SECTION 07 27 00

FLUID-APPLIED MEMBRANE AIR BARRIERS

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\*\* NOTE TO SPECIFIER \*\* GE Silicones; fluid applied air barriers.
This section is based on the products of GE Silicones, which is located at:
13620 Reese Blvd. E. Suite 310
Huntersville, NC 28078
Toll Free Tel: 877-943-7325
Tel: 704-996-7164
Email: [request info (eric.prester@momentive.com)](https://admin.arcat.com/users.pl?action=UserEmail&company=GE+Silicones&coid=44515&rep=&fax=&message=RE:%20Spec%20Question%20(07270mom):%20%20&mf=)
Web: <http://gesilicones.com>
 [ [Click Here](https://www.arcat.com/arcatcos/cos44/arc44515.html) ] for additional information.
The construction industry demands high quality products that are highly UV resistant. Cured silicone rubber exhibits excellent long term resistance to natural weathering, including UV radiation, high and low temperatures and rain and snow, with negligible change in elasticity. Contact GE Silicones for additional technical information and literature.

1. GENERAL
	1. SECTION INCLUDES
		1. Fluid-applied, vapor-permeable membrane air barriers and accessories.
	2. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 06 16 36 - Wood Panel Product Sheathing.
		2. Section 07 27 19 - Plastic Sheet Air Barriers .
	1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. American Association of Textile Chemists and Colorists:
			1. AATCC-127 Water Resistance: Hydrostatic Pressure Test
		2. ASTM International (ASTM):
			1. ASTM C1305 - Standard Test Method for Crack Bridging Ability of Liquid-Applied Waterproofing Membrane.
			2. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension.
			3. ASTM D1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
			4. ASTM D2370 - Standard Test Method for Tensile Properties of Organic Coatings.
			5. ASTM D4541 - Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.
			6. ASTM D6904 - Standard Practice for Resistance to Wind-Driven Rain for Exterior Coatings Applied on Masonry.
			7. ASTM D7234 - Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers.
			8. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
			9. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials.
			10. 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.
			11. ASTM E331, Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
			12. ASTM E783 - Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors.
			13. ASTM E1186 - Standard Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems
			14. ASTM E1354, Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter
			15. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials.
			16. ASTM E2357 - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.
			17. ASTM G154, Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials
		3. National Fire Protection Association:
			1. NFPA 285, Standard Fire Test Method for Evaluation of Fire Propagation Characteristics
		4. Underwriters' Laboratory, Canada:
			1. CAN/ULC-S741, Standard for Air Barrier Materials - Specification.
			2. CAN/ULC-S742, Standard for Air Barrier Assemblies - Specification
		5. United States Green Building Council (USGBC): LEED rating system.
		6. Environmental Protection Agency (EPA): Method 24/40 CFR 59.
	1. SUBMITTALS
		1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
		2. Product Data: Manufacturer's written instructions for evaluating, preparing, and treating substrate; technical data; and tested physical and performance properties of products.
			1. Preparation instructions and recommendations.
			2. Storage and handling requirements and recommendations.
			3. Cleaning methods.

\*\* NOTE TO SPECIFIER \*\* Delete the following paragraph if the submittal of LEED data is not required.

* + 1. USGBC LEED Product Data for Credit IEQ 4.2: For air-barrier products, documentation including printed statement of VOC content.
		2. Shop Drawings: For air-barrier assemblies.
			1. Show locations and extent of air barrier. Include details for substrate joints and cracks, counterflashing strips, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.
			2. Include details of interfaces with other materials that form part of air barrier.
		3. Product Certificates: From air-barrier manufacturer, certifying compatibility of air barriers and accessory materials with Project materials that connect to or that come in contact with the barrier.
		4. Product Test Reports: For each air-barrier assembly, for tests performed by a qualified testing agency.
	1. QUALITY ASSURANCE
		1. Installer Qualifications: Engage installers trained, accepted and as approved by manufacturer. ABAA contractors are preferred but not required.
		2. Source Limitations: To the greatest extent possible, obtain primary air-barrier materials and air-barrier accessories from a single source and from single manufacturer.

