DOWSIL™ Silicone Air Barrier System – Contractor Handbook

Build a Better Barrier™
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A Silicone System for Building Protection

The DOWSIL™ Silicone Air Barrier System is a suite of fully compatible high-performance silicone technologies from Dow designed to work in concert to help protect the entire building envelope in both new construction and renovation projects.

- **DOWSIL™ DefendAir 200 Silicone Liquid Applied Air and Weather Barrier**
- **DOWSIL™ Silicone Transition System (STS)**
  - DOWSIL™ Silicone Transition Strips
  - DOWSIL™ Silicone Transition Corners
- **DOWSIL™ 758 Silicone Weather Barrier Sealant**
- **DOWSIL™ 791 Silicone Weatherproofing Sealant**
- **DOWSIL™ 778 Silicone Liquid Flashing**
This document is intended to provide installation and field testing guidance for DOWSIL™ DefendAir 200.

Product Descriptions

**DOWSIL™ DefendAir 200 Silicone Liquid Applied Air and Weather Barrier**

DOWSIL™ DefendAir 200 is a 100 percent silicone liquid-applied air and weather barrier designed to protect against uncontrolled air infiltration and water penetration. The vapor-permeable, one-component, water-based coating dries to form a flexible membrane that is impervious to water, but has the ability to “breathe,” allowing water vapor to escape from inside the substrate. It is a one-part, water-based silicone elastomer that can be brush, roller- or spray applied. The coating provides long-term protection from air infiltration and water penetration and the elements while allowing for normal movement imposed by seasonal thermal contraction and expansion. The coating maintains its air and water protection properties even when exposed to sunlight, rain, snow or temperature extremes.

**DOWSIL™ Silicone Transition System**

DOWSIL™ Silicone Transition System (STS) is comprised of a preformed silicone strip and molded pieces designed for flashing and transition applications to weatherproof against air and water infiltration.

**DOWSIL™ 791 Silicone Weatherproofing Sealant**

DOWSIL™ 791 Silicone Weatherproofing Sealant is a one-part, medium-modulus, neutral-curing silicone sealant for general weathersealing applications. Available in a wide variety of colors.

**DOWSIL™ 758 Silicone Weather Barrier Sealant**

DOWSIL™ 758 Silicone Weather Barrier Sealant is a neutral, one-part silicone sealant designed for adhering to low-energy surfaces common in sheet or self-adhered air and weather-resistant barriers. Available in white.

**DOWSIL™ 778 Silicone Liquid Flashing**

DOWSIL™ 778 Silicone Liquid Flashing is a one-part, liquid silicone flashing that can be trowel applied to weatherproof at window and door openings and other through-cavity penetrations.
UV Exposure

DOWSIL™ DefendAir 200 does not have a limit on exposure time before being covered by the exterior cladding if applied in strict accordance with the requirements of this application guide. After the coating is installed, any delays in the construction schedule that will result in the coating being exposed longer than expected will not affect the performance of the material. Open-joint rainscreen applications where sections of the coating will remain exposed will not affect the performance of the material. When using in conjunction with DOWSIL™ brand silicone sealants and transition materials, all components are approved for long-term UV exposure.

Availability

DOWSIL™ DefendAir 200 is available in 5-gallon (19 L), 44 lb (20 kg) pails and 55-gal (208 L), 507 lb (230 kg) drums. DOWSIL™ DefendAir 200 is supplied in white or grey. It should not be tinted to another color prior to installation.

If a different color coating is desired, one 10-mil wet (5-mil dry) coat of DOWSIL™ AllGuard Silicone Elastomeric Coating can be applied. DOWSIL™ AllGuard Silicone Elastomeric Coating and DOWSIL™ 200 are compatible and will adhere to each other. DOWSIL™ DefendAir 200 should be installed to the required 15-mil dry film thickness and all quality control performed before any DOWSIL™ AllGuard Silicone Elastomeric Coating is applied.

Coverage Rates

Table 1. Estimated Application Rates(1) (15-Mil [0.38 mm] Minimum Dry-Film Thickness)

<table>
<thead>
<tr>
<th>Texture/Substrate</th>
<th>Estimated Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ft²/gal</td>
</tr>
<tr>
<td>Smooth (sheathing, precast concrete)</td>
<td>45-55</td>
</tr>
<tr>
<td>Medium (plywood)</td>
<td>30-45</td>
</tr>
<tr>
<td>Coarse (CMU)</td>
<td>20-30</td>
</tr>
</tbody>
</table>

(1)Application rates vary tremendously with porosity and degree of texture of the substrate. These values are estimated and should be confirmed at the job site prior to bidding the project.

Specific brands of the substrates (especially exterior grade sheathing) listed above may absorb more or less of the air barrier than is listed in Table 1. See the Tech Talk at the back of this guide for more information on specific substrates that have been tested.

DOWSIL™ DefendAir Primer may be required for some substrates. It is available in 5-gallon (19 L), 42 lb (19.1 kg) pails. See Table 4 for information on substrate preparation.
Shelf Life

DOWSIL™ DefendAir 200 has a shelf life of six months from the date of manufacture.

Compatibility and Adhesion Between DOWSIL™ Brand Products

DOWSIL™ DefendAir 200 is compatible with many DOWSIL™ brand sealant and precured silicone components. DOWSIL™ DefendAir 200 is also compatible with DOWSIL™ AllGuard Silicone Elastomeric Coating.

Table 2 contains adhesion information for sealants commonly used with DOWSIL™ DefendAir 200. Sealants in Column A can be applied over the air barrier 48 hours after the DOWSIL™ DefendAir 200 is installed. Any sealant that adheres to DOWSIL™ DefendAir 200 (Column A) can be used to install DOWSIL™ Silicone Transition System over DOWSIL™ DefendAir 200 in order to create a complete air and watertight system. (Note: DOWSIL™ Silicone Transition System may also be installed under DOWSIL™ DefendAir 200 using a sealant that adheres to the underlying substrate. Refer to the STS application guide for more information.)

DOWSIL™ DefendAir 200 can be applied over any DOWSIL™ brand sealants listed in Column B of Table 2 after they have been allowed to achieve tack-free cure, which ranges from approximately 15-45 minutes depending on the sealant and environmental conditions (see sealant data sheets for more specific tack-free times).

Table 2. Adhesion Between DOWSIL™ DefendAir 200 and DOWSIL™ Brand Sealants

<table>
<thead>
<tr>
<th>Sealant</th>
<th>Column A Sealant Adheres to DOWSIL™ DefendAir 200</th>
<th>Column B DOWSIL™ DefendAir 200 Adheres to Sealant</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOWSIL™ 791 Silicone Weatherproofing Sealant</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>DOWSIL™ 756 SMS Building Sealant</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>DOWSIL™ 795 Silicone Building Sealant</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>DOWSIL™ 758 Silicone Weather Barrier Sealant</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>DOWSIL™ 790 Silicone Building Sealant</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Please contact your local Dow representative for information regarding the use of DOWSIL™ brand products not listed here.
Application and Service Temperature and Humidity

DOWSIL™ DefendAir 200 can be applied at ambient air temperatures between 20°F (-6°C) and 100°F (38°C). Do not apply the coating when the relative humidity is greater than 90 percent, or when there is a threat of rain within 8 hours. Reference the Tech Talk for more information on damp substrate and rain applications.

There is no lower-limit temperature specifically for the substrate, but the surface must remain free of bulk water and frost. Do not apply DOWSIL™ DefendAir 200 to surfaces above 120°F (49°C).

DOWSIL™ DefendAir 200 has a service temperature range of -15°F to 300°F (-26°C to 149°C).

Chemical Resistance

DOWSIL™ DefendAir 200 has passed ASTM D543 (Alkalinity Resistance) in a solution of sodium carbonate with a pH of 12. The elongation and tensile properties of DOWSIL™ DefendAir 200 were minimally affected after being submerged in the solution for 28 days. High pH exposure will not affect the expected performance characteristics of the material. A 15-mil sample of the air and weather barrier passes ASTM D1970 (Fastener Sealability) after being submerged in the pH 12 solution for 28 days.

DOWSIL™ DefendAir 200 should not be applied to cast-in-place/precast concrete that has cured for less than 28 days. Thinner applications of cementitious based patching materials, such as, but not limited to, grouts and patch compounds, should be allowed to cure for 10 days prior to coating.

Substrate Compatibility and Adhesion

DOWSIL™ DefendAir 200 has been tested according to ASTM D4541 for adhesion on the substrates in Table 3. Where DOWSIL™ DefendAir 200 Primer is not required in the table below, it optionally may be used for more robust adhesion.

There are numerous other substrates that will come into contact with the air and weather barrier. Please contact your local Dow representative for information on substrates not listed here.
Workmanship Considerations

It is important to protect adjacent surfaces and surroundings that are not to be coated with the air and weather barrier.

Application Instructions

Step 1. Surface Preparation and Evaluation

All surfaces must be clean and free of excessive dirt, dust, oil, grease, mold, fungus, efflorescence, laitance, peeling coating and any other foreign material. Green concrete must be allowed to cure 28 days before application of DOWSIIL™ DefendAir 200 Silicone Liquid Applied Air and Weather Barrier. Large amounts of dust and dirt should be removed from the substrate through a light dusting of the surface using either a brush or dry cloth. If other substances are found on the substrate, refer to Table 4 for recommendations to ensure proper cleaning and preparation of the substrate prior to coating.

When installing DOWSIL™ Silicone Transition System or another window transition system as part of the air and weather barrier system, follow the recommendations of the system manufacturer. For DOWSIL™ Silicone Transition System, clean the substrate where the sealant is to be installed using a solvent and two-cloth cleaning method. Refer to the Americas Technical Manual (Form No. 62-1112) for more information on general sealant installation recommendations.

