Corian. SOLID SURFACE

DUPONT™ CORIAN® INTERIOR VERTICAL CLADDING

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INTRODUCTION

This bulletin is offered to facilitate specification and installation of DuPont™ Corian® solid surface interior wall surfacing for dry applications. The information needed to make design decisions on the primary features for a vertical surface application is summarized in Table 1.

TABLE 1: DESIGN DECISIONS; INTERIOR WALL VERTICAL SURFACING

Feature	Comments
Color	DuPont™ Corian® solid surface is offered in over one hundred colors. Colors can be viewed at www.corian.com. Local distributors can provide color brochures and samples. Call 1 800 436 6072 for the location of the distributor nearest you.
Cladding Sheet Thickness	All bulletin sketches show 6 mm (¼") sheet material, but 12 mm (½") material could also be used. Although 6 mm material is very durable in most applications, 12 mm material will provide additional protection against impact damage in areas where high levels of abuse can be anticipated.
Cladding Adhesive	A 100% silicone with 50% movement capability is suggested for bonding sheets to walls. Reference Section A for silicone thickness and placement. Silicone thickness needs to be increased if inside corners are hard seamed (Reference Figure E-1).
Cladding Wall Seams (Hard versus Silicone)	Long expanses of inconspicuous hard seamed cladding provide desirable seamless appearance and can ease cleaning and maintenance. However, hard seamed wall lengths need to be limited per Table 3, page 3 to accommodate thermal expansion and contraction. Soft silicone seams may be inserted as needed to allow for expansion.
Outside Corner Details	Outside corners can be made with either inconspicuous hard seams or silicone soft seams, reference Section C. The wall length limits in Table 3 also apply to walls with outside corners.
Inside Corner Details	Inside corners can also be made with either inconspicuous hard seams or silicone soft seams. The hard-seam wall length limits in Table 4 apply to walls with inside corners. The decision process for room inside corners is summarized in Figure D-2. Options for hard seamed inside corners appear in Section E. Options for silicone soft seamed inside corners appear in Sections F, G, H, and I.
Wall to Floor Details	Options for the connection between walls and floors appear in Figure J-1 through Figure J-4.
Wall to Ceiling Details	Options for the connection between walls and ceilings appear in Figure K-1 through Figure K-3.
Other Topics	Mounting devices or equipment, e.g., handrails, and wet walls are covered in Sections N and O, respectively.

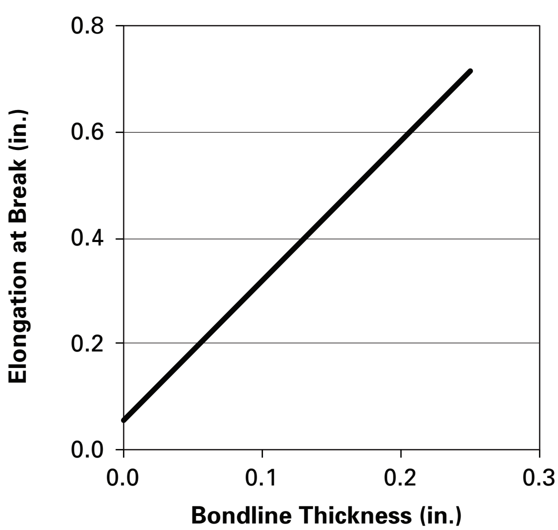
Additional introductory comments most applicable to the fabricator/installer include:

- DuPont™ Corian® sheet can be mounted with either horizontal or vertical seams in vertical cladding applications. Sheets can be seamed together using butt, tongue and groove edge, or wavy edge seams. Reference Section P, Hard Seaming, for more information on tongue and groove joints.
- To ease alignment between sheets it is preferable to only have vertical or horizontal seams, not both. Therefore, for long, full height walls, vertical seams are preferable. Develop an overall installation plan based on the application. Care must be taken to mount sheets with plumb and level vertical and horizontal edges, respectively, especially for the initial sheet mounted on a wall. Both vertical edges of corner panels should be plumb. It is easier to align a larger sheet than a narrow vertical or horizontal strip. To ease alignment for hard seamed panels it is suggested that narrow strip pieces, e.g., corner pieces or baseboards, be seamed to larger pieces prior to installation on the wall.
- Reference Section M for requirements for cutouts. A general rule of thumb for interior applications where temperature is not well controlled or variable sun loads exist on the walls is to provide an allowance (gap from potential hard restraints) for 1/64" movement (panel dimension expansion or contraction) for every foot of panel dimension (1.5 mm per meter).
- Although the guidelines documented in this bulletin are generally applicable to walls in both dry and wet environments, some special consideration are needed for walls in wet environments.

A. SILICONE ADHESIVE

A 100% silicone sealant with minimum 50% movement capability[1] is suggested for bonding sheets to walls. The use of an elastic silicone and the final thickness of the silicone bond are important to create an elastic connection between the Corian® sheet and the wall substrate to allow for differential expansion and contraction (Reference Figure A-1). A minimum silicone adhesive thickness of 1⁄16" (1.5 mm) is suggested to apply sheet panels to the wall. Greater silicone thickness can accommodate even longer hard seamed wall lengths for a given variable temperature environment. Be sure to clean both the substrate surface and the surface of the sheet you are adhering to the substrate to ensure a quality silicone bond.

FIGURE A-1: SILICONE MOUNTING BOND LINE THICKNESS VS. ELONGATION AT BREAK: LAP SHEAR DATA BETWEEN DUPONT™ CORIAN® SOLID SURFACE AND COMMON SUBSTRATES

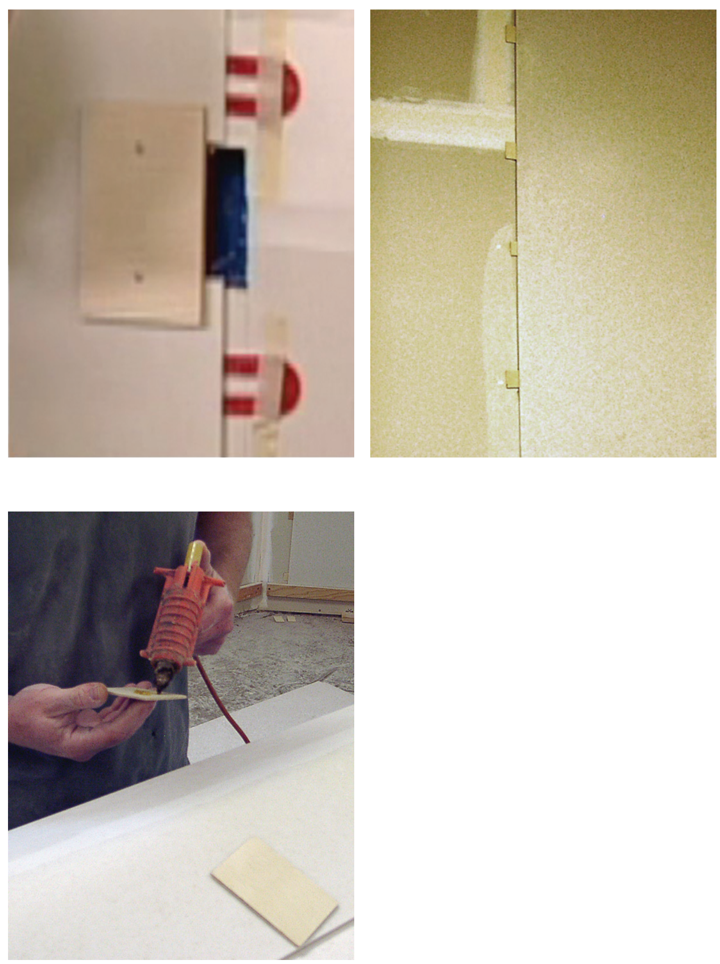


The data in Figure A-1 is adequate for design purposes as minimum performance with gypsum board, cement board, wood, MDF, metals, and ceramic tiles. Higher elongation capabilities are applicable for some of these materials. If there is any question regarding bond strength, quality testing should be performed using a peel-in-adhesion or other quality test, reference ASTM C794, *Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants*, for a procedure to test and record adhesion strength.