\*\* NOTE TO SPECIFIER \*\* Include a mock-up if the project size and/or quality warrant taking such a precaution. The following is one example of how a mock-up on a large project might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.

* + 1. Mock-Up: Provide completely assembled, typical wall areas installed with related accessories, designed to fulfill the performance criteria, and representative of the design as shown on the Drawings.
			1. Extent of mock-up shall be the same as that which will be provided in the final work.
			2. Mock-up shall be installed simulating actual construction conditions, including actual structural supports and connections. Use means, methods and techniques proposed for final installation. Include junction with roofing membranes, building corner conditions, and foundation wall intersection.
			3. Locate mock-up in locations as directed by the Architect.
			4. Preconstruction Testing and Approval:
				1. Do not proceed with remaining work until workmanship is approved by Architect.
				2. Architect approval of deviations from Drawings and specifications must be approved in writing.

\*\* NOTE TO SPECIFIER \*\* Delete if preconstruction testing of mock-up areas is not required.

* + - * 1. Mock-up shall be subjected to testing criteria specified for final installation.

\*\* NOTE TO SPECIFIER \*\* Delete one of the two following options.

* + - 1. Mock-up area may become part of finished work.
			2. Mock-up area may not become part of finished work.

\*\* NOTE TO SPECIFIER \*\* Mockup testing is usually limited to buildings with complex, unusual, or previously untested exterior envelope construction. Delete Article if preconstruction testing of mock-up areas is not required.

* 1. PRECONSTRUCTION TESTING
		1. Preconstruction Testing Service: Owner will engage a qualified testing agency to perform preconstruction testing on field mockups.
		2. Mockup Testing: Air-barrier assemblies shall comply with performance requirements indicated, as evidenced by reports based on mockup testing by a qualified testing agency.

\*\* NOTE TO SPECIFIER \*\* Fill in blanks below with values for minimum performance. Delete options for testing not required.

* + - 1. Qualitative Air-Leakage Testing: ASTM E1186, chamber pressurization or depressurization with smoke tracers.
			2. Qualitative Air-Leakage Testing: ASTM E1186, chamber depressurization with detection liquids.
			3. Quantitative Air-Leakage Testing: ASTM E783.
			4. Adhesion Testing: ASTM D4541, minimum air-barrier adhesion \_\_\_\_\_\_\_\_\_.
	1. DELIVERY, STORAGE, AND HANDLING
		1. Deliver, store and handle materials and products in strict compliance with manufacturer's instructions and recommendations and industry standards.
		2. Store materials in manufacturer's original sealed, labeled packaging until ready for installation and in accordance with manufacturer's instructions. Protect from damage.
	2. PROJECT CONDITIONS
		1. Maintain environmental conditions (temperature, humidity and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.
			1. Application is not recommended under the following condition:
				1. Temperature of surfaces to be coated is above 150 degrees F (66 degrees C).
				2. Temperature of surfaces to be coated is below 0 degrees F (-18 degrees C)
				3. Frost or moisture is present on the surfaces to be coated.
	3. COORDINATION AND SEQUENCING
		1. Pre-Installation Conference:
			1. Convene conference prior to start of work specified herein, and at Contractor's direction.
			2. Review air-barrier requirements and installation, special details, mockups, air-leakage and bond testing, air-barrier protection, and work scheduling that covers air barriers
			3. Establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.
	4. WARRANTY
		1. Warranty: Provide manufacturer's material warranty, from date of substantial completion: Ensure all manufacturers installation guidelines, specifications, details and warranty requirements are met.
			1. 10 years.
			2. 15 years.
1. PRODUCTS
	1. MANUFACTURERS
		1. Acceptable Manufacturer: GE Silicones, which is located at: 13620 Reese Blvd. E. Suite 310; Huntersville, NC 28078; Toll Free Tel: 877-943-7325; Tel: 704-996-7164; Email: [request info (eric.prester@momentive.com)](https://admin.arcat.com/users.pl?action=UserEmail&company=GE+Silicones&coid=44515&rep=&fax=&message=RE:%20Spec%20Question%20(07270mom):%20%20&mf=); Web: <http://gesilicones.com>

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
		2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.
	1. VAPOR-PERMEABLE MEMBRANE AIR-BARRIER

\*\* NOTE TO SPECIFIER \*\* Separate vapor retarder may also be required at different location within wall.

* + 1. Fluid-Applied, Vapor-Permeable Membrane Air Barrier: Synthetic polymer membrane.
			1. Basis-of-Design: GE Silicones; GE Elemax 2600 AWB as manufactured by GE Silicones
			2. Polymer: 100 percent silicone.
			3. Consistency: Pourable liquid.
			4. Color: Grey, black or custom.
			5. VOC (EPA Method 24): Less than 234 g/l.
			6. Viscosity (WPSTM C-560): Approximately 16,000 Centipoise.
			7. Recoat Time (Varies with Temp and RH): Less than 2 hours.
		2. Compliance, GE Elemax 2600 AWB:
			1. Required dry film thickness: 17 mils. Applied 19 mils wet.
			2. Air Permeance - tested at 1.57 psf (75 Pa) (ASTM E2178): 0.00006 cfm/ft2 (0.0003 L/s.m2).
			3. Air Permeance - tested at 1.57 psf (75 Pa) (ULC 741): 0.0002 cfm/ft2 (0.0009 L/s.m2).
			4. Assembly Air Leakage - tested at 1.57 psf (75 Pa) (ASTM E2357): 0.0002 cfm/ft2 (0.0009 L/s.m2).
			5. Assembly Air Leakage - tested at 1.57 psf (75 Pa) (ULC 742): 0.0004 cfm/ft2 (0.0018 L/s.m2).
			6. Water Resistance (AATCC 127): Pass.
			7. Water Penetration (ASTM E331): No water penetration observed after 15 minutes at 62.5 psf (2993 Pa).
			8. Water Vapor Permeance at 17 mils DFT(ASTM E 96): 10.5 perms.
			9. UV & Weathering Resistance (ASTM G154): No degradation after 5000 hours.
			10. Self Sealability around Nails (ASTM D 1970): Pass at 17 mils DFT.
			11. Service Temperature Range: -40 to 300 degrees F (-40 to 149 degrees C).
			12. Pull of Strength (concrete) (ASTM D 4541): 126 psi (0.87 MPa).
			13. Pull of Strength (fiberglass mat faced gypsum sheathing) (ASTM D 4541): 44 psi (0.30 MPa).
			14. Elongation (ASTM D 412): 542 percent.
			15. Surface Burning (ASTM E 84): NFPA Class A, UBC Class 1.
				1. Flame spread: 10.
				2. Smoke developed: 185.
			16. Oxygen Consumption (Cone) Calorimeter (ASTM E1354):
				1. Effective Heat of Combustion: 9.8 MJ/kg
				2. Peak Heat Release Rate: 97 kW/m2
				3. Total Heat Release: 5.6 MJ/m2
			17. Multi Story Wall Assembly Burn Test (NFPA 285): Passed.
			18. Crack Bridging Ability (1/16 inch or 1.5mm) (ASTM C1305): Pass.
			19. Application Temperature Range: 0 to 158 degrees F (-18 to 70 degrees C).
			20. Tensile Strength (ASTM D412): 175 psi (1.21 MPa).
			21. Recoat time, typical: 1-2 hours. Time varies due to temperature and relative humidity.
			22. Cure Time, complete: 1-2 days. Time varies due to temperature and relative humidity.
	1. ACCESSORY MATERIALS
		1. Recommended by air-barrier manufacturer to produce a complete air-barrier assembly and compatible with primary air-barrier material.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + 1. Precured Silicone Transition Sheet: Manufacturer's standard system consisting of cured low-modulus silicone extrusion, sized to fit opening widths, with a single-component, neutral-curing, Class 50 (medium modulus) or Class 100/50 (low-modulus) silicone sealant for bonding precured silicone transition sheet to substrates.
			1. Basis-of-Design Product: Provide UST2200 UltraSpan, as manufactured by GE Silicones
				1. 3 inch (76 mm) wide.
				2. 6 inch (152 mm) wide.
				3. 12 inch (305 mm) wide.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + 1. Joint Sealant: ASTM C 920, single-component, neutral-curing silicone; Class 50 (medium modulus) or Class 100/50 (low modulus), Grade NS, Use NT related to exposure, and, as applicable to joint substrates indicated, Use O. Comply with Section 07 91 23 - Backer Rods0 "Joint Sealants."
			1. Basis-of-Design: GE Elemax 5000 as manufactured by GE Silicones
			2. Basis-of-Design: GE SCS2000 SilPruf as manufactured by GE Silicones
			3. Basis-of-Design: GE SCS2700 SilPruf LM as manufactured by GE Silicones
			4. Basis-of-Design: GE SCS9000 SilPruf NB as manufactured by GE Silicones
			5. Basis-of-Design: GE SWS. as manufactured by GE Silicones

