CORIAN®

DESIGN

CORIAN® SOLID SURFACE

TECHNICAL DATA SHEET

Click to access each document:

K-27478 Product Overview

K-26829 Performance Properties

K-27406 Chemical Resistance

K-28300 Fire Performance

CORIAN® SOLID SURFACE PRODUCT OVERVIEW

Product name

Corian® Solid Surface

Manufacturer

Corian® Design
DuPont de Nemours International Sàrl
154 Route du Nant d'Avril
1217 Meyrin (Switzerland)
www.corian.uk

Product description

Basic use

Corian® Solid Surface is an advanced composite product used as an architectural and design material in a variety of residential and commercial applications. Corian® Solid Surface offers design versatility, functionality and durability. Supplied in sheets and shapes, it can be fabricated with conventional woodworking tools into virtually any design. It is the original Solid Surface material made only by DuPont. It is widely accepted as a material for countertops, vanity tops, bath/shower walls, kitchen sinks, vanity basins and laboratory bench tops in numerous markets including hotels, healthcare, banks, boutiques and restaurants.

Composition

Corian® Solid Surface sheet is a solid, non-porous, homogeneous surfacing material, composed of ~ 1 /3 acrylic resin (also known as polymethyl methacrylate or PMMA), and ~ 2/3 natural minerals. These minerals are composed of aluminium trihydrate (ATH) derived from bauxite, an ore from which aluminium is extracted. For more information on the composition of the material, please consult the Corian® Solid Surface Safety Data Sheet (SDS) available via the *www.dupont.com* website or via your local supplier.

Standard products

Corian® Sheets

Available in various standard thicknesses, easily cut to size by professional fabricators.

All colours in the standard colour palette are available in 12 mm sheets that are 760 mm x 3658 mm. Selected colours may be available in 19 mm sheet with the same length and width or 6 mm sheets that are 760 mm x 2490 mm. 930 mm wide sheets are available in selected 6 and 12 mm colours. 1300 mm and 1500mm wide sheets are available in selected 12 mm colours with length 3658 mm. Please consult your Corian® Design distributor or representative for availability.

The Colours of Corian® Solid Surface

A broad palette of colours allows for an almost unlimited working palette. You can choose a single colour; a neutral basis for design; or experiment with eye-catching harmonies. Corian® Solid Surface can also be used as inlays, accents, or as a versatile complement to other materials like metal, wood, stone, etc.

Hues, patterns and textures are related by style and character. Dark, heavily pigmented Corian® colours will show scratches, dust and ordinary wear and tear more readily than lighter, textured colours. As a result, these colours are recommended for applications where surface contact is light or for use as inlays and accent colours.

However, the DeepColour™ series incorporates an innovative, proprietary technology that delivers greater depth of colour and increased durability compared to other dark Corian® colours. Please consult the document *Corian® Solid Surface Recommended Colours for Kitchen Worktops and Heavy Use Environments*. For complete information on colours, refer to www.corian.uk.

Custom Sheets

DuPont can manufacture Corian® sheets in custom colours, patterns and dimensions., within manufacturing capability limits and based on a minimum order quantity.

Corian® Sinks and Basins

A wide range of Corian® sinks and washbasins are available in selected solid colours for custom integration with Corian® sheets to create a continuous surface. This includes basins in selected solid colours for bathrooms, and single and double sinks for kitchens, bars and small wash-up areas, hospitals, and laboratories.

Seamed undermounting eliminates rims that trap dirt and water, minimising cleaning and maintenance and providing improved hygiene.

Please consult www.corian.uk for an overview of the models and dimensions available.

Limitations

Use of 6 mm sheets should be restricted to interior vertical applications. The choice between 12 mm and 19 mm is generally based on performance and cost considerations.

Do not fix Corian® Solid Surface in saunas or steam rooms. Due to the influence of constant exposure to moisture and humidity the coefficient of expansion and contraction are impossible to control.

Due to the complex blending of natural minerals and man-made acrylics, slight colour variations may be found within a sheet or from sheet to sheet or sheet to shape of the same colour. Therefore, checking for colour matching is an essential element of sheet and shape inspection before starting fabrication.