Examples: 1⁄16" (1.5 mm) 100% silicone will allow approximately 0.15" (3.8 mm) movement before failure. 1⁄8" (3 mm) and 1⁄5" (5 mm) 100% silicone will allow approximately 0.4" (10 mm) and 0.6" (15 mm) movement before failure, respectively. Applying a safety factor of 2 to these values is suggested.

Typical silicone manufacturer guidance includes use of 3:1 silicone width to thickness bond lines and limit of static loads to one pound per square inch (1 psi) or 7 kPa. The applied silicone bead diameter should be 2 to 2.5X your desired finished silicone thickness. This will result in a bite width to thickness ratio of approximately three. Fabrication methods should be used to insure the thickness is achieved, e.g., the use of shims as shown in Figure A-2. Table 2 is a tabulation of silicone bead diameters and bead lengths suggested to achieve manufacturer's recommendations for silicone bonds.

FIGURE A-2: SHIMS MAINTAIN MINIMUM SILICONE BOND LINE THICKNESS (SHIMS CAN BE SECURED WITH HOT MELT GLUE AND LEFT IN PLACE)



[1]Silicone movement capability is typically listed in manufacturer's material property literature.

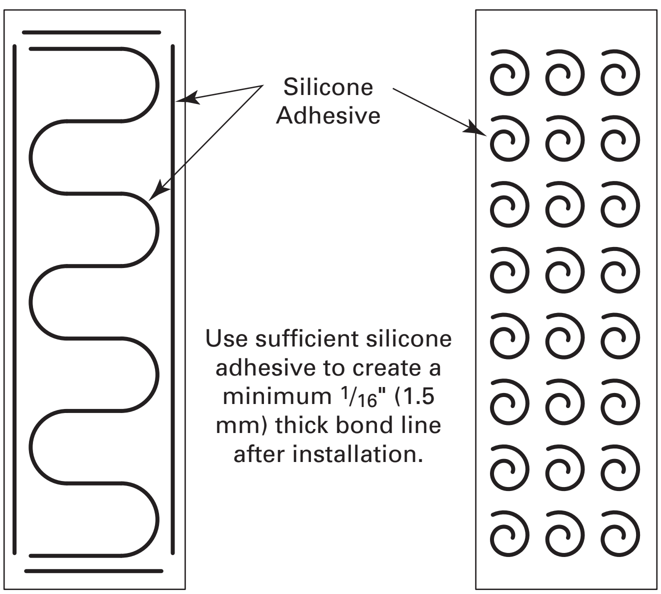
TABLE 2: SILICONE ADHESIVE BONDING GUIDELINES

Suggested Silicone Bead Diameters to Achieve Different Bond Line Thicknesses and Suggested Silicone Bead Lengths Per Area of Different Sheet Thicknesses.

Sheet Thickness		Bead Diameter		Compressed Thickness		Bead Length Required / Unit Sheet Length		Bead Length Required / Unit Sheet Area	
(in.)	(mm)	(in.)	(mm)	(in.)	(mm)	(in./ft.)	(cm/m)	(in./ft.²)	(cm/m²)
¼	6	⅛	3.2	1/16	1.6	40	310	15	405
¼	6	¼	6.4	⅛	3.2	20	620	8	205
½	12	⅛	3.2	1/16	1.6	75	155	30	810
½	12	¼	6.4	⅛	3.2	40	310	15	410

Use a distributed silicone placement pattern to provide panel bonding near all panel edges and across spans to provide consistent dimensional gap support from the substrate (Reference Figure A-3). It is important not to create closed loops of silicone adhesive as silicone uses atmospheric moisture to cure. Closed loops create a barrier to moisture and will retard cure.

FIGURE A-3: SILICONE ADHESIVE PLACEMENT



B. HARD SEAMED WALL LENGTH LIMITATIONS

Long expanses of inconspicuous hard seamed cladding can be fabricated using Corian® solid surface sheets when 100% silicone is used for mounting. For 1/16" (1.5 mm) silicone bond lines the maximum suggested wall lengths versus the expected temperature change appear in Table 3. If desired wall dimensions exceed those suggested, thicker silicone bond lines can be used or an expansion joint is suggested (Reference Table 3).

TABLE 3: HARD-SEAMED WALL LENGTH LIMITS AS FUNCTION OF EXPECTED TEMPERATURE CHANGE FOR 100% SILICONE WITH 50% MOVEMENT CAPABILITY[2,3]

1/16" (1.6 mm) Silicone Thickness

ΔT (°F)	length limit (ft.)	ΔT (°C)	length limit (m)
±10	49	±5	16.7
±15	33	±10	8.3
±20	25	±15	5.6
±25	20	±20	4.2
±30	16	±25	3.3
±35	14		
±40	12		

1/8" (3.2 mm) Silicone Thickness

ΔT (°F)	length limit (ft.)	ΔT (°C)	length limit (m)
±10	115	±5	38.9
±15	77	±10	19.4
±20	57	±15	13.0
±25	46	±20	9.7
±30	38	±25	7.8
±35	33		
±40	29		

The temperature range used for design should be based on the expected deviation from the installation temperature and should include consideration for the construction phase as well as occupation. Plan the installation to minimize ambient temperature changes on site. If possible, the building should be heated prior to installation. Acclimate the materials and building to the design temperature for at least 48 hours with air circulation around the materials. The temperature needs to be controlled once installation is complete.

[2]Suggested limits are based on silicone capability plotted in Figure A-1, installation on gypsum board and a safety factor of 2. Reference Appendix A: Example Application Calculations for example application calculations.

[3]Silicone movement capability is typically listed in manufacturer's material property literature.

C. OUTSIDE CORNERS

Outside corners may be either hard seamed or silicone seamed as shown in Figure C-1.

FIGURE C-1: ALTERNATIVE OUTSIDE CORNERS – HARD SEAM

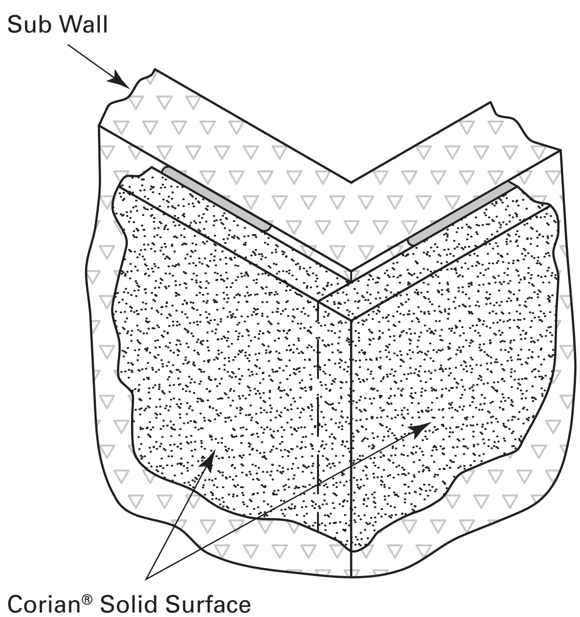
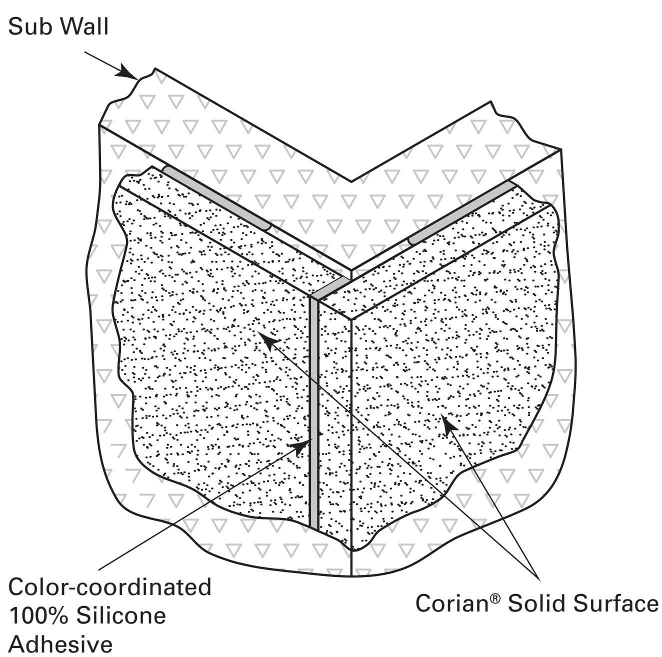


