

# CORIAN® QUARTZ DESIGN, SAFETY AND FABRICATION

## Introduction

This fabrication bulletin addresses basic fabrication requirements for Corian® Quartz. It replaces the fabrication and installation guidance in DuPont™ Zodiaq™ Z-1 *Manufacturing and Installation Requirements for ZODIAQ™ Quartz Surfacing*. It also replaces *Adhesives for use with Zodiaq®* (Z-2006-001b).

## Overview

Proper fabrication and installation of Corian® Quartz is essential. Commercial hot-cold horizontal applications require specialized fabrication and installation techniques. *Reference Commercial Food Service Bulletin* (Z-2007-001) for additional guidance.

## A. Safety

Operations such as sawing, routing and sanding can generate dust. Dust generated during the handling of quartz surfacing products can contain particles of crystalline silica (quartz) and overexposure to airborne quartz dust can lead to silicosis. DuPont has created a silica safety education video on the health hazards associated with silica dust exposure, as well as engineering controls, personal protective equipment needed and fabrication techniques/procedures to be used to reduce or eliminate this exposure. This video can be found at: <https://www.youtube.com/watch?v=dAlb0hOYcZs>

*Corian® Quartz Safe Handling and Storage* (K-28289) provides guidance on safe handling and storage of Corian® Quartz.

## B. Inspection

The slab should be inspected for any manufacturing defects prior to fabrication. **Call your Authorized Distributor of Corian® Quartz for assistance whenever you are unsure of raw material quality. Be prepared to provide the slab batch number.** Fabrication labor on product with manufacturing defects is not reimbursed under the *Corian® Quartz Residential Warranty for North America*.

## C. Indoor Use Only

Corian® Quartz is not recommended for exterior applications. DuPont excludes from warranty coverage any exterior applications

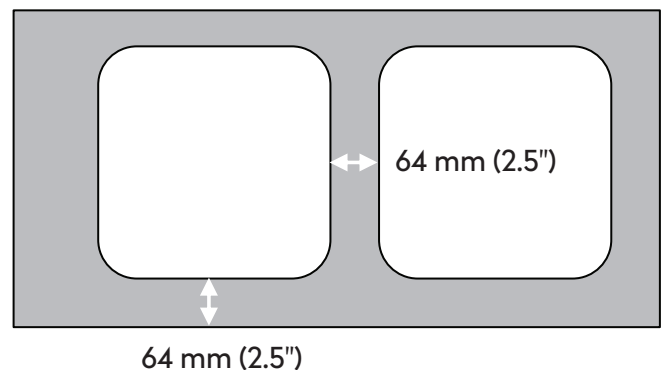
## D. Cutting

Corian® Quartz should be cut wet to minimize exposure to crystalline silica. Appropriate diamond tooling (saw blades and router bits) for quartz surfacing must be used. Consult the machine or tool vendors guidance for proper settings. For cutting with a waterjet, consult the vendor for appropriate abrasive and settings.

## E. Cutouts in Corian® Quartz

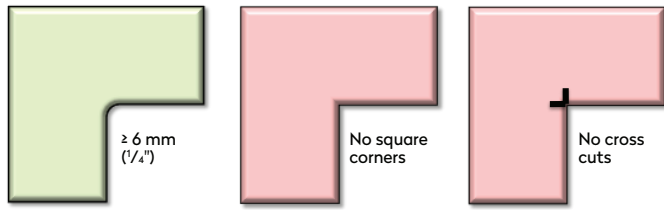
Cutouts for drop-in sinks and cooktops must leave a minimum of 2.5" (64 mm) of quartz surfacing surrounding the cutout. Undermount sinks require a minimum of 3.5" (89 mm) of quartz surfacing to provide space for the flange to clear the support structure (flanges greater than 1" (25 mm) will require additional room). Adjacent cutouts should be a minimum of 2.5" (64 mm) apart. Cutouts for gas appliances may require additional distance to a backsplash. Check the appliance manufacturer's installation instructions for guidance.

