

# CORIAN® SOLID SURFACE FOR EXTERIORS

Low-rise applications

## Technical Bulletin

## INTRODUCTION

This document provides an overview of Corian® Solid Surface for Exteriors by DuPont in material in low-rise buildings for the North American region.

Building practices and codes vary throughout the world. The guidance provided in this document was developed for the United States and Canada and may not be applicable to other countries. For guidance for other countries please check the appropriate country at <http://www.corian.com> or contact a local Corian® Design representative. Laws, building and safety codes governing the design, engineering and construction of installations vary widely. It is the responsibility of the purchaser to ensure that proper building practices and codes are followed for the location of the installation.

### A. ADVANTAGES AND DESIGN FLEXIBILITY OF CORIAN® SOLID SURFACE

Corian® Solid Surface material is innovation through beauty, color and depth. It is strength and purity, reliability and performance. But above all, it is inspiration – a maverick, seamless material that can transform any space, whether for interiors or exteriors, through unlimited possibilities. Corian® Solid Surface brings personality to virtually any type of environment, enhancing and facilitating the lives of those who use and enjoy its unique potential. Crafted into almost anything, in any place, for any purpose and in a wide palette of colors, it offers the freedom to design, explore and create.

Long-lasting, durable and elegant, Corian® Solid Surface has a three-dimensional formability liberating inventive and artistic minds for 50 years. It is an advanced blend of natural minerals and acrylic polymer. It is a synthetic material – born of human imagination and exploration – and the result of a reflection upon the demands of design. To make the most of Corian® Solid Surface in a world of changing environments, fashions and modes of communication, the invitation to architects is to transform this limitless material into a meaningful work of form and function.

Corian® Solid Surface is a solid, non porous, homogeneous surfacing material, composed of about  $\frac{1}{3}$  acrylic resin (also known as polymethylmethacrylate or PMMA), and about  $\frac{2}{3}$  mineral, aluminum trihydrate (ATH). For more information on the composition of the material, please consult the Safety Data Sheets (SDS) available via the SDS Finder at [dupont.com](http://dupont.com). Supplied in sheets, it can be fabricated with conventional woodworking tools into virtually any design.

*The guidelines in this document were developed specifically for use with the DuPont products and third party products recommended for use by DuPont that are referenced in this document. The information set forth herein is furnished free of charge and based on technical data that DuPont believes to be reliable. It is intended for use by persons having technical skill, at their own risk. Since conditions of use are outside our control, DuPont makes no warranties, expressed or implied and assume no liability in connection with any use of this information. Nothing herein is to be taken as license to operate under or a recommendation to infringe any patents.*

## Advantages

Corian® Solid Surface offers many advantages in single story applications:

### High performance durability

- Great resistance to impact
- Resistant to humidity
- Resistant to salt fog and sulfur dioxide (SO<sub>2</sub>)
- Resistant to fungi and bacteria
- Will not delaminate nor decompose

### Structural Performance

- Lightweight for reduced structural load
- Flexural and tensile strength provide excellent resistance to wind loads
- Compatibility with typical building components, structural silicone and sealants

### Fire Performance

- Low flame spread
- In the event of fire, Corian® Solid Surface will not melt and will not create burning droplets
- Low smoke generation
- When burned, it primarily releases carbon oxides and does not contain toxic halogenated gases

### Weatherability

- Resistant to bulk water absorption
- Weather-resistant system minimizes leakage from wind-driven rain (ability to seam reduces the number of joints)
- Excellent freeze-thaw resistance
- Excellent resistance to chemicals, detergents and environmental pollutants

### Environment – Durability

- Is durable, long-lasting. Panels can be repaired, if necessary, rather than replaced (less material is needed or discarded over the life of the building)
- Is inert, safe in use and has low VOC content
- Is nontoxic

### Color Fastness

UV stable colors with excellent color fastness are available. Consult Color Fastness and Exterior Use of Corian® Solid Surface Sheet (K-27409) for color fastness ratings.

## Maintenance

- There are no pores to trap dirt
- Neither the surface nor the edges need to be sealed, painted or protected
- Colors run through the entire thickness and cannot wear away or delaminate, making the product inherently robust
- Even covered with some of the most difficult dirt and graffiti, the panels can be restored to their original appearance through cleaning and sanding
- Under normal conditions, will require annual cleaning only, with standard agents such as water and detergents

## Renewability

If excessive surface damage is incurred after installation, Corian® solid surface has unique repair possibilities. In most cases it can be repaired on site with little difficulty, using abrasive scouring pads and an orbital sander.