FIGURE C-2: ALTERNATIVE OUTSIDE CORNERS – SILICONE SEAM



D. INSIDE CORNERS

Any inside corners at the end of walls should be designed to allow for expansion. Corian® wall-panel expansions as a function of wall length for three different temperatures are shown in Figure D-1. Corian® wall-panel expansion can be calculated using the following formula:

$$\Delta Length = \alpha \times Length \times \Delta Temperature$$

α is the Coefficient of Thermal Expansion (CTE) and it is important to select the correct value for the selected temperature scale.

$$\alpha = \frac{2.2 \times 10^{-5}}{°F} \text{ or } \alpha = \frac{0.000022}{°F}$$

$$\alpha = \frac{3.9 \times 10^{-5}}{°C} \text{ or } \alpha = \frac{0.000039}{°C}$$

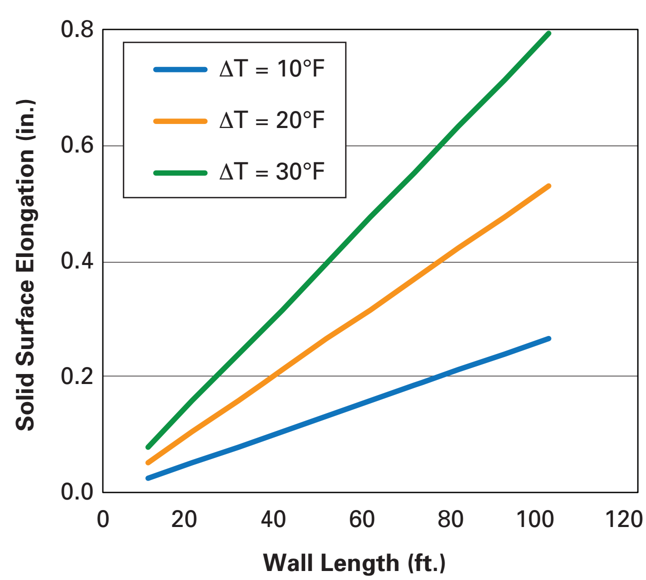
The units used for length are arbitrary, but must be the same for both initial length and change in length. These equations are often written with length units included for clarity.

$$\Delta Length\ (inch) = \alpha \left(\frac{inch}{inch\ °F}\right) \times Length(inch) \times \Delta Temperature\ (°F)$$

$$\Delta Length\ (meter) = \alpha \left(\frac{meter}{meter\ °C}\right) \times Length(meter) \times \Delta Temperature\ (°C)$$

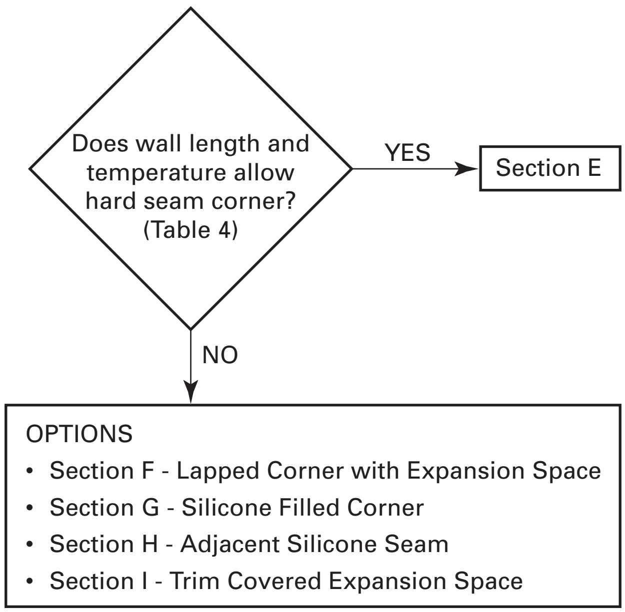
Use of this formula is suggested neglecting the expansion of the wall substrate material. Neglecting the differential expansion or contraction of the wall substrate simply adds a factor of safety. An example calculation appears in Appendix A: Example Application Calculations.

FIGURE D-1: WALL EXPANSION AND CONTRACTION



Alternatives for inside corners at the end of walls are outlined below. Figure D-2 presents a decision tree outlining inside corner options.

FIGURE D-2: INSIDE CORNER OPTIONS



E. INSIDE CORNER ALTERNATIVE: HARD SEAMED WALL CORNERS

Perpendicular walls can be completely hard seamed including the corners as shown in Figures E-1 and E-2, subject to the wall length limits suggested in Table 4. A minimum ⅛" (3 mm) thick 100% silicone bond line to control the gap behind each panel is suggested when hard seamed inside corners are used. Be sure to radius the inside corner of butting panels.

FIGURE E-1: HARD SEAMED CORNERS – V-GROOVED COVE

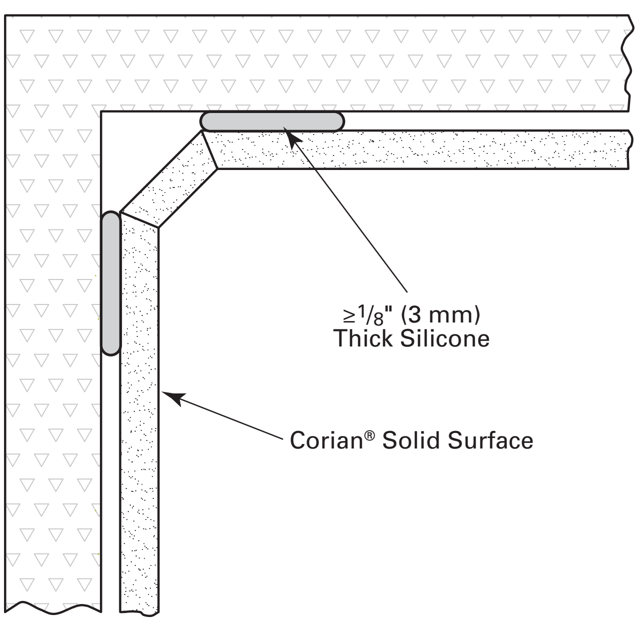


FIGURE E-2: HARD SEAMED CORNERS – THERMOFORMED COVE

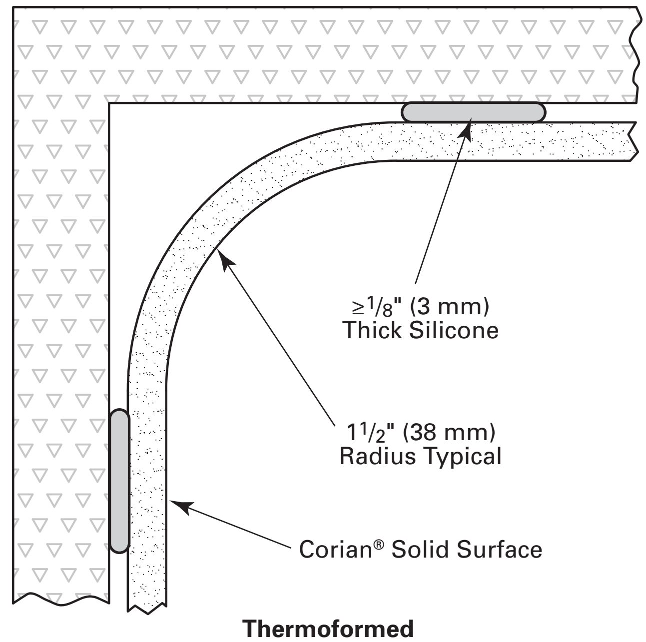


TABLE 4: SUGGESTED WALL LENGTH LIMITS FOR WALLS WITH INSIDE HARD-SEAMED CORNERS AS FUNCTION OF EXPECTED TEMPERATURE CHANGE (REFERENCE FIGURE D-2)

ΔT (°F)	Suitable Wall Length Limit (ft.)	ΔT (°C)	Suitable Wall Length Limit (m)
±10	30.9	±5	10.5
±15	20.6	±10	5.2
±20	15.4	±15	3.5
±25	12.3	±20	2.6
±30	10.3	±25	2.1
±35	8.8		
±40	7.7		

F. INSIDE CORNER ALTERNATIVE: LAPPED CORNER WITH EXPANSION SPACE

Perpendicular walls can lap adjacent walls as shown in Figure F-1, allowing expansion space for one wall length in each corner of the room. Corner void spaces equal to 1.5 times the estimated wall expansion for the free expanding wall are suggested. Typical values are tabulated in Table 5. The free expanding wall should project behind the lapping wall by at least one half the thickness of the wall sheet. The space between the lapping wall is suggested to be at least 1⁄16" (1.5 mm) in dimension and filled with color-coordinated silicone.

