



Guide Specifications – DEFENDAIR™ 200C Air and Weather Barrier Coating – Section 07 27 26

DEFENDAIR™ 200C Air and Weather Barrier Coating is a fluid-applied, 100% silicone elastomeric air- and weather-barrier designed to protect against air infiltration and water penetration. The vapor permeable, one component, water-based coating cures to form a flexible membrane that resists water penetration but has the ability to allow water vapor to escape from inside the substrate.

DEFENDAIR™ 200C Air and Weather Barrier Coating offers long-term air and water protection properties even when exposed to sunlight, rain, snow, or temperature extremes. It requires no primer on many substrates and cures to form a flexible membrane that can handle the normal movements of seasonal thermal expansion-contraction. DEFENDAIR™ 200C Air and Weather Barrier Coating offers the following advantages:

- ABAA Evaluated per ABAA S0008 Standard for Air and Water-Resistive Barriers
- Water based – wet material can be cleaned up using water; no solvents are required
- Long term UV resistance
- Excellent temperature resistance - service temperature range of -20°F to 300°F
- Elastomeric – accommodates building movement
- Seamless – cured membrane is continuous and does not form seams or laps
- Low VOC
- NFPA Class A fire rating

DEFENDAIR™ 200C Air and Weather Barrier Coating is available with a 15-year limited air barrier system warranty. For additional information, contact your Dow representative.

Dow offers a broad range of high-performance silicone sealants, preformed silicone seals, primers, and water-repellent silicone elastomeric coatings for the construction industry for both new and renovation projects. Silicon-based sealants, coatings, water repellents and concrete admixtures by Dow are designed to protect, strengthen, and preserve building materials in new construction and renovation projects. For example, silicone construction sealants by Dow have a life expectancy that is typically three times longer than organic sealants used in the same applications. They waterproof, remain flexible, and resist the effects of ultraviolet (UV) light and common temperature extremes.

Dow offers industry professionals with product information, technical experience, design tools and other resources to create building system solutions options, based on decades of construction industry experience, technical service, support resources, and customized construction services. Dow offers:

- Information regarding using silicone to achieve LEED® green building program credits
- Downloadable product selection guides and data sheets
- Evaluations to ensure proposed applications help to achieve Dow standards for warrantable performance
- AIA Continuing Education programs

We recommend you consult with your Dow construction technical representative, who can be contacted through:
The Dow Chemical Company, Midland MI; (877) SEALANT (877) 732-5268; email: construction@dow.com;
dow.com/construction.

Dow products appear in the following CSI Master Format specifications sections:

- Section 07 01 91 Joint Sealant Rehabilitation and Replacement
- Section 07 27 26 Fluid-Applied Membrane Air Barriers
- Section 07 92 00 Joint Sealants
- Section 08 85 00 Glazing Sealants
- Section 09 96 53 Silicone Elastomeric Coatings
- Section 32 13 73 Concrete Paving Joint Sealants

SECTION 07 27 26
FLUID-APPLIED MEMBRANE AIR BARRIERS, VAPOR PERMEABLE

PART 1 – GENERAL

1.1 SUMMARY

- A. Section includes fluid-applied, vapor-permeable silicone air barrier assembly.
- B. Related Sections:

Specifier: If retaining optional Related Sections paragraph, edit below to correspond to Project sections.

- 1. Section 06 16 00 "Sheathing" for air barrier coating substrate.
- 2. Section 07 92 00 "Joint Sealants" for installation requirements for elastomeric joint sealants applied in conjunction with work of this Section.

1.2 REFERENCE STANDARDS

Specifier: If retaining this optional Reference Standards Article, edit to include only those references included in edited section.