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + 1. Reinforcing Fabric: RF100.
			1. 4 inch (102 mm) wide.
			2. 6 inch (152 mm) wide.
			3. 12 inch (305 mm) wide.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + 1. Pre-Cured Silicone Molded Corners: GE USM UltraSpan inside and outside corners as manufactured by GE Silicones.
1. EXECUTION
	1. EXAMINATION AND PREPARATION
		1. Examine and prepare substrates using the methods recommended by manufacturer for achieving best result for the substrates under project conditions.
		2. Do not proceed with installation until substrates have been prepared using the methods recommended by manufacturer and deviations from manufacturer's recommended tolerances are corrected. Commencement of installation constitutes acceptance of conditions.
		3. If preparation is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions.
	2. INSTALLATION
		1. Installation in accordance with manufacturer's instructions including the following:
			1. Substrates shall be clean, dry and frost free. Do not apply to moist or wet substrates.
				1. Provide a stable clean surface for application.
				2. Mask surfaces not covered by air barrier.
			2. Pre-test adhesion of sealants and coatings prior to application as recommended by manufacturer.
			3. Prepare substrates and fill voids as recommended by manufacturer.
				1. Masonry joints struck flush.
				2. Cracks, greater than crack bridging: Route when necessary, trowel fill with liquid flashing prior to membrane application. Membrane may be applied immediately after flashing.
				3. Spot all over and under drive fasteners with liquid flashing or membrane.
				4. Sheathing joints: Treated per manufacturer's installation details.
			4. Transition/Detailing treatment: Install appropriate materials to treat sheathing joints, expansion joints, drift joints, rough openings, transitions, terminations, penetrations and similar surface irregularities. Transitions and detailing can be performed before or after air barrier membrane application. Ensure installation is performed in accordance with manufacturers written installation instructions and details.
			5. Apply by spray, brush or roller within manufacturer's recommended temperature range, 0 to 158 degrees F (-18 to 70 degrees C)
			6. Apply to achieve manufacturer's recommended wet film thickness, 19 mils (483 microns), 17 mils (432 microns) final dry film thickness.
			7. Allow coating to reach full cure, typically 24 to 48 hours depending on temperature and relative humidity
			8. Install sealants and transition strips beyond or onto transitions, terminations, and perimeters a distance of 2 inches (50 mm) or greater.
			9. Repair any damage as recommended by manufacturer using sealant or transition sheets.
	3. PROTECTION
		1. Protect installed products until completion of project.
		2. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION