SECTION 07 27 00

WEATHER BARRIERS

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\*\* NOTE TO SPECIFIER \*\* Kingspan Insulation LLC; Weather barriers, air barriers, building wraps, flashing and seam tape.
This section is based on the products of Kingspan Insulation LLC, which is located at:
2100 RiverEdge Parkway, Suite 175
Atlanta, GA 30328
Toll Free Tel: 800-241-4402
Tel: 678-589-7300
Fax: 678-589-7325
Email: [request info (info@kingspaninsulation.us)](https://arcat.com/rfi?action=email&company=Kingspan%252BInsulation%252BLLC&message=RE%253A%2520Spec%2520Question%2520(07250ksp)%253A%2520&coid=49893&spec=07250ksp&rep=&fax=678-589-7325)
Web: <https://www.kingspan.com/us/en-us/about-kingspan/kingspan-insulation>
 [ [Click Here](https://arcat.com/company/kingspan-insulation-llc-49893) ] for additional information.
Kingspan Insulation LLC is a leading manufacturer in energy efficiency and moisture management products, offering high performance insulation, building wraps and pre-insulated HVAC ductwork. Kingspan Insulation is part of the Kingspan Group plc, a global leader in a range of product divisions including pre-insulated building panels, environmental technologies and renewable energy technologies. Its products are among the most thermally efficient and technologically advanced insulation materials available.
Kingspan Weather Barriers are high-performance air barrier and water-resistive barrier products that help deflect water and wind driven rain while allowing trapped moisture to escape to create healthier, more durable, and cost-efficient structures. Typically installed between exterior wall cladding and sheathing.

1. GENERAL
	1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Air and water-resistive barriers of the following types:
			1. Kingspan GreenGuard RainDrop 3D Building Wrap.
			2. Kingspan GreenGuard MAX Building Wrap.
			3. Kingspan GreenGuard HPW Building Wrap.
		2. Self-adhering flashing of the following types:
			1. Kingspan Standard Flashing.
			2. Kingspan Butyl Flashing.
			3. Kingspan Professional Flashing.
	1. RELATED SECTIONS

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

* + 1. Section 03 30 00 - Cast-in-Place Concrete.
		2. Section 04 20 00 - Unit Masonry.
		3. Section 05 40 00 - Cold-Formed Metal Framing.
		4. Section 06 10 00 - Rough Carpentry.
		5. Section 06 16 36 - Wood Panel Product Sheathing.
		6. Section 07 21 19 - Foamed-In-Place Insulation.
		7. Section 07 24 00 - Exterior Insulation and Finish Systems.
		8. Section 07 62 00 - Sheet Metal Flashing and Trim.
		9. Section 07 91 23 - Backer Rods.
	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 (AAMA):
			1. AAMA 711 - Voluntary Specification for Self-Adhering Flashing Used for Installation of Exterior Wall Fenestration Products.
		2. American Association of Textile Chemists and Colorists (AATCC):
		3. AATCC-127 - Water Resistance: Hydrostatic Pressure Test.
		4. ASTM International (ASTM):
			1. ASTM D1777 - Standard Test Method for Thickness of Textile Materials.
			2. ASTM D226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
			3. ASTM D779 - Standard Test Method for Water Resistance of Paper, Paperboard and Other Sheet Materials by the Dry Indicator Method.
			4. ASTM D3330 - Standard Test Method for Peel Adhesion of Pressure-Sensitive Tape.
			5. ASTM D3776 - Standard Test Methods for Mass Per Unit Area (Weight) of Fabric.
			6. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials.
			7. ASTM E283 - Standard Test Methods of Determining Rate of Air Leakage through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
			8. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
			9. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
			10. ASTM E1677 - Standard Specification for Air Barrier Material or System for Low-Rise Framed Building Walls.
			11. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials.
			12. ASTM E2273 - Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies.
			13. ASTM E2357 - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.
			14. ASTM E2556 - Standard Specification for Vapor Permeable Flexible Sheet Water-Resistive Barriers Intended for Mechanical Attachment.
		5. National Research Council Canada, Canadian Construction Materials Centre (CCMC):
			1. CCMC Technical Guide 07102 - Sheathing, Membrane, Breather-Type.
			2. CCMC Technical Guide 07273 - Air Barrier Materials.
		6. International Code Council Evaluation Service (ICC-ES):
			1. ICC-ES AC38 - Acceptance Criteria for Water-Resistive Barriers.
			2. ICC-ES AC148 - Acceptance Criteria for Flashing Materials.
			3. ICC-ES AC356 - Acceptance Criteria for Moisture Drainage Systems Used with Exterior Cement Plaster or Adhered Masonry Veneer Walls.
	1. SUBMITTALS
		1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
		2. Product Data: Manufacturer's data sheets on each product to be used, including:
			1. Physical properties, performance criteria, compliance reports, material compatibility, product limitations, and recommendations.
			2. Preparation instructions and recommendations.
			3. Storage and handling requirements and recommendations.
			4. Installation methods.
		3. Shop Drawings:
			1. Provide project specific, scaled, shop drawings and calculations including extents of installation, load bearing capacity and structural requirements.
			2. Show details including material layers and thicknesses, flashing, terminations and openings, intersections, seams, joints, penetrations, and accessories with each system to be installed.
		4. Qualifications: Submit manufacturer and installer qualifications.

