# Table of Contents:

2  Cool-Vent Product Information  
4  Plan View / Block Illustration Cool-Vent Insulation  
5  Block Markings  
6  Fastening Pattern For 7:12 Slope  
7  Fastening Pattern For 8:12 Slope  
8  Horizontal Steel Deck Application  
9  Vertical Steel Deck Application  
10 Suggested layout for Two-Layer System Cool-Vent over flat polyiso  
11 Fastener Info - SIP WD - Plywood Deck Fastener  
12 Fastener Info - SIP SD - Steel Deck Fastener  
13 Fastener Info - SIP HD - Steel Deck Fastener  
14 Rabbeted Edge Detail  
15 Getting Started  
16 Isometric View with Vapor Retarder  
17 Eave Edge Detail  
18 Rake Edge Detail  
19 Hip and Valley Cutting  
20 Hip and Valley Detail for Cool-Vent  
21 Ridge Detail with Steel Deck  
22 Eaves Detail / (Typ.) Steel Deck  
23 Ridge Detail w/ Tongue & Groove Deck  
24 Eaves Venting Detail / Tongue & Groove Deck  
25 Roof / Wall Detail  
26 Fascia Vent Detail  
27 Cool-Vent Design Criteria  
**Back**  
**Warnings and Limitations**  
**Warranty**
Cool-Vent is a venting composite insulation board that consists of a 4’x8’ panel of closed cell rigid polyisocyanurate, a middle layer of solid wood spacers, creating a standard 1” air space and a top layer of APA/TECO rated OSB or plywood. Cool-Vent is the environmentally intelligent choice for steep slope roofing applications and is viable in green and sustainable building designs.

**FEATURES AND BENEFITS**
- Manufactured with NexGen Chemistry: Contains no CFCs, HCFCs, HFCs, is Zero ODP, EPA Compliant and has virtually no GWP
- 75% lateral air movement
- Optimal cooling and ventilation through 92% open air space
- The edges of the wood panels are rabbeted to provide for expansion and contraction of the wood while allowing the foam edges to be installed tightly to achieve thermal integrity across the entire roof deck
- Wood spacers less than 12” apart; minimizes deflection
- Design flexibility: 1.5” and 2” wood spacers available for increased air flow (when eave ridge distance is over 20 feet)
- Exceeds requirements of ARMA Tech Bulletin 211-RR-24 regarding minimum depth of air space

**PRODUCT DESCRIPTION**

**COOL-VENT THERMAL VALUES**

<table>
<thead>
<tr>
<th>THICKNESS† (INCHES)</th>
<th>MINIMUM R-VALUE*</th>
<th>FLUTE SPANABILITY</th>
</tr>
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<tbody>
<tr>
<td>2.5&quot;</td>
<td>64</td>
<td>5.7</td>
</tr>
<tr>
<td>3.0&quot;</td>
<td>76</td>
<td>8.6</td>
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<tr>
<td>3.5&quot;</td>
<td>89</td>
<td>11.4</td>
</tr>
<tr>
<td>4.0&quot;</td>
<td>102</td>
<td>14.4</td>
</tr>
<tr>
<td>4.1&quot;</td>
<td>104</td>
<td>15.0</td>
</tr>
<tr>
<td>4.5&quot;</td>
<td>114</td>
<td>17.4</td>
</tr>
<tr>
<td>5.0&quot;</td>
<td>127</td>
<td>20.5</td>
</tr>
</tbody>
</table>

*Long Term Thermal Resistance Values are based on ASTM C 1289.
†Thickness is calculated with 7/16” OSB and 1” airspace.
For other dimensions contact Hunter Panels.

Cool-Vent is only manufactured in the sizes listed above and on our packaging and weight chart. R-values other than those listed can be achieved by installing a multi layer system consisting of an additional layer of flat polyiso under Cool-Vent.