CAUTION: do not remove wall material from a fire-rated wall to create a corner void space.

FIGURE F-1: LAPPED CORNER WITH EXPANSION SPACE

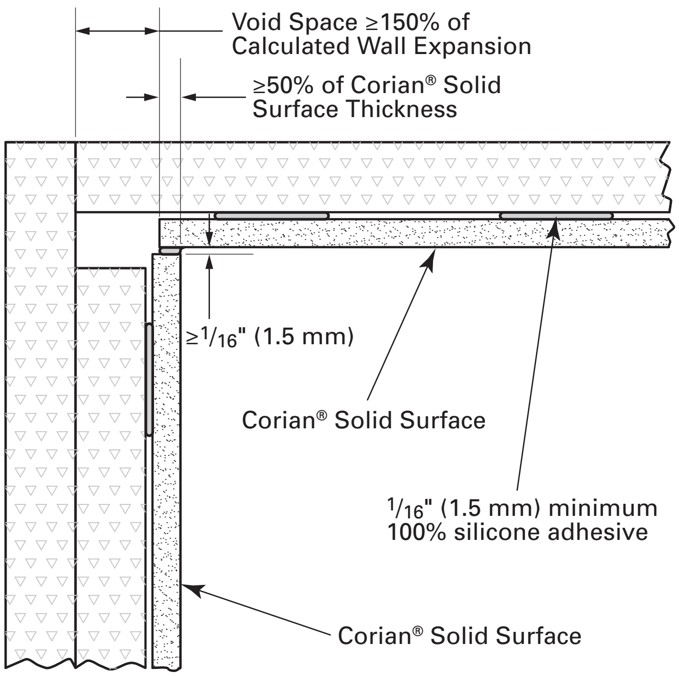


TABLE 5: SUGGESTED VOID SPACE AS FUNCTION OF EXPECTED TEMPERATURE CHANGE FOR LAPPED CORNER WITH EXPANSION SPACE (REFERENCE FIGURE F-1)

1/16" Silicone Thickness

Length (ft.)	ΔT = ±10°F Void (in.)	ΔT = ±20°F Void (in.)	ΔT = ±30°F Void (in.)
10	0.04	0.08	0.12
15	0.06	0.12	0.18
20	0.08	0.16	0.24
25	0.10	0.20	
30	0.12		
40	0.16		
50	0.20		

1/8" Silicone Thickness

Length (ft.)	ΔT = ±10°F Void (in.)	ΔT = ±20°F Void (in.)	ΔT = ±30°F Void (in.)
30	0.12	0.24	0.36
40	0.16	0.32	0.48
45	0.18	0.36	
60	0.24	0.48	
75	0.30		
100	0.40		
115	0.46		

1.6 mm Silicone Thickness

Length (m)	ΔT = ±5°C Void (mm)	ΔT = ±10°C Void (mm)	ΔT = ±15°C Void (mm)
3	0.9	1.8	2.7
6	1.8	3.6	5.3
8	2.4	4.8	
11	3.3		
13	3.9		
15	4.5		
17	5.0		

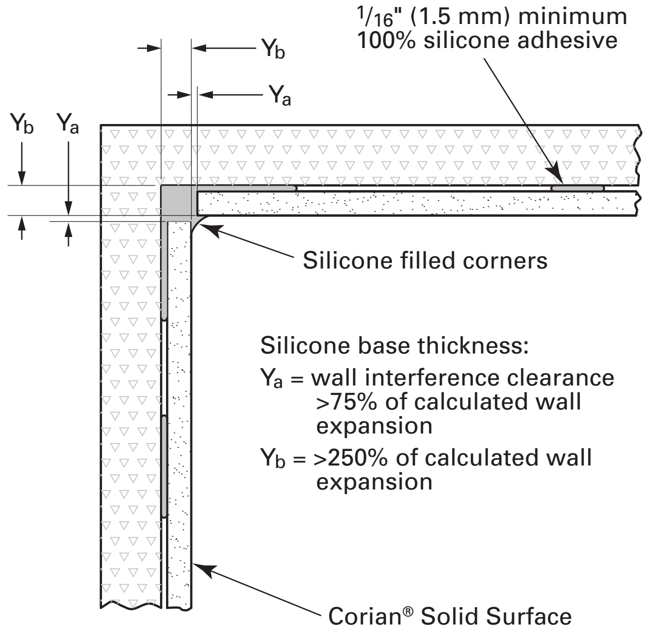
3.2 mm Silicone Thickness

Length (m)	ΔT = ±5°C Void (mm)	ΔT = ±10°C Void (mm)	ΔT = ±15°C Void (mm)
8	2.4	3.6	7.1
13	3.9	5.8	11.6
18	5.3	8.0	
20	5.9	8.9	
25	7.4		
30	8.9		
40	11.9		

G. INSIDE CORNER ALTERNATIVE: SILICONE FILLED CORNERS

Corners may be silicone filled as shown in Figure G-1. Suggested minimum dimensions are shown.

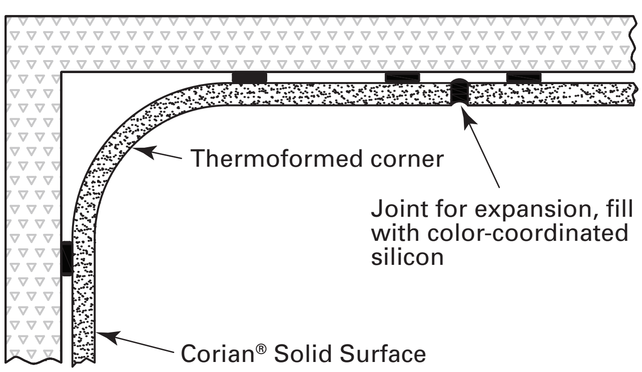
FIGURE G-1: SILICONE FILLED CORNERS



H. INSIDE CORNER ALTERNATIVE: ADJACENT SILICONE SOFT SEAMS

It may be desirable to locate exposed silicone away from inside corners to ease janitorial maintenance. An example of a seamless corner with an adjacent soft seam appears in Figure H-1. Soft seams can also be used at other locations in extensive wall lengths as expansion joints. A minimum gap of 3⁄16" (4.5 mm) filled with color-coordinated silicone is suggested. Reference Section Q of this bulletin for more information on silicone soft seams.

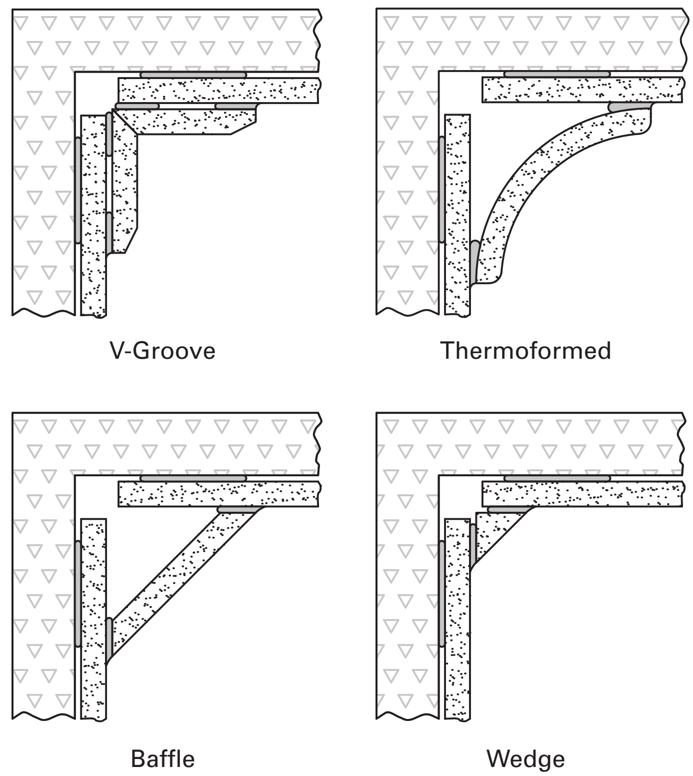
FIGURE H-1: ADJACENT SILICONE SOFT SEAMS



I. INSIDE CORNER ALTERNATIVE: TRIM COVERED EXPANSION SPACE

Corners may be made using trim pieces as shown in Figure I-1. Expansion clearance greater than 0.75 times the greatest wall expansion is suggested relative to the projection of any perpendicular wall into the corner to prevent interference between adjacent walls. Reference detailed drawings for these options are available from DuPont. Values for the wall panel clearance dimension in these figures can be determined by dividing the values in Table 5 by a factor of two.