Figure E-1: Cutout Design with Minimum



All cutouts must have a minimum inside radii of  $\frac{1}{4}$ " (6 mm). The top and bottom edges of the cutout must be eased to a minimum  $\frac{1}{16}$ " (1.5 mm) radius. Cutouts for electrical outlets may have a smaller minimum  $\frac{1}{8}$ " (3 mm) radius in the corners. There should be no square inside corners or cross cuts.

Figure E-2: Inside Corner Requirements



Smooth or hone around the interior of the cutout to remove cut lines and chipping. Minimum 120 grit diamond is recommended.

## F. Edges

### F.1. RADII

#### F.1.1 Inside Corner (L or U-shaped countertop)

Guidance is the same for 2 cm and 3 cm. Single section (e.g., L, U, etc.) shaped pieces are required to have a minimum radius of 1/4" (6 mm) to reduce corner stresses. A larger radius will reduce stress and increase durability. Multiple section (e.g., two-piece L and three-piece U) shaped pieces with seams in the corners (i.e., full 45° miter or European/stepped miter) do not need to have a radius in the corner.

#### F.1.2 Outside Corner

Outside corners are required to have a minimum radius of 1/8" (3 mm). Larger radii will provide additional impact resistance in heavy duty applications.

#### F.1.3 Top and Bottom Edges

Ease all top and bottom edges of straight edge profiles to a minimum of 1/16" (1.5 mm) radius or chamfer. Larger radii will provide additional impact resistance in heavy duty applications.

Figure F-1: Placeholder top/bottom edge radius



### F.2. EDGE POLISHING

Quartz surface fabrication has much in common with stone fabrication, but there are some important differences. Excessive heat and/or pressure when edge polishing can damage the interface between the quartz of the polymer. The key to successful polishing is keeping the material cool by using water, lower pressure and lower rotational speeds, particularly at courser grits.

The manufactured surface finish cannot be replicated by fabricators with edge cutting and polishing tools. The standard Corian® Quartz finish is highly polished and a polished edge provides a complementary appearance.

The leathered surface is textured and a lower gloss. The objective is to obtain a complementary finish that matches the surface in shade. This varies by color, with the darker colors looking better with a higher gloss finish, the lighter colors a more matte finish. It's also subjective based off preference. The appearance will get darker with higher gloss. This effect is stronger the darker the color.

The same finishing sequence can be followed just eliminating the later steps in the sequence. The edge should be completely dried when comparing the appearance of the surface and the edge, as a wet surface will have a higher apparent gloss. The sequence of abrasives may vary by vendor.

Edge profile selection can also affect appearance. A sharper transition between the surface and the edge will make the change in surface texture less apparent.

## G. Seaming Corian® Quartz

### G.1. SEAM PLACEMENT

Do not place seams over dishwashers or other appliances. Avoid placing seams over unsupported areas, such as corner lazy Susan. The seam should be supported on both sides as well as front and back. Locating the seam over a structural support member or where two cabinets join is recommended. For an "L" top an offset seam is preferred. There should be a minimum of 2.5" (64 mm) between seams and cutouts.

### G.2. SEAM WIDTH

The seam width should be less than 1/16" (1.5 mm).

### G.3. SEAM HEIGHT MISMATCH

The height mismatch at a seam should be less than 1/64" (0.4 mm). A flush seam is recommended.

### G.4. ADHESIVE

Use the adhesive specified for the specific application.

#### Deck Seams

Corian® Joint Adhesive or Akemi® Clear Platinum Polyester-Based Adhesive for quartz surfaces – Knife-grade (tinting required).

#### Lamination Seams

Corian® Joint Adhesive, 2-part epoxy or polyester adhesives.

#### Corian® Solid Surface sinks and lavatories

Corian® Joint Adhesive

#### Corian® Quartz tile (Maximum 24"x24" (60 cm x 60 cm))

For vertical 2 cm quartz only, tile adhesive may be used up to the size maximum specified.

#### Other materials

100% silicone adhesive is required to accommodate movement when bonding to dissimilar materials such as solid surface sheet, metal, porcelain, china, cast iron, wood, etc.