\*\* NOTE TO SPECIFIER \*\* Delete the following paragraphs if LEED is not applicable. Coordinate with the Architect and Sustainable Design team as required for documentation.

* + 1. USGBC LEED Submittals: Provide product data and manufacturer's certifications as requested by the Architect.
	1. QUALITY ASSURANCE
		1. Single Source Responsibility: Provide primary weather barrier materials from a single manufacturer. Secondary and accessory materials by other manufacturers shall be approved for compatibility by the primary manufacturer.
		2. Testing Laboratory Qualifications: Accredited by the International Accreditation Service (IAS), American Association for Laboratory Accreditation (A2LA), or Standards Council of Canada (SCC).
		3. Manufacturer Qualifications: Minimum 20 years experience manufacturing similar products.
		4. Installer Qualifications: Minimum 2 years experience installing similar products and approved by the manufacturer.

\*\* NOTE TO SPECIFIER \*\* Include a mock-up if the project size 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 a mock-up for evaluation of surface preparation, installation materials and techniques, and application workmanship.
			1. Apply weather barriers at location acceptable to Architect, minimum size 8 by 8 feet (2438 by 2438 mm) including corners and transition, fasteners, tapes, flashing and accessories to be provided in the final installation.
			2. Do not proceed with remaining work until workmanship is approved by Architect.
			3. Rebuild mock-up area as required to produce acceptable work.
			4. Accepted mock-up shall establish relationships between adjacent materials and the standard of workmanship for the final installation.
	1. PRE-INSTALLATION MEETINGS
		1. Convene the manufacturer's authorized technical representative, general contractor, and related trades minimum two weeks prior to starting work of this section to discuss project conditions, material compatibility, manufacturer's warranty requirements, and installation procedures.
		2. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.
	2. DELIVERY, STORAGE, AND HANDLING
		1. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.
		2. Store in accordance with the manufacturer's instructions in clean, dry location protected from exposure to direct sunlight. Material that has been unwrapped shall be covered with opaque, light colored tarp or re-wrapped in manufacturer's packaging.
		3. Handle materials in accordance with manufacturer's recommendations and to avoid damage.
	3. PROJECT CONDITIONS
		1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results.
		2. Do not install products to wet substrates or under environmental conditions outside manufacturer's recommended limits.
	4. WARRANTY
		1. Provide manufacturer's extended product and weathertightness warranty backed by manufacturer's inspectors and authorized installer network.
			1. Warranty Period: 15 years.
1. PRODUCTS
	1. MANUFACTURERS
		1. Acceptable Manufacturer: Kingspan Insulation LLC, which is located at:
		2100 RiverEdge Parkway, Suite 175
		Atlanta, GA 30328
		Toll Free Tel: 800-241-4402
		Tel: 678-589-7300
		Fax: 678-589-7325
		Email: [request info (info@kingspaninsulation.us)](https://arcat.com/rfi?action=email&company=Kingspan%252BInsulation%252BLLC&message=RE%253A%2520Spec%2520Question%2520(07250ksp)%253A%2520&coid=49893&spec=07250ksp&rep=&fax=678-589-7325);Web: <https://www.kingspan.com/us/en-us/about-kingspan/kingspan-insulation>

\*\* 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.