**COOL-VENT THERMAL VALUES**

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**Codes and Compliances**
- ASTM C 1289 Type II, Class 1 Grade 2 (20 psi) or Grade 3 (25 psi)
- International Building Code (IBC) Chapter 26
- State of Florida Product Approval Number FL 5968
- Miami Dade County Product Control Approved

**Underwriters Laboratories Inc Classifications**
- TGDY. R20624 Shingle Deck Accessory; Cool-Vent roof insulation is classified for use with any Class A, B, or C asphalt organic shingles, metal or tile roof coverings.
- UL 1256
- Insulated Steel Deck Construction Assemblies – No. 120, 123
- UL 790
- UL 263 Hourly Rated P Series Roof Assemblies

**UL Classified for use in Canada**
- Refer to UL Directory of Products Certified for Canada for more details

**Factory Mutual Approvals**
- FM 4450, FM 4470

**LEED Potential Credits for Polyiso Use**
- Energy and Atmosphere
  - Optimize Energy Performance
- Materials & Resources
  - Building Life-Cycle Impact Reduction
  - Environmental Product Declarations
  - Materials Reuse
  - Recycled Content
  - Construction and Demolition Waste Management

**TYPICAL PHYSICAL PROPERTY DATA CHART**

**Codes and Compliances**
- ASTM C 1289 Type II, Class 1 Grade 2 (20 psi) or Grade 3 (25 psi)
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  - Materials Reuse
  - Recycled Content
  - Construction and Demolition Waste Management
TYPICAL PHYSICAL PROPERTY DATA CHART PER ASTM C 1289 – POLYISO FOAM CORE ONLY

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>TEST METHOD</th>
<th>VALUE</th>
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</thead>
<tbody>
<tr>
<td>Compressive Strength</td>
<td>ASTM D 1621</td>
<td>20 psi*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(138kPa, Grade 2)</td>
</tr>
<tr>
<td>Dimensional Stability</td>
<td>ASTM D 2126</td>
<td>2% linear change</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(7 days)</td>
</tr>
<tr>
<td>Moisture Vapor Transmission</td>
<td>ASTM E 96</td>
<td>&lt; 1 perm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(57.5ng/(Pa•s•m²))</td>
</tr>
<tr>
<td>Water Absorption</td>
<td>ASTM C 209</td>
<td>&lt; 1% volume</td>
</tr>
<tr>
<td>Flame Spread**</td>
<td>ASTM E 84</td>
<td>&lt; 75</td>
</tr>
<tr>
<td>Smoke Developed**</td>
<td>ASTM E 84</td>
<td>&lt; 450</td>
</tr>
<tr>
<td>Service Temperature</td>
<td>–</td>
<td>-100° to 250° F</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-73°C to 122°C)</td>
</tr>
</tbody>
</table>

**Also available in 25 psi, Grade 3

**Meets the requirements of the IBC code. For specific Flame Spread or Smoke Developed Ratings - please contact the Hunter Panels Technical Department.

WARNINGS AND LIMITATIONS
Insulation must be protected from open flame and kept dry at all times. Install only as much insulation as can be covered the same day by completed roof covering material. Hunter Panels will not be responsible for specific building and roof design by others, for deficiencies in construction or workmanship, for dangerous conditions on the job site or for improper storage and handling. Technical specifications shown in this literature are intended to be used as general guidelines only and are subject to change without notice. For more information refer to the Storage and Handling Technical Bulletin at www.hunterpanels.com, or refer to PIMA Technical Bulletin No. 109: Storage & Handling Recommendations for Polyiso Roof Insulation at www.polyiso.org.

INSTALLATION
- Install Cool-Vent only over fully supported structural decking
- **Cool-Vent is NOT a structural panel**
- Cool-Vent must be applied perpendicular to the flutes in steel deck applications
- The use of 15# and 30# roofing felt is not recommended under asphalt shingles when using Hunter Panels Cool-Vent product
- Install Cool-Vent on slopes 3:12 or greater

NOTE: When installing Cool-Vent over an acoustical deck, check local codes for fire ratings. The use of a ¾” minimum gypsum fire barrier may be required.

The Use of Synthetic Underlayments
The use of synthetic underlayments is becoming an industry norm (for steep slope application). Hunter Panels strongly suggests the use of a synthetic underlayment under asphalt shingles unless otherwise specified by the shingle manufacturer. Synthetic underlayments provide excellent water resistance and absorb no moisture.