## H. Support

Support is a key element of installation. The slab should not be installed over an existing countertop.

### H.1. PLANARITY

The perimeter support must be within  $\frac{1}{8}$ " (3 mm) of a flat surface over a 118" (3 m) length. Any shimming must be done between the perimeter support and the underlying structure (often cabinets), not between the perimeter support and the quartz slab. For longer runs multiple shims should be used to provide support versus just one in the middle of the curvature.

### H.2. SUPPORT PRINCIPLES

There are two basic elements of support: Structural support is the primary structure and provides a rigid, flat structure that transfers the load from the slab, typically to the floor. With proper design structural support can extend load support horizontally. Spacers/Substructures such as underlayment or ladder structures are installed in-between the primary structural support and the countertop. These are secondary structures, not needed in all cases, that transfer load vertically to primary structure.

### H.3. KEY FEATURES OF STRUCTURAL SUPPORT

Structural support bears the weight of the slab (generally transferring the load to the floor structure) and must be structurally sound. It must be rigid, so it does not bend under load (slab plus objects on slab). It must be level and in-plane., quartz surfaces need very flat support. There should be no gaps in support. Structural support must meet the maximum span requirements.

### H.4. STRUCTURAL SUPPORT MATERIALS

The most common structural support, particularly for residential applications are cabinets. Other structural support may be constructed from tube steel or angle iron. Wood or plywood may be part of a structural design, but only in a vertical orientation. Wood used in a horizontal orientation will not provide sufficient rigidity.

### H.5. KEY FEATURES OF SPACERS/SUBSTRUCTURE

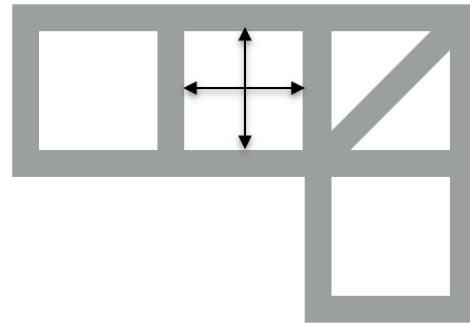
Spacers/Substructures are secondary structures such as underlayment or ladder structures are installed in-between the primary structural support and the countertop. They are insufficient in themselves to provide sufficient support for the quartz slab. Any corrections to flatness of the primary support must be done between the support structure and the spacer. Never shim in direct contact with the slab. Some materials may provide additional rigidity, others primarily raise the counter to allow drawer clearance with a mitered front edge.

### H.6. SPACERS/SUBSTRUCTURE MATERIALS

The most common materials used to construct spacers/substructures include moisture resistant/marine grades only of plywood and MDF. Untreated wood substrates should not be used as they expand/contract more with temperature and humidity changes. Particle board should not be used.

## H.7. SPANS FOR SURFACE SUPPORTED ON ALL FOUR SIDES

Figure H-1: Support Spans



Structurally sound, full perimeter support is required. Cabinets that are structurally sound; level and in-plane may qualify as support.

For spans supported on four sides the guidance is the same for 2 and 3 cm.

- $\leq 26$ " (66 cm) deep, perimeter support is sufficient.
- $> 26$ " (66 cm) to  $36$ " (91 cm) deep, perimeter support plus front to back support every  $36$ " (91 cm) or less is required.
- $> 36$ " (91 cm) in depth will require additional side-to-side support spaced no greater than  $36$ " (91 cm) apart.

## H.8. SPANS FOR SURFACE SUPPORTED ON THREE SIDES

If there is a gap between cabinets for equipment, support bracing should be installed along front and back if possible. If a front support is not possible install a support strip to span the gap between cabinets at the rear.

### 2 cm slab

- $\leq 26$ " (66 cm) deep, additional support is required at widths  $> 24$ " (60 cm)
- $> 26$ " (66 cm) deep, additional support is required at widths  $> 24$ " (60 cm).

