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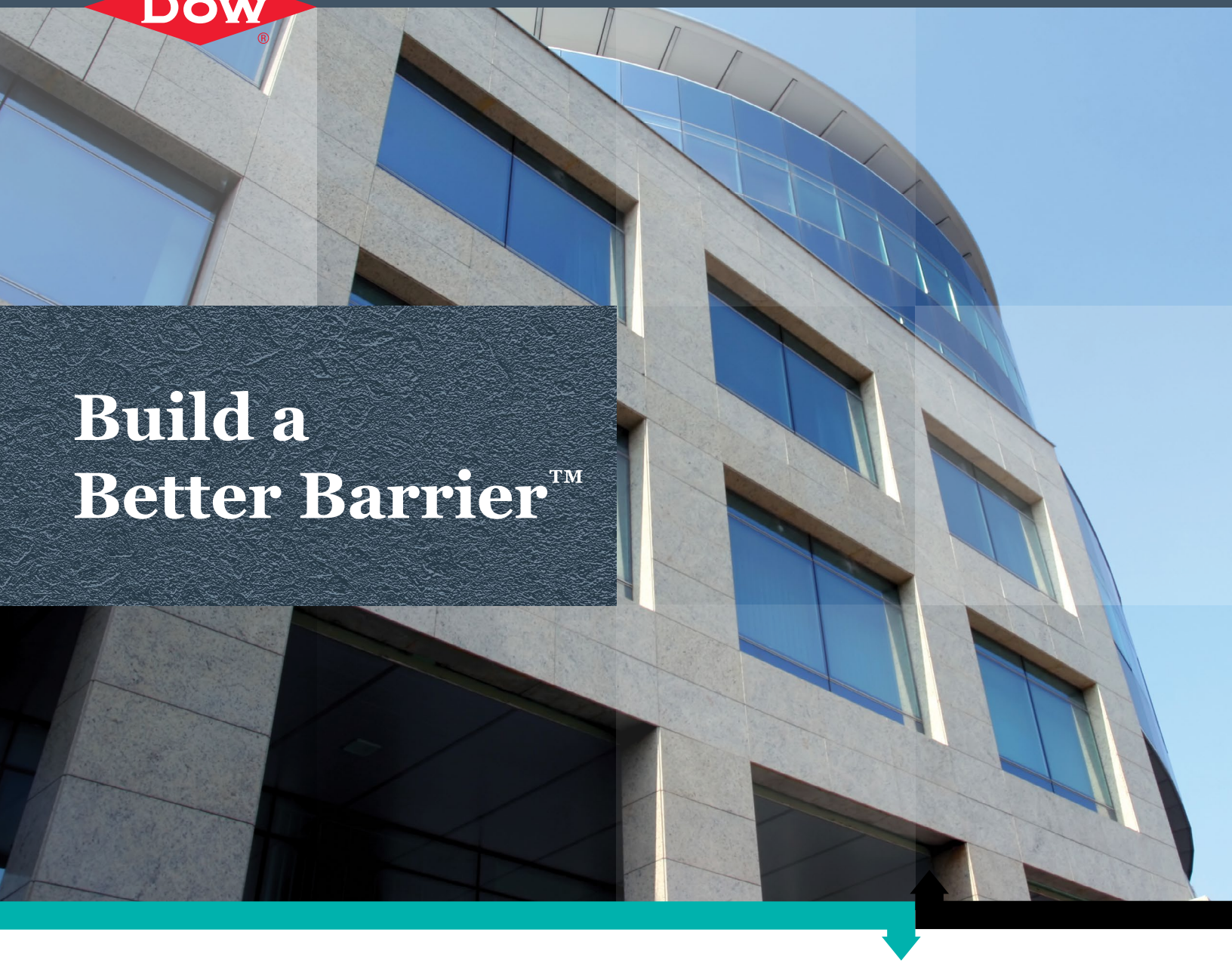

Build a Better Barrier™

DEFENDAIR™ 200C Air and Weather Barrier Coating

Application guide

DOWSIL™

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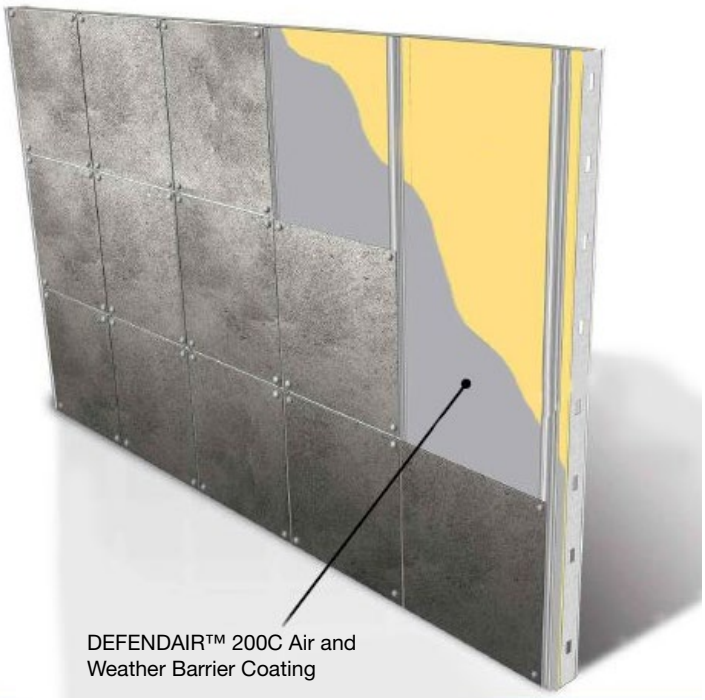