Although Corian® Solid Surface can withstand high temperatures, it should be protected against direct heat with hot pads or heat shields.

Corian® Solid Surface is non-porous so spills and stains remain on the surface. However, some chemicals can stain, discolour or damage the surface of Corian® Solid Surface. These chemicals include strong acids (like concentrated sulphuric acid), ketones (like acetone), chlorinated solvents (like chloroform) or strong solvent combinations (like paint remover). The extent of the damage will depend on the length of contact. Except for strong solvents such as paint remover, short periods of contact will not usually cause severe damage to Corian® Solid Surface. Acid drain cleaners should not be used as they can damage both Corian® Solid Surface and any plastic plumbing beneath. Corian® Solid Surface is not recommended for use in photographic processing laboratories.

More information can be found in *Corian® Solid Surface Chemical Resistance* (K-27406). In some hospitals and laboratories where strong disinfectants come in contact with Corian® applications, the recommendation is to use solid colours and avoid extended contact.

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CORIAN® SOLID SURFACE PERFORMANCE PROPERTIES

PHYSICAL PROPERTIES

PROPERTY	TEST	TYPICAL RESULT
Density	ISO 1183	1.75 g/cm3
Approximate weight per square meter 6 mm		10.5 kg
Approximate weight per square meter 12 mm[1]		21 kg
Thermal expansion	ASTM D 696	3,9 x 10^{-5} mm/mm °C
Hardness - Rockwell "M" scale	EN ISO 19712-2 (ISO 2039-2)	>85
Hardness - Barcol impressor	EN ISO 19712-2 (ASTM D 2583)	56
Hardness - Ball indentation	EN ISO 19712-2 (ISO 2039-1)	290 N/mm^2
Surface hardness (Mohs index)	DIN EN 101	2-3

MECHANICAL PROPERTIES

PROPERTY	TEST	TYPICAL RESULT
Flexural modulus	ISO 178	8800 MPa
Flexural strength		71 MPa
Tensile strength	ISO 527-2	47 MPa
Tensile elongation at break		0.8%
Compressive strength	ISO 604	119 MPa

Typical results for 12mm solid colours unless gauge is specified. Properties may vary by aesthetic. These values are not intended for engineering calculations, if precise calculations are required contact DuPont for additional information.

[1] For information on specific colours, please see *Corian® Solid Surface The Complete Colour Palette*. For information on Fire Performance please see *Corian® Solid Surface Fire Performance* (K-28300-EMEA).

FITNESS FOR USE

PROPERTY	TEST	TYPICAL RESULT
Light resistance (Xenon Arc)	EN ISO 19712-2	Pass
Weatherability[1]	ASTM G 155	$\triangle E^*_{94}$ <5 in 1,000 hrs.
Resistance to impact by large diameter ball	EN ISO 19712-2	no breaks
Stain/chemical-resistance test		Pass
Resistance to cigarette burns		Pass
Resistance to dry heat		Pass
Resistance to wet heat		Pass
Hot/cold cycle water-resistance test		Pass
Load test		Pass
Dimensional stability	ISO 4586-2	Pass
Resistance to surface wear		0.18% wt/25 revolutions
Fungi and bacteria resistance	ISO 846	Does not support microbial growth
Resistance to boiling water - surface change	DIN ISO 4586 T7	No visible change

Typical results for 12mm solid colours unless gauge is specified. Properties may vary by aesthetic. These values are not intended for engineering calculations, if precise calculations are required contact DuPont for additional information.

[1] For information on specific colours, please see *Corian® Solid Surface The Complete Colour Palette*. For information on Fire Performance please see *Corian® Solid Surface Fire Performance* (K-28300-EMEA).

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CORIAN® SOLID SURFACE CHEMICAL RESISTANCE

Introduction

This technical bulletin discusses the chemical resistance of Corian® Solid Surface. Chemical resistance is evaluated by placing a chemical on Corian® Solid Surface and covering it for 16 hours. Time of exposure is an important factor; prompt removal of chemicals will prevent most damage.