### 3 cm slab

- $\leq 26$ " (66 cm) deep, additional support is required at widths  $> 36$ " (90cm)
- $> 26$ " (66 cm) deep, additional support is required at widths  $> 24$ " (60 cm).

## H.9. SPANS FOR SURFACE SUPPORTED ON TWO SIDES

When surface can only be structurally supported on two sides, the following restrictions apply.

- For 2 cm slabs, the maximum span is  $24$ " (61 cm)
- For 3 cm slabs, the maximum span is  $36$ " (91 cm).

### H.10. OVERHANG

An overhang should not exceed one third of the depth of the total top in the dimension of the overhang. The support guidance varies by thickness.

#### 2 cm slab

- Overhangs <12" (30 cm) do not require support
- Overhangs 12-18" (30-45 cm) use solid substrate and corbels evenly spaced at no greater than 36" (90 cm) intervals. Corbels must cover  $\frac{2}{3}$  of overhang, mechanically attach to cabinet, silicone to top.
- Overhangs >18" (>45 cm) use solid substrate along with legs or columns evenly spaced at no greater than 36" (90 cm) intervals.

#### 3 cm slab

- Overhangs <15" (40 cm) do not require support
- Overhangs 15-24" (40-60 cm) use corbels evenly spaced at no greater than 36" (90 cm) intervals. Corbels must cover two thirds of the overhang, mechanically attach to cabinet, silicone to top.
- Overhangs >24" (>60 cm) install legs or columns evenly spaced at no greater than 36" (90 cm) intervals.

### H.11. HALF WALL

Guidance is the same for 2 cm and 3 cm slabs. Full perimeter or underlayment support is required.

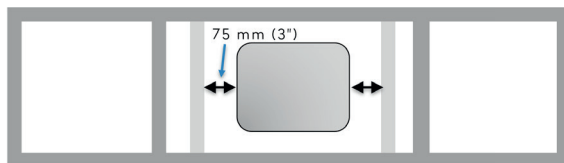
For overhangs of less than one third the depth of the top, no additional support required, but the overhang should not exceed the guidance provided under Overhangs.

For all other half wall overhangs, corbels are required to support the overhang where the bracket depth is three quarters of the overhang depth and spacing is a maximum of 24" (61 cm). Corbels should be placed at wall studs.

### H.12. CUTOUTS

Guidance is the same for 2 cm and 3 cm. Add structural support for cutouts on all sides within 3" (76 mm) of the edge of the cutout.

**Figure H-2: Support for Cutouts**



### H.13. SINK SUPPORT

Guidance is the same for 2 cm and 3 cm slabs. Support undermount sinks with brackets.

- Stainless steel and lavatory undermount sinks must be attached with clips attached to the underside of the countertop or with cradles attached to the outer perimeter or cabinet. Clips must not be screwed into quartz.
- All others sink types must be supported with cradles attached to the outer perimeter or cabinet.

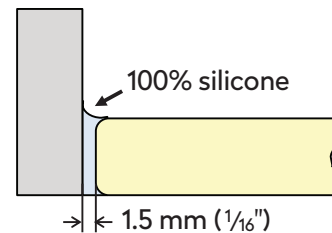
### H.14. SEAM SUPPORT (2 & 3 CM)

Guidance is the same for 2 cm and 3 cm slabs. Place seams over cabinet structure if possible. At a minimum field seams must be supported within 3" (76 mm) on both sides of the seam in the front and back. In addition, any seams that extends into an overhang should be supported.

## I. Clearances

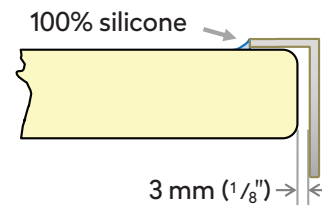
Allow  $\frac{1}{16}$ " (1.5 mm) minimum clearance between Corian® Quartz and any surface that could constrain expansion and contraction of the installation such as walls or penetrations. Long runs or applications with sun exposure may require additional space for expansion.