Vapor Retarders
In building construction, vapor retarders are used to inhibit or block the passage of moisture into roofing assemblies. Vapor barriers also serve as air barriers to limit the movement of moisture-laden air from the interior to the exterior. This is especially important during the construction phase when excessive moisture drive is present. To determine whether a vapor retarder is necessary, we recommend that calculations on the building’s interior relative humidity, interior temperature conditions and outside temperature fluctuations during the various seasons be performed prior to the completion of the design. Excessive moisture migration can cause unwanted condensation that will potentially damage the system or infiltrate the occupied space. Hunter Panels strongly suggests the use of a vapor retarder with a perm value of 0.5 or less on all projects except in extreme cooling conditions. Consult a licensed design professional, architect or engineer to establish whether or not a vapor retarder is necessary and to specify its type and location within the assembly. This criteria varies with geographical location and is therefore specific to each project.

Fastening Guidelines
Hunter Panels requires the use of the Hunter Panels SIP SD Panel Fastener for steel deck applications, the SIP WD for plywood deck applications, and SIP HD for heavy duty steel decks. See Fastening Pattern Guide for recommended fastening patterns.
PLAN VIEW / BLOCK ILLUSTRATION — COOL-VENT INSULATION

DETAIL #1

W O O D S P A C E R S

P O L Y ISO FOAM INSULATION

SUBSTRATE

NOTE: WOOD SUBSTRATE RABBETTED ALL FOUR SIDES

C O O L - V E N T ™ INSULATION
**Block Markings**

Cool-Vent panels have painted markings on the substrate to indicate block locations. Fasteners need to be installed within 1" of this marked area. On steel decks be sure to fasten into the top flute.

See pages 8 and 9 for Cool-Vent orientation in regards to flute direction.
Fastener Pattern for up to 7:12 Slopes

**Notes:**
Cool-Vent panels have painted markings on the substrate to indicate block locations. Fasteners need to be installed within 1" of this marked area. On steel decks be sure to fasten into the top flute.

See pages 8 and 9 for Cool-Vent orientation in regards to flute direction.
Fastener Pattern for Slopes 8:12 or Greater

Notes:
Cool-Vent panels have painted markings on the substrate to indicate block locations. Fasteners need to be installed within 1" of this marked area. On steel decks be sure to fasten into the top flute.

See pages 8 and 9 for Cool-Vent orientation in regards to flute direction.
Recommended Installation of Cool-Vent Steel Deck Running Horizontally

**NOTES:**
Run 8” side of Cool-Vent perpendicular to the direction of the flutes of steel decking.
Recommended Installation of Cool-Vent
Steel Deck Running Vertically

Notes:
Run 8’ side of Cool-Vent perpendicular to the direction of the flutes of steel decking.
SUGGESTED LAYOUT FOR TWO-LAYER SYSTEM
COOL-VENT OVER FLAT POLYISO

NOTES:
Recommend a minimum of 6" stagger on all sides of the base layer and subsequent layers of polyiso being installed in a multi-layer system.
The Hunter Panels SIP WD Fastener is intended to mechanically attach Cool-Vent and H-Shield NB to plywood substrates. The Hunter Panels SIP WD Fastener has the following features:

- FM approved—plates not required
- Pull-out values for plywood
- Star/spider head eliminates need for washer and offers dramatically increased pull-out value
- Multiple bits included in each pail
- 100% American made
- Fast, one-step installation
- No pre-drilling

Fasteners should never be struck with a hammer during installation.

### Test Description Table

<table>
<thead>
<tr>
<th>Test Description</th>
<th>Typical Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pull-through (lbs)</td>
<td>630</td>
</tr>
<tr>
<td>Pull-out (lbs):</td>
<td></td>
</tr>
<tr>
<td>1/2&quot; plywood</td>
<td>442</td>
</tr>
<tr>
<td>5/8&quot; plywood</td>
<td>459</td>
</tr>
<tr>
<td>3/4&quot; plywood</td>
<td>710</td>
</tr>
<tr>
<td>Douglas Fir (1&quot; pen.)</td>
<td>768</td>
</tr>
</tbody>
</table>

### Physical Data Chart

<table>
<thead>
<tr>
<th>Physical Data Chart</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Diameter</td>
<td>.625&quot;</td>
</tr>
<tr>
<td>Thread Diameter</td>
<td>.240&quot;</td>
</tr>
<tr>
<td>Shank Diameter</td>
<td>.190&quot;</td>
</tr>
</tbody>
</table>
Fastener Info - SIP SD - For Steel Decks and Structural Concrete

