DREXEL DEFEND-R VENT

SECTION 07 22 00

VENTILATED NAILBASE INSULATION PANELS

APRIL 2025

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Section includes ventilated nailbase insulation panel system.

1.2 RELATED SECTIONS

A. Section 05300 - Steel Deck.

B. Section 06110 - Wood Framing: Structural deck sheathing, and field fabricated curbs.

C. Section 06150 - Plywood Decking.

D. Section 07260 - Vapor Retarders.

E. Section 07310 - Roof Shingles.

F. Section 07320 - Roof Tiles.

1.3 REFERENCES

A. ASTM C 209 – Methods of Testing Insulating Board, Structural and Decorative.

B. ASTM C 1289 – Specifications for Faced Rigid Cellular Polyisocyanurate Thermal Insulating Board.

C. ASTM D 1621 – Test Methods for Compressive Properties of Rigid Cellular Plastics.

D. ASTM D 2126 - Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging.

E. ASTM E 84 – Surface Burning Characteristics of Building Materials.

F. ASTM E 96 - Test Method for Water Vapor Transmission of Materials.

G. UL 1256 - Fire Test of Roof Deck Constructions.

H. PS2-92 - Performance Standard for Wood-based Structural-use Panels.

1.4 SYSTEM DESCRIPTION

A. Physical properties (Foam Core):
   1. Manufactured using 3rd Generation Zero ODP, EPA Compliant Blowing Agent; Contains zero CFCs, HCFCs, or HFCs; Virtually no Global Warming Potential (GWP)
   2. Compressive Strength: ASTM D 1621 and ASTM C 1289, Type II, Class 1, 20 psi (138 kPa) minimum
   3. Dimensional Stability: ASTM D 2126, 2 percent linear change (7 days).
   4. Moisture Vapor Transmission: ASTM E 96, < 1 perm ((57.5ng/(Pa•s•m2)).
   5. Water Absorption: ASTM C 209, < 1 percent by volume.
   6. Service Temperature: Minus 100 degrees to 250 degrees F (minus 73 degrees C to 122 degrees C).
   7. Foam core flame spread index of 75 or less and smoke developed of 450 or less when tested in accordance with ASTM E 84.

B. Foam Core R Values: Based on LTTR (Long Term Thermal Resistance) in accordance with ASTM C 1289.

C. UL Assemblies: Insulated steel deck assemblies - UL 1256 (nos. 120, 123) TGDY. R20624 Shingle Deck Accessory; Drexel Defend-R Vent roof insulation is classified for use with any Class A, B, or C asphalt glass mat or asphalt organic shingles, standing seam metal or tile roof coverings.

1.5 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on nailbase insulation panels and fasteners to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

C. LEED Submittals: Provide documentation of how the requirements of Credit will be met:
   1. List of proposed materials with recycled content. Indicate post-consumer recycled content and pre-consumer recycled content for each product having recycled content.
   2. Manufacturer-Specific Environmental Product Declaration which conforms to ISO 14025

D. Verification Samples: For each finish product specified, two samples, representing actual product.
   1. Submit 6 by 6 inch (152 mm by 152 mm) samples of each board type required.
   2. Submit samples of each fastener type required.

E. Manufacturer's Certificate: Certify ventilated nailbase insulation panels will conform to specified performance requirements.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer shall be a company that regularly manufactures polyisocyanurate insulation panels and fully assembles ventilated nailbase insulation in-house with no outside fabrication.

B. Manufacturer shall have multiple manufacturing facilities to ensure consistency of product supply.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Good construction practice dictates that all insulations should be protected from moisture and direct sunlight during job-site storage. Pallets of Drexel Metals Drexel Defend-R Vent are protected by a 2-step packaging process using **shrink wrap and a UV resistant polyethylene bag**. This moisture resistant package is designed for protection from the elements during flatbed shipment from our facilities to the job-site.

B. Store products in accordance with the manufacturer recommendations.

C. Store product on a solid flat foundation and elevate a minimum of 2” above the finished surface.

D. Slit the bundle packaging vertically down the center of the two short sides and cover with a waterproof tarpaulin

E. Protect insulation from open flame and keep dry at all times.

1.8 PROJECT CONDITIONS

A. Install only as much insulation as can be covered the same day by a completed roof covering material.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: Drexel Defend-R Vent produced by Drexel Metals, 1234 Gardiner Lane, Louisville, KY 40213. Phone: (888) 321-9630. Fax: (502) 690-6174. E-mail: info@drexelmetals.com. Web: www.drexelmetals.com.