FIGURE I-1: SILICONE SOFT SEAMED INSIDE CORNERS



J. WALL TO FLOOR DETAILS

Wall to floor details are shown in Figure J-1through Figure J-3.

FIGURE J-1: WALL BASE DETAIL

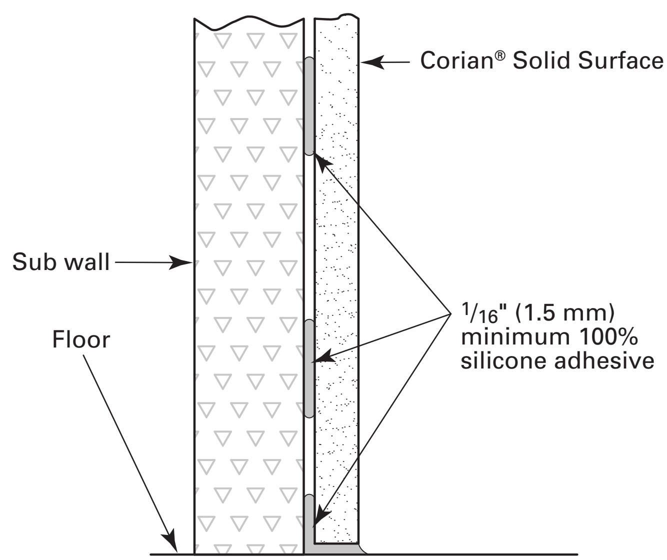


FIGURE J-2: WALL BASE DETAIL WITH TRIM

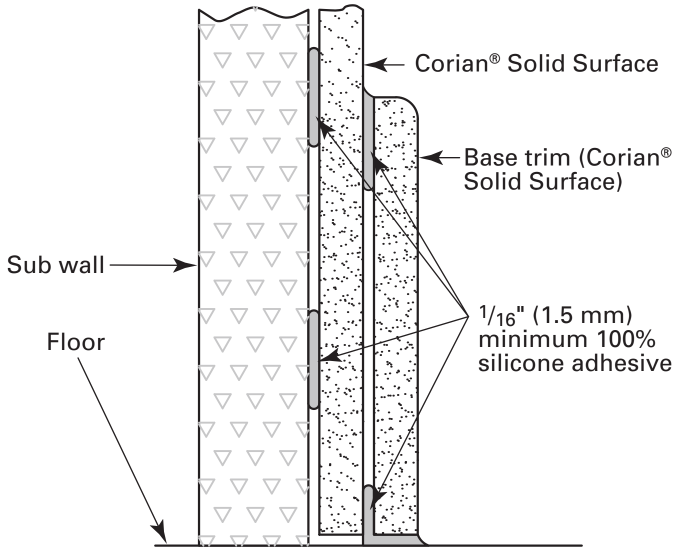


FIGURE J-3: WALL BASE DETAIL WITH FLASH COVE

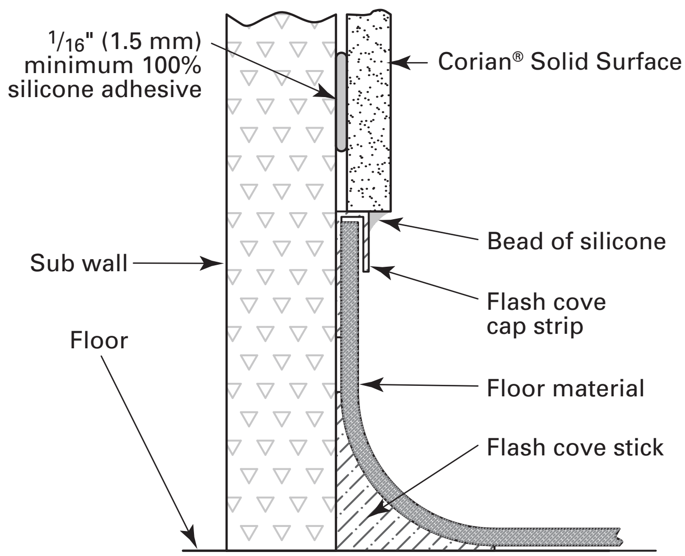
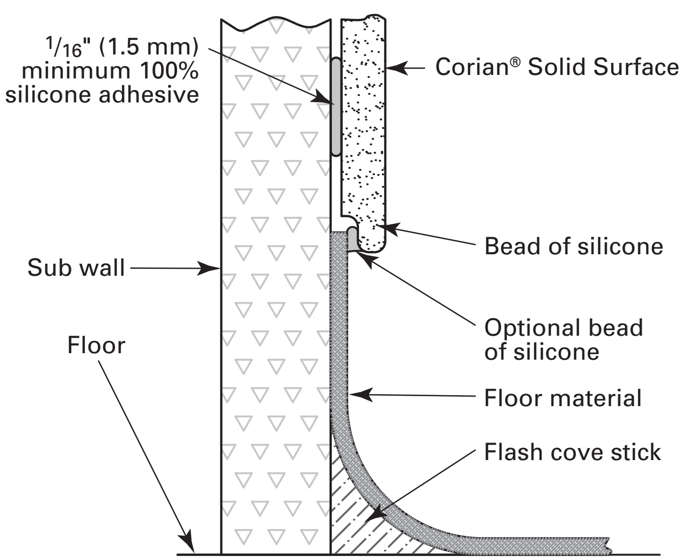


FIGURE J-4: WALL BASE DETAIL WITH DADO AND FLASH COVE



K. WALL TO CEILING DETAILS

Wall to ceiling details are shown in Figure K-1through Figure K-3.

FIGURE K-1: WALL CEILING DETAIL

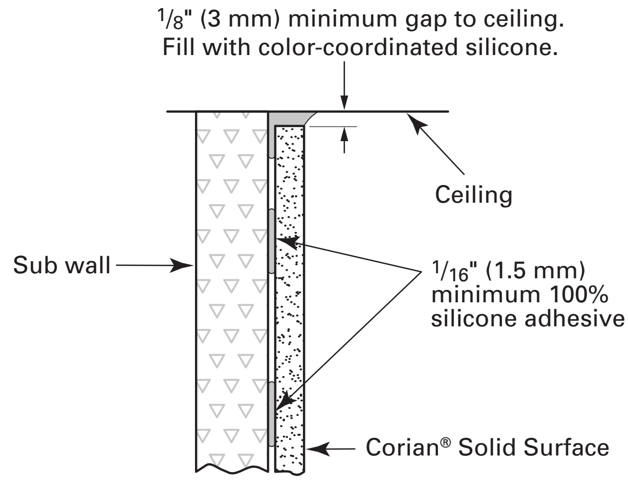


FIGURE K-2: WALL CEILING DETAIL WITH TRIM

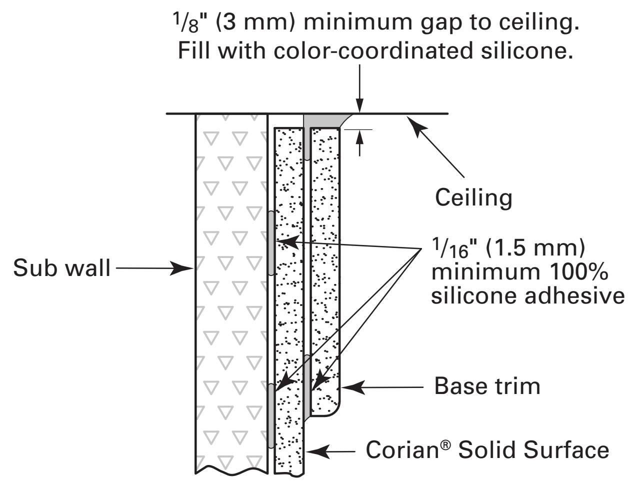
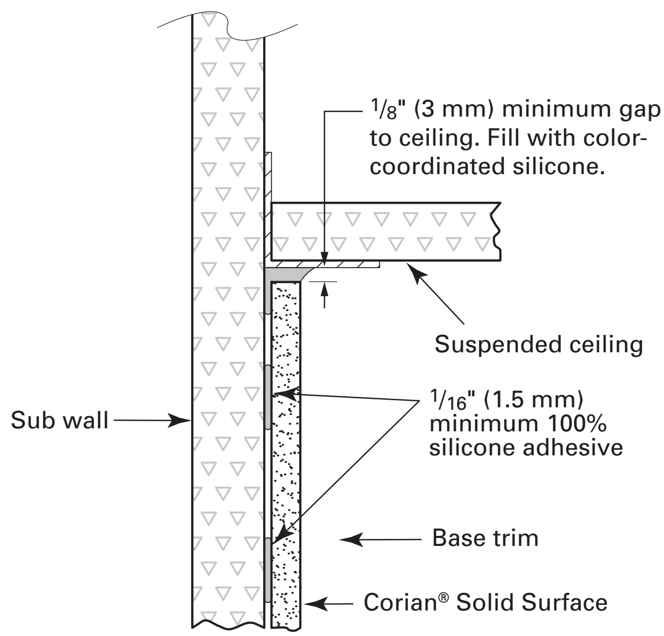


FIGURE K-3: WALL CEILING DETAIL FOR SUSPENDED CEILING

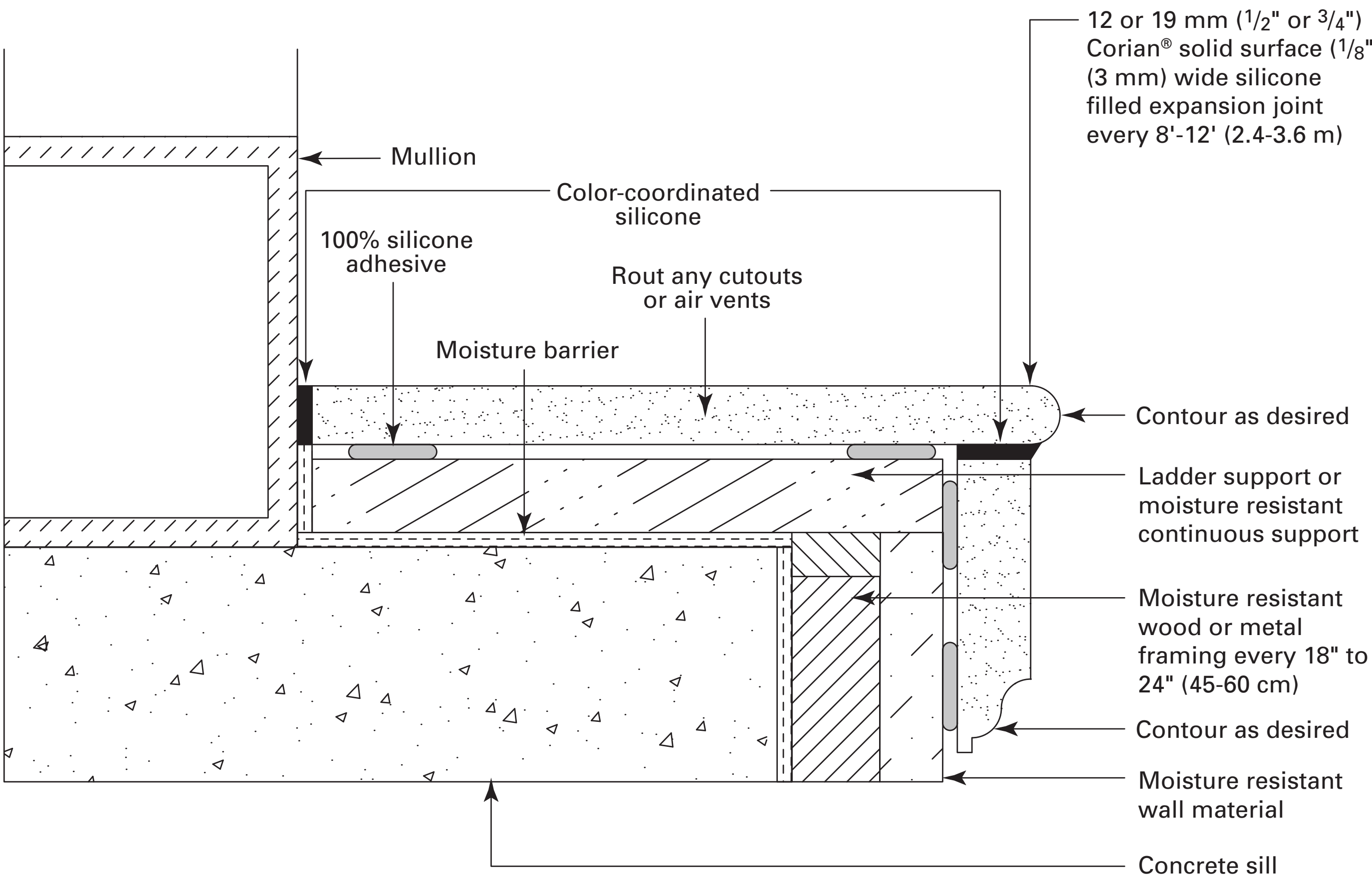


L. WINDOW SILLS

Figure L-1 illustrates specific design details for a "typical" window sill application. Window sills often experience wider temperature extremes due to solar heating and lower insulation provided by the window. Allow for expansion and contraction at either end of sills. As a conservative rule of thumb for window sills, allowance of 1⁄64" of movement per foot (1.3 mm per meter) of sill length is suggested. The allowance (gap) can be divided between the two ends of a sill section. If filled with 50% movement capable silicone (typical), gaps need to be doubled. Reference Section Q on silicone soft seams guidance.

The silicone thickness bonding the window sill to substrate may have to be increased to accommodate sill movement under greater window exposure, e.g., 1⁄8" (3 mm) bond line thickness.

FIGURE L-1: TYPICAL WINDOW SILL APPLICATION



M. CUTOUTS

Cutouts in Corian® applications are suggested to be made oversized to allow for expansion and contraction. Table 6 documents suggested oversize dimensions around any equipment or accessory protruding from a cutout or other potential restraint. Examples of potential restraints include electrical outlets and window or door frames. Radius cutout corners with 3⁄16" (4.5 mm) radii and sand edges smooth to prevent possible cracking.

Table 6 is divided into two sections, for cases with and without silicone fill in the gap. If the gap is covered by a flange and not filled with silicone the needed clearance dimensions are smaller. Table 6 is used by selecting a column for the appropriate maximum temperature variation from the installation temperature. The maximum length dimension in the wall under consideration between any two potential restraints or between a potential restraint and the end of the wall should be used to select the appropriate row in Table 6. The width value listed in the table at the intersection of the critical length row and temperature column is the appropriate clearance gap. Reference Section Q, Silicone Soft Seams, for further discussion on sizing and fabrication.

TABLE 6: SUGGESTED GAP WIDTHS AROUND WALL RESTRAINTS[4]

With silicone in gap

Temperature change (°F)	ΔT = ±10°F	ΔT = ±20°F	ΔT = ±40°F	ΔT = ±60°F
Length (ft.)	Width (in.)	Width (in.)	Width (in.)	Width (in.)
10	0.092	0.123	0.184	0.245
20	0.123	0.184	0.306	0.428
30	0.153	0.245	0.428	0.611
40	0.184	0.306	0.550	0.794

With nothing in gap

Temperature change (°F)	ΔT = ±10°F	ΔT = ±20°F	ΔT = ±40°F	ΔT = ±60°F
Length (ft.)	Width (in.)	Width (in.)	Width (in.)	Width (in.)
10	0.077	0.092	0.123	0.153
20	0.092	0.123	0.184	0.245
30	0.108	0.153	0.245	0.336
40	0.123	0.184	0.306	0.428

[4]Table 6 is based on the seam sizing equation in Section Q. No live load movement is included. Table 6 values do include a 1/16" (1.5 mm) fabrication tolerance.

With silicone in gap

Temperature change (°C)	ΔT = ±5°C	ΔT = ±10°C	ΔT = ±20°C	ΔT = ±30°C
Length (m)	Width (mm)	Width mm)	Width (mm)	Width (mm)
3	2.3	2.9	4.3	5.7
6	2.9	4.3	7.1	9.8
9	3.6	5.7	9.8	13.9
12	4.3	7.1	12.5	18.0

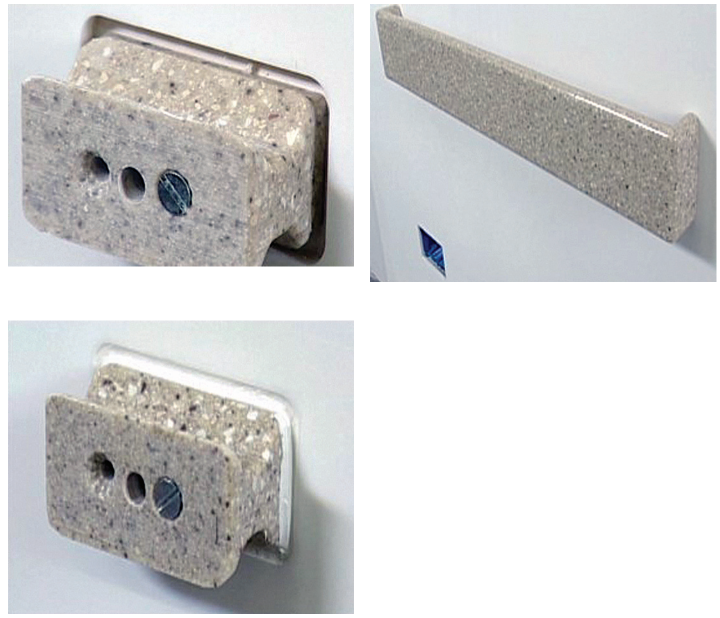
With nothing in gap

Temperature change (°C)	ΔT = ±5°C	ΔT = ±10°C	ΔT = ±20°C	ΔT = ±30°C
Length (m)	Width (mm)	Width mm)	Width (mm)	Width (mm)
3	1.9	2.3	2.9	3.6
6	2.3	2.9	4.3	5.7
9	2.6	3.6	5.7	7.7
12	2.9	4.3	7.1	9.8

N. MOUNTING HANDRAILS OR OTHER DEVICES

Handrail mounting brackets or other accessories should be mounted by creating an oversized cutout in the Corian® material and directly fastening the accessory to the wall or substrate structure. Reference Section M, Cutouts above and Section Q, Silicone Soft Seams, for cutout sizing. Figure N-1 shows an installation sequence for a handrail bracket.

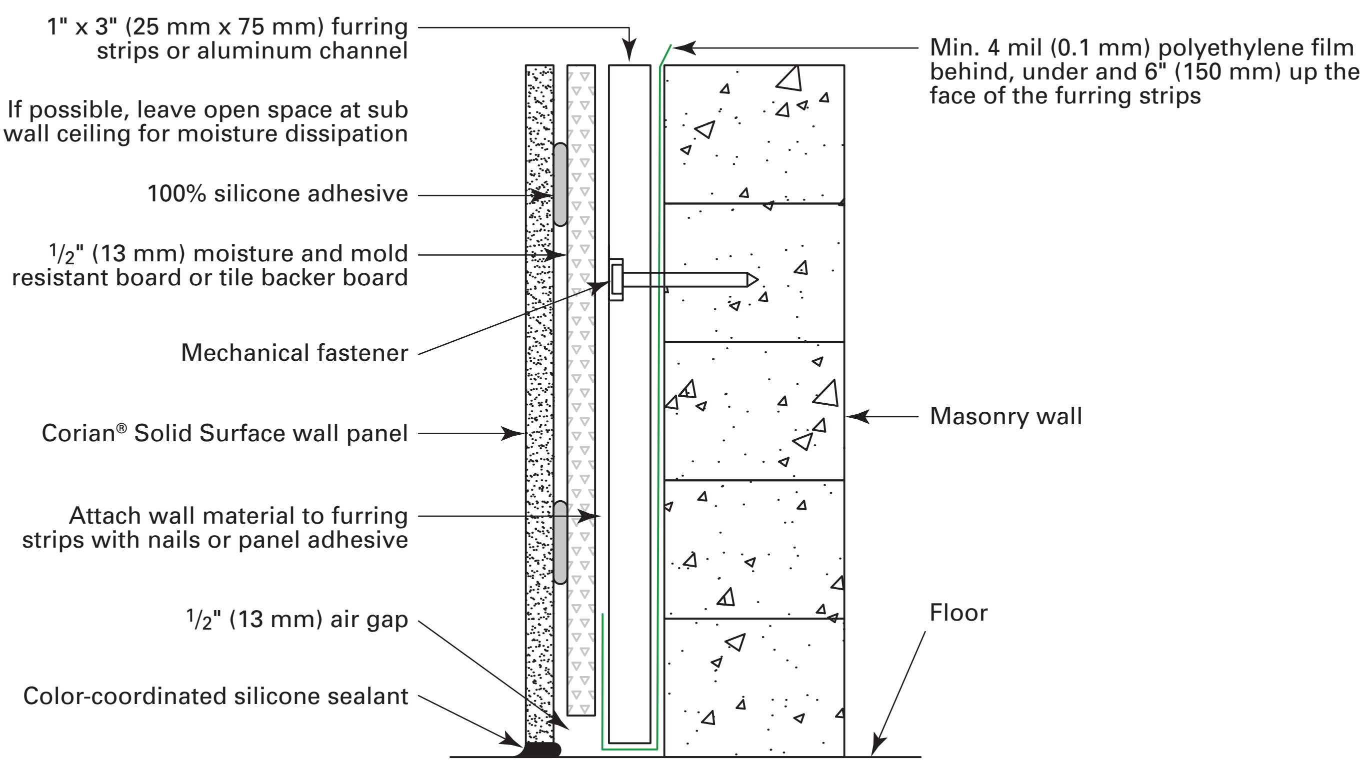
FIGURE N-1: ACCESSORIES OR EQUIPMENT SHOULD BE MOUNTED USING CUTOUTS TO AVOID CREATION OF RESTRAINTS



O. COVERING MASONRY

Figure O-1 shows recommendations for mounting Corian® solid surface over masonry. Masonry products are known to hold and release moisture. Although Corian® solid surface is nonporous and will absorb little moisture, it, like other materials, will change dimension due to moisture pickup. Trapped moisture behind a wall can lead to wall panel warpage due to differential dimensional changes. The vertical channels or furring strips depicted in Figure O-1 create a drying air space and gap promoting drainage away for the Corian® material.

FIGURE O-1: COVERING MASONRY



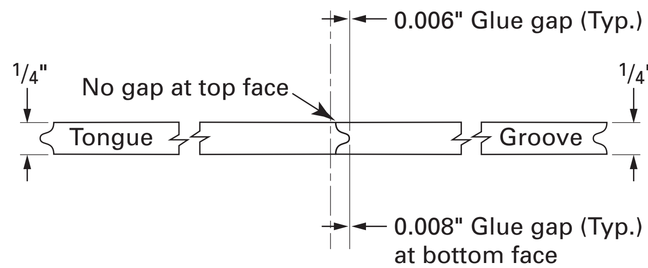
P. HARD SEAMING

DuPont™ Corian® sheets can be hard seamed together using DuPont™ Joint Adhesive or DuPont™ Joint Adhesive 2.0 using either butt, tongue and groove edge, or wavy edge joints. The choice between a butt or alternative edge should be based on ease of installation and fabrication cost. The potential advantage of a tongue and groove or wavy edge relative to a butt edge is easier sheet alignment. This can translate into labor savings by reducing the time to install and/or finish sand the seam. Depending on the installer's capability to align butt joints using clamps or other methods, the added cost of cutting the tongue and groove detail may not be justified. Figure P-1 shows field butt seams aligned with adjustment screw blocks mounted adjacent to the seam using hot melt glue. Vacuum clamps and braces are shown in use to hold hard seams together.

FIGURE P-1: CLAMPING SEAMS

Use vacuum clamps and/or bracing to pull or push and hold seams together. Adjustment blocks can be mounted with hot melt glue to help align adjacent surfaces to achieve inconspicuous seams. Use of a wooden shim is shown in top right view to maintain silicone adherent thickness. Figure P-2 shows the assembly of a tongue and groove seam for 6 mm (¼") solid surface sheet.

FIGURE P-2: ASSEMBLED TONGUE AND GROOVE JOINT



CAUTION: Demonstrate tongue and groove or wavy edge seaming is acceptable for the Corian® solid surface color chosen. Several Corian® colors are quite translucent, e.g., Cameo White, and unacceptable seam shadows can be apparent when these alternative edge geometries, e.g., tongue and groove, are used. Also be sure to clean all seaming edge surfaces before applying joint adhesive to keep visible dirt lines out of the seams.

Figure P-3 shows 6 mm cutter detail dimensions. Cutters are also available for 12 mm sheet. Potential sources for tongue and groove cutters or router bits include those listed in Table 7.

FIGURE P-3: TONGUE AND GROOVE PROFILE, 6 MM (¼") FIGURE DIMENSIONS IN METRIC UNITS (MM)

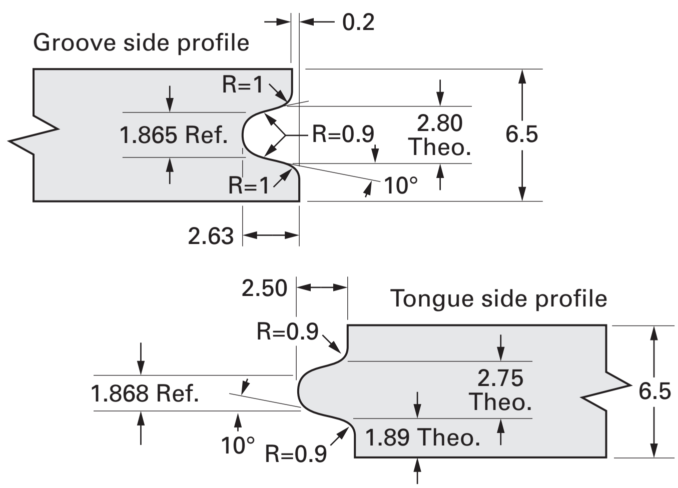


TABLE 7: POTENTIAL TONGUE AND GROOVE CUTTER SOURCES

Sources	Part Numbers 6 mm (¼")	12 mm (½")
Diversified Equipment (704) 533-1891	H9662, H9663	H6664, H9665
Titman USA (800) 722-6486	0.506.190.21 and 0.511.190.21	
F. M. Velepec Co. (800) 365-6636	60-250	

It is important to center tongue and groove features in the material thickness and remove the same amount of material on both sides of the tongue. CNC equipment can be used with proper sheet hold down. It is critical to hold the sheet flat, especially the edge which is being routed. Alternatively, hand held routers can be used either in the field or shop. Setting up two routers with base plates for both cutters is suggested.

Complete as much of the fabrication as possible before wall installation. Fabrication tasks are typically easier with the sheet flat in a horizontal plane either in the shop or at the job site. Handle panels carefully to prevent breakage until panels are mounted to the wall. Dry fit sheet panels before adhesive application. A good dry fit is needed to produce inconspicuous seams. Clean both edge surfaces before applying adhesive. Completely fill seams with adhesive. Application of adhesive to both sides on the tongue and into the groove of tongue and groove features is suggested to eliminate air pockets.

Q. SILICONE SOFT SEAMS

Soft seams are sometimes needed to divide walls into manageable sections and are typically needed around hard restraints. Restraints typically exist at the ends of walls and at columns, but are also common around electrical cutouts or cutouts for other wall mounted equipment or accessories. Wall mounted hand rails are another example of potential restraint points, see Section N.

A 100% silicone sealant with minimum 50% movement capability is suggested for construction of soft seams. The minimum joint width can be calculated as:

$$\text{Minimum Joint Width} = W_{joint} = (100/C_S)\,(M_{temp} + M_{load}) + \text{tolerance}$$

Where C_S = silicone movement capability. If capability is 50%, $(100/50) = 2$

M_{temp} = Movement due to thermal expansion

M_{load} = Movement due to live load

tolerance = an added dimension for construction to assure minimum is maintained

The movement due to thermal expansion can be determined by either calculation or use of rules of thumb.

Corian® wall-panel expansion can be calculated using the following formula:

$$\Delta Length = \alpha \times Length \times \Delta Temperature$$

$$\alpha = \frac{2.2 \times 10^{-5}}{°F} \text{ or } \alpha = \frac{0.000022}{°F}$$

$$\alpha = \frac{3.9 \times 10^{-5}}{°C} \text{ or } \alpha = \frac{0.000039}{°C}$$

An example calculation appears in Appendix A: Example Application Calculations. Alternatively, a conservative rule of thumb for interior applications where temperature is not well controlled or variable sun loads exist on the walls is to provide a movement allowance (joint width from potential hard restraints) of 1/64" for every foot of panel dimension (1.5 mm per meter).

A minimum ¼" (6 mm) joint width is typically recommended by silicone manufacturers with joint geometry ratio of 2:1, width to depth. Always clean the edges of the solid surface using denatured alcohol or acetone and clean white rags before applying the silicone to the joint.

R. SAFETY

DuPont™ Corian® solid surface can be cut and worked with like wood. It is best to minimize all dust and shavings by containing them with a vacuum. Use proper safety equipment when working with Corian® solid surface and DuPont™ Joint Adhesive, including safety glasses, appropriate gloves, steel-toe shoes, and ear plugs. Lifting devices or carts may be used to improve safe handling for larger pieces. Reference product Safety Data Sheets (SDS) available from DuPont.

APPENDIX A: EXAMPLE APPLICATION CALCULATIONS

Example input:

- Expected installation temperature change, over time, relative to installation temperature = 20°F
- Designed length of hard seamed installation = 37 feet = 37 (12) = 444 inches

Corian® wall-panel expansion can be calculated using the following formula:

$$\Delta Length\ (inch) = \alpha \left(\frac{inch}{inch\ °F}\right) \times Length(inch) \times \Delta Temperature\ (°F)$$

where:

$$\alpha = \frac{2.2 \times 10^{-5}\ in}{in\ °F}$$

$$0.195\ in = \frac{2.2 \times 10^{-5}\ in}{in\ °F} \times 444\ in \times 20°F$$

Potential change in length is 0.195" (≈3⁄16")

For straight walls or walls with only outside corners:

This is longer than limit tabulated in Table 3 for 1⁄16" (1.5 mm) silicone mounting. It can still be hard seamed if thicker silicone elastic foundation is used. Doubling the silicone mounting thickness to ⅛" (3 mm) and using the ⅛" table in Table 3 yields a limit of 57 feet (17.4 m). This is greater than 37 feet or 444 inches (11 m), and therefore meets guideline criteria. Another check: Using factor a safety of two, 2(0.195) = 0.39" (9.9 mm). Figure A-1 shows elongation limit for ⅛" (3 mm) is approximately 0.4" (10.0 mm). Since 0.39" < 0.4", ⅛" adherent thickness will provide a factor of safety of approximately two for the example application.

For walls with inside corners:

This is longer than limit tabulated in Table 4, so a soft seam will need to be added to the wall, see Section Q, Silicone Soft Seams, for seam sizing and construction recommendations.

DUPONT™ CORIAN® INTERIOR VERTICAL CLADDING

TABLE OF FIGURES

Please visit www.surfaces.dupont.com or contact your DuPont representative for more information about DuPont™ Corian® solid surfaces.

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