The Hunter Panels SIP SD Fastener is intended to mechanically attach Cool-Vent and H-Shield NB to 18–22 gauge corrugated steel decking and structural concrete. The Hunter Panels SIP SD Fastener has the following features:

- FM approved—plates not required
- Pull-out values for steel
- Star/spider head eliminates need for washer and offers dramatically increased pull-out value
- Multiple bits included in each pail
- 100% American made
- Fast, one-step installation
- No pre-drilling when used on a steel deck
- For use on structural concrete, ¼" pilot hole 1½" deep is required

Test Description | Typical Value
--- | ---
Pull-through (lbs) | 630
Pull-out (lbs):
22 gauge metal | 510
18 gauge metal | 920

Fasteners should never be struck with a hammer during installation.

Physical Data Chart

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Head Diameter</td>
</tr>
<tr>
<td>Thread Diameter</td>
</tr>
<tr>
<td>Shank Diameter</td>
</tr>
<tr>
<td>Fastener Length</td>
</tr>
</tbody>
</table>

For more information on this product, visit www.hunterpanels.com.
Hunter Panels SIP HD Fastener is intended to mechanically attach Cool-Vent or Hunter NB to 16 gauge or greater corrugated steel decking. Hunter Panels SIP HD Fastener has the following features:

- FM approved—plates not required
- Pull-out values for steel
- Star/spider head eliminates need for washer and offers dramatically increased pull-out value
- Multiple bits included in each pail
- 100% American made
- Fast, one-step installation
- SIP/HD is for 16 gauge or thicker steel deck
- No pre-drilling

<table>
<thead>
<tr>
<th>Test Description</th>
<th>Typical Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pull-through (lbs)</td>
<td>630</td>
</tr>
<tr>
<td>Pull-out (lbs):</td>
<td></td>
</tr>
<tr>
<td>Structural Steel 16 ga</td>
<td>770</td>
</tr>
</tbody>
</table>

Fasteners should never be struck with a hammer during installation.

<table>
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<tr>
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</tr>
<tr>
<td>Shank Diameter</td>
</tr>
<tr>
<td>Fastener Length</td>
</tr>
</tbody>
</table>

Minimum 1" penetration into top flute of steel deck.
**RABBETED EDGE DETAIL FOR COOL–VENT**

**NOTES:**

**RABBETED EDGE DEFINITION:**
The wood substrate on Cool–Vent is rabbeted (routed) back on all four wood sides to allow for expansion of the wood substrate.
NOTES:
Stagger rows by following Cool-Vent layout above. Cool-Vent can be cut 48" o.c. to provide two equal halves, no waste then occurred.

(Do not discard unused blocks)
**NOTES:**

Vapor Retarder – perm rating should be .5 or less as determined by ASTM E-96. The need for and location of a vapor retarder system varies depending on the location, climate conditions and the intended use of the structure beneath it.

Consult a licensed architect or engineer for recommendations regarding this important design consideration.
NOTES:

EAVE EDGE:
1. Pressure treated blocking equal to the foam thickness of Cool-Vent shall be installed along the eave edge. Cool-Vent foam should then be trimmed back to equal eave blocking and then spacers and substrate to be placed on top of eave blocking and secured to allow air flow at eave.

2. Do not discard wood spacers from Cool-Vent when applying along the eave, as they can be used at another juncture in the installation.
RAKE EDGE DETAIL FOR COOL-VENT

NOTES:

RAKE EDGE:

1. Pressure treated nailer(s) equal to the Cool-Vent overall thickness, shall be installed along the rake to protect exposed edge of insulation. Ice and watershield or approved shingle felt should then be applied to furthest edge of rake blocking and secured per manufacturer’s specifications.

2. Do not discard wood spacers from Cool-Vent when applying along the rake.
NOTES:
1. Cool-Vent has been designed to provide two pieces when cut in half.

2. For valleys and hips cut a piece of Cool-Vent in half, snap a chalk line from SE corner to NW corner and cut end to end.

3. In Diagram #3, you may need to add additional blocks for support along diagonal edges. Do not discard any blocks as they maybe used for this detail. Additional blocks are available upon request.
**NOTES:**
Some additional spacer blocks may be needed for this valley detail. (■)
Please save all unused blocks for further use. Additional blocks are available upon request.
NOTES:
It is important that foam butts tightly at top of ridge. Wood substrate should then be cut back to accommodate airflow and ridge cap/vent that is being installed.
EAVES DETAIL / (TYP.) STEEL DECK FOR COOL-VENT

- Recommended fastener (see MFRS specification)
- Synthetic underlayment (refer to local building codes)
- Air flow
- Shingles
- 1" minimum air space
- Polyiso foam cut back for venting air space
- Polyiso foam
- Structural substrate
- Outside air flow
- Vented soffit panel
**Notes:**
It is important that foam butts tightly at top of ridge. Wood substrate should then be cut back to accommodate airflow and ridge cap/vent that is being installed.
EAVES DETAIL / (TYP.) TONGUE AND GROOVE DECK FOR COOL-VENT

- SHINGLES
- 1" MINIMUM AIR SPACE
- SYNTHETIC UNDERLAYMENT (REFER TO LOCAL BUILDING CODES)
- POLYISO FOAM
- STRUCTURAL SUBSTRATE
- 12" STRIP VENT
- 2" X 10" BLOCKING
- OUTSIDE AIR FLOW

RECOMMENDED FASTENER (SEE MFRS SPECIFICATION)
ROOF / WALL DETAIL FOR COOL-VENT

DETAIL #18

METAL FLASHING

1" VENTED AIR SPACE W/VENTING MATERIAL

SHINGLES

1" MINIMUM AIR SPACE

SYNTHETIC UNDERLAYMENT (REFER TO LOCAL BUILDING CODES)

POLYSIO FOAM

RECOMMENDED FASTENER (SEE MFRS SPECIFICATION)

STRUCTURAL SUBSTRATE

2" X 10" BLOCKING

OUTSIDE AIR FLOW

12" STRIP VENT
CONSTRUCTION GENERATED MOISTURE

Buildings under construction are susceptible to water and/or moisture intrusion from the unfinished portions of the roof or adjacent components of the building. Some of the most common sources of moisture drive are:

- Pouring of a concrete floor or other masonry work in an enclosed building
- The use of heaters or "salamanders" to provide more comfortable conditions or help cure the freshly poured concrete.
- The use of oil burning heaters
- The use of paint, plaster and other water based construction materials

Effects of moisture generated during construction on the roofing system can cause the following conditions:

- Water accumulation in the steel deck flutes causing corrosion and possible intrusion into the building
- Condensed moisture can promote microorganism growth
- Moisture drawn into the roof system may have a deleterious effect on the physical properties of the roof insulation (i.e. dimensional stability, thermal properties)

Adherence to good construction practices can minimize some or all of the above-mentioned conditions. Adequate ventilation should be provided at all times for enclosed construction to limit moisture drive through the underside of the roof deck. The use of multi-layered roof insulation assemblies will enhance thermal performance as well as restrict the transport of moisture into the roof system. During roof construction, the completed roof section should be tied off each day to protect the new roof from water entry.
2. VAPOR DIFFUSION RETARDERS
In building construction, vapor retarders are used to inhibit or block the passage of moisture into roofing assemblies. Vapor barriers also serve as air barriers to limit the movement of moisture-laden air from the interior to the exterior. This is especially important during the construction phase where excessive moisture drive is present. To determine whether a vapor retarder is necessary, we recommend that calculations on the building’s interior relative humidity, interior temperature conditions and outside temperature fluctuations during the various seasons be performed prior to the completion of the design. Excessive moisture migration can cause unwanted condensation that will potentially damage the system or infiltrate the occupied space.

Hunter Panels strongly suggests the use of a vapor retarder with a perm value of 0.5 or less on all projects except in extreme cooling conditions. Consult a licensed design professional, architect or engineer to establish whether or not a vapor retarder is necessary and to specify its type and location within the assembly. This criteria varies with geographical location and is therefore specific to each project.