B. Substitutions: Not permitted.

C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 PANEL CONSTRUCTION

A. Panels shall consist of a top layer of APA/TECO rated Oriented Strand Board (OSB) or 5-ply CDX plywood, a middle layer of vented air space consisting of 1 inch (25.4 mm) thick wood spacers and a bottom layer of fiber-reinforced facers (GRF) polyisocyanurate foam insulation.
   1. Polyisocyanurate foam insulation shall conform to ASTM C 1289, Type II, Class 1.
   2. Compressive Strength: 20 pounds per square inch (138 kPa) Grade 2.
   3. Multiple top layer substrate shall conform to PS2 and shall be as follows:
      a. OSB:
         1) Type:

(a) Standard sheathing grade.

2) Thickness:

(a) 7/16 inch (11.1 mm).

(b) 5/8 inch (15.9 mm).

b. 5-ply CDX Plywood:

1) Type:

(a) Standard sheathing grade.

(b) Fire-treated sheathing grade.

2) Thickness:

(a) 5/8 inch (15.9 mm).

(b) 3/4 inch (19.1 mm).

B. Vented airspace shall be a minimum of 1 inch (25 mm) in depth and provide not less than 92 percent overall free air movement through the panel. It shall have 55 percent or greater lateral free air movement. Panels shall be manufactured to provide cross directional ventilation without additional material being incorporated into the construction. Provide an airspace of:

1. 1.5 inch (38 mm) air space.
2. 2 inch (51 mm) air space.

C. Panel with wood nailable surface as specified shall be factory rabbetted 1/8 inch (3.2 mm) on all sides to prove for expansion of substrate.

2.3 PANEL TYPES

A. Drexel Defend-R Vent Panels: 4 feet by 8 feet (1220 mm by 2440 mm) with top layer surface of 7/16 inch (11 mm) OSB, and a vented air space consisting of 1 inch (25.4 mm). Panels shall have an overall thickness, R-value, and flute spanability as follows:

1. Thickness 2.5 inches (64 mm), R Value 5.7, flute spanability 2-5/8 inches (67 mm).
2. Thickness 3.0 inches (76 mm), R Value 8.6, flute spanability 4-3/8 inches (111.13 mm).
3. Thickness 3.5 inches (89 mm), R Value 11.4, flute spanability 4-3/8 inches (111.13 mm).
4. Thickness 4.0 inches (102 mm), R Value 14.4, flute spanability 4-3/8 inches (111.13 mm).
5. Thickness 4.1 inches (102 mm), R Value 15.0, flute spanability 4-3/8 inches (111.13 mm).
6. Thickness 4.5 inches (114 mm), R Value 17.4, flute spanability 4-3/8 inches (111.13 mm).
7. Thickness 5.0 inches (127 mm), R Value 20.5 flute spanability 4-3/8 inches (111.13 mm).

B. Drexel Defend-R Vent Panels: 4 feet by 8 feet (1220 mm by 2440 mm) with multiple top layer surface of 5/8 inch (15.9 mm) OSB or 5-ply CDX plywood and a vented airspace of 1 inch (25 mm). Panel shall have an overall thickness, R-value, and flute spanability as follows:

1. Thickness 2.6 inches (66 mm), R Value 5.7, flute spanability 2-5/8 inches (67 mm).
2. Thickness 3.1 inches (79 mm), R Value 8.6, flute spanability 4-3/8 inches (111.13 mm).
3. Thickness 3.6 inches (91 mm), R Value 11.4, flute spanability 4-3/8 inches (111.13 mm).
4. Thickness 4.1 inches (104 mm), R Value 14.4, flute spanability 4-3/8 inches (111.13
5. mm).
6. Thickness 4.2 inches (107 mm), R Value 15.0, flute spanability 4-3/8 inches (111.13 mm).

7. Thickness 4.6 inches (118 mm), R Value 17.4, flute spanability 4-3/8 inches (111.13 mm).
8. Thickness 5.1 inches (130 mm), R Value 20.5, flute spanability 4-3/8 inches (111.13 mm).

C. Drexel Defend-R Vent Panels: 4 feet by 8 feet (1220 mm by 2440 mm) with top layer surface of 3/4 inch (19 mm) 5-ply CDX plywood and a vented airspace of 1 inch (25 mm). Panel shall have an overall thickness, R-value, and flute spanability as follows:
1. Thickness 2.7 inches (69 mm), R Value 5.7, flute spanability 2-5/8 inches (67 mm).
2. Thickness 3.2 inches (81 mm), R Value 8.6, flute spanability 4-3/8 inches (111.13 mm).
3. Thickness 3.7 inches (94 mm), R Value 11.4, flute spanability 4-3/8 inches (111.13 mm).
4. Thickness 4.2 inches (107 mm), R Value 14.4, flute spanability 4-3/8 inches (111.13 mm).
5. Thickness 4.3 inches (109 mm), R Value 15.0, flute spanability 4-3/8 inches (111.13 mm).
6. Thickness 4.7 inches (119 mm), R Value 17.4, flute spanability 4-3/8 inches (111.13 mm).
7. Thickness 5.2 inches (132 mm), R Value 20.5, flute spanability 4-3/8 inches (111.13 mm).

D. Drexel Defend-R Vent Panels: 4 feet by 8 feet (1220 mm by 2440 mm) with top layer surface of 7/16 inch (11.1 mm) OSB and a vented airspace of 1.5 inches (38 mm). Panel shall have an overall thickness, R-value, and flute spanability as follows:
1. Thickness 3.0 inches (76 mm), R Value 5.7, flute spanability 2-5/8 inches (67 mm).
2. Thickness 3.5 inches (89 mm), R Value 8.6, flute spanability 4-3/8 inches (111.13 mm).
3. Thickness 4.0 inches (102 mm), R Value 11.4, flute spanability 4-3/8 inches (111.13 mm).
4. Thickness 4.5 inches (114 mm), R Value 14.4, flute spanability 4-3/8 inches (111.13 mm).
5. Thickness 4.6 inches (117 mm), R Value 15.0, flute spanability 4-3/8 inches (111.13 mm).
6. Thickness 5.0 inches (127 mm), R Value 17.4, flute spanability 4-3/8 inches (111.13 mm).
7. Thickness 5.5 inches (140 mm), R Value 20.5, flute spanability 4-3/8 inches (111.13 mm).

E. Drexel Defend-R Vent Panels: 4 feet by 8 feet (1220 mm by 2440 mm) with multiple top layer surface of 5/8 inch (15.9 mm) OSB or 5-ply CDX plywood and a vented airspace of 1.5 inches (38 mm). Panel shall have an overall thickness, R-value, and flute spanability as follows:
1. Thickness 3.1 inches (79 mm), R Value 5.7, flute spanability 2-5/8 inches (67 mm).
2. Thickness 3.6 inches (91 mm), R Value 8.6, flute spanability 4-3/8 inches (111.13 mm).
3. Thickness 4.1 inches (104 mm), R Value 11.4, flute spanability 4-3/8 inches (111.13 mm).
4. Thickness 4.6 inches (117 mm), R Value 14.4, flute spanability 4-3/8 inches (111.13 mm).
5. Thickness 4.7 inches (119 mm), R Value 15.0, flute spanability 4-3/8 inches (111.13 mm).
6. Thickness 5.1 inches (130 mm), R Value 17.4, flute spanability 4-3/8 inches (111.13 mm).
7. Thickness 5.6 inches (142 mm), R Value 20.5, flute spanability 4-3/8 inches (111.13 mm).

F. Drexel Defend-R Vent Panels: 4 feet by 8 feet (1220 mm by 2440 mm) with top layer surface of 3/4 inch (19.1 mm) 5-ply CDX plywood and a vented airspace of 1.5 inches (38 mm). Panel shall have an overall thickness, R-value, and flute spanability as follows:
   1. Thickness 3.2 inches (81 mm), R Value 5.7, flute spanability 2-5/8 inches (67 mm).
   2. Thickness 3.7 inches (94 mm), R Value 8.6, flute spanability 4-3/8 inches (111.13 mm).
   3. Thickness 4.2 inches (107 mm), R Value 11.4, flute spanability 4-3/8 inches (111.13 mm).
   4. Thickness 4.7 inches (119 mm), R Value 14.4, flute spanability 4-3/8 inches (111.13 mm).
   5. Thickness 4.8 inches (122 mm), R Value 15.0, flute spanability 4-3/8 inches (111.13 mm).
   6. Thickness 5.2 inches (132 mm), R Value 17.4, flute spanability 4-3/8 inches (111.13 mm).
   7. Thickness 5.7 inches (145 mm), R Value 20.5, flute spanability 4-3/8 inches (111.13 mm).

G. Drexel Defend-R Vent Panels: 4 feet by 8 feet (1220 mm by 2440 mm) with top layer surface of 7/16 inch (11.1 mm) OSB and a vented airspace of 2 inches (51 mm). Panel shall have an overall thickness, R-value, and flute spanability as follows:
   1. Thickness 3.5 inches (89 mm), R Value 5.7, flute spanability 2-5/8 inches (67 mm).
   2. Thickness 4.0 inches (102 mm), R Value 8.6, flute spanability 4-3/8 inches (111.13 mm).
   3. Thickness 4.5 inches (114 mm), R Value 11.4, flute spanability 4-3/8 inches (111.13 mm).
   4. Thickness 5.0 inches (127 mm), R Value 14.4, flute spanability 4-3/8 inches (111.13 mm).
   5. Thickness 5.5 inches (140 mm), R Value 17.4, flute spanability 4-3/8 inches (111.13 mm).
   6. Thickness 6.0 inches (152 mm), R Value 20.5, flute spanability 4-3/8 inches (111.13 mm).