Contents

This document is intended to offer installation and field testing guidance for DEFENDAIR™ 200C Air and Weather Barrier Coating. The information contained herein is offered in good faith and is believed to be accurate. This information should not be substituted for engineering or architectural advice and is offered for your guidance only. Because conditions and methods of use of our products are beyond our control, this information should not be used in substitution for customer's tests to help ensure that our products are safe, effective and fully satisfactory for the intended end use.

Product descriptions

DEFENDAIR™ 200C Air and Weather Barrier Coating

DEFENDAIR™ 200C Air and Weather Barrier Coating is a 100 percent silicone fluid-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 resists water penetration but has the ability to allow water vapor to escape from inside the substrate. It can be brush applied, or roller applied using a manual roller, pressure roller, spray roller or spray applied using an airless sprayer.

The coating offers 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

The 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. Available in charcoal gray and light green.

UV exposure

DEFENDAIR™ 200C Air and Weather Barrier Coating 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, most components are approved for long-term UV exposure.

Availability

DEFENDAIR™ 200C Air and Weather Barrier Coating is available in 4.9 gal (18 L) pails (44 lb [20 kg]) and 50.5 gal (191 L) drums (459 lb [208 kg]). DEFENDAIR™ 200C Air and Weather Barrier Coating is supplied in charcoal gray.

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 DEFENDAIR™ 200C Air and Weather Barrier Coating are compatible and will adhere to each other. DEFENDAIR™ 200C Air and Weather Barrier Coating should be installed to the required minimum total 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]

Texture/substrate	Estimated rate	
	ft^2/gal	m^2/L
Smooth (sheathing)	36-49	0.9-1.2
Coarse (CMU)	29-43	0.7-1.1

These are typical properties, not to be construed as specifications.

[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) may absorb more or less of the air barrier. Reference the DOWSIL™ Silicone Air Barrier System: Tech Talks (63-6947) found at **BuildABetterBarrier.com** for more information on specific substrates that have been tested. DOWSIL™ DEFENDAIR 200 Primer may be required for some substrates. See Table 4 for information on substrate preparation.

Shelf life

DEFENDAIR™ 200C Air and Weather Barrier Coating has a shelf life of 12 months from the date of manufacture. It should be stored in its original, unopened container above 34°F (1°C) and below 90°F (32°C).

Compatibility and adhesion between DOWSIL™ Brand Products

DEFENDAIR™ 200C Air and Weather Barrier Coating is compatible with many DOWSIL™ Brand Sealant and Precured Silicone Components. DEFENDAIR™ 200C Air and Weather Barrier Coating is also compatible with DOWSIL™ ALLGUARD Silicone Elastomeric Coating.

Table 2 contains a list of adhesion information for sealants commonly used with DEFENDAIR™ 200C Air and Weather Barrier Coating. Sealants in Column A can be applied over the air barrier 48 hours after the DEFENDAIR™ 200C Air and Weather Barrier Coating is installed. Any recommended sealant listed in Column A can be used to install the DOWSIL™ Silicone Transition System over DEFENDAIR™ 200C Air and Weather Barrier Coating in order to create an essentially complete airtight and watertight system. (Note: The DOWSIL™ Silicone Transition System may also be installed under DEFENDAIR™ 200C Air and Weather Barrier Coating using a sealant that adheres to the underlying substrate. Refer to the DOWSIL™ Silicone Transition System application guide [63-1236] for more information.)

DEFENDAIR™ 200C Coating 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 DEFENDAIR™ 200C Air and Weather Barrier Coating and DOWSIL™ Brand Sealants

	Column A	Column B
Sealant	Sealant adheres to DEFENDAIR™ 200C Air and Weather Barrier Coating	DEFENDAIR™ 200C Air and Weather Barrier Coating adheres to sealant
DOWSIL™ 791 Silicone Weatherproofing Sealant	X	X
DOWSIL™ 756 SM Building Sealant	X	X
DOWSIL™ 795 Silicone Building Sealant		X
DOWSIL™ 758 Silicone Weather Barrier Sealant	X	X
DOWSIL™ 790 Silicone Building Sealant		X

These are typical properties, not to be construed as specifications.

Please contact your local Dow representative for information regarding the use of DOWSIL™ Brand Products not listed here.

Application and service temperature and humidity

DEFENDAIR™ 200C Air and Weather Barrier Coating can be applied at ambient air temperatures between 20°F (-6°C) and 100°F (38°C). For cold temperature considerations, refer to page 9 of this guide.