## Large Panels

Large panels can be easily built up by adhering standard panels with inconspicuous, reinforced seams. The main limitations are the ability of the substructure to accommodate movement due to thermal expansion, the weight capacity of the mounting system, and the necessary expansion gaps (revealed or open joint designs). The maximum dimensions are typically governed by the capability of the design to accommodate the anticipated thermal movement.

Colors run through the entire thickness, so edges are the same color as the rest of the sheet, and revealed joints will show no black gaps.

## Translucency

Corian® Solid Surface will allow some diffused light transmission, depending on color. In general, solid light colors such as white and beige are the most translucent, and dark colors are the least translucent. The Corian® Illumination Series has been specifically designed with more translucency than the standard colors. Special considerations for these materials are described in the *Corian® Illumination Series Fabrication Bulletin*.

Corian® can also be fabricated to achieve different levels of light transmission by selectively back-cutting the material to different thickness. As the material is cut thinner, it allows more light to pass through. The effect generated will depend on the combination of material and lighting system variables. See notes below on the potential effects of material removal on material flatness and load capabilities.

## B. PERFORMANCE PROPERTIES

Corian® Solid Surface material has many desirable attributes for decorative exterior applications. These include good color stability, low moisture absorption, and resistance to stains, environmental pollutants, detergents, humidity, and freeze-thaw conditions. Performance properties of Corian® Exteriors material for an array of industry standards relevant for outdoor use are summarized in Table B-1.

Table B-1: Performance Properties of Corian® Solid Surface Material

### Structural

Property	Typical Result	Standard
Specific Gravity	1.7	
Weight	4.4 psf (21.5 kg/sq. meter)	
Tensile Strength	6,000 psi (41 MPa)	ASTM D638
Tensile Modulus	1.5 x 10 <sup>6</sup> psi (10,350 MPa)	ASTM D638
Tensile Elongation	0.4% min.	ASTM D638
Flexural Strength	10,000 psi (69 MPa)	ASTM D790
Flexural Modulus	1.2 x 10 <sup>6</sup> psi (8,275 MPa)	ASTM D790
Izod Impact (Notched Specimen)	0.28 ft.-lbs./in. of notch (0.15 N-m/cm)	ASTM D256 (Method A)
Impact Test Resistance	130 in-lb (14.7 N-m)	ASTM D5420

### Fire Performance

	Class/result	Standard
Flammability, Surface Burning Characteristics of Building Materials	Class A	NFPA 101* Life Safety Code*
Flame Spread Index Surface Burning Characteristics of Building Materials	Flame Spread Index FSI <25	ANSI/UL 723 (ASTM E84, NFPA 255)
Smoke Developed Index Surface Burning Characteristics of Building Materials	Smoke Developed Index SDI <25	ANSI/UL 723 (ASTM E84, NFPA 255)
Flame Spread Surface Burning Characteristics of Flooring, Floor Covering, and Miscellaneous Materials	Flame Spread Value 0	CAN/ULC-S102.2
Smoke Developed. Surface Burning Characteristics of Flooring, Floor Covering, and Miscellaneous Materials	Smoke Developed Value 5	CAN/ULC-S102.2

### Weatherability

Property	Typical Result	Standard
Thermal Expansion	2.2 x 10 <sup>-5</sup> /°F (3.9 x 10 <sup>-5</sup> /°C)	ASTM E228
Thermal Conductivity	< 5.4 BTU/hr/sqft °F (0.78 W/mK)	ASTM C518
Colorfastness	See Color Fastness Bulletin	ASTM G7 & ASTM G155
Water Absorption, Long-term; 30-days	0.6 weight%	ASTM D570
Freeze / Thaw Resistance	No observable changes	ASTM C666
Salt Fog	Surface easily renewed (Concentrated effects of coastal environment exposure.)	ASTM B117
Sulfur Dioxide (SO <sub>2</sub> ) Resistance	No effect	ASTM G85
Fungus and Bacteria Resistance	Does not support microbial growth	ASTM G21 & ASTM G22
Microbial Resistance	Highly resistant to mold growth	UL 2824 (AST M D6329)


### Maintainability

Property	Typical Result	Standard
Hardness	>85	ASTM D785 (Rockwell "M" Scale)
	56	ASTM D2583 (Barcol Impressor)
Nitric Acid / Mortar Resistance	Surface easily renewed (Acid rain and mortar resistance.)	AAMA 605.2
Alkali / Acid Resistance	Surface easily renewed	ASTM D1308
High Temperature (100°F) with 100% Relative Humidity	Surface easily renewed	ASTM D2247
Detergent Resistance	Surface easily renewed (Resistance to commercial window cleaner solution.)	ASTM D2248

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OR CONTACT YOUR CORIAN® SOLID SURFACE REPRESENTATIVE.

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