CORIAN® ENDURA™ EXTERIOR COUNTERTOPS

Introduction

This fabrication bulletin addresses the basic design principles for exterior horizonal countertops manufactured with Corian® Endura™ high performance porcelain.

Overview

Corian® Endura™ high performance porcelain is dimensionally stable and highly resistant to heat, cold, UV radiation and water. It does however require different installation guidance to accommodate environmental extremes. *Corian® Endura™ Design* (K-30200) and *Corian® Endura™ Support* (K-30201) are references for standard fabrication, with outdoor specifics discussed in this bulletin.

A. Exterior Countertops

Outdoor applications experience far greater changes in conditions. If there is direct exposure to the sky, it may have greater extremes in temperatures than the air due to solar heating and radiational cooling. While Corian® Endura™ has very low water absorption and a very low thermal coefficient of expansion, the adjoining materials will generally have a greater expansion and may create stress on the slab.

B. Design

B.1. MITER

The miter support should be constructed from porcelain, granite or high-density foam designed for use with ceramic tiles. There should be a minimum 5 mm ($^3/_{16}$") gap between the miter support and the substrate underneath the countertop to allow for expansion and contraction. Chamfer the miter support slightly to allow adhesive from the miter joint to fill the space, reinforcing the joint.

B.2. RADII

Inside corner radii should be a minimum of 10 mm ($^3/_8$"). The radii for a cutout for a barbeque should be at a minimum 10 mm ($^3/_8$"), preferably 20 mm (3/4") or as large as the flange will allow.

B.3. GAPS

Due to wider temperature ranges the greater thermal expansion must be taken into account. Gaps to vertical surfaces are increased to a minimum of 5 mm ($^3/_{16}$"). This should be increased for longer runs or tops directly exposed to the sun.

B.4. SEAMS

Outdoor applications may provide addition challenges due to temperature extremes and potential ground movement. Consider separating the top into multiple sections (corresponding to multiple base units) separated with air gaps or silicone seams to allow for ground movement. While a short leg "L" can be done as a single unit with an inside radius, larger "L" and "U" should have seams at corners.

Silicone seams should be 3 mm ($^1/_8$") wide to allow for expansion with the edges having a 2 mm ($^3/_{32}$") chamfer.

C. Support

Corian® Endura™ Support (K-30001) provides basic support guidance. It is critical to ensure proper support for the top.

Unlike indoor applications, wood cabinets are much less likely to be the primary support structure. Instead the support may be masonry or metal. Metal will expand more than porcelain, so care must be taken that clearances are sufficient.

Any appliances or cooking units such as a barbeque should have independent support. The weight should not be borne by the countertop.

D. Substrate

Wood based substrates are not recommended for outdoor installations. Use full underlayment of cement fiberboard, nominal ½" thick (products may vary from 0.42-0.5" (10.7-12.7 mm)). This should be securely fastened to the support structure.

E. Adhesives

For constructing miters and deck seams use an adhesive specified for ceramic/porcelain suitable for the range of outdoor conditions that the top will experience. Note that countertops may exceed extremes in air temperatures.

Flexible seams should use 100% silicone adhesive.

For adhering to the substrate use adhesives designed for bonding to tile substrates (horizontal or vertical). These must meet ANSI A118.15HE or ISO 13007 C2TE S1. Consult with the adhesive manufacturer if adhesive does not list standards compliance.

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Adhesive application is with a 3-mm tile trowel on the slab, and a 10-mm V-notch or 15-mm U-notch trowel on the substrate. Apply in a single and identical direction for both the slab and the substrate parallel to the short edge to aid in air removal when bringing the slab and substrate together.

F. Cooking Appliances and Barbeques

All appliances and barbeques should have independent support such that the weight is born by the structure, not the countertop.

Barbeques generate heat in the plane of the countertop. There should be 5 mm ($^3/_{16}$") clearance for the cutout on all sides. If the barbeque has a flange aluminum heat reflecting tape should be used on the inside of the cutout. The flange should not rest on the countertop, leave a 2 mm ($^3/_{32}$") vertical gap between the countertop and the flange. The radii for a cutout for a barbeque should be at a minimum 10 mm ($^3/_8$"), preferably 20 mm ($^3/_4$") or as large as the flange will allow.

When the barbecue cutout is "U" shaped consider cutting the rear strip so it is separate and seam on both sides with silicone. This addresses potential issues if there is a back wall reflecting heat, large sections of countertop on either side of the cutout, improper support, inability to use a 20 mm ($^3/_4$") radius for the cutout and other stresses associated with having a thin strip of material at the rear of the barbeque.

For appliance installation design requirements, Corian® Endura™ is non-combustible as measured by ASTM E136-19a, *Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C.*

G. Referenced Documents

ASTM E136-19a, *Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C*

Corian® Endura™ Design (K-30200)

Corian® Endura™ Support (K-30201)

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