

# DELTA®-VENT S – Vapor Permeable (Breathable) Roof Underlayment

## *Division 7 – Thermal and Moisture Protection*

### PART 1 – GENERAL

#### 1.1 SUMMARY

- A. This Section provides information regarding vapor permeable roof underlayment for the exterior roof.
- B. Related Sections include the following:
  - 1. Division 6, Section “Rough Carpentry” for exterior sheathing.
  - 2. Division 7, Section “Clay Tile” for roof assembly.
  - 3. Division 7, Section “Slate Tile” of roof assembly.
  - 4. Division 7, Section “Concrete Tile” for roof assembly.
  - 5. Division 7, Section “Wood Shakes and Shingles” for roof assembly.
  - 6. Division 7, Section “Metal Roofing” for roof assembly.

#### 1.2 REFERENCES

- A. AATCC Test Method 42-2000 – Water Resistance (Impact Penetration Test).
- B. CAN/CGSB-4.2 No 26.3 – Resistance to water penetration.
- C. ASTM E96 – Water Vapor Transmission of Materials.

#### 1.3 SUBMITTALS

- A. Product Data: Include manufacturer’s written instructions, technical data, and tested physical and performance properties of vapor permeable underlayment.
- B. Shop Drawings: Provide 1-1/2” scale drawings (or larger) showing relationship of underlayment to:
  - 1. Framing or blocking member
  - 2. Batten boards
  - 3. Metal decking
  - 4. Thermal insulation
  - 5. Sheathing
  - 6. All roofing, fascia and gable end conditions
  - 7. Roof or attic ventilation penetrations
  - 8. Roof curbs
  - 9. Pipe, conduit and duct penetrations
- C. Samples:
  - 1. 3” x 5” (76.2 mm x 126 mm) sample of vapor permeable underlayment membrane
  - 2. Single sided sealing tape, compatible to underlayment
  - 3. Rubberized (permanently elastic) caulking adhesive, compatible to underlayment
  - 4. Provide materials and fasteners for mock-up as specified in Section \_\_\_\_\_

- D. Manufacturer's Instructions: Provide manufacturer's instructions showing the recommended procedures and sequences of installation of vapor permeable underlayment.

#### 1.4 QUALITY ASSURANCE

- A. Underlayment manufacturer shall have an on-going quality control program with inspections by a nationally recognized independent organization. DELTA<sup>®</sup>-VENT S is listed with Quality Auditing Institute ([www.qai.org](http://www.qai.org)).
- B. Source Limitations: Obtain all vapor permeable underlayment through one source from a single manufacturer.
- C. Pre-installation meeting: Conduct meeting at project site to comply with requirements in Division 1, Section "Project Management and Coordination." Review requirements for underlayment, including surface preparation specified under other sections, substrate condition and pre-treatment, forecasted weather conditions, special details and flashings, installation procedures, testing and inspection procedures, protection, and repairs.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to project site in original containers with seals unbroken, wrapped in a polyethylene sleeve, labelled with manufacturer's name, and product brand name.
- B. Store rolls under cover, on a clean, level surface, either flat or upright

### PART 2 – PRODUCTS

#### 2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide one of the following products:
  - 1. Spun Bonded Polypropylene with embedded breathable film: Underlayment shall be furnished in standard rolls of 1.5m wide by 50m long.
    - a. DELTA<sup>®</sup>-VENT S, distributed by Cosella-Dörken Products, Inc.  
Phone: +1 (888) 433-5824 - [www.deltavents.com](http://www.deltavents.com)
    - b. Others as may be approved by Addendum.  
*Note: The Architect is not aware of any other material that has the water penetration resistance and high vapor permeability of the specified product.*

#### 2.2 UNDERLAYMENT PHYSICAL PROPERTIES

- A. Three layer synthetic underlayment consisting of polypropylene spun fiber non-woven inner and outer layers and a polypropylene film center layer
- B. Weight: 2.9 lbs / 100 ft<sup>2</sup> (140g / m<sup>2</sup>)
- C. Water Penetration Resistance: CAN/CGSB-4.2 NO 26.3: 252" (642 cm)
- D. Water Vapor Transmission: ASTM E96, Proc. B: 120 grains/h/ft<sup>2</sup>/in Hg (perms)
- E. Water Impact Penetration Resistance: AATCC 42-2000: 0 g (pass)
- F. Flame Spread: ASTM E84-09: 25 (NFPA Class A)
- G. Smoke Developed: ASTM E84-09: 105

#### 2.3 BUILDING CODE APPROVAL

- A. ICC–ES AC188, Acceptance Criteria for Roof Underlayment
- B. ICC-ES AC 48, Acceptance Criteria for Use in Severe Climate Areas

C. CSA 220.1-06 Installation of Concrete Roof Tiles

2.4 AUXILIARY MATERIALS

- A. Single-Sided Tape:
  - a. DELTA<sup>®</sup>-MULTI-BAND, to seal DELTA<sup>®</sup>-VENT S at overlaps, penetrations, and to repair tear damage; distributed by Cosella-Dörken Products, Inc.
  - b. DELTA<sup>®</sup>-FLEXX-BAND, to seal DELTA<sup>®</sup>-VENT S at inner and outer connections to structural details or penetration, and to repair tear damage; distributed by Cosella-Dörken Products, Inc.
- B. Rubberized Caulking Adhesive (permanently elastic):
  - a. DELTA<sup>®</sup>-THAN, to seal DELTA<sup>®</sup>-VENT S at overlaps; distributed by Cosella-Dörken Products, Inc.
- C. Fasteners:
  - a. Roofing nails minimum 1" long, with plastic or metal cap (1" diameter).
- D. Flashing:
  - a. DELTA<sup>®</sup>-MULTI-BAND and DELTA<sup>®</sup>-FLEXX-BAND can be used as flashing to ensure a water-tight seal until roofing and counter-flashing is completed.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with installer present, for compliance with requirements and other conditions affecting performance.

3.2 SURFACE PREPARATION

- A. Clean and prepare substrate according to manufacturer's written recommendations. Provide clean and solid substrate for vapor permeable underlayment application.

3.3 PENETRATIONS

- A. Pipes and conduits:
  - 1. Install manufactured penetration sleeves sized for the penetration and install as recommended by the manufacturer.
  - 2. Unroll DELTA<sup>®</sup>-VENT S membrane next to penetration and fold membrane back on itself. Mark and cut out penetration size out of membrane. Ensure cut out section is slightly smaller than diameter of penetration. Slide membrane over penetration.
  - 3. Wrap DELTA<sup>®</sup>-MULTI-BAND or DELTA<sup>®</sup>-FLEXX-BAND around penetration. Ensure that 2" extend onto the membrane, as well as on to the penetrating subject.
- B. Large, curbed roof penetrations:
  - 1. Follow roof manufacturer's and curb manufacturer's approved shop drawings for curb and roof system installation.
  - 2. Unroll and install DELTA<sup>®</sup>-VENT S around curb. Run membrane 6" up on sides of curbs, or to top if less than 6".
  - 3. Using DELTA<sup>®</sup>-MULTI-BAND seal all laps (joints) and corners together (see standard details).

3.4 VAPOR PERMEABLE UNDERLAYMENT APPLICATION

1. DELTA<sup>®</sup>-VENT S is installed on the 'cold' side of the roof assembly, below the Tile, Slate, or Metal roofing material.
2. DELTA<sup>®</sup>-VENT S should be installed label side up, laid such that it forms a continuous membrane over the entire roof area, allowing any water to drain down to the gutters. Avoid blockages that would otherwise obstruct the water flow.
3. DELTA<sup>®</sup>-VENT S should be fully supported to give a clear drainage path.\*
4. Draping between batten boards may result in ponding, and should be avoided. If this is not practical on low slope roofs then the laps must be sealed with DELTA<sup>®</sup>-THAN to prevent leakage.
5. Minimum 1' roofing nails with a minimum 1" plastic or metal cap may be used to fasten DELTA<sup>®</sup>-VENT S; temporary roofing nails may be used along top and bottom edge of underlayment if vertical battens are used over the DELTA<sup>®</sup>-VENT S. Ensure compatibility between fasteners and roofing material.
6. Appropriate precautions should be taken during installation in high winds.
7. At eaves, ensure that DELTA<sup>®</sup>-VENT S is dressed into the gutter.
8. It is recommended to seal all vertical laps with DELTA<sup>®</sup>-MULTI-BAND or DELTA<sup>®</sup>-THAN. The vertical and horizontal lap width should be determined using the chart below.
9. When roof slopes are lower than 10°, we recommend a continuous bead of DELTA<sup>®</sup>-THAN in the laps.
10. In severe climates it is recommended to install a self adhering membrane at the perimeter of the roof as required per IBC (International Building Code).
11. DELTA<sup>®</sup>-VENT S should be laid horizontally across the rafters, starting at the eaves and secured in place.
12. When partially supported between battens, it is good practice to introduce an extra batten 1" above the bottom edge to restrain the lap from opening under wind lift.
13. Air tightness should be considered when assessing the requirement for ventilation above the underlay. A minimum ½" thick counter-batten will allow air movement above the underlay where necessary.

Installation over Roof Deck			
Rafter Pitch		Side Laps (horizontal)	End Laps (vertical)
10°-14°	2:12 to 3:12	6" (15 cm)	8" (20 cm)
> 15°	4:12 and greater	4" (10 cm)	6" (15 cm)

\* For design consideration without a solid roof deck with draping of roof underlayment that may result in ponding, please contact our technical support team for further information. Please call 1-888-4DELTA4 (433-5824).

### 3.5 FIELD QUALITY CONTROL

- A. The owner will engage an independent inspector to observe substrate and installation. The inspector shall provide a written sign-off log on all penetrations before the underlayment is placed against them. The form of the log shall be approved by the Architect before the contract with the inspection service is approved.

### 3.6 PROTECTING AND CLEANING

- A. Protect installed vapor permeable underlayment from damage due to ultraviolet light, harmful weather exposures, physical abuse, and other causes. Manufacturer suggests a maximum of three (3) months UV exposure.
- B. Repair torn vapor permeable underlayment as follows:

Any rips, tears, or holes in the membrane less than 2" in diameter should be patched with DELTA<sup>®</sup>-MULTI-BAND or DELTA<sup>®</sup>FLEXX-BAND, centered over the tear. Any rips, tears, or holes larger than 2" in diameter should be patched with DELTA<sup>®</sup>-VENT S, cut at least 6" larger in diameter than the tear. Center the patch over the tear, and fasten with DELTA<sup>®</sup>-THAN.

- C. Remove mud and similar marks with a water scrub. If chemicals have been spilled on underlayment, treat as a tear and repair as stated above.

END OF SECTION