The concentration tested is listed where applicable, unless specified the chemical is a solution in water. Use caution if using higher concentrations as they may increase the likelihood of damage. Concentrations reported as <X% were tested at multiple concentrations, with the result indicated up to the listed concentration.

A. Class I Reagents

The following reagents generally show no permanent effect on Corian® Solid Surface sheet when left in contact for periods of 16 hours. Wipe the surface clean using adequate personal protection for the chemical such as gloves and eye protection. Any chemical residues may be removed with a wet Scotch-Brite™ pad and bleaching cleanser. Sometimes, minimal effects have been observed, particularly those indicated by footnotes ([1][2][3]).

acetic acid (10%)	ethyl ether[2]	methyl red (1%)	sodium sulfate
acetone	eucalyptol	mineral oil	soy sauce
ammonium hydroxide (<28%) (ammonia in water)	ferric chloride	mustard	sugar (sucrose)
	food colouring	nail polish	sulfuric acid (<60%)
amyl acetate	formalin (10% neutral buffered formaldehyde)	nail polish remover (acetone)	tannic acid
amyl alcohol		naphthalene (naphtha)	tea
aromatic ammonia (smelling salts)	gasoline	n-Hexane	tetrahydrofuran (THF)
ball point pen ink	gentian violet (crystal violet)	nitric acid (<6%)	tetramethylrhodamine
benzene[2]	hair dyes	olive oil	thymol (alcohol solution)
bleach (household type)	hemastoxlin stain	pencil lead	toluene
blood	household soaps	perchloric acid	tomato sauce
butanol (butyl alcohol)	hydrochloric acid (<30%)	permanent marker ink	trisodium phosphate (30%)
calcium thiocyanate (78%)	hydrogen peroxide	phenolphthalein (1%)	trypan blue
carbon disulfide	iodine (1% in alcohol)[3]	phosphorus pentoxide	urea (6%)
carbon tetrachloride	iodine, tincture of	potassium permanganate (2%)	uric acid
cigarette (nicotine)	isopropanol (isopropyl alcohol)[2]	povidone-iodine (PVP-I), “Betadine” Solution	urine
citric acid (10%)	kerosene		vinegar
coffee	ketchup	saffron	washable inks
cooking oils	lemon juice	salt (sodium chloride)	wine (all varieties)
cotton seed oil	lipstick	shoe polish	Wright’s stain
dimethyl formamide	liquid shoe polish	silver nitrate (10%)	xylenes
dishwashing liquids/powders	lye (1%)	sodium bisulfate	zinc chloride
ethyl acetate (in acetone-free nail polish remover)	methanol[2]	sodium hydroxide flake[2]	zinc oxide (paste, ointment)
	methyl ethyl ketone (MEK)	sodium hydroxide solution (<40%)[2]	
ethanol (ethyl alcohol)[2]	methyl orange (1%)	sodium hypochlorite (<15%)	

[1] May cause surface etching or deglossing after 16 hours exposure.
[2] May cause slight lightening after 16 hours exposure.
[3] May cause slight darkening after 16 hours exposure.

B. Class II Reagents

Corian® Solid Surface is not recommended for working areas where it likely to come in contact with CLASS II reagents. Concentrations reported as >X% were tested at multiple concentrations, with the result indicated above the listed concentration. The occasional stain that might result from inadvertent exposure to Class II reagents can often be removed. Scrubbing with household cleanser will remove light stains. More stubborn surface stains will require sanding with fine to coarse sandpaper, followed by typical fabrication finishing steps. Exposure to the following materials may cause damage that requires sanding for complete removal.

acetic acid (>90%)	dioxane	methylene chloride	phosphoric acid (>75%)
acid drain cleaners	formic acid (>50%)	methylene chloride-based products: paint removers, brush cleaners, some metal cleaners	sodium hydroxide (>50%)
aqua regia	furfural		sulfuric acid (>77%)
chlorobenzene	hydrochloric acid 10M		trichloroacetic acid (>10%)
chloroform (100%)	hydrofluoric acid (48%)	nitric acid (>25%)	
cresol	methyl methacrylate	phenol (>40%)	

C. Specialized Products

C.1. Biochemistry

Biochemistry staining agents will stain Corian® Solid Surface in most instances after a few minutes exposure. These stains can often be removed by prompt scrubbing with acetone. Residual stains may be restored by scrubbing with a Scotch-Brite™ cleaning pad. Example stains are listed, but all staining agents should be handled with caution and promptly removed if spilled.

acridine orange	gentian violet (crystal violet)	safranine (safranin)

C.2. Dental

Dental treatment materials may degloss, etch, or slightly stain Corian® surface. Affected areas may be restored by scrubbing with a wet Scotch-Brite™ cleaning pad. Dental products are often proprietary blends of materials. The SDS may list some, but generally not all of the components. One common component is eugenol, which may affect the surface if not removed promptly.

Products that are not listed may be similar to the ones that are. Please compare the ingredients listed on their label or in their Safety Data Sheet (SDS) to the ones mentioned.

The published results are for 16 hours exposure time. In many cases, actual exposure is much less as the material may be removed by cleaning or through rapid evaporation. However, in some cases exposure can be much longer. For example, a leaking hand-soap dispenser may create a liquid puddle for periods greater than 16 hours, even days or longer, creating almost constant exposure. Similarly, some containers have poorly designed spouts/caps from which product leaks every time they are used, so that the containers stand constantly in the spilled material. If needed, a drip cup or a spill tray of a suitable material would address these situations.

The resistance to staining of Corian® Joint Adhesive is slightly less than that of Corian® Solid Surface sheet and shape.

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CORIAN® SOLID SURFACE FIRE PERFORMANCE

Introduction

This technical bulletin discusses the fire performance of Corian® Solid Surface. Fire performance results are specific to the standard tested. It is important to understand which standard is appropriate and the meaning of the results. Standards are applicable for the regions specified, but may be used as material specifications in other regions.

A. Fire performance

	STANDARD	REGION	MATERIAL	CLASS/RESULT
Caloric Potential	EN ISO 1716	Europe (CEN Member States)	Glacier White, 12 mm	9,5 KJ/g
Reaction to fire – Building materials	EN 13501-1	Europe (CEN Member States)	Standard grade 6 & 12 mm, all colours	Euroclass C-s1, d0
			Made in USA, FR-Grade 12mm, all colours	Euroclass B-s1, d0
			Made in PRC, 12 mm, Glacier White	
			Deep Colour™ Technology, 12mm, all colours	
Marine	IMO MED – Marine Equipment Directive 2014/90/EU	Ships registered under the flags of the European Union Member States	Made in USA, FR-Grade, 12 mm, solid colours	Module B and Module D for MED/3.18a (see details in B.3.)
	46 CFR Part 164.117	United States	Made in USA, FR-Grade, 12 mm, solid colours	USCG Module B
Rolling Stock (Railway)	EN 45545-2	Europe (CEN Member States)	Standard Grade, 12 mm, all colours	R2 (HL1, HL2, HL3)
			Deep Colour™ Technology, 12mm, all colours	R1 (HL1, HL2) R2 (HL1, HL2, HL3)
			Made in USA, FR-Grade 12 mm, all colours	R1 (HL1, HL2) R2 (HL1, HL2, HL3)
			Made in USA and JPN, 6 mm solid colours	R1 (HL1, HL2) R2 (HL1, HL2, HL3)
Flammability of Interior Materials, Motor Vehicles	FMVSS 302	United States	Standard Grade, 6 &12 mm, all colours	Pass, Does not ignite
	CMVSS 302	Canada		
Flammability, Surface Burning Characteristics of Building Materials	NFPA 101® Life Safety Code®	United States	Standard Grade, 6 &12 mm, all colours	Class A
Flame Spread Index Surface Burning Characteristics of Building Materials	ANSI/UL 723 (ASTM E 84, NFPA 255)	United States	Standard Grade, 6 &12 mm, all colours	Flame Spread Index FSI <25 Smoke Developed Index SDI <25 UL File Num. BTAT.R19169
Flame Spread Surface Burning Characteristics of Flooring, Floor Covering, and Miscellaneous Materials	CAN/ULC-S102.2	Canada	Standard Grade, 6 &12 mm, all colours	Flame Spread Value 0 Smoke Developed Value 5 UL File Num. BTLIC.R19169
Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances	UL-94	United States	Standard Grade, 6 &12 mm, all colours	V-0 5VA

B. Fire performance Standards

B.1. ISO EN 1716

EN 1716 is used to determine the potential maximum heat release of a material that is completely burned under high pressure in a pure oxygen atmosphere.