H. Drexel Defend-R Vent Panels: 4 feet by 8 feet (1220 mm by 2440 mm) with multiple top layer surface of 5/8 inch (15.9 mm) OSB or 5-ply CDX plywood and a vented airspace of 2 inches (51 mm). Panel shall have an overall thickness, R-value, and flute spanability as follows:
   1. Thickness 3.6 inches (91 mm), R Value 5.7, flute spanability 2-5/8 inches (67 mm).
   2. Thickness 4.1 inches (104 mm), R Value 8.6, flute spanability 4-3/8 inches (111.13 mm).
   3. Thickness 4.6 inches (117 mm), R Value 11.4, flute spanability 4-3/8 inches (111.13 mm).
   4. Thickness 5.1 inches (130 mm), R Value 14.4, flute spanability 4-3/8 inches (111.13 mm).
   5. Thickness 5.2 inches (132 mm), R Value 15.0, flute spanability 4-3/8 inches (111.13 mm).
   6. Thickness 5.6 inches (142 mm), R Value 17.4, flute spanability 4-3/8 inches (111.13 mm).
   7. Thickness 6.1 inches (155 mm), R Value 20.5, flute spanability 4-3/8 inches (111.13 mm).

I. Drexel Defend-R Vent Panels: 4 feet by 8 feet (1220 mm by 2440 mm) with top layer surface of 3/4 inch (19.1 mm) 5-ply CDX plywood and a vented airspace of 2 inches (51 mm). Panel shall have an overall thickness, R-value, and flute spanability as follows:
   1. Thickness 3.7 inches (94 mm), R Value 5.7, flute spanability 2-5/8 inches (67 mm).

2. Thickness 4.2 inches (107 mm), R Value 8.6, flute spanability 4-3/8 inches (111.13 mm).
3. Thickness 4.7 inches (119 mm), R Value 11.4, flute spanability 4-3/8 inches (111.13 mm).
4. Thickness 5.2 inches (132 mm), R Value 14.4, flute spanability 4-3/8 inches (111.13 mm).
5. Thickness 5.3 inches (135 mm), R Value 15.0, flute spanability 4-3/8 inches (111.13 mm).
6. Thickness 5.7 inches (144 mm), R Value 17.4, flute spanability 4-3/8 inches (111.13 mm).
7. Thickness 6.2 inches (157 mm), R Value 20.5, flute spanability 4-3/8 inches (111.13 mm).

2.4 PANEL FASTENERS

A. Fasteners shall be FM Approved SIP/SD Panel Fasteners for **steel deck** application. Fasteners have a 3/16 inch (5 mm) shank, and are corrosion resistant with oversized heads. Length of fasteners shall be as recommended by Drexel Metals. Use of 2 inch (51 mm) round plates are not required.
   1. Penetration of fastener into bottom flute is not acceptable.

B. Fasteners shall be FM Approved SIP/WD Panel fasteners for **wood deck** application. Fasteners have a 3/16 inch (5 mm) shank, and are corrosion resistant with oversized heads. Length of fasteners shall be as recommended by Drexel Metals. Use of 2 inch (51 mm) round plates are not required.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until structural deck has been properly prepared.

B. Verify deck, adjacent materials, and structural backing is dry and ready to receive insulation.

C. Verify deck surface is flat, free of fins or protrusions and irregularities.

D. If deck preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Apply vapor barrier and or retarder, as specified by the Architect or required by the local building code, to decking prior to the installation.

B. Apply proper ridge and soffit vents to create an effective eave to ridge venting system in conjunction with Drexel Defend-R Vent.

3.3 INSTALLATION

A. Install panels with the wood (OSB/Plywood) side face up. Place panels in the manufacturers recommended pattern. Only factory assembled panels will be accepted. Fasten panels through the top nailable surface and also through the wood block panel spacers using Drexel Metals approved threaded fasteners.

B. For multiple layered installations, install the base layer of panels loose-laid, and stagger the joints of subsequent layers in accordance with good roofing practice.

3.4 PROTECTION

A. Protect installed products until completion of project.

B. Cover the top and edges of unfinished roof panel work to protect it from the weather and to prevent accumulation of water in the cores of the panels.

C. Do not leave panels exposed to moisture. Wet panels shall be removed or allowed to completely dry prior to application of vapor barrier and/or roof covering.

D. Apply only enough insulation panels per day that can be covered the same day by a completed roof covering material.

END OF SECTION