3. MULTI-LAYERED ROOF INSULATION
Multi-layering of polyiso in any roof application installed with staggered joints offers a number of advantages and is considered good roofing practice because doing so:

- Minimizes thermal loss at the joints of the insulation, prevents thermal bridging
- Prevents moisture from inside of the structure from condensing on the underside of the finished roof system

4. FASTENER REQUIREMENTS
To ensure optimal performance, Hunter Panels requires the use of the Hunter SIP SD or Hunter SIP HD for steel deck applications and the Hunter SIP WD for plywood deck applications. Always fasten the Cool-Vent through the designated and marked wood spacers as described in the this literature.

5. SLOPES AND INCREASED AIR CAVITIES
It has been Hunter Panels experience that as the slope of the roof decreases and/or the length of the run from eave to ridge increases, the rate of air movement within the vented cavity is affected. This rate of airflow must be considered in the design of the roofing assembly. Hunter Panels strongly suggests that the venting space is increased for improved air movement when the length of the run is over 20 feet. Hunter Panels’ Cool-Vent product can be specified with 1", 1.5" and 2" venting spaces to accommodate many design parameters.

PLEASE NOTE: When increasing the size and volume intake of the cavity area from 1.0" to 1.5" or 2.0", both the intake area at the fascia and the output area at the ridge should also be increased to handle the extra demand. This is a critical consideration for optimum performance and a balanced system and is often overlooked in the design process. (see 6: Eave and Ridge Vent Design)
6. EAVE AND RIDGE VENT DESIGN
This very important design feature is critical to consider for every individual roofing project due to the effects of certain variables on the completed system. Slope and length of run play an important role in the role of the vented insulation panel and the achievement of a balanced system. As the length of the run increases, the designer should consider increasing the size of the venting space. However, air intake (fascia design) and air output (ridge vent design) must be increased proportionally. Failure to do so may lead to future problems such as underlayment and shingle buckling.

PLEASE NOTE: When increasing the size and volume intake of the cavity area from 1.0" to 1.5" or 2.0", both the intake area at the fascia and the output area at the ridge should also be increased to handle the extra demand. This is a critical consideration for optimum performance and a balanced system and is often overlooked in the design process.

7. USE OF SYNTHETIC UNDERLAYMENTS
The use of synthetic underlayments is becoming the industry norm for steep slope roofing assemblies. Hunter Panels strongly suggests the use of a synthetic underlayment under asphalt shingles unless the shingle manufacturer has specifically eliminated it. Synthetic underlayments offer several key advantages over traditional asphalt felt:

- Larger rolls with fewer laps and less nailing
- Lighter weight for easier handling and quicker installation
- May be left exposed for longer periods of time without organic deterioration
- Synthetic reinforced polypropylene wicks the moisture and provides excellent water resistance
- Some manufacturers of synthetic underlayment offer products with prolonged exposure to UV rays, greater fire resistance, tear strength and puncture resistance

Hunter Panels does not recommend the use of 15# and 30# roofing felt as an underlayment to asphalt shingles on our Cool-Vent product. Use of these felt products will void any and all claims regarding a Cool-Vent assembly. Hunter Panels cannot be responsible for claims arising out of aesthetic anomalies caused by roofing felts in the assembly.

8. SHINGLE CONSIDERATION
The roof covering is one of the most important considerations of any low slope or steep slope application. In most steep slope roofing projects, however, the visual appeal or aesthetic look plays almost as large a role as the true performance and physical properties of the shingle.

Please go to www.hunterpanels.com and click on:
ROOF POLYISO PRODUCTS : COOL VENT or H-SHIELD NB
to view the most current information
WARNINGS AND LIMITATIONS

This material must be kept dry, stored above ground/roof level on pallets and completely covered (top & sides) with a waterproof tarpaulin. Prolonged exposure to moisture will degrade the wood substrate and have a deleterious effect on its performance. Hunter Panels will not be responsible for the performance of this product if it is installed wet. Only install as much product in a day that can be covered with the completed roofing system.

WARRANTY

Hunter Panels will not be responsible for leakage, damage or failure of any kind caused by improper application or design, structural movement, accident or natural hazard, defective membrane or improper maintenance.

Hunter Panels warrants that its polyisocyanurate foam will conform to its published physical properties, federal specifications and ASTM standards. Hunter Panels does not warrant the performance or physical properties of the wood substrate incorporated into the Cool-Vent assembly.

Hunter Panels will not be liable for incidental or consequential damages to the structure, its contents or occupancy.

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