

# COLORFASTNESS AND EXTERIOR USE OF DUPONT™ CORIAN® SOLID SURFACE

## INTRODUCTION

This bulletin provides an overview of one potential performance consideration when deciding if DuPont™ Corian® solid surface is appropriate for an exterior application. Corian® color recommendations are based on testing performed at the Axalta Coating Systems Florida Weathering Laboratory. Preliminary assessments of new colors are made based on accelerated Weather-Ometer® testing performed in accordance with ASTM G155 and Florida exposure testing of comparable Corian® colors.

## OVERVIEW

Color stability is often a primary concern when evaluating a material for exterior use; however, there are other performance factors that should also be considered. Many colors of Corian® solid surface exhibit good color stability. All colors have low moisture absorption and resistance to stains, environmental pollutants, detergents, humidity and freeze-thaw conditions. Design flexibility, ease of fabrication, seamless appearance, thermoformability and durability make Corian® solid surface a versatile material. Corian® installations can be easily cleaned and/or sanded to restore their original appearances. Even graffiti can be removed through standard pressure washing with baking soda-based cleaning agents. All of these performance factors combined make Corian® solid surface an excellent choice for exterior applications.

Individual Corian® colors change differently upon prolonged exposure to outdoor weather conditions and may exhibit color shifts which can be renewed with cleaning and/or sanding. This change is more evident in saturated, chromatic and dark colors and least evident in whites, lights and many of the earth tones. Ultimately, it is up to the end user to determine if these characteristics are acceptable for the desired application. Corian® solid surface has been tested according to industry standards that are used in part to help determine a product's suitability for exterior use.

## TESTING METHODS

Testing at the Axalta Coating Systems Florida Weathering Laboratory was performed in accordance with ASTM G7. Corian® panels were exposed facing south at 45° from the

horizontal for a two year period. In some cases, preliminary color assessments are made based on accelerated Weather-Ometer® testing performed in accordance with ASTM G155 and Florida exposure testing of comparable Corian® colors.

Accelerated Weather-Ometer® testing artificially reproduces and accelerates weathering effects that occur from exposure to direct sunlight and rain or dew using exposure to a xenon arc lamp and water. Color changes for both tests are measured before and after the exposure period. All exposure testing protocols are performed on nominal half-inch gauge product. Corian® colors are grouped into three performance categories. These categories are based on projected 10-year color change performance. Color changes are measured in  $\Delta E_{ab}$  units.  $\Delta E_{ab}$  (the total color difference) and its calculation are defined in ASTM D2244.

**Group 1** - Color change of less than or equal to 5  $\Delta E_{ab}$  units in 10 years - good choices for exterior applications.

**Group 2** - Color change of 5 to 15  $\Delta E_{ab}$  units in 10 years - good choices if some color change is not objectionable.

**Group 3** - Color change of greater than 15  $\Delta E_{ab}$  units in 10 years - potential choices if greater color change is acceptable.

## GROUP 1

Abalone	Deep Anthracite	Mojave
Antarctica	Deep Night Sky	Raffia
Arrowroot	Deep Nocturne	Rain Cloud
Aurora	Designer White	Rice Paper
Aztec Gold	Doeskin	Sahara
Basil	Dove	Savannah
Bisque	Ecru	Seafoam
Blue Pebble	Fossil	Serene Sage
Bone	Glacier Ice	Thyme
Burled Beach	Glacier White	Vanilla
Cameo White	Hazelnut	Venaro White
Canvas	Hickory Smoke	Whipped Cream
Cilantro	Linen	White Jasmine
Clam Shell	Mint Ice	Willow
Concrete	Modern White*	

\*Preliminary color assessment based on accelerated Weather-Ometer® testing performed in accordance with ASTM G155 and Florida exposure testing of comparable Corian® colors.

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### GROUP 2

Allspice	Deep Storm*	Noble Ecu
Anthracite	Deep Terrain*	Pearl Gray
Aqualite	Deep Titanium*	Platinum
Arctic Ice	Desert	Riverbed
Cobalt	Elderberry	Rosemary
Cottage Lane	Elegant Gray	Sagebrush
Deep Bedrock*	Fawn	Sand
Deep Black Quartz	Granola	Sand Storm*
Deep Caviar*	Graylite	Sandstone
Deep Cloud*	Juniper	Silver Birch
Deep Espresso*	Lava Rock	Silverite
Deep Inkwell*	Matterhorn	Sorrel
Deep Lapis*	Milky Way	Stardust
Deep Mink*	Mineral	Suede
Deep Sable*	Moonlit Sea	Tumbleweed
Deep Smoky Pearl*	Natural Gray	Whisper
Deep Space*	Nightfall*	

### GROUP 3

Absolute Beige	Jasmine	Sandalwood
Blue Spice	Maui	Silt
Bronzite	Moss	Silver Gray
Canyon	Oat	Sonora
Cocoa Brown	Pine	Witch Hazel
Earth	Royal Red	
Flint	Saffron	

\*Preliminary color assessment based on accelerated Weather-Ometer® testing performed in accordance with ASTM G155 and Florida exposure testing of comparable Corian® colors.

**Glacier White and Designer White display exceptional colorfastness properties. The projected  $\Delta E_{ab}$  is less than 2 units over 10 years. DuPont™ Corian® solid surface materials used in an outdoor application are covered under the DuPont™ Corian® Commercial (Product Only) 10-Year Limited Warranty for North America.**

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### REFERENCE STANDARDS

- AAMA 2604, Voluntary Specification, Performance Requirements and Test Procedures for High Performing Organic Coatings on Aluminum Extrusions and Panels
- ASTM B117, Standard Practice for Operating Salt Spray (Fog) Apparatus
- ASTM C666/C666M, Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing
- ASTM C756, Standard Test Method for Cleanability of Surface Finishes
- ASTM D1308, Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes
- ASTM D2244, Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates
- ASTM D2247, Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity
- ASTM D2248, Standard Practice for Detergent Resistance of Organic Finishes
- ASTM D570, Standard Test Method for Water Absorption of Plastics
- ASTM G7, Standard Practice for Atmospheric Environmental Exposure Testing of Nonmetallic Materials
- ASTM G21, Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi
- ASTM G85, Standard Practice for Modified Salt Spray (Fog) Testing
- ASTM G155, Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials
- ISO 14021:2001, Environmental Labels and Declaration. Self-declared Environmental Claims (Type II Environmental Labeling)
- ISFA-2-01 (2013), Classification and Standards for Solid Surfacing Material
- ISO 19712-2:2007, Plastics – Decorative solid surfacing materials – Part 2: Determination of properties – Sheet goods