



SECTION 07260

VAPOR RETARDERS

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PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Reinforced vapor retarders.
- B. Tape to seal joints and repair vapor retarder.
- C. Pipe boots for sealing penetrations.

1.2 RELATED SECTIONS

- A. Section 03300 - Cast-In-Place Concrete: Slabs on grade.
- B. Section 05310 - Steel Deck.
- C. Section 05400 - Cold Formed Metal Framing: Wall and roof framing.
- D. Section 06100 - Rough Carpentry: Wall and roof framing.
- E. Section 06150 - Wood Decking: Timber or lumber roof deck..
- F. Section 06160 - Sheathing: Roof sheathing.
- G. Section 07220 - Roof and Deck Insulation.
- H. Section 07410 - Metal Roof and Wall Panels.
- I. Section 07420 - Plastic Roof and Wall Panels.
- J. Section 07500 - Membrane Roofing.
- K. Section 07610 - Sheet Metal Roofing.

1.3 REFERENCES

- A. ASTM International (ASTM):
 - 1. ASTM D 882 - Tensile Properties of Thin Plastic Sheeting.
 - 2. ASTM D 1709 - Impact Resistance of Plastic Film by the Free-Falling Dart Method.
 - 3. ASTM D 2582 - Puncture-Propagation Tear Resistance of Plastic Film and

- Thin Sheeting.
4. ASTM D 3776 - Mass Per Unit Area (Weight) of Woven Fabric.
 5. ASTM D 4833 - Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products.
 6. ASTM E 84 - Surface Burning Characteristics of Building Materials.
 7. ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials.
 8. ASTM E 1643 - Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.
 9. ASTM E 1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.

- B. National Fire Protection Association (NFPA): NFPA 701 - Fire Tests for Flame-Resistant Textiles and Films.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. [Product Data]: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
 2. Storage and handling requirements and recommendations.
 3. Installation methods.
- C. Samples: Submit manufacturer's samples of reinforced vapor retarders.
- D. Verification Samples: For each product specified, two samples, minimum size 5 inches (125 mm) square, representing actual product, color, and patterns.

1.5 QUALITY ASSURANCE

- A. Preinstallation Meeting: Convene a preinstallation meeting two weeks before start of installation of reinforced vapor retarders. Require attendance of parties directly affecting work of this section, including Contractor, Architect, and installer. Review installation, protection, and coordination with other work.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage:
1. Store products in manufacturer's unopened packaging until ready for installation.
 2. Store materials in a clean, dry area in accordance with manufacturer's instructions.
- C. Handling: Protect materials during handling and installation to prevent damage.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. Acceptable Manufacturer: Griffolyn, Division of Reef Industries, Inc., which is located at: 9209 Almeda Genoa Rd. ; Houston, TX 77075; Toll Free Tel: 800-231-6074; Tel: 713-507-4251; Fax: 713-507-4295; Email: [request info \(ri@reefindustries.com\)](mailto:request_info(ri@reefindustries.com)); Web: www.reefindustries.com/division.php?div=1

- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 REINFORCED VAPOR RETARDERS

- A. Fire Retardant Reinforced Vapor Retarder: Griffolyn Type-90 FR.
 - 1. Material: Fire retardant 5-ply laminate, combining three layers of linear low-density polyethylene and two high-strength non-woven cord grids.
 - 2. Weight: 69 lb/1,000 sq ft (33.7kg/100 sq m), when tested in accordance with ASTM D 3776.
 - 3. Puncture Propagation Tear: 45 lb (187 N), when tested in accordance with ASTM D 2582.
 - 4. Permeance (Perm): 0.028 grains/hr-sq ft-in Hg (1.61 ng/(Pa-s-sq m)), when tested in accordance with ASTM E 96.
 - 5. Drop Dart: 2400 g, when tested in accordance with ASTM D 1709.
 - 6. Tensile Strength: 180 lb/3,750 psi (800 N/ 25.8 MPa), when tested in accordance with ASTM D 882, 3 inch (76 mm) wide specimen.
 - 7. Puncture Strength: 54 lb (209 N), when tested in accordance with ASTM D 4833.
 - 8. Surface Burning Characteristics:
 - a. Large Scale: Pass, when tested in accordance with NFPA 701.
 - b. Class I, Class B flame spread rating. Flame spread 5, smoke developed 135, when tested in accordance with ASTM E 84.
 - 9. Usable Temperature Range: Minus 40 to 170 degrees F (minus 40 to 77 degrees C).
 - 10. Application(s):
 - a. Use on roof decks under insulation.
 - b. Use on exterior walls on inside face of framing.
- B. Fire Retardant Reinforced Vapor Retarder: Griffolyn TX-1200 FR.
 - 1. Material: Fire retardant 3-ply laminate, combining two layers of linear low-density polyethylene and one high-strength non-woven cord grid.
 - 2. Weight: 45 lb/1,000 sq ft (22 kg/100 sq m), when tested in accordance with ASTM D 3776.
 - 3. Puncture Propagation Tear: 35 lb (156 N) , when tested in accordance with ASTM D 2582.
 - 4. Permeance (Perm): 0.036 grains/hr-sq ft-in Hg (2.06 ng/(Pa-s-sq m)) , when tested in accordance with ASTM E 96.
 - 5. Drop Dart: 1090g, when tested in accordance with ASTM D 1709 Method B.
 - 6. Tensile Strength: 135 lb/5,600 psi (600 N/38.6 MPa), when tested in accordance with ASTM D 882, 3 inch (76 mm) wide specimen.
 - 7. Puncture Strength: 48 lb (210 N), when tested in accordance with ASTM D 4833.
 - 8. Surface Burning Characteristics:
 - a. Large Scale: Pass, when tested in accordance with NFPA 701.
 - b. Class I, Class A flame spread rating. Flame spread 5, smoke developed 70, when tested in accordance with ASTM E 84.
 - 9. Usable Temperature Range: Minus 10 to 170 degrees F (minus 23 to 77 degrees C).
 - 10. Application(s):
 - a. Use on roof decks under insulation.
 - b. Use on exterior walls on inside face of framing.
- C. Fire Retardant Reinforced Vapor Retarder: Griffolyn Type-55 FR.
 - 1. Material: Fire retardant 3-ply laminate, combining two layers of linear

2. low-density polyethylene and one high-strength non-woven cord grid.
 2. Weight: 33 lb/1,000 sq ft (16.1 kg/100 sq m) , when tested in accordance with ASTM D 3776.
 3. Puncture Propagation Tear: 26 lb (111 N) , when tested in accordance with ASTM D 2582.
 4. Permeance (Perm): 0.062 grains/hr-sq ft-in Hg (3.556 ng/(Pa-s-sq m)) , when tested in accordance with ASTM E 96.
 5. Drop Dart: 450 g, when tested in accordance with ASTM D 1709.
 6. Tensile Strength: 90 lb/5,050 psi (378 N/34.8 MPa) , when tested in accordance with ASTM D 882, 3 inch (76 mm) wide specimen.
 7. Puncture Strength: 30 lb (133 N) , when tested in accordance with ASTM D 4833.
 8. Surface Burning Characteristics:
 - a. Large Scale: Pass, when tested in accordance with NFPA 701.
 - b. Class I, Class A flame spread rating. Flame spread 5, smoke developed 45, when tested in accordance with ASTM E 84.
 9. Usable Temperature Range: Minus 5 to 150 degrees F (minus 20 to 66 degrees C).
 10. Application(s):
 - a. Use on roof decks under insulation.
 - b. Use on exterior walls on inside face of framing.
- D. Reinforced Vapor Retarder: Griffolyn Type-65 G for use under concrete slabs; complying with ASTM E 1745 Class A.
1. Material: 4-ply laminate, combining 2 layers of high-density polyethylene and a high-strength non-woven cord grid with a layer of non-woven geotextile fiber.
 2. Weight: 73 lb/1,000 sq ft (35.7 kg/100 sq m), when tested in accordance with ASTM D 3776.
 3. Puncture Propagation Tear: 55 lb (245 N), when tested in accordance with ASTM D 2582.
 4. Permeance (Perm): 0.038 grains/hr-sq ft-in Hg (2.18 ng/(Pa-s-sq m)), when tested in accordance with ASTM E 96.
 5. Drop Dart: 2300 g, when tested in accordance with ASTM D 1709.
 6. Tensile Strength: 160 lb/1,350psi (710 N/9.3 MPa), when tested in accordance with ASTM D 882, 3 inch (76 mm) wide specimen.
 7. Puncture Strength: 60 lb (265 N), when tested in accordance with ASTM D 4833.
 8. Classification: Class A, when tested in accordance with ASTM E 1745.
 9. Usable Temperature Range: Minus 25 to 170 degrees F (minus 32 to 77 degrees C).
 10. Application: Use under concrete slabs, over aggregate fill.
 11. Application: Use under concrete slabs, under aggregate fill.
- E. Reinforced Vapor Retarder: Griffolyn Vaporguard; complying with ASTM E 1745 Class B.
1. Material: 3-ply laminate, with an aluminum core surrounded by two layers of multi-axially oriented, high-density polyethylene.
 2. Weight: 84 lb/1,000 sq ft (41 kg/100 sq m), when tested in accordance with ASTM D 3776.
 3. Puncture Propagation Tear: 42 lb (178 N), when tested in accordance with ASTM D 2582.
 4. Permeance (Perm): 0.000 grains/hr-sq ft-in Hg (0.000 ng/(Pa-s-sq m)), when tested in accordance with ASTM E 96.
 5. Drop Dart: 1750 g, when tested in accordance with ASTM D 1709.
 6. Tensile Strength: 105 lb/2,200 psi (467 N/15.16 MPa), when tested in

- accordance with ASTM D 882, 3 inch (76 mm) wide specimen.
7. Puncture Strength: 45 lb (200 N) , when tested in accordance with ASTM D 4833.
 8. Usable Temperature Range: Minus 40 to 170 degrees F (minus 40 to 77 degrees C).
 9. Application(s):
 - a. Use on roof decks under insulation.
 - b. Use on exterior walls on inside face of framing.
 - c. Use under concrete slabs, over aggregate fill.
- F. Reinforced Vapor Retarder: Griffolyn Type-105; complying with ASTM E 1745 Class A.
1. Material: 7-ply laminate, combining four layers of high-density polyethylene and three high-strength non-woven cord grids.
 2. Weight: 91 lb/1,000 sq ft (44.4kg/100 sq m), when tested in accordance with ASTM D 3776.
 3. Puncture Propagation Tear: 55 lb (245 N), when tested in accordance with ASTM D 2582.
 4. Permeance (Perm): 0.019 grains/hr-sq ft-in Hg (1.207 ng/(Pa-s-sq m)) when tested in accordance with ASTM E 96.
 5. Drop Dart: 2,300 g, when tested in accordance with ASTM D 1709.
 6. Tensile Strength: 275 lb/5,464 psi (1,223 N/37.7 MPa), when tested in accordance with ASTM D 882, 3 inch (76 mm) wide specimen.
 7. Puncture Strength: 79 lb (350 N), when tested in accordance with ASTM D 4833.
 8. Usable Temperature Range: Minus 45 to 170 degrees F (minus 42 to 77 degrees C).
 9. Application(s):
 - a. Use on roof decks under insulation.
 - b. Use on exterior walls on inside face of framing.
 - c. Use under concrete slabs, over aggregate fill.
 - d. Use under concrete slabs, under aggregate fill.
- G. Reinforced Vapor Retarder: Griffolyn Type-85; complying with ASTM E 1745 Class B.
1. Material: 5-ply laminate, combining three layers of high-density polyethylene and two high-strength non-woven cord grids.
 2. Weight: 70 lb/1,000 sq ft (34.2 kg/100 sq m), when tested in accordance with ASTM D 3776.
 3. Puncture Propagation Tear: 55 lb (245 N), when tested in accordance with ASTM D 2582.
 4. Permeance (Perm): 0.027 grains/hr-sq ft-in Hg (1.551 ng/(Pa-s-sq m)), when tested in accordance with ASTM E 96.
 5. Drop Dart: 1,900 g, when tested in accordance with ASTM D 1709.
 6. Tensile Strength: 225 lb/3,846 psi (1000 N/26.6 MPa), when tested in accordance with ASTM D 882, 3 inch (76 mm) wide specimen.
 7. Puncture Strength: 50 lb (222 N), when tested in accordance with ASTM D 4833.
 8. Usable Temperature Range: Minus 40 to 170 degrees F (minus 40 to 77 degrees C).
 9. Application(s):
 - a. Use on roof decks under insulation.
 - b. Use on exterior walls on inside face of framing.
 - c. Use under concrete slabs, over aggregate fill.
 - d. Use under concrete slabs, under aggregate fill.