- A. Reference Standards, General: Applicable editions of cited reference standards are those current at time of issuing of project, or edition cited in applicable building code for project.
- B. Air Barrier Association of America (ABAA): www.airbarrier.org
 - 1. Training and Certification Program for Air Barrier Contractors and Installers.
 - 2. ABAA S0008 - Standard for Air and Water-Resistive Barriers - Fluid Applied Membrane - Material Specification
 - 3. ABAA T0002 - Standard Test Method for Pull-Off Strength of Adhered Air and Water-Resistive Barriers Using an Adhesion Tester
 - 4. ABAA T0004 - Standard Test Method for Determining Gap Bridging Ability of Air and Water-Resistive Barrier Materials
- C. ASTM International (ASTM): www.astm.org
 - 1. ASTM C920 - Standard Specification for Elastomeric Joint Sealants
 - 2. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension
 - 3. ASTM D624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
 - 4. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials
 - 5. ASTM D543 - Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents
 - 6. ASTM E2485 - Standard Test Method for Freeze/Thaw Resistance of Exterior Insulation and Finish Systems (EIFS) and Water Resistive Barrier Coatings
 - 7. ASTM C1338 - Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings
 - 8. ASTM D522 - Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings
 - 9. ASTM C794 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants
 - 10. ASTM C1498 - Standard Test Method for Hygroscopic Sorption Isotherms of Building Materials
 - 11. ASTM D2247 - Standard Practice for Testing Water Resistance of Coatings in 100 % Relative Humidity
 - 12. 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
 - 13. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials
 - 14. ASTM E2178 - Standard Test Methods for Air Performance of Building Materials
 - 15. ASTM E2357 - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies

- D. Federal Government Publications: www.ecfr.gov
 - 1. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings
- E. Federal National Fire Protection Association (NFPA): www.nfpa.org
 - 1. NFPA 285 - Standard Fire Test Method For Evaluation Of Fire Propagation Characteristics Of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components
- F. Sealant, Waterproofing, and Restoration Institute (SWRI): www.swrionline.org :
 - 1. SWRI Validation Program

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Conference: Conduct conference at Project site. Review air barrier assembly installation requirements including substrate condition inspection, testing requirements, environmental conditions, mockups, details, and scheduling and inspection of work.

1.4 ACTION SUBMITTALS

- A. Product Data: For specified products, including:
 - 1. Substrate preparation instructions and recommendations.
 - 2. Recommended primers and accessories
 - 3. Standard details illustrating applications of air barrier assembly products required for Project.
 - 4. Product test reports.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified applicator.

Specifier: Retain subparagraph below if seeking ABAA certification of Project.

- 1. Provide list of ABAA-certified air barrier installation personnel performing work on Project.
- B. Preconstruction compatibility and adhesion test reports.
- C. Manufacturer's instructions for installation and field quality control testing.
- D. Field quality control adhesion test reports.
- E. Warranty: Sample of special warranty.

1.6 QUALITY ASSURANCE

Specifier: Retain paragraph below when applicable to products specified in Part 2. Approved extrusion coating applicator may be able to offer enhanced warranties listed in Warranty Article below.

- A. Applicator Qualifications: Employer of experienced applicators in the application of air barrier products required for this Project with record of successful completion of projects of similar scope.

Specifier: Retain subparagraph below if seeking ABAA certification of Project.

- 1. Employer of ABAA-certified air barrier installers.
- B. Mock-Up: Prior to installation of air barrier assembly, apply air barrier products [to integrated exterior wall mockup specified in Division 01 General Requirements] [to portion of wall construction designated by Architect] to verify details under product data submittals and to demonstrate tie-ins with adjoining construction, and other termination conditions, as well as application and execution specifics.
 - 1. Apply air barrier assembly to mock-up components, including back-up wall substrates, window and door frames and sills, insulation, flashing, corner condition, junctions with roof system and foundation wall, and typical penetrations and gaps, illustrating materials interfaces and seals.
 - 2. Retain mock-ups during application of the work.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to Project site in original packaging with seals unbroken, labeled with manufacturer's name, product, date of manufacture and/or use-by date, and directions for storage.
- B. Store materials in their original undamaged packages in a clean, dry, protected location at a temperature above 34°F (1°C) and below 90°F (32°C).

1.8 PROJECT CONDITIONS

- A. Do not apply air barrier to surfaces above 120°F (49°C).
- B. Do not apply air barrier when ambient air temperatures will be above 100°F (38°C) or below 20°F (-6°C) at time of product application.

1.9 WARRANTY

Specifier: Dow will furnish up to a 15-year project-specific material system warranty for commercial applications of DEFENDAIR™ 200C Air and Weather Barrier Coating when properly applied as a complete system (including all related Dow transitions and sealants) by an experienced applicator in accordance with Dow's written instructions. A 10-year project specific material warranty for commercial applications of DEFENDAIR™ 200C Air and Weather Barrier Coating is available when only DEFENDAIR™ 200C Air and Weather Barrier Coating is used. Consult your Dow representative for details.

- A. Special Warranty, General: Manufacturer's standard project-specific form in which manufacturer agrees to repair or replace air barrier coatings and accessory products that demonstrate deterioration or failure within warranty period specified due to material failure under normal use. Failure includes water or air penetration through air barrier assembly.
 - 1. Warranty Period: [10 to 15] years from date of Substantial Completion.

PART 2 – PRODUCTS

2.1 MANUFACTURER

Specifier: Retain option for substitutions below when required for Project.

- A. Basis-of-Design Products: Provide air barrier coatings and accessory products manufactured by The Dow Chemical Company, Midland MI; (877) SEALANT, (877) 732-5268; email: construction@dow.com; website: www.dow.com/construction, [or comparable products of other manufacturer approved by Architect in accordance with Instructions to Bidders and Division 01 General Requirements].

2.2 MATERIALS, GENERAL

- A. Single Source Responsibility: Provide air barrier coatings and accessory products of a single manufacturer through a single source.
- B. VOC Content: Provide products complying with the following limits when calculated according to 40 CFR 59, Subpart D (EPA Method 24), and in accordance with VOC limitations of authorities having jurisdiction.
 - 1. Coatings: 250 g/L.
 - 2. Coating Primers: 200 g/L.
 - 3. Sealants: 250 g/L.
 - 4. Sealant Primers for Nonporous Substrates: 250 g/L.
 - 5. Sealant Primers for Porous Substrates: 775 g/L.

2.3 PERFORMANCE REQUIREMENTS

- A. Air Barrier Assembly, General: Provide air barrier assembly consisting of fluid-applied coating, molded transition strips, and liquid sealants that together perform as a continuous vapor-permeable air barrier, capable of accommodating normal structural movement, transitions between coating substrate materials, penetrations of coating substrates, and tie-ins to framed openings, waterproofing systems, and roofing systems, without deterioration or air leakage exceeding specified limits.
- B. Air-Barrier Assembly Air Leakage: ≤ 0.04 cfm/sq. ft. at 1.57 lbf/sq. ft. (0.2 L/s x sq. m at 75 Pa) when tested according to ASTM E 2357.
- C. Allowable UV Exposure Time: Not less than 12 months.
- D. Surface-Burning Characteristics: Provide air barrier coatings that achieve flame-spread index of 25 or less and smoke-developed index of 450 or less per ASTM E 84.

Specifier: Retain "Fire Propagation Characteristics" Paragraph for projects where an NFPA 285-tested exterior wall assembly is required by authorities having jurisdiction. Verify local requirements.

- E. Fire Propagation Characteristics: Provide air barrier coatings and accessory materials that are tested for compliance with NFPA 285 when used as part of an exterior wall assembly identical to that required for the Project.
 - 1. When testing of identical wall assembly is not available, offer engineering judgment by qualified third-party testing agency acceptable to authorities having jurisdiction demonstrating equivalent compliance with requirements.

2.4 SILICONE AIR BARRIER ASSEMBLY

Specifier: DEFENDAIR™ 200C Air and Weather Barrier Coating is a fluid applied, water-based, vapor-permeable, one-component elastomer treatment for above-grade application to gypsum sheathing, concrete unit masonry, and other exterior wall backup substrates. Refer to DEFENDAIR™ 200C Air and Weather Barrier Coating data sheet for actual test results.

- A. Air Barrier Coatings: Fluid-applied, water-based, vapor-permeable, one-component silicone elastomeric coating.
 - 1. Product: **DEFENDAIR™ 200C Air and Weather Barrier Coating.**
 - 2. Air Permeance, ASTM E 2178: ≤ 0.004 cfm/sq. ft. at 1.57 lbf/sq. ft. (0.02 L/s x sq. m at 75 Pa).
 - 3. Volatile Organic Compound (VOC) Content: ≤ 5 g/L maximum.
 - 4. Vapor Permeance, ASTM E 96, Method B: > 10 perms.
 - 5. Ultimate Elongation, ASTM D 412: ≥ 600 percent.

- B. Silicone Elastomer Weather Barrier Transition Strips: Highly-flexible clear flashing and transition sheet with pre-molded corner accessory pieces for bonding to weather barrier substrates and to adjacent curtain wall, storefront, and window frames and other transition substrates using silicone sealant.

Specifier: Air infiltration and water penetration testing below reflects performance of DOWSIL™ Silicone Transition Strip when installed according to manufacturer's installation instructions as perimeter flashing isolated on test window unit in sheathed wall. Test report copies available from manufacturer.

- 1. Product: **DOWSIL™ Silicone Transition Strip.**
 - a. Air Infiltration, ASTM E 283: Max. 0.025 cfm/sq. ft. (0.127 L/s per sq. m) at 6.24 lbf/sq. ft. (300 Pa).
 - b. Water Penetration under Static Pressure, ASTM E 331: None at 15 lbf/sq. ft. (720 Pa).
 - c. Movement Capability: Not less than plus 200, minus 75 percent.
 - d. Tensile Strength, ASTM D 412: 800 psi (5.5 MPa).
 - e. Tear Strength, ASTM D 624, die B: 200 ppi (35 kN/m).
 - f. Elongation, ASTM D 412: 400 percent.
 - g. Hardness, ASTM D 412: 53 durometer Shore A.

- C. Silicone Elastomer Seals: Highly flexible low-modulus flashing and transition material for bonding to substrates with silicone sealant. SWRI validated.
 - 1. Product: **DOWSIL™ 123 Silicone Seal.**
 - 2. Bonding Sealant: Manufacturer's recommended neutral-curing silicone.
 - 3. Hardness, ASTM D 2240: 25 durometer Shore A, minimum.

- D. Detail Joint and Bonding Sealant: ASTM C 920, single-component, neutral-curing silicone, Grade NS, SWRI-validated, of Class indicated, compatible with adjacent materials. Offer products recommended by air barrier manufacturer for application.
 - 1. Class 25: Product: **DOWSIL™ 758 Silicone Weather Barrier Sealant.**
 - 2. Class 50: Product: **DOWSIL™ 791 Silicone Weatherproofing Sealant.**
 - 3. Class 50: Product: **DOWSIL™ 756 SM Building Sealant.**

- E. Liquid Applied Flashing: Single-component, neutral-curing silicone, Grade NS, of Class indicated, compatible with adjacent materials. Provide products recommended by air barrier manufacturer for application.
 - 1. Class 25: Product: **DOWSIL™ 778 Silicone Liquid Flashing.**
 - 2. Class 50: Product: **DOWSIL™ 791 Silicone Weatherproofing Sealant.**

2.5 ACCESSORY MATERIALS

- A. Crack Fillers: Substrate manufacturer's recommended crack fillers or sealants compatible with air barrier assembly components and adjacent materials.

Specifier: DEFENDAIR™ 200C Air and Weather Barrier Coating offers adequate primer-free adhesion on most substrates. Retain "Primer" paragraph below when preconstruction testing indicates need for primer. Consult Dow product representative.

- B. Primer: Air barrier coating manufacturer's recommended, factory-formulated, alkali-resistant primer compatible with substrate and adjacent materials.

Specifier: Retain "Block Filler" paragraph when required for concrete masonry unit substrate to offer smooth continuous finish to Accept air barrier coating.

- C. Block Filler: Air barrier coating manufacturer's recommended latex block filler compatible with substrate and adjacent materials.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine substrates to determine if work is ready to receive air barrier system. Verify that surfaces are clean, dry, and free of frost, dust, dirt, grease, oil, curing compounds, form release agents, laitance, efflorescence, mildew, excess alkalinity, and other conditions affecting performance of work.
 - 1. Verify that new concrete and mortar to receive coating application has cured adequately in accordance with substrate and air barrier coating manufacturers' instructions.

DEFENDAIR™ 200C Air and Weather Barrier Coating offers adequate primer-free adhesion on most substrates. Depending on the substrate, primer may be required to promote adhesion. Testing should be conducted to determine if primer is required. Field adhesion test is required for manufacturer's water repellent warranty.

- B. Preinstallation Testing: Prior to application of air barrier coatings, perform the following tests to verify condition of substrate in accordance with manufacturer's instructions:
 - 1. Adhesion: Perform substrate field adhesion tests on each substrate to determine if primer is required to satisfactorily adhere air barrier coatings to substrates.
 - 2. Alkalinity: Verify substrate is within alkalinity range acceptable to manufacturer.
 - 3. Moisture Level: Verify substrate moisture content is acceptable to manufacturer.
- C. Proceed with air barrier coating work once conditions meet air barrier coating manufacturer's recommendations.

3.2 PREPARATION

- A. General: Comply with air barrier coating manufacturer's written instructions for preparation of substrates. Protect work of other trades against damage from application of air barrier coatings.

- B. Cleaning: Clean substrates to remove contaminants and foreign material by pressure cleaning, wire brushing, grinding or other method recommended by air barrier coatings manufacturer.
- C. Substrate Repair: Repair deteriorated or damaged substrates, repair masonry joints, and fill cracks, voids, honeycomb, and other defects using materials as recommended in writing by air barrier coating manufacturer. Allow patching materials to cure.
 - 1. All joints between exterior grade sheathing should be sealed using a sealant listed in Column B of Table 2 in the DEFENDAIR™ 200C Air and Weather Barrier Coating Application Guide, prior to installing the coating. 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.
- D. Protection: Protect adjacent surfaces not designated to receive air barrier coatings. Offer protection for pedestrians, vehicles, landscaping, and surrounding areas to prevent contact with coating materials.

Specifier: Retain "Primer" paragraph when required for project based upon preconstruction testing.

- E. Primer: Apply primer to substrates where required based upon preinstallation testing and air barrier coating manufacturer's recommendations, using application methods and rate of application recommended by manufacturer. Allow to dry prior to application of air barrier coating.

Specifier: Block filler may be required on some CMU substrates based upon coarseness of CMU finish and quality of mortar joint tooling.

- 1. Apply recommended block filler as primer on concrete masonry unit substrates where required to fill pores and offer smooth, substrate for application of air barrier coating.

3.3 AIR BARRIER APPLICATION

- A. Transition Strips and Elastomer Seals: Install with approved sealants in accordance with manufacturer's written instructions.
 - 1. Form tie-in to window, storefront, and curtain wall frames, door frames, louver frames, roofing system perimeters, and at interface of other adjacent materials utilizing compatible accessory materials forming part of air barrier assembly.
 - 2. Promptly adhere laps and bonds to substrates.
- B. Air Barrier Coating: Apply air barrier coating using application methods and rate of application recommended by manufacturer to achieve the specified minimum total dry-film thickness. Apply using nap roller or airless sprayer, as allowed by authorities having jurisdiction.
 - 1. 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.
 - 2. 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.
 - 3. 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.
 - 4. May be spray applied, using an airless sprayer, in one coat from 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.
 - 5. The final dry coating should be continuous.

6. 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.
7. 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.
8. 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.

3.4 FIELD QUALITY CONTROL

- A. Owner may retain testing agency to perform the following tests:
 1. Verification that substrate preparation meets requirements.
 2. Testing and certification that coating materials comply with requirements for thickness and continuity.
 3. Testing of application for compliance with adhesion and film thickness requirements.
- B. If testing indicates products or work do not meet requirements, Owner may stop work and require Contractor to remove non-complying materials and materials applied over non-complying substrates, and otherwise correct application.

3.5 CLEANING AND PROTECTION

- A. Curing and Protection: Allow air barrier coatings to cure before exposure to other construction operations. Prevent damage to coatings resulting from construction operations or other causes. Replace damaged air barrier coatings prior to concealment behind subsequent construction.
- B. Cleaning: Remove overspray and excess material as work progresses, using materials and methods approved by manufacturer that will not damage adjacent materials.
- C. Remove temporary coverings and protection upon completion. Clean and repair adjacent surfaces damaged by air barrier coating application.

END OF SECTION

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