Note: All system tests such as ASTM E2357 were performed using DOWSIL™ brand sealants and DOWSIL™ Silicone Transition System and are recommended to ensure the published system performance.
<table>
<thead>
<tr>
<th>Surface Conditions</th>
<th>Detection Method</th>
<th>Removal Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efflorescence</td>
<td>Wipe with dark cloth</td>
<td>Wire brush; then clean with high-pressure water. On stubborn deposits, mix 1 part muriatic acid (or similar) to 12 parts water, then clean with high-pressure water.</td>
</tr>
<tr>
<td>Laitance</td>
<td>Scrape with putty knife, looking for powdery material</td>
<td>Scrape with steel scraping tool followed by high-pressure water cleaning.</td>
</tr>
<tr>
<td>Mildew</td>
<td>Visual</td>
<td>Scrub with 5 percent bleach solution followed by high-pressure water cleaning.</td>
</tr>
<tr>
<td>Grease/oil</td>
<td>Visual; sprinkle water on surface</td>
<td>Trisodium phosphate (TSP) solution in hot water and high-pressure water cleaning.</td>
</tr>
<tr>
<td>Form release, curing or surface-hardening compounds</td>
<td>Visual; sprinkle water on surface</td>
<td>Must be removed by mechanical abrasion or abrasive water cleaning.</td>
</tr>
</tbody>
</table>

### Step 2. Sealing Joints and Penetrations

**Substrate Joints, Defects and Holes**

All joints between substrates or between sheets of exterior sheathing (such as those found in exterior grade gypsum or plywood sheets) should be sealed using a DOWSIL™ brand sealant as listed in Column B of Table 2. The sealant should be tooled flush to the surface. No bond breaker is required for these joints provided they are static joints (Figure 1). Any unused nail holes, as well as any countersunk or protruding nails and screws, must be sealed (using the same sealant used to seal the joints) and struck flush to the surface of the substrate prior to the installation of DOWSIL™ DefendAir 200. Screw and nail heads that are installed flush to the substrate and remain in the substrate do not need to be sealed separately prior to the installation of the air and weather barrier.

Defects in the substrate can be repaired flush to the surface using the same sealant as used for joints and penetrations (Figure 2) or a patching material recommended by the substrate manufacturer. Cementitious patches should be allowed to cure for a minimum of 10 days prior to installing the coating.

Changes in the substrate (Figure 3) and control joints (Figure 4) should be sealed as a traditional weatherseal joint. There are five basic steps for proper joint preparation and sealant application:
1. **Clean** – Joint surfaces must be clean, dry, dust-free and frost-free.
2. **Prime** – If required, primer is applied to the clean surface(s).
3. **Pack** – Backer rod or bond breaker is applied.
4. **Seal** – Sealant such as DOWSIL™ 791 Silicone Weatherproofing Sealant is applied into the joint cavity.
5. **Tool** – Dry-tooling techniques are used to create a flush joint and to make certain the sealant has the proper configuration and fully contacts the joint walls.

Wall offsets or changes in plane can be sealed using a fillet bead of sealant (Figure 5). Bond breaker material does not need to be used unless greater than 15 percent movement is expected in the joint.

**Figure 1. Gap in Sheathing**

**Figure 2. Divot in Concrete Wall**
Exterior insulation – two layers staggered to minimize gap in thermal barrier

DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod. Set sealant back at joints where movement is expected. Fully apply DOWSIL™ DefendAir 200 over sealant joint.

DOWSIL™ DefendAir 200
Penetrations
Gaps around penetrations should be sealed in a similar manner using a sealant listed in Table 2. To reduce the amount of sealant used, a backer rod can be inserted into gaps greater than ¼ inch (6.3 mm) and sealed as a traditional sealant joint (Figure 6).

For information on fasteners installed after the air barrier, refer to page 24.
Figure 6. Vertical Wall Offset

Detail assumes penetration exists prior to installation of air barrier system.

Window and Door Openings

Window openings must be flashed with an approved through-wall flashing material such as DOWSIL™ 778 Silicone Liquid Flashing. DOWSIL™ 778 Silicone Liquid Flashing should be trowel-applied in a 20-mil (0.63 mm) wet-film thickness for this application. Best practice is to trowel apply the liquid flashing around the entire opening. At minimum, DOWSIL™ 778 Silicone Liquid Flashing should be applied on the entire sill and a minimum of 6 inches (203.2 to 304.8 mm) up both vertical jambs. The flashing should be applied around the front corner of the sill and jambs, covering a minimum of 3 inches (76.2 to 101.6 mm) perimeter on the face of the sheathing. The depth of the flashing into the window opening should be a minimum of 3 inches or 1 inch (76.2 to 25.4 mm) behind where the primary air and water seal is to be installed, whichever is greater.
If liquid flashing is only used at the sill and lower jambs of the opening, a 15-mil (0.38 mm) dry film thick layer of DOWSIL™ DefendAir 200 should then be used to flash the remainder of the jambs and the head of all openings. DOWSIL™ DefendAir 200 should always overlap the DOWSIL™ 778 Silicone Liquid Flashing by at least 1 inch (25.4 mm). When the distance between materials in the window opening (i.e., the distance between the sheathing and the window framing) is greater than 1/8 inch (3.175 mm), a bead of sealant must be used to bridge the gap.
Example of flashing at window opening

Figure 8. Curtain Wall Jamb at Flush Condition – DOWSIL™ DefendAir 200 Flashing

Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod as air seal between window frame and membrane flashing

Provide finished GWB edge

Exterior insulation – two layers staggered to minimize gap in thermal barrier

Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod

Apply DOWSIL™ 778 Silicone Liquid Flashing OR DOWSIL™ DefendAir 200 with DOWSIL™ 778 Silicone Liquid Flashing at sill only, extending up jambs 6” and 4” onto face of sheathing

DOWSIL™ DefendAir 200 lapped over flashing coat min. 1”
Figure 9. Curtain Wall Jamb at Flush Condition – STS Flashing

DOWSIL™ 791 Silicone Weatherproofing Sealant can also be used in lieu of DOWSIL™ 778 Silicone Liquid Flashing in this application at a 25-mil (0.63 mm) wet-film thickness.

The sealing of window openings to the curtainwall or window system can be completed with a liquid-applied sealant (Figure 8) or DOWSIL™ Silicone Transition System (Figure 9). This step can be completed before or after DOWSIL™ DefendAir 200 is installed. When DOWSIL™ Silicone Transition System is installed after the air and weather barrier, DOWSIL™ DefendAir 200 should be allowed to dry for a minimum of 48 hours before the DOWSIL™ Silicone Transition System is installed. A primer is not required when one of the recommended sealants in Table 2, Column A is used to adhere DOWSIL™ Silicone Transition System to DOWSIL™ DefendAir 200.

It is important to seal the absolute edge of the DOWSIL™ Silicone Transition System. This most often requires a second line of sealant to be applied along the edge of the strip after it has been initially installed. This additional step will help ensure that no area of the substrate is left exposed once the air and weather barrier is installed and will prevent unwanted water penetration into the system.

For more information on detailing window openings, reference the Tech Talk section of this guide.
Foundation and Roof Transitions

Foundation and roof transitions are best sealed using DOWSIL™ Silicone Transition System. When installing DOWSIL™ Silicone Transition System, it is important to choose a sealant that adheres well to the substrate(s). In the case of most roofing and foundation membranes, the recommended sealant is DOWSIL™ 758 Silicone Weather Barrier Sealant. See Figures 10 and 11. A fillet bead of DOWSIL™ 758 Silicone Weather Barrier Sealant may be adequate to bridge the transition between the air barrier and the foundation or roof membrane. DOWSIL™ DefendAir 200 is not approved to transition to other membranes without use of a sealant or pre-cured strip.

Example of bridging from below grade water proofing to Air Barrier using DOWSIL™ 758 Silicone Weather Barrier Sealant
Figure 10. Stud Wall to Concrete Wall

- Exterior insulation – two layers staggered to minimize gap in thermal barrier

- DOWSIL™ DefendAir 200

- Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant cap along edge of silicone transition strip

- DOWSIL™ Silicone Transition System

- Fillet bead of DOWSIL™ 791 Silicone Weatherproofing Sealant at top of flashing

- DOWSIL™ DefendAir 200 lapped on to flashing, over STS and onto field layer

- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant

- Metal flashing to conceal transition strip (flashing not required if cladding covers STS)

- Continuous DOWSIL™ 758 Silicone Weather Barrier Sealant along edge of STS where transition is to membrane by others; DOWSIL™ 791 Silicone Weatherproofing Sealant otherwise
Continuous beads of DOWSIL™ 791 Silicone Weatherproofing Sealant between STS and air barrier near the gap between stud walls

Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant cap along edge of STS

Slope blocking to drain

DOWSIL™ Silicone Transition System – overlap widths to suit condition

Seal all penetrations

Continuous exterior insulation over parapet

Coping gap

Exterior insulation – two layers staggered to minimize gap in thermal barrier

DOWSIL™ DefendAir 200 Application Guide
Step 3. DOWSIL™ DefendAir Primer

DOWSIL™ DefendAir 200 does not require a primer on most substrates. Refer to Table 3 for primer recommendations for common substrates. To determine if primer is required on other materials or on substrates that may have been contaminated by other substances, it is recommended to perform a project-specific adhesion test. The procedure for this test can be found in the “Adhesion Test Procedure” section of this guide (page 26).

When required, DOWSIL™ DefendAir 200 Primer is applied in one coat using either a ½- to ¾-inch (13 to 19 mm) nap roller or an airless sprayer. The primer should only be installed when temperatures are above 20°F (-6°C) and when there is no chance of rain within four hours. The expected coverage rate of DOWSIL™ DefendAir 200 Primer is approximately 300 square feet per gallon (7.4 square meters per liter).

Allow the primer to “dry to the touch” (30 minutes to two hours) before applying DOWSIL™ DefendAir 200. After priming, before installing the air and weather barrier, the spray equipment should be fully cleaned or a new roller used.

Step 4. Installing DOWSIL™ DefendAir 200

DOWSIL™ DefendAir 200 must be applied to a minimum total 15-mil (0.38 mm) dry-film thickness on the surface of the substrate (approximately 30-mil [0.76 mm] wet-film thickness) to attain air and water tightness and to qualify for a project-specific warranty. (See the “Coverage Rates” section on page 6 of this guide for more information.) DOWSIL™ DefendAir 200 can be applied using a brush, roller (hand or power) or airless sprayer.

Prior to installing DOWSIL™ DefendAir 200, it is important that all sealants and primers that have been installed during the wall preparation process are allowed to “dry to the touch” (15-30 minutes for sealant and 30 minutes to two hours for DOWSIL™ DefendAir 200 Primer). Apply one coat of material around all penetrations and openings prior to the installation of the air barrier on the entire surface. This will help ensure complete coverage of these details. DOWSIL™ DefendAir 200 should overlap the liquid flashing and all window opening detailing by a minimum of 1 inch (25.4 mm).

Do not thin or cut back DOWSIL™ DefendAir 200.
**Hand Roller Application**

Apply DOWSIL™ DefendAir 200 using a ⅜- to 1½-inch (9.5 to 38 mm) nap, polyester or 50/50 polyester/wool blend roller cover. In general, smaller nap lengths are more suitable for smooth substrates. Apply the coating in a fan (W-) pattern to achieve uniform thickness. The coating should be applied in two 15- to 18-mil (0.38 to 0.46 mm) wet-thickness coats. Typically, two 15- to 18-mil (0.38 to 0.46 mm) wet coats will result in the required 15-mil dry-coating thickness (DFT); however, an additional coat may be required depending on surface texture or porosity. If it is found that an additional coat is necessary to achieve 15-mil DFT on the surface of the substrate, it may be possible to utilize DOWSIL™ DefendAir 200 Primer before applying DOWSIL™ DefendAir 200 to reduce the amount of DOWSIL™ DefendAir 200 being absorbed. This may decrease the need for extra coats of DOWSIL™ DefendAir 200.

Allow the coating to dry to the touch (typically two to four hours) before applying the next coat.

**Power Roller Application**

Apply DOWSIL™ DefendAir 200 using a ½- to 1½-inch (12.7 to 38 mm) nap, polyester or 50/50 polyester/wool blend roller cover. The coating should be applied in two 15- to 18-mil (0.38 to 0.46 mm) wet-thickness coats. Typically, two 15- to 18-mil (0.38 to 0.46 mm) wet coats will result in the required 15-mil dry-coating thickness; however, thicker coats may be required depending on surface texture or porosity. Up to a 25-mil (0.63 mm) wet-thickness coat can be applied in one pass using a power roller.

A low air pressure is needed to pump the material to the roller head. Pull the application trigger often to apply more material to the roller. There is too much material being applied in one coat when the roller slides instead of rolling.

Allow the coating to dry to the touch (typically two to four hours) before applying a second coat.

**Spray Application**

DOWSIL™ DefendAir 200 can be installed on most substrates, in one 30-mil (0.76 mm) wet coat using an airless sprayer. Two 18- to 20-mil (0.46 to 0.51 mm) wet coats may be required to achieve the required thickness on some extremely porous substrates. There is no maximum installation thickness for DOWSIL™ DefendAir 200, but the air barrier will start to sag when approximately 60-mil (1.52 mm) wet-film thickness is achieved in one coat. (For information on how the applied thickness of DOWSIL™ DefendAir 200 affects the vapor permeability of the air barrier, please see the Tech Talk section of this manual.)
Refer to the equipment manual for your spray equipment for detailed information on tip size selection, tip wear and optimal pressure. A minimum 0.021-inch (0.53 mm) tip is recommended to spray DOWSIL™ DefendAir 200. The optimal tip sizes range from 0.025 inch to 0.031 inch (0.63 mm to 0.79 mm). The larger the tip size, the more pressure will be required to spray the material – and the faster the application of the air and weather barrier. Ensure that your spray equipment is able to accommodate the tip size you wish to use before starting the application.

When spraying DOWSIL™ DefendAir 200, start with a low pressure and increase the pressure until a uniform pattern is sprayed. Increase the size of the tip if more material is desired. As the tip wears, the pressure on the sprayer will need to be increased to maintain an even application of material. If the air and weather barrier begins to exhibit pinholing or fisheyes, reduce the pressure of the sprayer and/or move the sprayer head farther away from the substrate.

A respirator is not required when spraying DOWSIL™ DefendAir 200. Personal preference may be to wear a mask.

**Drying Time**

After the final coat of the air barrier has been applied, the average drying time of DOWSIL™ DefendAir 200 is four to 12 hours, depending on coat thickness, temperature, humidity and wind conditions. DOWSIL™ DefendAir 200 will attain full adhesion and physical properties in seven to 14 days.

**Cold Temperature Considerations**

DOWSIL™ DefendAir 200 can be applied at temperatures as low as 20°F (-6°C). If temperatures drop below 20°F (-6°C) after DOWSIL™ DefendAir 200 is applied, the coating will freeze on the surface until the temperature increases. This will not affect the cured properties of the air barrier but will extend the drying time. DOWSIL™ DefendAir 200 requires temperatures higher than 20°F (-6°C) for a cumulative total of 24 hours to dry. DOWSIL™ DefendAir 200 will attain full adhesion and physical properties in seven to 14 days.

Roller application of the air barrier at low temperature will require two coats. The air barrier should “dry to touch,” not simply freeze, between coats. Application equipment such as rollers and the tips of spraying equipment should be kept above 32°F (0°C) when not in use. When the temperatures are consistently below 40°F (4°C), allow the air barrier to dry a minimum of three days prior to applying other materials to the surface of the air barrier.
Fasteners Installed After Air Barrier

DOWSIL™ DefendAir 200 successfully passes ASTM D1970 for Nail Sealability when applied at 15 mils.

In addition, DOWSIL™ DefendAir 200 has been tested in full wall assemblies with a number of different fasteners installed through the air barrier for air infiltration (ASTM E283) and water infiltration (ASTM E331) both before and after structural loading (ASTM E330). This testing included fasteners that were installed through panel furring strips and through foam insulation. None of the fasteners tested affected the air leakage rate of the wall assembly. The following recommendations are for maintaining a watertight building envelope.

All fasteners with a diameter less than ¼ inch (6.4 mm) passed this testing without any extra preparation or post-sealing. For fasteners greater than ¼ inch (6.4 mm) in diameter, some pre- or post-sealing of the fastener was required. The best practice for larger fasteners is to tool a thin layer (25 mils [0.64 mm]) of sealant onto the air barrier prior to installation of fastener (see Table 2, Column B for options). The fastener can be installed at any time after the sealant. The amount of cure of the sealant does not affect the performance. This method worked for all fasteners tested, but other options may be available for specific hardware. For detailed preparation recommendations for the specific fasteners tested, refer to the Tech Talk section of this manual.

If fasteners miss the stud during installation, best practice is to remove the fastener from the wall and seal the hole with a sealant from Table 2, Column B.

Quality Control

Wet-film thickness can be measured using a wet mil gauge. When measuring the thickness of DOWSIL™ DefendAir 200 that has been installed on porous substrates, wait five minutes before measuring the coating thickness. This measures the amount of material that remains on the surface of the substrate, after any material has been absorbed. Document the location and thickness from the testing in a quality control form (an example can be found in the Tech Talk section). Wet-film thicknesses should be measured on every floor and elevation to ensure proper air barrier thickness is being applied. As a guideline, measure at least every 10 feet during application.

At the beginning of the project, it is recommended to measure the dry film thickness of the air barrier in the same area as where the wet-film thickness was measured. This will determine the actual absorption rate of the air barrier into the project substrate. A full 15-mil (0.38 mm) dry thickness must remain on the surface of the substrate.
Demonstrating usage of wet mil gauge

At least one day after the air barrier is applied, visual inspection should be performed on the entire wall area that has been coated to assess that the wall has an adequate coating thickness. Any areas where the text on the underlying sheathing is visible, there is insufficient air barrier material and an additional coat of DOWSIL™ DefendAir 200 should be applied.

Post application inspection shows sheathing joint not properly sealed. Reseal with sealant.

The visual assessment should also look at seams between sheathing panels, mortar joints and screw heads to ensure that they have all been covered. After DOWSIL™ DefendAir 200 has been installed and allowed to dry, the white or gray color of the coating allows joints and deficiencies in the substrate that were not sealed before or during the application of the air and weather barrier to become visible. Screw heads and joints that did not receive enough material can be sealed over the air barrier using DOWSIL™ 791 Silicone Weatherproofing Sealant or another sealant found in Column B of Table 2 or by touching up the area with DOWSIL™ DefendAir 200.
Equipment Cleanup

DOWSIL™ DefendAir 200 is a water-based material. Any equipment that is used to install the air and weather barrier can be cleaned using water; no solvents are required. Spray equipment can be cleaned by running water through the sprayer. It is recommended to clean the equipment at least every five working days. If a longer period between cleanings is needed, sprayability of the material should be verified by the contractor.

Disposal

See the Material Safety Data Sheet (MSDS) for disposal information.

Adhesion Test Procedure

For uncommon materials or substrates that may have been contaminated by other materials, it is recommended an adhesion test be performed to determine whether a primer is required.

The most reliable method for testing adhesion of an air barrier to a substrate is to follow ASTM D4541. This test requires the use of specialized equipment and a metal loading fixture (dolly) to be adhered to the air barrier (Figure 12). LocTite Hysol 907 adhesive can be used to adhere the dolly to DOWSIL™ DefendAir 200. Current air barrier standards state that the air barrier should have an adhesive strength of greater than 16 psi (110 kPa).

Figure 12. Adhesion Test Using ASTM D4541

Another option available for adhesion testing is to perform a “cheesecloth” test (Figure 13). This test is ideal for concrete and masonry substrates. Some substrates, especially gypsum sheathing, may produce a false-negative result when using this test method.
1. Prepare surfaces as described in the section on Surface Preparation and Evaluation (page 9).

2. Use of a primer is optional, but testing is required to ensure sufficient adhesion in primerless applications. If primer is used, apply per the application method and allow it to dry.

3. Apply the first coat of DOWSIL™ DefendAir 200 at a rate of 15-mil (0.38 mm) wet-film thickness. Embed a cheesecloth strip (1 x 12 inch [25 x 305 mm]) in the wet coating with a paintbrush.

4. Apply the second coat over the cheesecloth at the same 15-mil (0.38 mm) wet-film thickness and allow to fully dry for seven to 14 days. This is an adhesion test only; additional coats may be required to achieve thickness requirements.

5. Test adhesion of the coating by pulling the uncoated part of the cheesecloth at a 180° angle at a slow, steady rate.

6. Inspect and note the percent cohesive failure (percent of coating material left on the wall surface). At least 80 percent of the coating should remain on the substrate.

7. If 80 percent retention is not achieved, the test should be repeated using DOWSIL™ DefendAir Primer. If necessary, contact Dow Technical Service for further instruction.

Figure 13. Adhesion Test Procedure Diagram
Product Limitations

DOWSIL™ DefendAir 200 is not designed for use on horizontal surfaces or in below-grade applications.

DOWSIL™ DefendAir 200 should not be installed on newly applied or green cementitious materials; industry guidelines recommend at least 28 days of cure before painting or coating the substrates (see SSPC 2010 Painting Manual, Chapter 3.1 – Concrete Surface Preparation).

DOWSIL™ DefendAir 200 does not adhere to high-density polyethylene-backed materials. When using these materials in conjunction with DOWSIL™ DefendAir 200, please contact Dow for assistance.

Appendix I – Material Compatibility

DOWSIL™ DefendAir 200 has been tested with a selection of materials offered by other manufacturers in the industry. For information on compatibility with the materials provided by other manufacturers, please contact your local Dow representative. Project-specific testing typically is recommended. Please reference the Tech Talk section for more information on material compatibility on page 90.

Appendix II – Referenced ASTM Standards

ASTM E2178 Standard Test Method for Air Permeance of Building Materials

ASTM E2357 Standard Test Method for Determining Air Leakage of Air Barrier Assemblies


ASTM E283 Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen


ASTM E331 Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
Health and Environmental Information
To support customers in their product safety needs, Dow has an extensive Product Stewardship organization and a team of Product Safety and Regulatory Compliance (PS&RC) specialists available in each area.