B.2. EN 13501-1

EN 13501-1 standard describes the European classification for the reaction to fire of building materials.

Classification is based on the material's behaviour in reference scenarios. The classification for wall and ceiling materials is based on the contribution to fire development the material will give in a scenario with a fire starting in a small room by a single burning object (SBI).

FIRE BEHAVIOUR CLASSIFICATION	
Class A1	Non-combustible materials that will not contribute to the fire growth or to the fire
Class A2	Low-combustible materials that will not significantly contribute to the fire growth and fire load
Class B	Materials that will not lead to a flashover, however they can contribute to the fully developed fire after 20 minutes
Class C	Materials that may lead to a flashover only after more than 10 minutes
Class D	Materials that may lead to a flashover within 10 minutes
Class E	Materials that may quickly lead to a flashover situation, within the first two minutes of the test
Class F	No performance determined
SMOKE CONTRIBUTION	
s1	Little or no smoke
s2	Medium smoke
s3	Large smoke contribution
BURNING DROPLETS	
d0	No droplets
d1	Droplets
d2	Many droplets

B.3. Marine (IMO MED/United States Coast Guard)

Marine Equipment Directive (MED) 2014/90/EU, covers certain equipment and materials used in ships registered under the flags of the European Union Member States. MED was established to ensure that equipment and materials comply with the requirements of International Conventions e.g. Safety of Life at Sea, 1974 (SOLAS) as agreed upon by the International Maritime Organisation (IMO).

IMO MED – Module B and Module D. Both Module B and Module D are mandatory for certain materials used on ships. Module B certification by a Notified Body indicates that the material complies with criteria given in the standard IMO Res. MSC.307 (88)-(2010 FTP Code) Annex 1 Part 2 and Part 5. Corian® Solid Surface (FR-Grade, U-Series, Solid Colours, 12 mm) is certified compliant with the requirements for regulation item *MED/3.18a Surface Materials And Floor Coverings With Low Flame-Spread Characteristics: Decorative Veneers*.

Module D, which is linked to ISO 9001 certification, covers the overall manufacturer's production processes, quality management and systems used.

A manufacturer is allowed to affix the **United States Coast Guard** approval number (USCG Approval Category/NB number/ Unique Identifier) as allowed by the "Agreement between the European Community and the United States of America on Mutual Recognition of Certificates of Conformity for Marine Equipment" signed on 27 February 2004 and amended by Decision No.1/2018 dated 18 February 2019.

B.4. EN 45545-2

The Technical Committee CEN/TC 256 "Railway Applications" on behalf of the European Commission developed a new classification system for European rail fire safety requirements using fire safety regulations for railway vehicles from the International Union of Railways (UIC) and different European countries. The specifications for the reaction to fire performance requirements for materials and products used on railway vehicles are defined in EN 45545-2 (Railway applications - Fire protection on railway vehicles - Part 2: Requirements for fire behaviour of materials and components).

HAZARDS LEVEL (HL) CLASSIFICATION BY OPERATION CATEGORY WITH RESPECT TO DESIGN CATEGORY

	DESIGN CATEGORIES			
Operation Categories	N Standard Vehicle	A Automatic vehicle with no emergency trained staff on board	D Double decked vehicles	S Sleeping/couchette vehicles (Single or double decked)
1	HL1	HL1	HL1	HL2
2	HL2	HL2	HL2	HL2
3	HL2	HL2	HL2	HL3
4	HL3	HL3	HL3	HL3

Rail vehicles are divided into operation categories. These categories describe the infrastructure and the evacuation possibilities.