- H. Reinforced Vapor Retarder: Griffolyn Type-65; complying with ASTM E 1745 Class C.
1. Material: 3-ply laminate, combining two layers of high-density polyethylene and one high-strength non-woven cord grid.
 2. Weight: 40 lb/1,000 sq ft (19.5 kg/100 sq m, when tested in accordance with ASTM D 3776.
 3. Puncture Propagation Tear: 30 lb (133 N), when tested in accordance with ASTM D 2582.
 4. Permeance (Perm): 0.038 grains/hr-sq ft-in Hg (2.18 ng/(Pa-s-sq m)), when tested in accordance with ASTM E 96.
 5. Drop Dart: 475 g, when tested in accordance with ASTM D 1709.
 6. Tensile Strength: 100 lb/4560 psi (444 N/31.5 MPa), when tested in accordance with ASTM D 882, 3 inch (76 mm) long test specimen.
 7. Puncture Strength: 35 lb (155 N), when tested in accordance with ASTM D 4833.
 8. Usable Temperature Range: Minus 25 to 170 degrees F (minus 32 to 77 degrees C).
 9. Application(s):
 - a. Use on roof decks under insulation.
 - b. Use on exterior walls on inside face of framing.
 - c. Use under concrete slabs, over aggregate fill.
 - d. Use under concrete slabs, under aggregate fill.
- I. Vapor Retarder: Griffolyn 10 Mil Green; complying with ASTM E 1745 Class A.
1. Material: Extruded polyethylene film
 2. Weight: 49 lbs/1,000 sq ft (23.9 kg/100 sq m), when tested in accordance with ASTM D 3776.
 3. Puncture Propagation Tear: 34 lb (150 N), when tested in accordance with ASTM D 2582.
 4. Permeance (Perm): 0.027 grains/hr-sq ft-in Hg (1.549 ng/(Pa-s-sq m)), when tested in accordance with ASTM E 96.
 5. Drop Dart: 2270 g, when tested in accordance with ASTM D 1709.
 6. Tensile Strength (1" Tensile) : 44 lb/4400 psi (195 N/30.3 MPa), when tested in accordance with ASTM D 882, .
 7. Puncture Strength: 24 lb (107 N), when tested in accordance with ASTM D 4833.
 8. Usable Temperature Range: Minus 25 to 170 degrees F (minus 32 to 77 degrees C).
 9. Application(s):
 - a. Use on roof decks under insulation.
 - b. Use on exterior walls on inside face of framing.
 - c. Use under concrete slabs, over aggregate fill.
 - d. Use under concrete slabs, under aggregate fill.
- J. Vapor Retarder: Griffolyn 15 Mil Green; complying with ASTM E 1745 Class A.
1. Material: Extruded polyethylene Film
 2. Weight: 73 lb/1,000 sq ft (35.6 kg/100 sq m, when tested in accordance with ASTM D 3776.
 3. Puncture Propagation Tear: 46 lb (204 N), when tested in accordance with ASTM D 2582.
 4. Permeance (Perm): 0.018 grains/hr-sq ft-in Hg (1.032 ng/(Pa-s-sq m)), when tested in accordance with ASTM E 96.
 5. Drop Dart: 3150 g, when tested in accordance with ASTM D 1709.
 6. Tensile Strength (1" Tensile): 72 lb/4800 psi (320 N/33.100 MPa), when tested in accordance with ASTM D 882.
 7. Puncture Strength: 24 lb (107 N), when tested in accordance with ASTM D