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 DOWSIL™ Silicone Air Barrier System: Tech Talks (63-6947) found at **BuildABetterBarrier.com** 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 DEFENDAIR™ 200C Air and Weather Barrier Coating to surfaces above 120°F (49°C).

DEFENDAIR™ 200C Air and Weather Barrier Coating has a service temperature range of -20°F to 300°F (-29°C to 149°C).

Chemical resistance

DEFENDAIR™ 200C Air and Weather Barrier Coating has passed ABAA S0008, section 9.4 alkali resistance test which requires dried free film material to be tested using ASTM D543 Practice A, Procedure 1, in a sodium hydroxide solution with an initial pH of 12 ± 0.5.

DEFENDAIR™ 200C Air and Weather Barrier Coating 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

DEFENDAIR™ 200C Air and Weather Barrier Coating has been tested according to ASTM D4541 for adhesion on the substrates in Table 3. DOWSIL™ DEFENDAIR 200 Primer 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.

Table 3. Substrate adhesion: tested per ASTM D4541 (new substrates)

Substrates that do NOT require primer
Plywood Sheathing
Oriented Strand Board (OSB) Sheathing - rough side
DensGlass Sheathing[2]
e2XP Sheathing
Securock Sheathing
GlasRoc Sheathing
Durock Cement Board
Concrete Masonry Unit (CMU)

[2] ASTM E2357 was completed using DensGlass as a substrate without DOWSIL™ DEFENDAIR 200 Primer.

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 DEFENDAIR™ 200C Air and Weather Barrier Coating. 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 help ensure proper cleaning and preparation of the substrate prior to coating. If other parts of the air barrier system, such as sealant, liquid flashing or precured strips, have accumulated dirt prior to the installation of the air barrier, the substrate should be cleaned using a solvent and two-cloth cleaning method.

When installing the 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 the 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.

Table 4. Substrate preparation

Surface conditions	Detection method	Removal method
Efflorescence	Wipe with dark cloth	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.
Laitance	Scrape with putty knife, looking for powdery material	Scrape with steel scraping tool followed by high-pressure water cleaning.
Mildew	Visual	Scrub with 5 percent bleach solution followed by high-pressure water cleaning.
Grease/oil	Visual; sprinkle water on surface	Trisodium phosphate (TSP) solution in hot water and high-pressure water cleaning.
Form release, curing or surface-hardening compounds	Visual; sprinkle water on surface	Must be removed by mechanical abrasion or abrasive water cleaning.

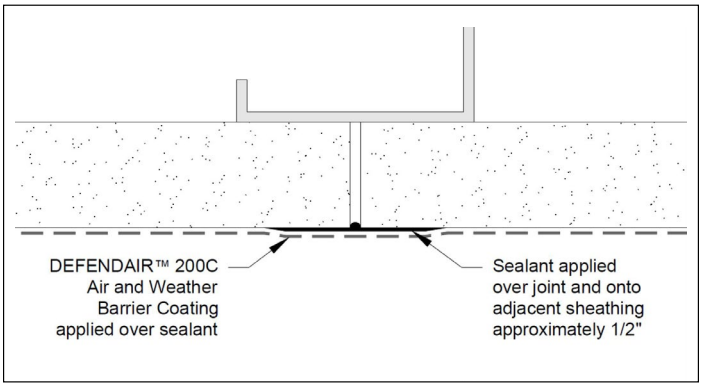
Step 2. Sealing joints and penetrations

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 sealant listed in Column B of Table 2. Static joints may be filled with sealant and tooled flush to the surface. To reduce the amount of sealant used, a backer rod can be inserted into joints greater than 1/4 inch (6.3 mm) prior to applying sealant. Small static sheathing joints, up to 1/8 inch (3.2 mm), may also be sealed by applying sealant over the joint and tooling it approximately 1/2 inch (6.4 mm) onto the adjacent sheathing (Figure 1).

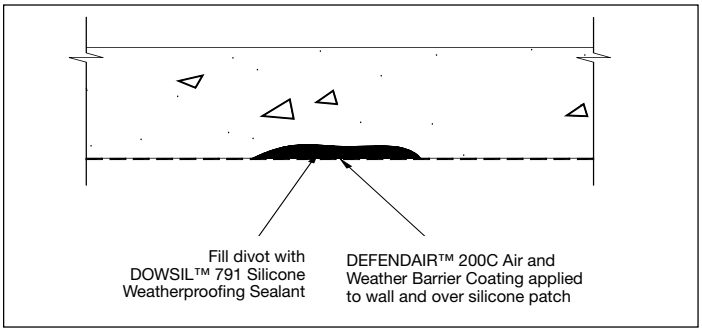
Any unused nail holes, as well as any countersunk or protruding nails and screws, must be sealed (using the same sealant used to seal the joints) and struck flush to the surface of the substrate prior to the installation of DEFENDAIR™ 200C Air and Weather Barrier Coating. Screw and nail heads that are 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.

Figure 1. Small static sheathing joint (up to 1/8 inch)



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.

Figure 2. Divot in concrete wall



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 3. Change in wall substrate

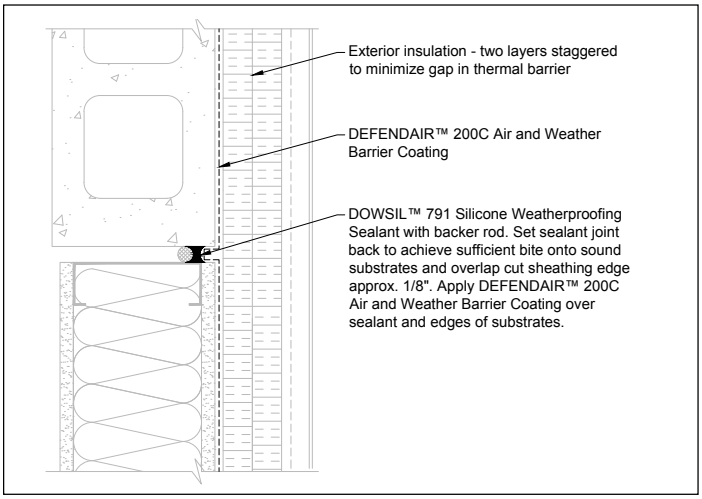


Figure 4. Control joint

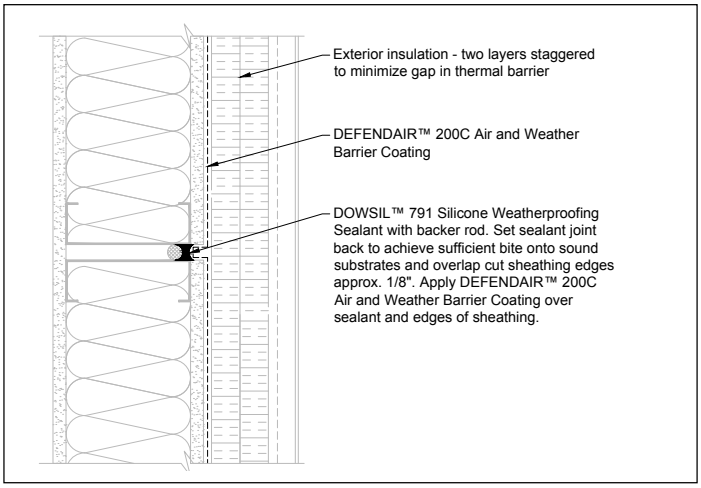
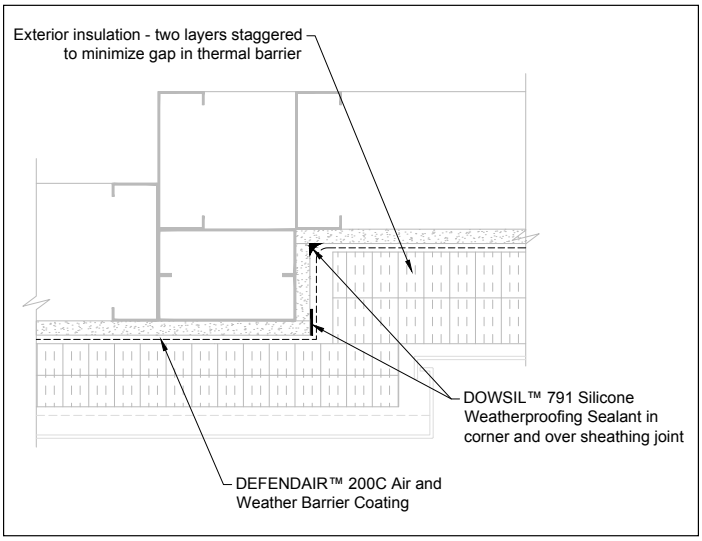


Figure 5. Vertical wall offset

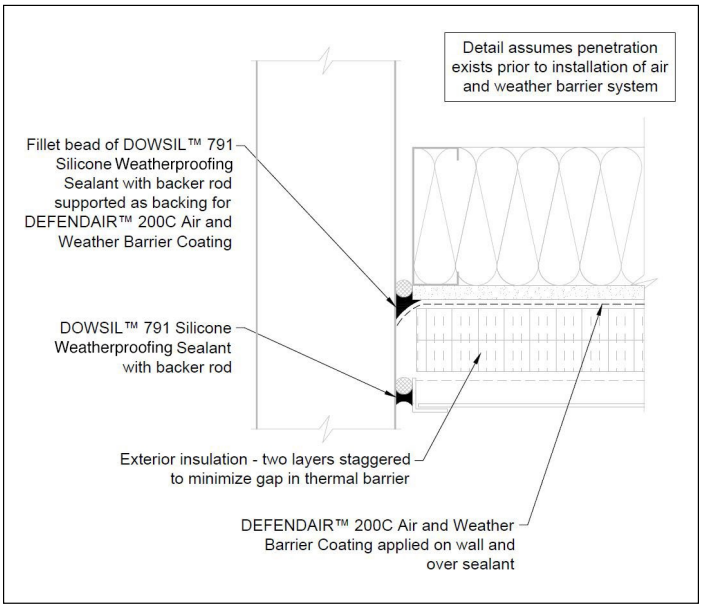


Penetrations

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 9.

Figure 6. Penetration



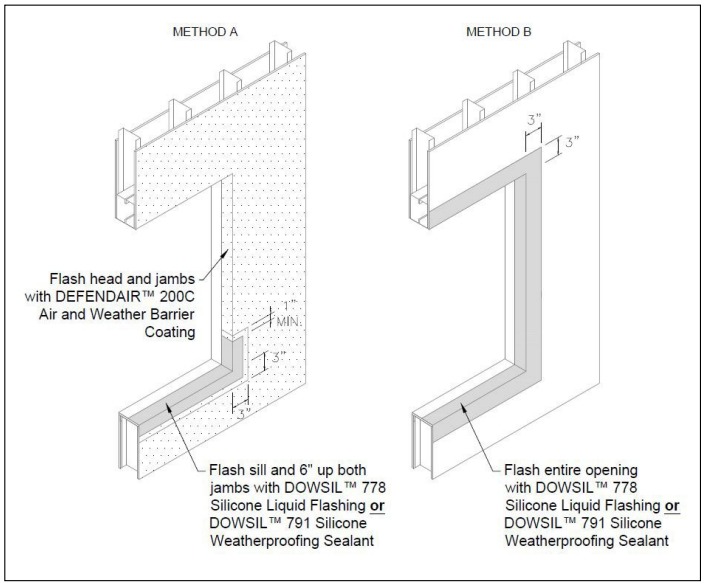
Window openings

Window openings must be flashed with an approved flashing method. There are two different methods that can be used. In flashing applications, DOWSIL™ 778 Silicone Liquid Flashing should be applied at 20- to 50-mil (0.51 to 1.27 mm) wet-film thickness and DOWSIL™ 791 Silicone Weatherproofing Sealant should be applied at 25-mil (0.63 mm) wet-film thickness.

One method (Figure 7 - Method A) is to first trowel apply DOWSIL™ 778 Silicone Liquid Flashing or DOWSIL™ 791 Silicone Weatherproofing Sealant on the entire windowsill and a minimum of 6 inches (152.4 mm) up both vertical jambs. The flashing should extend a minimum of 3 inches (76.2 mm) onto the face of the wall. The depth of the flashing into the window opening should be a minimum of 3 inches or 1 inch (76.2 or 25.4 mm) behind where the inner air and/or water seal is to be installed. Next, seal all the remaining joints between framing members or between the sheathing and framing with DOWSIL™ 791 Silicone Weatherproofing Sealant or another sealant in Table 2. Lastly, apply DEFENDAIR™ 200C Air and Weather Barrier Coating, at the required total thickness, to the face of the wall and into the remainder of the jambs and head of the window opening, making sure to overlap the sill flashing by a minimum of 1 inch (25.4 mm).

Another method (Figure 7 - Method B) is to trowel apply DOWSIL™ 778 Silicone Liquid Flashing or DOWSIL™ 791 Silicone Weatherproofing Sealant around the entire window opening. The flashing should extend a minimum of 3 inches (76.2 mm) onto the face of the wall and into the window opening a minimum of 3 inches or 1 inch (76.2 or 25.4 mm) behind where the inner air and/or water seal is to be installed. Ensure all the joints between the framing members or between the sheathing and framing are continuously sealed with the liquid flashing.

Figure 7. Window opening flashing methods



Example of using DOWSIL™ 778 Silicone Liquid Flashing

The sealing of window openings to the curtain wall or window system can be completed with a recommended sealant (Figure 8) or the DOWSIL™ Silicone Transition System (Figure 9). This step can be completed before or after DEFENDAIR™ 200C Air and Weather Barrier Coating is installed. When the DOWSIL™ Silicone Transition System is installed after the air and weather barrier, DEFENDAIR™ 200C Coating 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 the DOWSIL™ Silicone Transition System to DEFENDAIR™ 200C Coating.

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 help to prevent unwanted water penetration into the system.

Figure 8. Curtain wall jamb at flush condition – DOWSIL™ Brand Sealant

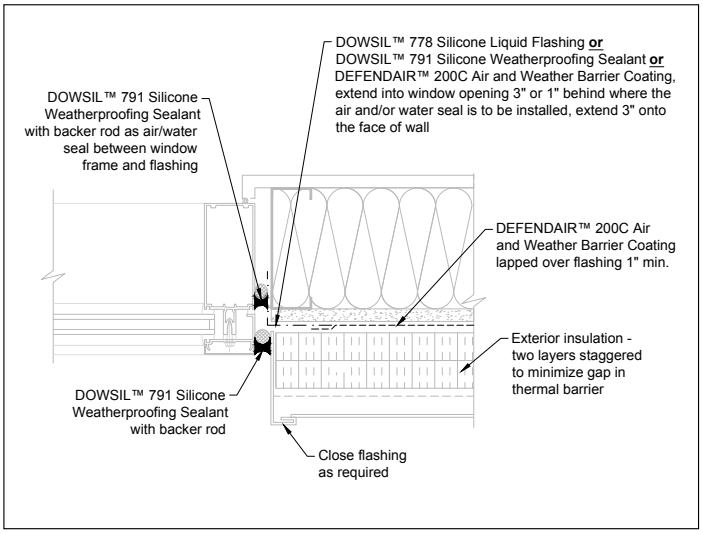
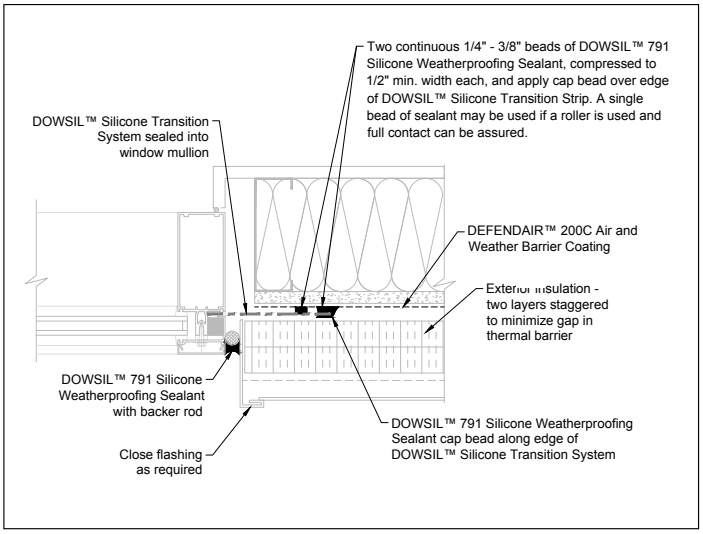


Figure 9. Curtain wall jamb at flush condition – DOWSIL™ Silicone Transition System

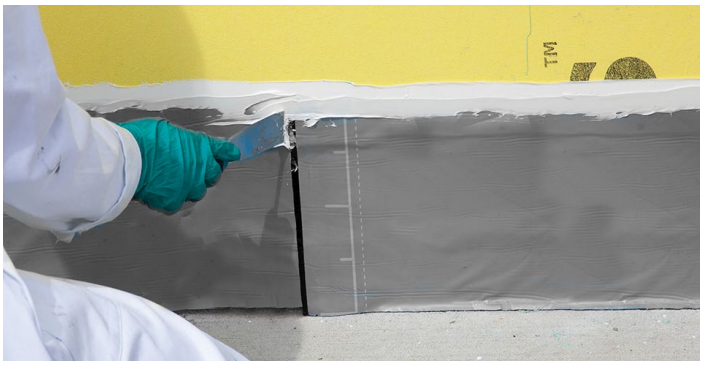


Foundation and roof transitions

Foundation and roof transition seals can be made using DOWSIL™ 758 Silicone Weather Barrier Sealant or DOWSIL™ Silicone Transition System (with a recommended sealant). DOWSIL™ 758 Silicone Weather Barrier Sealant, is designed for adhesion to low energy materials and is the recommended sealant to be used with most foundation and roof membranes.

DOWSIL™ 758 Silicone Weather Barrier Sealant can be used to bridge the transition between DEFENDAIR™ 200C Air and Weather Barrier Coating and the foundation or roof membrane by applying a large bead of sealant to the top edge of the membrane and tooling it to 2 inch (50.8 mm) wide and 1/8 inch (3.18 mm) thick, centered across both materials.

DEFENDAIR™ 200C Air and Weather Barrier Coating is not approved to transition to other membranes without the use of DOWSIL™ 758 Silicone Weather Barrier Sealant or the DOWSIL™ Silicone Transition System.



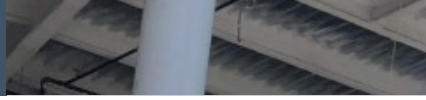
Example of bridging from below grade waterproofing to air barrier using DOWSIL™ 758 Silicone Weather Barrier Sealant

Step 3. DOWSIL™ DEFENDAIR 200 Primer

DEFENDAIR™ 200C Air and Weather Barrier Coating does not require a primer on most substrates. To determine if primer is required on substrates not listed in Table 3 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 10).

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). It is available in 5-gallon (19 L), 42 lb (19.1 kg) pails.

Allow the primer to "dry to the touch" (30 minutes to two hours) before applying DEFENDAIR™ 200C Air and Weather Barrier Coating. After priming, before installing the air and weather barrier, the spray equipment should be fully cleaned or a new roller used.



Step 4. Installing DEFENDAIR™ 200C Air and Weather Barrier Coating

DEFENDAIR™ 200C Air and Weather Barrier Coating may be specified as a low-build or medium-build fluid-applied air barrier to be installed at a required minimum total dry-film thickness of 15-mil or 17-mil (0.38 mm or 0.43 mm) on the surface of the substrate. A minimum total 15-mil (0.38 mm) dry-film thickness on the surface of the substrate is required to qualify for a project-specific warranty. The total wet-film thickness needed is going to depend on the substrate and the desired final dry-film thickness. A project-specific mockup is recommended to determine the actual wet-film thickness needed which will result in the required minimum total dry-film thickness on the surface of the substrate. Estimated application rates can be found in Table 1 of this guide.

Please refer to the DOWSIL™ Silicone Air Barrier System: Tech Talks (63-6947) at **BuildaBetterBarrier.com** for more information on absorption and estimated wet-film thicknesses on some substrates. It may be possible to utilize DOWSIL™ DEFENDAIR 200 Primer before applying DEFENDAIR™ 200C Air and Weather Barrier Coating to reduce the amount of coating absorbed into the substrate.

Prior to installing DEFENDAIR™ 200C Air and Weather Barrier Coating, it is important that all sealants and primers that have been installed during the wall preparation process are allowed to "dry to touch" (15-45 minutes for sealant and 30 minutes to two hours for DOWSIL™ DEFENDAIR 200 Primer). Apply one coat of DEFENDAIR™ 200C Air and Weather Barrier Coating 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.

DEFENDAIR™ 200C Air and Weather Barrier Coating 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 DEFENDAIR™ 200C Air and Weather Barrier Coating.

Roller application

DEFENDAIR™ 200C Air and Weather Barrier Coating should be roller applied in two coats at 15-mil to 21-mil (0.38 mm to 0.53 mm) wet-film thickness each, depending on the substrate and the desired final dry-film thickness. An additional coat may be necessary to achieve the required minimum total dry-film thickness on porous substrates. Allow the coating to dry to the touch (typically two to four hours) before applying the next coat. The final dry coating should be continuous.

The coating may be roller applied using a hand roller, pressure roller or spray roller. Apply the coating 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. If applying using a pressure roller, 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.

Spray application

DEFENDAIR™ 200C Air and Weather Barrier Coating may be spray applied, using an airless sprayer, in one coat at 30-mil to 42-mil (0.76 mm to 1.07 mm) wet-film thickness, depending on the substrate and the desired final dry-film thickness, as long as the coating does not sag and the final dry coating is continuous. Two thinner coats may be necessary if the coating begins to sag or to achieve the required minimum total dry-film thickness on porous substrates.

Refer to the equipment manual for your spray equipment for detailed information on tip size selection, tip wear and recommended pressure. A minimum 0.021-inch (0.53 mm) tip is recommended to spray DEFENDAIR™ 200C Air and Weather Barrier Coating. The recommended 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 DEFENDAIR™ 200C Air and Weather Barrier Coating, 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 DEFENDAIR™ 200C Air and Weather Barrier Coating. 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 DEFENDAIR™ 200C Air and Weather Barrier Coating is four to 12 hours, depending on coat thickness, temperature, humidity and wind conditions. DEFENDAIR™ 200C Air and Weather Barrier Coating will attain full adhesion and physical properties in seven to 14 days.

Cold temperature considerations

DEFENDAIR™ 200C Air and Weather Barrier Coating can be applied at temperatures as low as 20°F (-6°C). If temperatures drop below 20°F (-6°C) after DEFENDAIR™ 200C Air and Weather Barrier Coating 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. DEFENDAIR™ 200C Air and Weather Barrier Coating requires temperatures higher than 20°F (-6°C) for a cumulative total of 24 hours to dry. DEFENDAIR™ 200C Air and Weather Barrier Coating 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

DEFENDAIR™ 200C Air and Weather Barrier Coating has passed the ABAA S0008, section 9.3 air leakage rate testing with 48 - #12, self-drilling screw fasteners installed through the air and weather barrier coating, proud of the surface, without any pre- or post-sealing.

DEFENDAIR™ 200C Air and Weather Barrier Coating dries to form an elastic membrane that may self-gasket around smooth nails or against fully seated fasteners. However, self-drilling screws will cut/tear through the dried air and weather barrier, potentially creating a pathway for air and water infiltration to occur. A recommended practice for sealing seated cladding anchors that use self-drilling screw fasteners is to first apply sealant behind the cladding anchor at the penetration location and then apply an additional sealant cap bead over the fastener head and washer, using a sealant from Table 2, Column A.

Many different wall assembly designs, cladding attachment systems, and fastener types exist. It is the responsibility of the design professional to determine the desired water penetration performance of the building envelope/enclosure, the cladding attachment system, the fastener types, and the appropriate fastener penetration sealing methods for the design. It is recommended that the project team perform a water penetration test, on a project specific mockup, to verify the fastener penetration sealing method used is acceptable for the intended performance level.

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

Example of a self-drilling screw fastener penetration

Quality control

Wet-film thickness can be measured using a wet mil gauge. When measuring the thickness of DEFENDAIR™ 200C Air and Weather Barrier Coating 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 DOWSIL™ Silicone Air Barrier System: Tech Talks (63-6947) found at **BuildABetterBarrier.com**). Wet-film thicknesses should be measured on every floor and elevation to help ensure proper air barrier thickness is being applied. As a guideline, measure at least every 10 feet during application.

Demonstrating usage of wet mil gauge

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. The required minimum total dry-film thickness should remain on the surface of the substrate.

