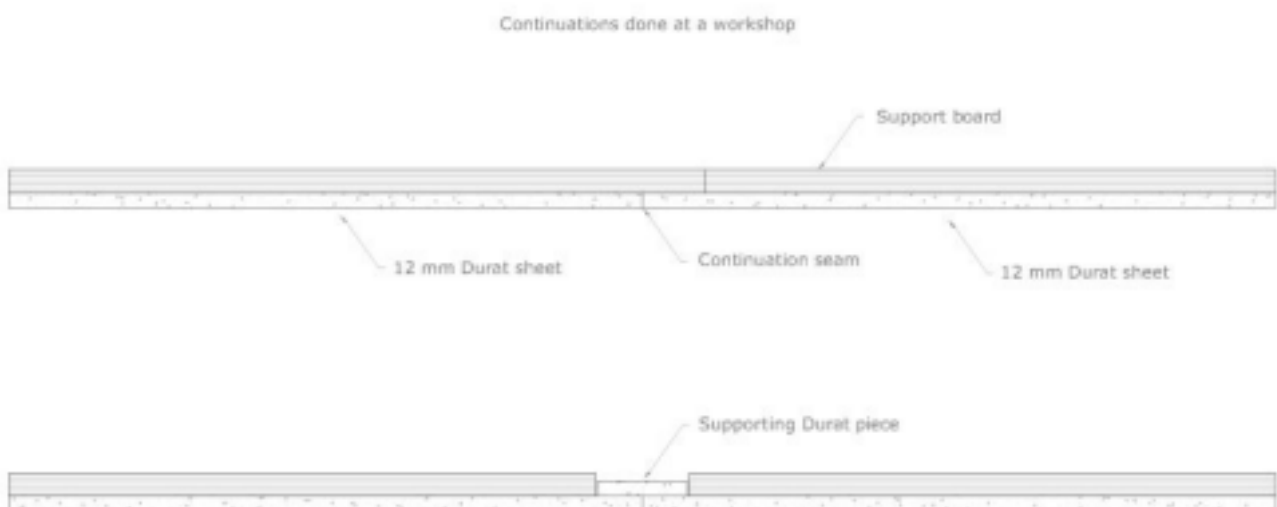
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Sand the seam and the surface close to it (30-40 cm) with a sander gradually (grit 100 to 240) and the top completely with grit 240 and 400 abrasives and finishing with polishing pads.

5.2 Continuation seams

If the size of the finished product is longer or wider than standard Durat® sheet, it is easy to add length to a Durat® sheet. Durat® does not recommend delivering more than three meter long tops and often this long worktop cannot be delivered to the site. In case a top needs to be seamed on site, it can be done with worktop connectors. The seam should always have support underneath the top.

If possible, a supporting Durat® list underneath the top would strengthen the seams even more.



6. Backside framing and support

Durat tops require full perimeter support. Cross-spans may be needed for additional support.

When properly supported, the top will not deflect more than 3mm when a 136kg weight is applied to the center of the supported span. Suitable support materials include framing lumber and square metal tube or angle.

The supports are mounted to Durat tops with flexible silicone sealant. Silicone is applied with a silicone gun in small dabs approximately 30cm apart. If there are seams on the Durat top, the supporting structure must be interlaced under the seam, see picture.

7. Sanding and finishing

Sanding should always be done with **random orbital sander**. Angle sanders are needed when

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sanding the seams on oval and round sinks. Angle sanders must always be polishing machines with RPM lower than 3000.

Joined seams are sanded starting from grit 100 up to 1200 using rotation method. Equal pressure and speed must be applied throughout sanding. Abrasives must be suited for sanding composite materials, dry or wet sanding, grits 100, 180, (240), 320, 600, 1200.*

For finishing we recommend to use Mirka Abralon[®] abrasive pads grit 1000 with some water on the top and pad. After sanding is finished, we recommend to treat the top with Howard Orange Oil.

*product samples are often finished to 400 grit. To achieve the same level of gloss, use 400 grit abrasives. For a glossier surface, use up to 1000 grit.

8. Installing and mounting finished products

The support plywood board enables the top to be affixed to the furniture. This can be done by screws. Worktops can also be glued with a polyurethane adhesive.

III Maintenance

When taking a new surface into use, it is recommended that the surface be cleaned with mild detergent or a soap and water solution and rinsed with water. Melamine foam (MiracleClean, Magic eraser) is an excellent cleaning product for Durat as well. For difficult stains, you can use dishwasher detergent.

If the Durat[®] countertop is scratched or suffers similar damage, it can be re-sanded in the same manner as sanding a new product.

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Durat
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