- 4833.
8. Usable Temperature Range: Minus 25 to 170 degrees F (minus 32 to 77 degrees C).
 9. Application(s):
 - a. Use on roof decks under insulation.
 - b. Use on exterior walls on inside face of framing.
 - c. Use under concrete slabs, over aggregate fill.
 - d. Use under concrete slabs, under aggregate fill.

2.3 ACCESSORIES

- A. General: Ensure accessories are from same manufacturer as reinforced vapor retarders.
- B. Mastic Tape: Griffolyn Fab Tape. RI Part Number: 60-0002.
 1. Description: Black, double-sided, asphaltic, pressure-sensitive, mastic tape.
 2. Weight: 3.75 pounds per 100 feet (1.7 kg per 30 m).
 3. Thickness: 35 mils (0.9 mm).
 4. 3 Inch Seam Shear: 35 pounds (156N).
- C. Self-Adhesive Repair Tape: Griffolyn Sealant Tape RI Part Number: 60-0153.
 1. Description: Reinforced white backing with Gray Adhesive.
 2. Weight: 3.0 lbs for 4 inch x 50 foot roll.
 3. Thickness: 26 mils (0.65 mm).
 4. 3 inch Seam Shear: 30 lbs (134 N)
- D. Fire Retardant Self-Adhesive Tape: Griff Tape FR RI Part Number 60-0151.
 1. Description: White backed adhesive tape.
 2. Weight: 3.75 lbs per roll, 4 inches x 180 feet long.
 3. Thickness: 5 mils(0.125 mm).
 4. Adhesion to Steel: 66 oz/in (18 N/in).
- E. Pipe Boots: Griffolyn pipe boots, factory-fabricated.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine surfaces and areas to receive reinforced vapor retarders. Notify Architect in writing of defects of work and other unsatisfactory site conditions that would cause defective installation of vapor retarders. Do not begin installation until unacceptable conditions have been corrected.
- B. Verify site dimensions.
- C. Commencement of work will imply acceptance of substrate.

3.2 INSTALLATION

- A. Install reinforced vapor retarders in accordance with manufacturer's instructions.
- B. Install reinforced vapor retarders in accordance with manufacturer's instructions and ASTM E 1643 at concrete slabs.
- C. Install vapor retarders continuously at locations as indicated on the drawings. Ensure there are no discontinuities in vapor retarder at seams and penetrations.
- D. Install vapor retarders in largest practical widths.

- E. Ensure surface beneath vapor retarder is smooth with no sharp projections.
- F. Join sections of vapor retarder and seal penetrations in vapor retarder with mastic tape. Ensure vapor retarder surfaces to receive mastic tape are clean and dry.
- G. Immediately repair holes in vapor retarder with self-adhesive repair tape.
- H. Seal around pipes and other penetrations in vapor retarder with pipe boots in accordance with manufacturer's instructions.

3.3 PROTECTION

- A. Protect reinforced vapor retarders from damage until covered by roof insulation.
- B. Protect reinforced vapor retarders from damage until covered by wall finish.
- C. Protect reinforced vapor retarders from damage during installation of reinforcing steel and utilities and during placement of granular materials or concrete slab.
- D. Immediately repair damaged vapor retarder in accordance with manufacturer's instructions.

END OF SECTION