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

* 1. AIR AND WATER-RESISTIVE BARRIERS
		1. Building Wrap: Kingspan GreenGuard RainDrop 3D Building Wrap or approved equal meeting the following criteria:
			1. Material: Cross-woven polyolefin building wrap with 3-dimensional drainage channels creating air space behind the cladding.
			2. Compliance:
				1. Intertek CCRR-1018 for IBC, IECC and IRC Compliance.
				2. DrJ Engineering TER No. 1407-05 (NFPA 285).
				3. ASTM E1677, Type I (Specification for Air Infiltration Barriers).
				4. ASTM E2178, Air Permeance (Air Barrier Materials).
				5. ASTM E2556, Type II (Specification for Water-Resistive Barriers).
			3. Nominal Thickness: 0.020 inch (20 mils) when tested in accordance with ASTM D1777.
			4. Nominal Width (ft): 3 / 9 / 10.
			5. Tensile Strength (MD / TD)2 (lb/in) ASTM D882 56 / 30.
			6. Trapezoid Tearing Strength (MD/TD) (lb/in): ASTM D4533 25 / 41.
			7. Water Penetration Resistance (cm H2O): AATCC-127 Pass/
			8. Drainage Efficiency (% water drained): ASTM E2273 greater than 90%.
			9. Water Vapor Permeance (perm): ASTM E96 (Desiccant) 16.
			10. Water Vapor Transmission Rate g/(24hr\*m2): ASTM E96 (Desiccant / Water Method) 68 / 95.
			11. Air Permeance (L/s/m2@75 Pa) (cfm/ft2@1.57 psi): ASTM E2178 0.001 / 0.000/
			12. Air Resistance / Wall Assembly (L/s/m2@75 Pa) (cfm/ft2@1.57 psf): ASTM E2357 less than 0.01 / 0.00/
			13. Flame Spread: ASTM E84 0 (Class A).
			14. Smoke Developed: ASTM E84 40.
		2. Building Wrap: Kingspan GreenGuard Max Building Wrap or approved equal meeting the following criteria:
			1. Material: Cross-woven building wrap with a breathable polyolefin coating that performs as both a water-resistive barrier and as an air barrier.
			2. Compliance:
				1. Intertek CCRR-1018 for IBC, IECC and IRC Compliance.
				2. DrJ Engineering TER No. 1407-05 (NFPA 285).
				3. ASTM E2178, Air Permeance (Air Barrier Materials);
			3. Nominal Thickness: 0.018 inch (18 mils) when tested in accordance with ASTM D1777.
			4. Nominal Width (ft): 9 / 10.
			5. Weight (lb/1000 ft2): 20.9.
			6. Tensile Strength (MD / TD) (lb/in) ASTM D882 74 / 44.
			7. Trapezoidal Tear Strength (MD / TD) (lb/in): ASTM D5587, ASTM D4533 80 / 48.
			8. Water Resistance (10 minutes): ASTM D779 Pass.
			9. Water Vapor Permeance (perm): ASTM E96 (Desiccant / Water Method) 20 / 25.
			10. Water Vapor Transmission Rate g/(24hr\*m2): ASTM E96 (Desiccant / Water Method) 137 / 175.
			11. Air Permeance (L/s/m2@ 75 Pa) (cfm/ft2@1.57 psf): ASTM E2178 less than 0.02, less than 0.004.
			12. Flame Spread: ASTM E84 0 (Class A).
			13. Smoke Developed: ASTM E84 75.
		3. Building Wrap: Kingspan GreenGuard HPW Building Wrap or approved equal meeting the following criteria:
			1. Material: Non-woven building wrap with a breathable polyolefin coating that performance as both a water-resistive barrier and as an air barrier.
			2. Compliance:
				1. Intertek CCRR-1018 for IBC, IECC and IRC Compliance.
				2. DrJ Engineering TER No. 1407-05 (NFPA 285).
				3. ASTM E2178 - Air Permeance (Air Barrier Materials).
				4. ASTM E2556, Type II - Standard specification for vapor permeable flexible sheet water-resistive barriers intended for mechanical attachment.
				5. AC 38 - Acceptance Criteria for Water-Resistive Barriers.
				6. CCMC 14124-R- Sheathing Membrane.
				7. CCMC 14143-R- Air Barrier Material.
			3. Nominal Thickness: 0.017 inch (17 mils) when tested in accordance with ASTM D1777.
			4. Nominal Width (ft): 9 / 10.
			5. Tensile Strength (MD / TD) (lb/in): ASTM D5034 50 / 40.
			6. Water Resistance (Minutes): ASTM D779 greater than 90.
			7. Water Penetration Resistance (CM H2O): AATCC 127 greater than 400.
			8. Water Vapor Permeance (perm): ASTM E96 (Desiccant Method) 24.
			9. Trapezoid Tearing Strength (MD / TD) (lbf): ASTM D4533 9 / 20.
			10. Water Vapor Transmission Rate g/(m2-24hr): ASTM E96 (Desiccant Method) 170.
			11. Air Permeance: (L/(s\*m2)@ 75 Pa) (cfm/ft2@1.57 psf): ASTM E2178 0.002/0.000.
			12. Flame Spread: ASTM E84 0 (Class A).
			13. Smoke Developed: ASTM E84 75.
	2. FLASHING