For further information, please see our website, consumer.dow.com/construction, or consult your local Dow representative.
The DOWSIL™ Silicone Transition System (STS) is a flexible solution for sealing transitions from curtain wall, storefront and punched windows to the façade opening. It can be installed with inboard, outboard and in-plane designs, as Figures 15 through 23 illustrate.

The silicone strip may be installed in-shop or in the field, depending on the desired sequence of installation.

**In-Shop**

*Installation of Strip*

For in-shop installations, Dow recommends attaching the strip to the mullion using DOWSIL™ 791 Silicone Weatherproofing Sealant or DOWSIL™ 795 Silicone Building Sealant. Other sealants (DOWSIL™ 756 SMS Building Sealant, DOWSIL™ 758 Silicone Weather Barrier Sealant or DOWSIL™ 983 Structural Glazing Sealant) may be used, but generally DOWSIL™ 791 Silicone Weatherproofing Sealant and DOWSIL™ 795 Silicone Building Sealant are the products on hand. For best air infiltration and water penetration results, Dow recommends two strips of silicone be used for the attachment. Clean the mullion using the two-rag wipe method and solvent. Apply two parallel beads of sealant ¼ inch to ⅜ inch (6 to 9 mm) in diameter to either the strip or the mullion, and then press the silicone strip to the mullion. The compressed bead width should be ½ inch (13 mm) or larger and can be visually checked by viewing through the translucent strip. It has been found that two beads help to eliminate any air infiltration through areas that may not be completely wetted out using hand pressure. A single bead of sealant may be used when there is insufficient space for two beads and full contact can be assured.

Corners may also be installed in-shop. When shop-installed, two beads of sealant (or one ensuring full contact) should be applied using the techniques previously mentioned. Corners shall be installed such that reverse lapping is avoided once the unit is installed.

This is most readily accomplished by installing the sill corners first; then the vertical DOWSIL™ Silicone Transition Strip pieces will lie over the corners. The head corners can then be installed lapping over the vertical strip pieces, achieving the appropriate shingling. However, this order can be changed provided the appropriate pieces are laid over/under as needed to avoid reverse lapping.
System Considerations

When installing the strip – and corners, if applicable – it may be found that a mechanical fastener is desired to keep the strip in place when moving units in the shop before sealant has cured. A screw can be punched through the strip, sealed over by installing a dollop of sealant over the screw head and tooling the sealant over the screw head. It is critical for air infiltration performance that any area where a mechanical fastener is used be completely covered with sealant, and the sealant must be tooled over the fastener.

When the fenestration unit is taken to the field, the opposing edge of the strip and corner are attached to the building façade using two strips of sealant. If the free edge is being attached to an air barrier, which would be expected (dependent on sequence of trades), the appropriate sealant for adhering to the air barrier should be chosen. When adhering to DOWSIL™ DefendAir 200, DOWSIL™ 791 Silicone Weatherproofing Sealant is the ideal sealant choice. When adhering to other air barriers, particularly self-adhered membranes with a polyethylene facing and spun bound polyolefin sheet membranes, DOWSIL™ 758 Silicone Weather Barrier Sealant is the preferred sealant because of its adhesive properties to low-energy surfaces. Depending on the substrate, be it an air barrier or other building material, alternate sealants may be used. A method for identifying a DOWSIL™ brand sealant with suitable adhesion is described in the following section. Additionally Dow can be contacted for guidance at consumer.dow.com/construction.

Once the appropriate sealant has been identified, clean the air barrier surface using a solvent and gentle two-rag wipe so as not to burnish the surface of the air barrier.
Apply two parallel beads of sealant of ¼ inch to ⅜ inch in diameter to the surface. Press the silicone strip to the surface. The compressed bead width should be ½ inch or larger, and it can be visually checked by viewing through the translucent strip. It has been found that two beads help in eliminating any air infiltration through areas that may not be completely wetted out using hand pressure.

If a roller is used and full contact can be assured, a single bead of sealant may be used.

For best air infiltration and water penetration performance, it is critical to install and tool sealant at every lap edge of the strip and every lap transition between pieces of the strip, or between strip and corners (Figure 4).

_Peel-in-Adhesion Test Procedure (Tab Adhesion)_

DOWSIL™ Silicone Transition System is to be installed using a sealant that adheres to the substrates the STS is being applied to. As previously noted, many sealants may function as the STS adhesive. In order to determine which sealant to use for STS installation, establishing the sealants’ adhesion to the substrates is important. A simple screening test can be done on a flat test surface. A test piece like that shown in Figure 3 is recommended.

1. Clean and prime the surface following the project-specific recommendations.

2. Place a piece of polyethylene sheet or bond breaker tape across the flat test surface.

3. Apply a bead of sealant and tool it to form a strip approximately 7.8 inches (200 mm) long, 1 inch (25 mm) wide and 1/8 inch (3 mm) thick. At least 2 inches (50 mm) of the sealant should be applied over the polyethylene sheet or bond breaker tape.

4. After allowing the sealant to cure, pull the free tab up and away at 180 degrees.

5. Pass/Fail criteria can be found in the Dow Americas Technical Manual; however, a sealant that easily (with little extension) releases adhesively from the substrate may indicate inadequate adhesion.

If the entire STS strip assembly is desired to be tested, the sealant adhering the strip can be undercut and the strip pulled on. This is a very inexact test to perform, particularly on sheathing, as the facing of the sheathing many times separates and the sealant and STS do not end up being directly tested (See Figure 3). A potential problem could be detected in this way, however, if the sealant and strip were observed to easily release from the substrate when pulled on. Please note when adhering STS to DOWSIL™ DefendAir 200, the assembly must cure a minimum of seven days before testing it.
Field Installation

For field installation, the same guidelines apply, but the order of installation is reversed, adhering the STS to the air barrier first, then to the mullion.

Installation of Strip

For field installations, Dow recommends attaching the strip to the building surface (generally an air barrier) with DOWSIL™ 758 Silicone Weather Barrier Sealant. Depending on the air barrier surface, other sealants may be used (please consult Dow for guidance as needed at consumer.dow.com/construction). Field adhesion testing by “tab adhesion” should be completed prior to installing the DOWSIL™ Silicone Transition System (Figure 3). Once the appropriate sealant has been identified, clean the air barrier surface using a solvent and gentle two-rag wipe, so as not to burnish the surface of the air barrier.
Apply two parallel beads of sealant of ¼ inch to ⅜ inch (6 to 9 mm) in diameter to the surface, and then press the silicone strip to the surface. The compressed bead width should be ½ inch (13 mm) or larger, and it can be visually assessed by viewing through the translucent strip.

It has been found that two beads help in mitigating any air infiltration through areas that may not be completely wetted out using hand pressure. Provided full contact can be assured, a single bead of sealant may be used. For best air infiltration and water penetration performance, it is recommended to install and tool sealant at every lap edge of the strip and every lap transition between pieces of the strip, or between strip and corners (Figures 5 and 6). The free edge can be folded and kept out of the way of window installation by folding the flaps into the building and taping them down if needed.

When a strip is hung vertically, it has been found that 10 to 15 foot vertical runs can be attached with sealant without slump. Longer runs may be possible but may require one mechanical fastener at the top to hold the strip in place. Sealant should be tooled over any mechanical fasteners. It has been found that one floor at a time is most feasible for installation.

Figure 4: Sealant Attaching Strip and Corner to Air Barrier In-Field. Lap Joints Sealed.
Openings also may be “wrapped” with the DOWSIL™ Silicone Transition System prior to the fenestration unit installation, meaning the DOWSIL™ Silicone Transition System would run vertically and horizontally around the opening (Figure 7). Using this method, it is recommended that the splice joints be located at the mid span of the fenestration unit opening, at least 12 inches (300 mm) away from a corner (Figure 8). At sills, the strip may be attached with sealant only. At head conditions, the strip, depending on the width being used and length of the run, may be attached with sealant only (Figure 9). If the strip begins to sag, use a mechanical fastener to hold it in place. Ensure there is sealant under the mechanical fastener and also applied over the fastener and tooled.
When installing the strip – and corners, if applicable – it may be found that to keep the strip in place, a mechanical fastener is desired. A screw can be used to punch through the strip and then sealed over by installing a dollop of sealant over the screw head and mechanically tooling the sealant over the screw head. It is critical for air infiltration performance that any area in which a mechanical fastener is used be completely covered with sealant, and the sealant must be tooled over the fastener (Figure 10).
Installation of Corners

Molded corners may be difficult to use in field installations depending on sequence of construction. If the exterior façade material is already in place at the time the opening is wrapped with the DOWSIL™ Silicone Transition System, the corner may not have sufficient building face available to adhere to. In these cases, the strip (installed in the opening) can be spliced and folded around the corner and attached to the fenestration unit using sealant. It is critical to apply sealant at every splice joint and ensure full sealant contact at least ½ inch (13 mm) to either side of the splice and along the entire length of the splice (Figures 11 and 12).
When the exterior façade material is not yet in place, molded corners may be installed at the opening before the fenestration unit is installed. Sealant should be applied using the cleaning and installation techniques previously described; it is critical to seal the lap joints between the DOWSIL™ Silicone Transition System strip and molded corner as shown in Figure 4.

Corners shall be installed such that reverse lapping once the unit is installed is avoided. This is most easily accomplished by installing the sill corners first; then the vertical DOWSIL™ Silicone Transition Strip pieces will lie over the corners. The head corners can then be installed lapping over the vertical strip pieces, achieving the appropriate shingling. However, this order can be changed provided the appropriate pieces are laid over/under as needed to avoid reverse lapping.

**System Considerations**

Once the fenestration unit is installed in the field, the opposing edge of the strip and corner are attached to the mullion using silicone sealant. Dow recommends attaching the strip to the mullion using DOWSIL™ 791 Silicone Weatherproofing Sealant or DOWSIL™ 795 Silicone Building Sealant. Other sealants (DOWSIL™ 756 SMS Building Sealant or DOWSIL™ 758 Silicone Weather Barrier Sealant) may be used. For best air infiltration results, Dow recommends two strips of silicone sealant be used for the attachment. Clean the mullion using the two-rag wipe method and solvent. Apply two parallel beads of sealant of ¼ inch to ⅜ inch (6 to 9 mm) in diameter to either the strip or the mullion, and then press the silicone strip to the mullion. The compressed bead width should be ½ inch (13 mm) or larger, and it can be visually checked by viewing through the translucent strip (Figures 13 and 14). It has been found that two beads help mitigate any air infiltration through areas that may not be completely wetted out using hand pressure. Provided full contact can be assured, a single bead of sealant may be used; often, there is only space for one sealant bead on the mullion. Achieving full contact between the strip, sealant and mullion is critical.

When installing the strip – and corners, if applicable – it may be found that to keep the strip in place through the installation process, a mechanical fastener is desired. A screw can be used to punch through the strip and then sealed over by installing a dollop of sealant over the screw head and mechanically tooling the sealant over the screw head. It is critical for air infiltration performance that any area in which a mechanical fastener is used be completely covered with sealant, and the sealant must be tooled over the fastener.
Figure 11: One Example of Folding Corner

Figure 12: Folded and Sealed Corner

Figure 13: Folding Strip onto Mullion and Attaching with Sealant
Inboard DOWSIL™ Silicone Transition System Detail

- Figure 14: Finished Strip Installation
- Figure 15: Jamb at Inboard Condition, Metal Panel
- Figure 16: Head at Inboard Condition, Metal Panel
- Figure 17: Sill at Inboard Condition, Metal Panel
Flush DOWSIL™ Silicone Transition System Detail

Figure 18: Jamb at Flush Condition, Metal Panel

Figure 19: Head at Flush Condition, Metal Panel

Figure 20: Sill at Flush Condition, Metal Panel
Outboard DOWSIL™ Silicone Transition System Detail

Figure 21: Jamb at Outboard Condition, Metal Panel

Figure 22: Head at Outboard Condition, Metal Panel

Figure 23: Sill at Outboard Condition, Metal Panel
**Figure 01. Stud Wall to Concrete Wall**

- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- DOWSIL™ DefendAir 200
- Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant cap along edge of silicone transition strip
- DOWSIL™ Silicone Transition System (STS)
- Fillet bead of DOWSIL™ 791 Silicone Weatherproofing Sealant at top of flashing
- DOWSIL™ DefendAir 200 lapped on to flashing, over STS and onto field layer
- DOWSIL™ DefendAir 200
- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant
- Metal flashing to conceal transition strip (flashing not required if cladding covers STS)
- Continuous DOWSIL™ 758 Silicone Weather Barrier Sealant along edge of STS where transition is to membrane by others; DOWSIL™ 791 Silicone Weatherproofing Sealant otherwise
Figure 02. Base of Wall at Sloped Roof

- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- DOWSIL™ DefendAir 200 lapped over cap seal DOWSIL™ 758 Silicone Weather Barrier Sealant and min. 2” over MTL flashing
- Seal top of flashing with continuous bead of DOWSIL™ 758 Silicone Weather Barrier Sealant (cap seal)
- Extend roofing base sheet 8” up wall
- Metal apron flashing
- Roofing/waterproofing/air barrier/vapor barrier by others
- Do not allow DOWSIL™ DefendAir 200 and roofing membranes to come into contact with one another

Figure 03. Base of Wall at 2-Ply Roofing Termination

- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- Pre-strip DOWSIL™ DefendAir 200
- Seal top of flashing with continuous bead of DOWSIL™ 758 Silicone Weather Barrier Sealant
- DOWSIL™ DefendAir 200 lapped over cap seal DOWSIL™ 758 Silicone Weather Barrier Sealant and min. 2” over MTL flashing
- DOWSIL™ DefendAir 200 lapped over cap DOWSIL™ 758 Silicone Weather Barrier Sealant as cap seal over top edge of roofing membrane over MTL flashing
- Extend roofing base sheet 2” above termination bar
- Metal counterflashing
- Roofing base ply flash
- Roofing cap ply flash
- Cant strip as required by manufacturer
- Do not apply SBS roofing membranes over DOWSIL™ DefendAir 200
Figure 04. Walls at Floor Slab

Note: Most deck coatings will not adhere to DOWSIL™ DefendAir 200

- Sheathing
- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- DOWSIL™ DefendAir 200
- Lap DOWSIL™ DefendAir 200 over cap seal of DOWSIL™ 758 Silicone Weather Barrier Sealant between DOWSIL™ DefendAir 200 and urethane deck coating
- Horizontal waterproofing by others
- Cant strip as required by manufacturer

DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod
- Fillet bead of DOWSIL™ 791 Silicone Weatherproofing Sealant as backing for DOWSIL™ DefendAir 200
- DOWSIL™ DefendAir 200

8" Min.

1/2" Min.

2" Min.
Exterior insulation – two layers staggered to minimize gap in thermal barrier

DOWSIL™ DefendAir 200

Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant cap along edge of silicone transition strip

DOWSIL™ Silicone Transition System

Fillet bead of DOWSIL™ 791 Silicone Weatherproofing Sealant at top of flashing

DOWSIL™ DefendAir 200 lapped on to flashing, over STS and onto field layer

DOWSIL™ DefendAir 200

Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant

Metal flashing to conceal transition strip (flashing not required if cladding covers STS)

Continuous DOWSIL™ 758 Silicone Weather Barrier Sealant along edge of STS where transition is to membrane by others; DOWSIL™ 791 Silicone Weatherproofing Sealant otherwise

Figure 05. Control Joint
Figure 05a. Control Joint – Alternate

Exterior insulation – two layers staggered to minimize gap in thermal barrier

DOWSIL™ DefendAir 200

4" min. wide DOWSIL™ Silicone Transition System sealed over gap with 2" min. bond each side. Do not seal gap.

Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant

Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant along edge of STS

Figure 05b. Control Joint – Alternate 2

Exterior insulation – two layers staggered to minimize gap in thermal barrier

DOWSIL™ DefendAir 200 – lap fully over STS

4" min. wide DOWSIL™ Silicone Transition System sealed over gap with 2" min. bond each side. Do not seal gap.

Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant

Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant along edge of STS
Exterior insulation – two layers staggered to minimize gap in thermal barrier

**DOWSIL™ DefendAir 200**

**DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod. Set sealant back at joints where movement is expected. Fully apply DOWSIL™ DefendAir 200 over sealant joint**

**Exterior insulation – two layers staggered to minimize gap in thermal barrier**

4" min. wide DOWSIL™ Silicone Transition System sealed over gap with 2" min. bond each side. Do not seal gap.

Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant

Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant along edges of silicone transition strip
Figure 06b. Change in Wall Substrate – Alternate 2

- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- DOWSIL™ DefendAir 200
- 4” min. wide DOWSIL™ Silicone Transition System sealed over gap with 2” min. bond each side. Do not seal gap.
- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant
- Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant along edges of silicone transition strip

Figure 07. Vertical Wall Offset

- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- DOWSIL™ DefendAir 200 applied on wall and over sealant
- Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant bead in corner
Figure 08. Deflection Joint Where Wall Passes in Front of Slab

- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant cap along edge of STS
- DOWSIL™ DefendAir 200 continuous along face of sheathing
- DOWSIL™ Silicone Transition System lapped over and sealed to metal flashing
- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant
- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant cap along edge of STS
- Through wall flashing
- Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant cap along edge of STS

Figure 08a. Deflection Joint Where Wall Passes in Front of Slab – Alternate

- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant cap along edge of STS
- DOWSIL™ DefendAir 200 continuous along face of sheathing
- DOWSIL™ Silicone Transition System lapped over and sealed to metal flashing
- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant
- Through wall flashing
- Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant cap along edge of STS

4" min. wide DOWSIL™ Silicone Transition System sealed over gap with 2" min. bond each side. Do not seal gap.
Figure 09. Deflection Joint Where Slab Interrupts Wall (Through Wall Flashing)

- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- Cap bead of DOWSIL™ 791 Silicone Weatherproofing Sealant – fully cover with DOWSIL™ DefendAir 200
- Cap bead of DOWSIL™ 791 Silicone Weatherproofing Sealant – fully cover with DOWSIL™ DefendAir 200
- DOWSIL™ Silicone Transition System lapped over and sealed to metal flashing
- Cap bead of DOWSIL™ 791 Silicone Weatherproofing Sealant – fully cover with DOWSIL™ DefendAir 200

Through wall flashing

DOWSIL™ DefendAir 200 – apply to sheathing and exposed slab edge

Figure 10. Seismic Joint

- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant
- Set STS expansion joint in continuous 2" bands of DOWSIL™ 791 Silicone Weatherproofing Sealant
- Metal closure by others
- DOWSIL™ Silicone Transition System expansion joint sealed to DOWSIL™ DefendAir 200
Figure 11. Seismic Joint at Parapet

- Set STS expansion joint in continuous 2” bands of DOWSIL™ Weatherproofing Sealant
- Existing building
- DOWSIL™ Silicone Transition System expansion joint sealed to existing building and DOWSIL™ DefendAir 200
- Parapet cap by others

Figure 12. Electrical Box/Fixture DOWSIL™ DefendAir 200 with Sealant

- Exterior insulation
- DOWSIL™ DefendAir 200 lapped onto box, top and sides, and onto field layer
- Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant fillet bead in corner to support application of DOWSIL™ DefendAir 200 – sealant to have min. ¼” bite onto substrates
- Electrical box
- DOWSIL™ 791 Silicone Weatherproofing Sealant at wire penetration
- Weather seal – continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod all around box at siding
- Exterior insulation – two layers staggered to minimize gap in thermal barrier

DOWSIL™ DefendAir 200 lapped over parapet
Figure 13. Electrical Box/Fixture/FSAM

- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod all around box at siding
- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- DOWSIL™ DefendAir 200
- DOWSIL™ 791 Silicone Weatherproofing Sealant at wire penetration

Figure 13a. Electrical Box/Fixture STS

- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod all around box at siding
- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- DOWSIL™ DefendAir 200
- DOWSIL™ 791 Silicone Weatherproofing Sealant at wire penetration
Figure 14. Curtain Wall Jamb at Flush Condition – STS Flashing

- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant
- 4" min. wide DOWSIL™ Silicone Transition System sealed into window mullion – lap 2" min. onto sheathing
- 2" Min.