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 DEFENDAIR™ 200C Air and Weather Barrier Coating should be applied.

The visual assessment should also look at seams between sheathing panels, mortar joints and screw heads to help ensure that they have all been covered. After DEFENDAIR™ 200C Air and Weather Barrier Coating has been installed and allowed to dry, the charcoal 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 A of Table 2 or by touching up the area with DEFENDAIR™ 200C Air and Weather Barrier Coating.

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

Equipment cleanup

DEFENDAIR™ 200C Air and Weather Barrier Coating 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 Safety Data Sheet (SDS) for disposal information.

Adhesion test procedure

A field adhesion test, using one of the methods below, is recommend for substrates not listed in Table 3 or substrates that may have been contaminated by other materials. If the adhesion strength is found to be low, then the test should be repeated after using DOWSIL™ DEFENDAIR 200 Primer.

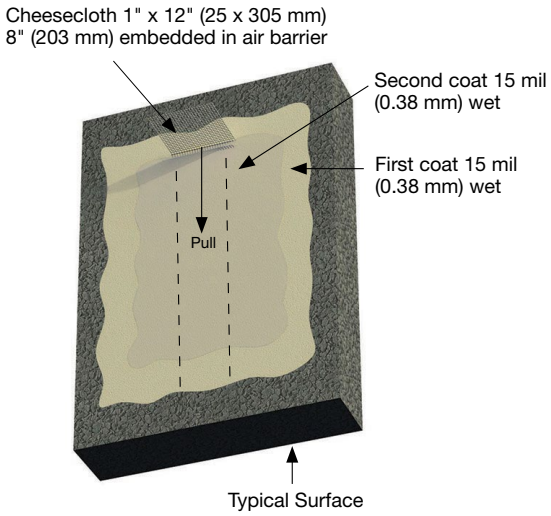
ABAA T0002 (Standard Test Method for Pull-Off Strength of Adhered Air and Water Resistive Barriers Using an Adhesion Tester) can be used for testing the adhesion of DEFENDAIR™ 200C Air and Weather Barrier Coating (or DOWSIL™ ALLGUARD Silicone Elastomeric Coating) to a substrate (Figure 12) Contact Dow Technical Service for adhesives that can be used to adhere the disc to DEFENDAIR™ 200C Air and Weather Barrier Coating. The current ABAA S0008 standard requires air barriers to have a pull adhesion strength of greater than 16 psi (110 kPa).

Figure 12. ABAA T0002 Adhesion Test

Another option available for adhesion testing is to perform a “cheesecloth” test (Figure 13). This test is well-suited 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 Substrate Preparation and Evaluation (page 5).
2. Use of a primer is optional, but testing is required to help 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 DEFENDAIR™ 200C Air and Weather Barrier Coating 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 (percentage 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 200 Primer. If necessary, contact Dow Technical Service for further instruction.

Figure 13. Adhesion test procedure diagram



Product limitations

DEFENDAIR™ 200C Air and Weather Barrier Coating should not be installed on horizontal surfaces that may be subjected to ponding water or subjected to pedestrian traffic.

DEFENDAIR™ 200C Air and Weather Barrier Coating should not be installed when there is a threat of rain within the next 8 hours or the relative humidity is in excess of 90 percent (because conditions would not permit complete surface drying).

DEFENDAIR™ 200C Air and Weather Barrier Coating should not be installed as a roof coating or in below-grade applications.

DEFENDAIR™ 200C Air and Weather Barrier Coating 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.

DEFENDAIR™ 200C Air and Weather Barrier Coating does not adhere to high-density polyethylene-backed materials. When using these materials in conjunction with DEFENDAIR™ 200C Air and Weather Barrier Coating, please contact Dow for assistance.

Appendix I – Material compatibility

DEFENDAIR™ 200C Air and Weather Barrier Coating has been tested with a selection of materials offered by other manufacturers in the industry. For information on compatibility with materials from other manufacturers, please contact your local Dow representative. Project-specific testing typically is recommended. Reference the DOWSIL™ Silicone Air Barrier System Tech Talks (63-6947) found at **BuildaBetterBarrier.com** for more information on material compatibility.

Appendix II – Referenced standards

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

ASTM D543 Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents

ABAA S0008 Standard for Air and Water-Resistive Barriers - Fluid Applied Membrane - Material Specification

ABAA T0002 Standard Test Method for Pull-Off Strength of Adhered Air and Water Resistive Barriers Using an Adhesion Tester

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, **dow.com/buildingscience**, or consult your local Dow representative.

Warranty

DEFENDAIR™ 200C Air and Weather Barrier Coating is offered with a 10-year limited warranty. When DOWSIL™ Brand Sealants and Transition Materials are applied with DEFENDAIR™ 200C Air and Weather Barrier Coating, the system qualifies for a 15-year limited warranty. Please contact your local Dow representative for more information.

For more information

Learn more about the full range of Dow Building Science offerings, including products, service and support, at **dow.com/buildingscience**.

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

DEFENDAIR™ 200C Air and Weather Barrier Coating

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