Design categories for vehicles are N - standard vehicles, A - automatic vehicles with no emergency trained staff on board, D - double decked vehicles and S - sleeping/ couchette vehicles. Vehicles used for freight are excluded.

Hazards level classification is based on performance of materials evaluated in accordance with EN ISO 5658-2 Lateral Spread of Flame Test, ISO 5660-1 Heat Release (Cone Calorimeter Method), EN ISO 11925-2 Ignition When Subjected to Direct Impingement of Flame and EN ISO 5659-2 Plastics – Smoke NF X70-100 parts 1 and 2 Smoke Toxicity.

B.5. FMVSS 302, CMVSS302

Federal Motor Vehicle Safety Standards (FMVSS) are USA federal safety regulations used for specifying the construction, performance, design and durability of motor vehicles. Canada Motor Vehicle Safety Standards (CMVSS) overlap substantially with the FMVSS. Standard 302 (FMVSS 302, CMVSS 302), Flammability of Interior Materials, is used to specify and test burn resistance of materials such as seat covers, instrument panel padding, etc. within 13 mm (0.5 inches) of interior compartment air space of the occupant. Standard 302 specifies that materials are not to burn or transmit a flame front across the surface of the material at a rate of more than 101.6 mm (four inches) per minute. ISO 3795 and ASTM D5132 are technically equivalent to Standard 302.

B.6. ANSI/UL 723 (ASTM E84, NFPA 255)

The ANSI/UL 723 (ASTM E84, NFPA 255) Surface Burning Characteristics of Building Materials standard is used to determine the relative surface burning characteristics of materials used as coverings for walls and ceilings. The test provides a means to describe a material's fire and heat response during a controlled burn. A photometer is used to indicate changes resulting from effluents, particulates or smoke. The distance travelled by the flame is used to calculate the Flame Spread Index (FSI). Flame spread ratings offer a general indication of the speed with which fire might spread across the surface of a material. The amount of smoke generated during the burn is measured optically and is used to calculate the Smoke Developed Index (SDI).

Fire performance is based on the test results in accordance with the NFPA 101, Life Safety Code® material classification. For all Interior Finishes, a flame spread rating of less than 25 results in a Class A classification if the smoke developed rating is less than 450. Any material with smoke developed rating greater than 450 is not classifiable.

NFPA 101, Life Safety Code®

CLASSIFICATION	FLAME SPREAD INDEX	SMOKE DEVELOPED INDEX
Class A	0-25	<450
Class B	26-75	<450
Class C	76-200	<450

B.7. CAN/ULC S-102, CAN/ULC S-102.2

The National Building Code of Canada requires that building materials be tested in accordance with CAN/ULC S102. The ULC S102 surface burning characteristics test for building materials is applicable to any type of building material that is capable of supporting itself in a manner comparable to its recommended use. Other types of materials which cannot be tested without the use of supporting material may be tested and classified in accordance to CAN/ULC-S102.2. Corian® Solid Surface, due to its thermoforming characteristics, does require supporting structure; therefore CAN/ULC-S102.2 applies.

B.8. UL-94

The UL 94: Flammability of Plastic Materials for Parts in Devices and Appliances standard relates to materials commonly used in manufacturing enclosures, structural parts and insulators found in consumer electronic products.

	UL-94 RATINGS
UL 94-5VA	Surface Burn; Burning stops within 60 seconds, test specimens MAY NOT have a burn-through (no hole). This is the highest (most flame retardant) UL 94 rating.
UL 94-5VB	Surface Burn; Burning stop within 60 seconds, test specimens MAY HAVE a burn-through (A hole may be present).
UL 94 V-0	Vertical Burn; Burning stops within 10 seconds, NO flaming drips are allowed.
UL 94 V-1	Vertical Burn; Burning stops within 60 seconds, NO flaming drips are allowed.
UL 94 V-2	Vertical Burn; Burning stops within 60 seconds, Flaming drips ARE allowed.
UL 94 H-B	Horizontal Burn; Slow horizontal burn test (H-B) are considered “self-extinguishing”. The lowest (least flame retardant) UL94 rating.

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