Exterior insulation – two layers staggered to minimize gap in thermal barrier

Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant along edge of STS

Figure 14a. Curtain Wall Jamb at Flush Condition – DOWSIL™ DefendAir 200

- Close flashing as required
- DOWSIL™ DefendAir 200

Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant

Exterior insulation – two layers staggered to minimize gap in thermal barrier

Provide finished GWB edge

Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod

Metal closure flashing

- Apply DOWSIL™ 778 Silicone Liquid Flashing OR DOWSIL™ DefendAir 200 with DOWSIL™ 778 Silicone Liquid Flashing at sill only, extending up jambs 6" and 4" onto face of sheathing
- DOWSIL™ DefendAir 200 lapped over flashing coat min. 1"
Figure 15. Curtain Wall Head at Flush Condition – STS Flashing

- DOWSIL™ DefendAir 200
- Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant cap along edge of STS
- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant
- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- DOWSIL™ Silicone Transition System sealed to metal flashing
  - 4” min. wide DOWSIL™ Silicone Transition System sealed into window mullion and 2” min. onto sheathing
- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant
- Metal drip flashing
- Curtain wall assembly

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Figure 15a. Curtain Wall Head at Flush Condition – DOWSIL™ DefendAir 200

- Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant cap along edge of STS
- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant
- DOWSIL™ DefendAir 200 lapped min. 1” onto membrane flashing
- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- DOWSIL™ Silicone Transition System sealed to metal flashing
  - 1/2” Min
- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant
- Metal drip flashing
- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod as air seal between window frame and membrane flashing
- Apply DOWSIL™ 778 Silicone Liquid Flashing OR DOWSIL™ DefendAir 200 with DOWSIL™ 778 Silicone Liquid Flashing at sill only, extending up jambs 6” and 4” onto face of sheathing
Figure 16. Curtain Wall at Flush Condition – STS Flashing

- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant
- DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod
- Closure flashing – shim to provide drainage to exterior
- 4” DOWSIL™ Silicone Transition System sealed into window mullion – min. 2” lap onto sheathing
- Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant cap along edge of STS
- DOWSIL™ DefendAir 200
- Exterior insulation – two layers staggered to minimize gap in thermal barrier

Figure 16a. Curtain Wall at Flush Condition – DOWSIL™ DefendAir 200

- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod as air seal between window frame and membrane flashing
- DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod
- Closure flashing
- DOWSIL™ 778 Silicone Liquid Flashing later applied on sill, 6” up jambs and 4” down face of wall
- DOWSIL™ DefendAir 200 lapped 1” min. over flashing membrane
- Exterior insulation – two layers staggered to minimize gap in thermal barrier
Figure 17. Curtain Wall Jamb at Outboard Condition – STS Flashing

Figure 18. Curtain Wall Head at Outboard Condition – STS Flashing
Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant

Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod

Closure flashing – shim to provide drainage to exterior

4" DOWSIL™ Silicone Transition System sealed onto window mullion – min. 2" lap onto sheathing. Terminate STS at frame shoulder.

Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant cap along edge of STS

Exterior insulation – two layers staggered to minimize gap in thermal barrier

DOWSIL™ DefendAir 200

Exterior insulation – two layers staggered to minimize gap in thermal barrier

DOWSIL™ DefendAir 200

Metal through-wall flashing beyond

Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant fillet bead around all sides of knife plate assembly to support application of DOWSIL™ DefendAir 200 (Alternate sealant: DOWSIL™ 778 Silicone Liquid Flashing)

Weather seal – continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod all around plate at siding

Knife plate

Cap all fasteners with DOWSIL™ 791 Silicone Weatherproofing Sealant before application of DOWSIL™ DefendAir 200

DOWSIL™ DefendAir 200 lapped onto plate 2" all sides, and min. 1" onto field layer of DOWSIL™ DefendAir 200

Set plate in a full bed of DOWSIL™ 791 Silicone Weatherproofing Sealant and fill all pre-drilled holes

4" min. wide DOWSIL™ Silicone Transition System sealed over gap with 2" min. bond each side; do not seal gap.
Figure 20a. Horizontal Projections, Knife Plate, Before DOWSIL™ DefendAir 200

- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- DOWSIL™ DefendAir 200
- Metal through-wall flashing beyond
- Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant fillet bead around all sides of knife plate assembly to support application of DOWSIL™ DefendAir 200
  (Alternate sealant: DOWSIL™ 778 Silicone Liquid Flashing)
- Weather seal – continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod all around plate at siding
- Knife plate
- Cap all fasteners with DOWSIL™ 791 Silicone Weatherproofing Sealant before application of DOWSIL™ DefendAir 200 coat
- DOWSIL™ DefendAir 200 lapped onto plate 2" all sides, and min. 1" onto field layer of DOWSIL™ DefendAir 200
- 4" min. wide DOWSIL™ Silicone Transition System sealed over gap with 2" min. bond each side. Do not seal gap.
- Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant cap along edge of STS

Figure 20b. Horizontal Projections, Concrete Embed Assembly

- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- DOWSIL™ DefendAir 200
- Continuous cap bead of DOWSIL™ 791 Silicone Weatherproofing Sealant at change of substrate – fully cover with DOWSIL™ DefendAir 200
- Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant fillet bead around all sides of knife plate assembly to support application of DOWSIL™ DefendAir 200
  (Alternate sealant: DOWSIL™ 778 Silicone Liquid Flashing)
- DOWSIL™ DefendAir 200 lapped onto plate 2" all sides, and min. 1" onto field layer of DOWSIL™ DefendAir 200
- DOWSIL™ DefendAir 200 field layer, beyond
- Weather seal – continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod all around plate at siding
- 4" min. wide DOWSIL™ Silicone Transition System sealed over gap with 2" min. bond each side. Do not seal gap.
- Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant cap along edge of STS
DOWSIL™ 791 Silicone Weatherproofing Sealant to extend 1" min. beyond flange of ducting

Fill any pre-drilled holes with DOWSIL™ 791 Silicone Weatherproofing Sealant

Apply a full bed of DOWSIL™ 791 Silicone Weatherproofing Sealant before knife plate

DOWSIL™ DefendAir 200 field layer or pre-strip

Continuous fillet bead of DOWSIL™ 791 Silicone Weatherproofing Sealant

Cover all fasteners with DOWSIL™ 791 Silicone Weatherproofing Sealant before applying DOWSIL™ DefendAir 200 collar

DOWSIL™ DefendAir 200 lapped min. 2" over field layer or pre-strip

Knife plate

Continuous fillet bead of DOWSIL™ 791 Silicone Weatherproofing Sealant all sides of collar cut-out

2" Min. Typ.

2" Min. Typ.
Cover all fasteners with DOWSIL™ 791 Silicone Weatherproofing Sealant before applying DOWSIL™ DefendAir 200.

Continuous fillet bead of DOWSIL™ 791 Silicone Weatherproofing Sealant all sides of cut knife plate.
Figure 22. Walls at Floor Slab

Note: Most deck coatings will not adhere to DOWSIL™ DefendAir 200

- Sheathing
- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- DOWSIL™ DefendAir 200
  - Lap DOWSIL™ DefendAir 200 over cap seal of DOWSIL™ 758 Silicone Weather Barrier Sealant between DOWSIL™ DefendAir 200 and urethane deck coating
  - Horizontal waterproofing by others
  - Cant strip as required by manufacturer
- DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod
- Fillet bead of DOWSIL™ 791 Silicone Weatherproofing Sealant as backing for DOWSIL™ DefendAir 200
- DOWSIL™ DefendAir 200

2" Min.
1/2" Min.

Diagram:
[Diagram showing the construction details as described above]
**Figure 23. Wall Penetration**

- Fillet bead of DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod support as backing for DOWSIL™ DefendAir 200
- DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod
- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- DOWSIL™ DefendAir 200 applied on wall and over sealant. Extend barrier onto penetration.

**Figure 23a. Wall Penetration – Alternate**

- Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant along edge of STS
- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant
- Factor exposed edges on GWB
  - 4" min. wide DOWSIL™ Silicone Transition System sealed over gap with 2" min. bond each side. Do not seal gap.
- Lap STS strip 2" in each direction
- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant
- DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod

Detail assumes penetration exists prior to installation of air barrier system.
**Figure 23b. Wall Penetration – Alternate 2**

Detail assumes penetration exists prior to installation of air barrier system

- Sealant to have min. ¼" bite onto substrate and penetration
- DOWSIL™ 791 Silicone Weatherproofing Sealant joint as backing for DOWSIL™ DefendAir 200
- DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod
- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- DOWSIL™ DefendAir 200 applied on wall and over sealant. Extend barrier onto penetration.

**Figure 24. Ducting Penetration**

- Detail assumes DOWSIL™ DefendAir 200 is installed before the duct shroud
- DOWSIL™ DefendAir 200 lapped min. 1” onto DOWSIL™ DefendAir 200 field layer and 2” over duct shroud flashing
- Seal all sides of flashing with continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant
- Duct shroud

- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod all around box at siding
- Exterior insulation – two layers staggered to minimize gap in thermal barrier
Apply a full bed of DOWSIL™ 791 Silicone Weatherproofing Sealant before applying DOWSIL™ DefendAir 200 strips.

Cover all fasteners with DOWSIL™ 791 Silicone Weatherproofing Sealant before applying DOWSIL™ DefendAir 200 strips.

Apply 6" strips of DOWSIL™ DefendAir 200 over flange.

Continuous fillet bead of DOWSIL™ 791 Silicone Weatherproofing Sealant all sides.

Duct opening

Shroud flange

Vent shroud

Shroud flange Continuous fillet bead of DOWSIL™ 791 Silicone Weatherproofing Sealant all sides

Apply a full bed of DOWSIL™ 791 Silicone Weatherproofing Sealant before applying DOWSIL™ DefendAir 200 field layer or pre-strip.

DowSIL™ 791 Silicone Weatherproofing Sealant to extend 1" min. beyond flange of dusting
Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant fillet bead around pipe or conduit – sealant to have min. ¼” bite onto substrates.
Figure 27. Storefront Window Head

- DOWSIL™ DefendAir 200 lapped min. 1” over flashing membrane
- Continuous DOWSIL™791 Silicone Weatherproofing Sealant cap along edge of STS
- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant
- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- DOWSIL™ Silicone Transition System sealed to metal flashing
- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant
- Metal drip flashing
- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod

Apply DOWSIL™ 778 Silicone Liquid Flashing OR DOWSIL™ DefendAir 200 with DOWSIL™ 778 Silicone Liquid Flashing at sill only, extending up jambs 6” and 4” onto face of sheathing.

Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod as air seal between window frame and membrane flashing.

Figure 28. Storefront Window Sill – DOWSIL™ 778 Silicone Liquid Flashing

- Continuous interior galvanized metal angle (min. 1”x1”x1/8”) to support membrane
- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant as air seal between window frame and DOWSIL™ 778 Silicone Liquid Flashing membrane
- DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod
- Closure flashing – shim to provide drainage to exterior
- DOWSIL™ 778 Silicone Liquid Flashing applied on sill, up back and angle and 4” down face of wall sheathing. Extend flashing 6” up jambs.
- DOWSIL™ DefendAir 200 lapped 1” min. over flashing membrane
- Exterior insulation – two layers staggered to minimize gap in thermal barrier
Figure 28a. Storefront Window Sill – DOWSIL™ 778 Silicone Liquid Flashing

- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod as air seal between window frame and DOWSIL™ 778 Silicone Liquid Flashing membrane
- Window assembly
- DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod
- Closer flashing – shim to provide drainage to exterior
- DOWSIL™ 778 Silicone Liquid Flashing applied on sill, up back angle and 4” down face of wall sheathing. Extend flashing 6” up jambs.
- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- DOWSIL™ DefendAir 200 lapped 1” min. over flashing membrane

Figure 29. Storefront Window Jamb

- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod as air seal between window frame and flashing
- DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod
- Interior insulation – two layers staggered to minimize gap in thermal barrier
- Continuous interior galvanized metal angle (min. 1”x1”x1/8”) to support membrane
- Intermittent shims behind window flange
- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- Apply DOWSIL™ 778 Silicone Liquid Flashing OR DOWSIL™ DefendAir 200
- Closure flashing as required
- DOWSIL™ DefendAir 200 lapped over flashing coat min. 1”
**Figure 30. Flanged Window Head – Metal Panel**

- **DOWSIL™ DefendAir 200**
- Continuous **DOWSIL™ 791 Silicone Weatherproofing Sealant** cap along edge of STS
- Continuous bead of **DOWSIL™ 791 Silicone Weatherproofing Sealant**
- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- **DOWSIL™ Silicone Transition System** sealed to metal flashing
- **4" DOWSIL™ Silicone Transition System** sealed onto flange and 2" min. onto sheathing
- Continuous bead of **DOWSIL™ 791 Silicone Weatherproofing Sealant**
- Metal drip flashing
- **DOWSIL™ 791 Silicone Weatherproofing Sealant** with backer rod
- Window assembly

**Provide finished GWB edge**

- Apply **DOWSIL™ 778 Silicone Liquid Flashing** or **DOWSIL™ DefendAir 200 with DOWSIL™ 778 Silicone Liquid Flashing** at sill only, extending up jambs 6" and 4" onto face of sheathing

**Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant** with backer rod as air seal between window frame and membrane flashing

**Figure 31. Flanged Window Jamb – Metal Panel**

- **Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant** with backer rod as air seal between window frame and membrane flashing
- **Nail flange set in DOWSIL™ 791 Silicone Weatherproofing Sealant**
- **Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant**
- **Apply DOWSIL™ 778 Silicone Liquid Flashing OR DOWSIL™ DefendAir 200 with DOWSIL™ 778 Silicone Liquid Flashing** at sill only, extending up jambs 6" and 4" onto face of sheathing

**Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant**

**Closure flashing as required**

**Provide finished GWB edge**

- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- **DOWSIL™ DefendAir 200 lapped over flashing coat min. 1"**
**Figure 32. Louver Head**

- DOWSIL™ DefendAir 200
- Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant cap along edge of STS (typ.)
- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant
- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- DOWSIL™ Silicone Transition System sealed to metal flashing
- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant

**Figure 33. Louver Sill**

- Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant as air seal between frame and flashing membrane
- Continuous interior galvanized metal angle (min. 1"x1"x1/8") to support membrane
- Louver assembly
- DOWSIL™ 778 Silicone Liquid Flashing OR DOWSIL™ DefendAir 200 with DOWSIL™ 778 Silicone Liquid Flashing at sill only, extending up jambs 6" and 4" onto face of sheathing
- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod as air seal between window frame and membrane flashing

- Metal drip flashing
- DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod
- Louver assembly
- Apply DOWSIL™ 778 Silicone Liquid Flashing OR DOWSIL™ DefendAir 200 with DOWSIL™ 778 Silicone Liquid Flashing at sill only, extending up jambs 6" and 4" onto face of sheathing
- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod as air seal between window frame and membrane flashing

- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant as air seal between window frame and membrane flashing
- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- DOWSIL™ 791 Silicone Weatherproofing Sealant

- Provide finished GWB edge
- DOWSIL™ 778 Silicone Liquid Flashing applied on sill, up back angle and 4" down face of wall sheathing. Extend flashing 6" up jambs.
- Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod
- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- Metal drip flashing
- DOWSIL™ 791 Silicone Weatherproofing Sealant

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BUILD A BETTER BARRIER™ 71
Details: Punched Opening

Figure 34. Louver Jamb

- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- DOWSIL™ DefendAir 200 lapped 1” min. over flashing membrane
- Metal flashing
- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod
- Louver assembly
- Apply DOWSIL™ 778 Silicone Liquid Flashing OR DOWSIL™ DefendAir 200 with DOWSIL™ 778 Silicone Liquid Flashing at sill only, extending up jambs 6” and 4” onto face of sheathing
- Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant as air seal between frame and weatherproof flashing

- Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant as air seal between frame and weatherproof flashing
Figure 35. Door Head

Exterior insulation – two layers staggered to minimize gap in thermal barrier

DOWSIL™ DefendAir 200
Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant cap along edge of STS (typ.)
Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant
DOWSIL™ DefendAir 200 lapped 1" min. over flashing membrane
DOWSIL™ Silicone Transition System sealed to metal flashing
Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant
Metal drip flashing
DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod

Door and frame assembly
Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod as air seal between frame and membrane flashing
Apply DOWSIL™ 778 Silicone Liquid Flashing OR DOWSIL™ DefendAir 200 with DOWSIL™ 778 Silicone Liquid Flashing at sill only, extending up jambs 6" and 4" onto face of sheathing

Metal drip flashing

Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod
DOWSIL™ 791 Silicone Weatherproofing Sealant

Detail assumes door is installed after the wall and air barrier system

Figure 36. Hollow Metal Door Head

Exterior insulation – two layers staggered to minimize gap in thermal barrier

DOWSIL™ DefendAir 200
Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant cap along edge of STS (typ.)
Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant
DOWSIL™ DefendAir 200 lapped 1" min. over flashing membrane
DOWSIL™ Silicone Transition System sealed to metal flashing
Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant
Metal drip flashing
DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod
Steel door frame

Apply DOWSIL™ 778 Silicone Liquid Flashing OR DOWSIL™ DefendAir 200 with DOWSIL™ 778 Silicone Liquid Flashing at sill only, extending up jambs 6" and 4" onto face of sheathing

Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod as air seal between frame and membrane flashing
Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant as air seal between frame and weatherproof flashing

Door frame

DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod

Apply DOWSIL™ 778 Silicone Liquid Flashing OR DOWSIL™ DefendAir 200 with DOWSIL™ 778 Silicone Liquid Flashing at sill only, extending up jambs 6” and 4” onto face of sheathing

Exterior insulation – two layers staggered to minimize gap in thermal barrier

Detail assumes door is installed after the wall and air barrier system

Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant as air seal between frame and weatherproof flashing

Steel door frame

Apply DOWSIL™ 778 Silicone Liquid Flashing OR DOWSIL™ DefendAir 200 with DOWSIL™ 778 Silicone Liquid Flashing at sill only, extending up jambs 6” and 4” onto face of sheathing

Provide finished GWB edge

Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod

DOWSIL™ DefendAir 200 lapped 1” min. over flashing membrane

Exterior insulation – two layers staggered to minimize gap in thermal barrier
Where metal back angle is to be used, install prior to application of DOWSIL™ brand weatherproofing products.

Trowel apply DOWSIL™ 778 Silicone Liquid Flashing over sill and up back angle per manufacturer’s instructions. (Where back angle is not used, apply DOWSIL™ 791 Silicone Weatherproofing Sealant fully into opening.)

Apply sealant up jambs 6” and extend 3” onto face of sheathing.

Note: Refer to window head, sill and jamb details. Sequence drawings indicate conceptual installation of flashing only and do not purport to illustrate actual conditions for the interior window wraps (head/jambs/sills).
Flash head and remainder of jambs with DOWSIL™ DefendAir 200 or DOWSIL™ 778 Silicone Liquid Flashing. Apply per manufacturer’s instructions. Extend 3” on to face of sheathing.

Overlap DOWSIL™ 778 Silicone Liquid Flashing with DOWSIL™ DefendAir 200, min. 1”
Figure 41. Window Opening – Isometric Sequencing DOWSIL™ 778
Silicone Liquid Flashing

Overlap DOWSIL™ DefendAir 200 onto window flashing, min. 1"

Field coat DOWSIL™ DefendAir 200
Continuous beads of DOWSIL™ 791 Silicone Weatherproofing Sealant between STS and air barrier near the gap between stud walls.

Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant cap along edge of STS.

DOWSIL™ Silicone Transition System – overlap widths to suit condition.

Continuous exterior insulation over parapet.

Exterior insulation – two layers staggered to minimize gap in thermal barrier.

Seal all penetrations.

Continuous exterior insulation over parapet.

Coping gap.

Slope blocking to drain.

DOWSIL™ DefendAir 200.

DOWSIL™ Silicone Transition System.

Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant.

Exterior insulation – two layers staggered to minimize gap in thermal barrier.

Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant cap along edge of STS.

DOWSIL™ DefendAir 200.

Figure 42. DOWSIL™ Silicone Transition System at Parapet.
Continuous blocking – slope to drain
DOWSIL™ DefendAir 200 – lap over self-adhered membrane
Exterior insulation – two layers staggered to minimize gap in thermal barrier
Continuous insulation over parapet
Support as required by foil-faced self-adhered flashing manufacturer
Exterior insulation – two layers staggered to minimize gap in thermal barrier
Seal all penetrations
Coping gap
Foil-faced self-adhered membrane by others

Figure 42a. DOWSIL™ DefendAir 200 Air Barrier with Self-Adhered Membrane at Parapet
Figure 43. Warm Soffit – Non-Vented

- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- DOWSIL™ DefendAir 200
- Exterior insulation at slab edge and around support brackets
- 4" min. wide DOWSIL™ Silicone Transition System sealed over gap with 2" min. bond each side. Do not seal gap.
- Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant cap along edges of silicone transition strip
- Exterior finish cladding per project
- Exterior insulation – two layers staggered to minimize gap in thermal barrier

- Continuous cap bead of DOWSIL™ 791 Silicone Weatherproofing Sealant – fully cover with DOWSIL™ DefendAir 200
- DOWSIL™ DefendAir 200
- Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant fillet bead in corner to support application of DOWSIL™ DefendAir 200 – sealant to have min. ¼" bite onto substrates
- Exterior finish cladding per project
- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- Exterior finish cladding per project
**Figure 43a. Cold Soffit**

- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- Exterior insulation at slab edge and around support brackets
- DOWSIL™ DefendAir 200
- Exterior finish cladding per project

**Continuous cap bead of DOWSIL™ 791 Silicone Weatherproofing Sealant – fully cover with DOWSIL™ DefendAir 200**

See Detail 47b for application of DOWSIL™ DefendAir 200 at concrete embedded assemblies

Continuous DOWSIL™ 791 Silicone Weatherproofing Sealant fillet bead in corner to support application of DOWSIL™ DefendAir 200 – sealant to have min. 1/4" bite onto substrates

DOWSIL™ DefendAir 200
- Sheathing
- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- Exterior finish cladding per project

Suspended vented soffit
Figure 44. Vented Eaves

- Continuous bead of DOWSIL™ 791 Silicone Weatherproofing Sealant with backer rod
- Exterior insulation – two layers staggered to minimize gap in thermal barrier
- Channel and perforated metal screen
- Metal flashing
- Lap DOWSIL™ DefendAir 200 onto metal flashing
- Spray foam insulation
- Roofing/waterproofing/air barrier/vapor barrier by others
Figure 45. Seismic Joint at Parapet

Set STS expansion joint in continuous 2” bands of DOWSIL™ 791 Silicone Weatherproofing Sealant

DOWSIL™ Silicone Transition System expansion joint sealed to existing building and DOWSIL™ DefendAir 200

Parapet cap by others

DOWSIL™ DefendAir 200 lapped over parapet
DOWSIL™ DefendAir 200 Absorption Rates on Various Substrates

DOWSIL™ DefendAir 200 is a liquid applied thin mil air barrier coating. As such, it is important to achieve the specified 15 mil dry film thickness on the surface of the substrate to ensure a robust application of the air barrier. There are industry concerns surrounding achieving the appropriate mil thickness on different substrates when using these thin mil systems. Dow has completed absorption testing on different substrates and found that the absorption rates of DOWSIL™ DefendAir 200 can change by substrate and even substrate manufacturer.

In general, a 30 mil wet coating results in the required 15 mil dry film thickness. However, some substrates do absorb more coating, and may require a higher wet mil application thickness to achieve the appropriate thickness on the surface of the substrate. Here is a summary of the wet mil vs. dry film thicknesses for a variety of substrates that were tested:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Wet Mil</th>
<th>24 hr Dry Mill</th>
</tr>
</thead>
<tbody>
<tr>
<td>GP Densglass® Gold</td>
<td>30</td>
<td>13.8</td>
</tr>
<tr>
<td>National Gypsum Purple</td>
<td>30</td>
<td>14.2</td>
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<tr>
<td>USG Green SECURock®</td>
<td>40</td>
<td>12.7</td>
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<tr>
<td>Plywood brand 1 (primed)</td>
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<tr>
<td>Large Aggregate Concrete</td>
<td>30</td>
<td>14</td>
</tr>
</tbody>
</table>

Coverage rates for your specific substrate may differ and should be verified by completing a mockup.

Please contact your local Dow sales development professional for further assistance.
DOWSIL™ DefendAir 200 has been tested to NFPA 285 using a wall system as follows: 2” Dow THERMAX™ Insulation, 1” airspace and aluminum composite panels. The panel joints were sealed with DOWSIL™ 795 Silicone Building Sealant. DOWSIL™ Silicone Transition System was installed at the window opening, using DOWSIL™ 791 Silicone Weatherproofing Sealant.

Engineering judgments may be obtained for the following scenarios:

- A similar system using an aluminum composite panel system that has been successfully tested to NFPA 285
- A heavier façade such as precast panels or brick that includes the same insulation assembly
- A system using ACM panels with an alternate thickness of Dow THERMAX™ Insulation, provided THERMAX™ Insulation has passed NFPA 285 in another system
- NFPA 285 assemblies containing XPS

Engineering judgments may be available for other wall assemblies.

Please contact your local Dow sales development professional for further assistance.
5/8" 20 American Gypsum FIREBLOC® Type X Gypsum Board

3-5/8" 20 GA Steel Stud

1/2" Georgia Pacific Densglass® Gold Sheathing

DOWSIL™ DefendAir 200

2" Dow THERMAX™ Insulation

1" Air Space

Alpolic/FR 4 mm ACM Panel
**DOWSIL™ DefendAir 200 on Damp Substrates and in Rain**

**Damp Substrates**

Dow has completed testing of DOWSIL™ DefendAir 200 on selected wet and damp substrates (on variety of sheathing, plywood, OSB and concrete). Our findings have consistently shown that damp substrates can be effectively coated with DOWSIL™ DefendAir 200 and adhesion is acceptable.

The adhesion of DOWSIL™ DefendAir 200 is not affected by the moisture content or “dampness” of most substrates. Testing has shown, however, that when OSB is damp, primer is required for the DOWSIL™ DefendAir 200 to achieve acceptable adhesion.

Dow always recommends field adhesion testing be completed for job site specific conditions, as not every brand of every substrate, especially sheathing, could be included in the study.

**Dry Time Before Precipitation**

While damp substrates are acceptable, DOWSIL™ DefendAir 200 should not be applied when raining or when rain is imminent. Rain will wash the DOWSIL™ DefendAir 200 off the substrate if the coating is not at least partially dry. DOWSIL™ DefendAir 200 dry times will depend on the temperature and humidity at the time of application and while it is drying.

In our studies, we have found that if a 30 mil (wet) coating is applied and is allowed to dry for eight hours, rain after that time did not negatively affect the coating. When rain is expected sooner than eight hours, or the weather cannot be predicted, it is possible to apply one 15 mil (wet) coat of DOWSIL™ DefendAir 200. At the thinner wet film thickness, rain will not negatively affect the DOWSIL™ DefendAir 200 after only a four hour drying time. A second coat can then be applied after four hours or when the rain has subsided. This technique allows the air barrier to be applied in more unpredictable weather conditions.

This testing was completed at 70°F and low relative humidity (15%RH) when the DOWSIL™ DefendAir 200 had potential to dry more quickly than would be seen in high humidity conditions. A higher humidity or lower temperature will lengthen the required drying time prior to the DOWSIL™ DefendAir 200 being unaffected by rain.
When sealing the building envelope with DOWSIL™ DefendAir 200, correct installation and proper material thickness is critical to final air barrier system performance. To this end, Dow has completed the most stringent air barrier testing and achieved airtight systems down to an air leakage level that was nearly beyond the test equipment’s capability to detect. Dow tested at multiple thicknesses (lower than our recommendations) to be conservative and ensure that our applied thickness recommendations are robust. Following are the system test results (an actual wall system with penetrations tested, not just a film of material).

**ASTM E2357: <0.000007 cfm/ft² at 1.57 psf**

We understand that a “thick mil” or even sheet applied materials may seem more comfortable, but in reality, the question is: What performs, and what can be installed over and over the same way, and still perform for many years?

Sheet applied materials do guarantee a certain thickness. But in application, there are joints, seams and folds to worry about, in addition to achieving 100% adhesion of the adhesive backing. Dow has shown, through our own testing, that not fully sealing the seams, or having a “fishmouth” such as shown below, may yield air infiltration results that do not pass current air barrier standards and/or exceed the infiltration rate of liquid applied membranes.

Thick mil applied liquid materials must still be applied at the thickness stated and validated for the correct thickness.

Taking care to assess progress, as Dow recommends with any sealant or coating application, is part of a quality installation; and it is not difficult. It is a matter of measuring the wet mil thickness during application using a hand held gauge. It is similar to other measurement or quality control methods in place for any number of construction products.

Please contact your local Dow sales development professional for further assistance with on-site and hands-on training regarding quality control.
DOWSIL™ DefendAir 200 Certified Applicators and Warranty

DOWSIL™ DefendAir 200 is offered with a 10-year limited warranty. When DOWSIL™ brand sealants and transition materials are applied with DOWSIL™ DefendAir 200, the system qualifies for a 15-year limited warranty.

When sealing the building envelope with DOWSIL™ DefendAir 200, it is critical to choose and install the appropriate materials correctly.

Dow has completed extensive hands-on training seminars with our distributors and key contractors specifically for DOWSIL™ DefendAir 200 (and other associated sealants and materials used with it).

DOWSIL™ DefendAir 200 is Air Barrier Association of America (ABAA) evaluated. Specifications often call for ABAA certified installers. Dow fully supports this program. It is not a specific Dow requirement, but an ABAA certified installer can be chosen for your quality project.

Please contact your local Dow sales development professional for further assistance.

*Note: Not intended for use on single family residential dwellings.*
When sealing the building envelope, many different materials come into contact. DOWSIL™ DefendAir 200 adheres to and is compatible with a wide range of building substrates including, but not limited to: gypsum-based sheathing, plywood, OSB, brick, concrete, concrete masonry units (CMU), aluminum, and galvanized and stainless steel.

Other common building components that DOWSIL™ DefendAir 200 may come into contact with include self-adhering flashings, mechanical flashings, other liquid flashings, sealants, weatherstrips and insulation.

DOWSIL™ DefendAir 200 can be continuously sealed to other mechanical and self-adhering flashings by creating a bridge between the two materials using either DOWSIL™ Silicone Transition Strip or DOWSIL™ 758 Silicone Weather Barrier Sealant. This allows for adhesion between the differing products, creating a continuous air and water tight seal. Mechanically attached flashings do not negatively affect the performance of DOWSIL™ DefendAir 200. Furthermore, the asphaltic and/or butyl backings of the self-adhering flashings do not negatively affect the performance of DOWSIL™ DefendAir 200.

If a liquid flashing from a company other than Dow is used, it should be fully cured before DOWSIL™ DefendAir 200 is applied over it. If the liquid flashing is to be applied over the DOWSIL™ DefendAir 200, allow the DOWSIL™ DefendAir 200 to cure a minimum of three days. Verify adhesion of the liquid flashing at the start of the project, as generally only silicone based materials will adhere to DOWSIL™ DefendAir 200. Dow is not aware of any liquid flashing currently on the market that would negatively affect the performance of the DOWSIL™ DefendAir 200 when used either over or under the DOWSIL™ DefendAir 200. Project-specific adhesion and compatibility testing can be performed.

DOWSIL™ DefendAir 200 is compatible with silicone sealants. It can also contact non-silicone sealants with no negative effects, but the non-silicone sealant should be allowed to cure prior to applying DOWSIL™ DefendAir 200. In all cases, adhesion between the two materials should be verified with field adhesion testing. In general, DOWSIL™ DefendAir 200 will adhere to cured sealants of any chemistry. Only silicone sealants would be expected to adhere to DOWSIL™ DefendAir 200.

DOWSIL™ DefendAir 200 is compatible with rigid foam board insulation.

Please contact your local Dow sales development professional for further assistance.
Example of Quality Control Wet Mil Thickness Form

Date __________________________

Project Name __________________________

Project Address __________________________

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Contact your Dow representative with any questions.
Contact us

Learn more about the DOWSIL™ Silicone Air Barrier System and our full range of High Performance Building Solutions, including service and support, at BuildaBetterBarrier.com.

Dow has sales offices, manufacturing sites, and science and technology laboratories around the globe. Find local contact information at consumer.dow.com/ContactUs.

BuildaBetterBarrier.com

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