**Figure I-1: Gap to Vertical Surfaces**

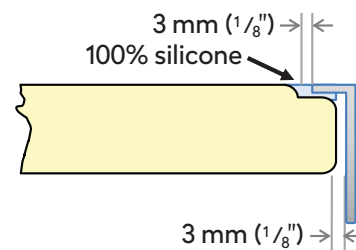


Allow  $\frac{1}{8}$ " (3 mm) for expansion on all sides of appliances and sinks to allow for expansion. Allow  $\frac{1}{8}$ " (3 mm) clearance between buildup edges and support structure.

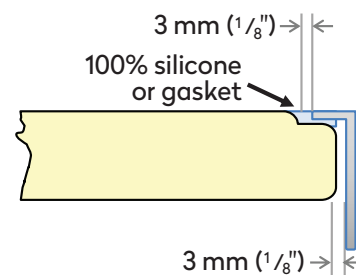
**Figure I-2: Gap for Top Mount Sink**



**Figure I-3: Gaps for Flush Mount Sink**



**Figure I-4: Gaps for Flush Mount Appliance**



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### J. Attachments

Seal and secure the front top edge of the cabinet to the underside of the Corian® Quartz top with an 1/8" (3 mm) diameter bead of 100% silicone adhesive around the perimeter. 100% silicone adhesive should be used for all bonding to dissimilar materials. There is one approved exception; Corian® bowls may be mounted on Corian® Quartz Surfaces using Corian® Joint Adhesive following the guidance in K-27500 *Corian® Quartz Sink Integration*.

Never install mechanical fasteners (screws, nails, etc.) directly into Corian® Quartz. Inserts may be used with Corian® Quartz. If inserts are used, slip fit and glue inserts are required rather than pressure fit inserts. Adhesive mounted fasteners may also be used. The design must accommodate thermal expansion in the structure to which the Corian® Quartz is fastened as the inserts will not accommodate any movement.

### K. Backsplashes

Apply standard height (<6"/150 mm) backsplashes of Corian® Quartz to the deck using 100% silicone adhesive. Full height backsplashes should follow guidance for vertical surfaces.

### L. Vertical Surfaces

Corian® Quartz is a heavy material weighing 10 lbs./sq. ft. for 2 cm and 15 lbs./sq. ft. for 3 cm slabs and requires proper support. The guidance varies by application. It is important to verify that the wall structure is capable of supporting slabs.

Waterfall edge on countertops. The vertical portion should be supported by cleats and or mechanical support at the base of the waterfall.

For 2 cm (3/4") Corian® Quartz only, tiles with maximum 24" x 24" (60 cm x 60 cm) dimension may be attached with tile adhesive. For wet wall installations (also 24" x 24" (60 cm x 60 cm) maximum) Corian® Quartz tiles must be applied with traditional mud wall installation techniques or adhered to cement board screwed to studs.

For 3 cm and 2 cm greater than 24" (60 cm) in dimension mechanical methods should be mounted with mechanical methods. Examples can be found in the Natural Stone Institute's *Dimension Stone Design Manual - Chapter 14 Vertical Surfaces*. <https://pubs.naturalstoneinstitute.org/resources/library/?mode=advancedSearch&method=get&submit=true&types=6>

### M. Tools Required

Use tooling designed for quartz surfacing.

### N. Referenced Documents

*Z-1 Manufacturing and Installation Requirements for ZODIAQ™ Quartz Surfacing*

*Adhesives for use with Zodiaq® (Z-2006-001b).*

*Zodiaq® Quartz Surfaces Commercial Food Service Bulletin (Z-2007-001)*

*Corian® Quartz Safe Handling and Storage (K-28289)*

*Corian® Quartz Sink Integration (K-27500)*

*Dimension Stone Design Manual - Chapter 15 Vertical Surfaces.*

PLEASE VISIT OUR WEB SITE: [WWW.CORIANQUARTZ.COM](http://WWW.CORIANQUARTZ.COM) OR CONTACT YOUR CORIAN® REPRESENTATIVE FOR MORE INFORMATION ABOUT CORIAN® QUARTZ.

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