\*\* NOTE TO SPECIFIER \*\* For use with building wrap, sheathing, windows, doors and other openings to create a complete water- resistant seal. Delete types not required.

* + 1. Standard Flashing: Kingspan GreenGuard Standard Asphalt Flashing or approved equal meeting the following criteria:
			1. Material: Self-adhering flashing membrane comprising a polyolefin film with a rubber-modified asphalt adhesive.
			2. Compliance:
				1. AAMA 711.
				2. ICC-ES AC148.
			3. Nominal Thickness (in) (mils): ASTM D1777 0.020 / 20.
			4. Nominal Length (ft): 100.
			5. Nominal Width (in): 4 / 6 / 9 / 12.
			6. Backing Material: Polyolefin.
			7. Adhesive: Rubber Modified Asphalt.
			8. Release Liner: Yes.
			9. Application Temperature, Minimum (degrees F): 25.
			10. Recommended Service Temp. Max. (degrees F): 150.
			11. Outdoor / UV Exposure, Maximum (days): 30.
			12. Tensile Strength (lb / in): ASTM D412 700.
			13. Elongation (%): ASTM D412 500.
			14. Peel Strength (lb / in width): ASTM D903 4.5.
			15. Puncture Resistance (lb): ASTM E154 27.
			16. Lap Adhesion (lb / in width): ASTM D1876 (Modified) 4.5.
			17. Shelf Life (yr): 1.
		2. Butyl Flashing: Kingspan GreenGuard Butyl Flashing or approved equal meeting the following criteria:
			1. Material: Self-adhering flashing membrane comprising a polyolefin fin with a butyl adhesive, available in straight and stretchable alternatives.
			2. Compliance:
				1. AAMA 711.
				2. ICC-ES AC148.
			3. Nominal Thickness (in) (mils): 0.016 / /16
			4. Nominal Width (in): 4 / 6 / 9.
			5. Backing Material: Polyolefin.
			6. Adhesive: Butyl.
			7. Split Release Liner: Yes.
			8. Application Temperature (degrees F): 10-150.
			9. Recommended Service Temperature (degrees F): -30 - +200.
			10. UV Exposure (days): 120.
			11. Nail Sealability AAMA 711: Pass.
			12. Water Resistance (min. 24 hours): ASTM D779 greater than 24.
			13. Peel Adhesion (at 90 deg.): ASTM D3350.
				1. OSB: 2.6 lb./in.
				2. Pressure Treated Lumber: 4.2 lb./in.
				3. Anodized Aluminum: 3.4 lb./in.
				4. Plywood: 2.7 lb./in.
				5. Vinyl: 3.5 lb./in.
				6. Exterior FG Gypsum: 3.4 lb./in.
				7. Concrete: 4.4 lb./in.
				8. GreenGuard RainDrop 3D: 1.7 lb./in.
			14. Pliability (no cracking at 32 degrees F): ICC-ES Acceptance Criteria AC148, Sec. 4.6, Pass.
			15. Shelf Life (years): 2.
		3. Professional Flashing: Kingspan GreenGuard Professional Flashing or approved equal meeting the following criteria:
			1. Material: Self-adhering flashing membrane comprising a polyolefin fin with a butyl adhesive.
			2. Compliance: ICC-ES AC148.
			3. Nominal Thickness (in) (mils): 0.016 / /16.
			4. Nominal Width (in): 4 / 6 / 9. / 12 / 18.
			5. Backing Material: HDPE.
			6. Adhesive: Butyl.
			7. Application Temperature (degrees F): 20-180.
			8. Recommended Service Temperature Maximum (degrees F): 300.
			9. Outdoor UV Exposure (days): 80.
			10. Nail Sealability AAMA 711: Pass.
			11. Mold Growth: ASTM G21: No growth.
	1. ACCESSORIES
		1. Seam Tape: Kingspan GreenGuard Custom Seam Tape.
		2. Adhesives, Sealants, and Primers: Compatible with weather barrier materials and flashing membranes and as recommended by manufacturer of weather barrier.
1. EXECUTION
	1. EXAMINATION
		1. Do not begin installation until substrates have been properly prepared.
		2. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
	2. PREPARATION
		1. Clean surfaces thoroughly prior to installation.
		2. Remove obstructions to installation planes greater than 1/4 inch (6 mm) including fasteners, debris or foreign objects that would interfere with a complete and continuous installation. Brush surfaces clean prior to installation of self-adhering products.
		3. Do not install to damp surfaces or in weather conditions outside the manufacturer's recommended limits.
	3. INSTALLATION
		1. Install in accordance with manufacturer's instructions in configurations and locations shown on the Drawings. Coordinate final installation details and sequencing with the drawings and adjacent products manufacturers requirements, including sheathing or insulation board, framing members, flashing, sealants and tapes, door and window manufacturer standard details and warranty requirements.
		2. Unroll with printed side facing out. Align bottom edge of wrap with the base of the wall. Install weather barriers continuously over building surfaces with sheets overlapped as follows: top and bottom, side to side, and at through-wall flashing as follows:
			1. Top and bottom, side to side, and at through-wall flashing laps, minimum 6 inches (152 mm).
			2. Corners laps, minimum 12 inches (304 mm)
		3. Seal seams, edges, and attachment to adjacent construction using manufacturers recommended tapes and sealants to prevent air leakage including penetrations, ties and anchors, windows, doors, and other openings, exterior assembly connections, control and expansion joints, and miscellaneous openings in the building envelope.
		4. Penetrations and Openings:
			1. Install continuously over openings, make a cut in the center of each opening wrapping inside the rough opening, securing to framing members unless otherwise indicated.
			2. Seal perimeters of penetrations and openings with manufacturers butyl flashing or approved equal.
		5. Install mechanical fasteners in minimum spacing recommended by the manufacturer.
			1. Do not install mechanical fasteners on exterior surfaces adjacent to openings as follows:
				1. Opening Sides: Not within 6 inches (152 mm).
				2. Opening Heads: Not within 9 inches (228 mm).
			2. Attach at sills and completely seal with manufacturer's recommended sealants and flashing.
	4. FIELD QUALITY CONTROL
		1. Coordinate with Owner's testing agency to inspect installation areas with the manufacturer's authorized technical representative and the Architect. Do not cover weather barriers until accepted.
	5. PROTECTION
		1. Protect installed products until completion of project. Do not leave weather barrier materials or accessories exposed to ultra-violet light or exterior weather conditions beyond periods recommended by the manufacturer.
		2. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION