

# PAC-Shield CV

## Energy Smart Polyiso



### Vented Nailbase Polyisocyanurate Insulation Panel for Steep Slope Roof Applications

PAC-Shield CV 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. PAC-Shield CV is the environmentally intelligent choice for steep slope roofing applications and is viable in green and sustainable building designs.

### APPLICATIONS

PAC-Shield CV is custom built to incorporate the individual specifications of the building designer. PAC-Shield CV is for use on slopes of 3:12 or greater (for lower slope considerations see PAC-Shield Nail Base).

- ▶ To achieve optimal thermal performance, PAC-CLAD recommends installation of a multi-layered system with staggered joints.

#### Applicable construction types include:

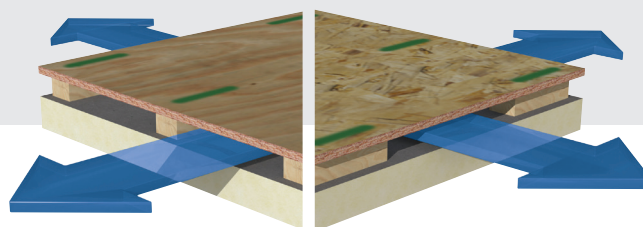
- ▶ Non-insulated Cathedral and Vaulted Ceilings
- ▶ Exposed ceiling designs beneath steel, plywood, tongue & groove deck types in commercial and residential constructions
- ▶ Log Home applications
- ▶ Post & Beam constructions

#### Acceptable Roof Coverings:

- ▶ Standing Seam Metal Roof Systems
- ▶ Slate (Natural and Synthetic)
- ▶ Tile
- ▶ Shingles

### PANEL CHARACTERISTICS

- ▶ 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
- ▶ ASTM C1289 Type II, Class 1, Grade 2 (20 psi)
- ▶ Available in 4' x 8' (1220mm x 2440mm) panels in overall thicknesses of 2.5" (64mm) to 5.0" (127mm)
- ▶ **Multiple Substrate Types Available:**
  - **OSB:** 7/16" or 5/8"
  - **Plywood:** 5/8", 3/4" (CDX or CDX Fire-Treated)
- ▶ 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

### POTENTIAL LEED® CREDITS FOR POLYISO USE

#### Energy and Atmosphere

- ▶ Optimize Energy Performance

#### Materials & Resources

- ▶ Building Life-Cycle Impact Reduction
- ▶ Material Reuse
- ▶ Recycled Content
- ▶ Environment Product Declaration
- ▶ Construction and Demolition Waste Management

#### Indoor Environmental Quality

- ▶ Thermal Comfort

### THERMAL VALUES

Long Term Thermal Resistance Values are based on ASTM C 1289

Thickness <sup>1</sup> (inches)	(mm)	Minimum R-Value	Flute Spanability
2.5	64	5.7	2 5/8"
3	76	8.6	4 3/8"
3.5	89	11.4	4 3/8"
4	102	14.4	4 3/8"
4.1	104	15	4 3/8"
4.5	114	17.4	4 3/8"
5	127	20.5	4 3/8"

<sup>1</sup>Thickness is calculated with 7/16" OSB and 1" airspace. For other dimensions contact PAC-CLAD. PAC-Shield CV 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 PAC-Shield CV.

### DEFINITION OF NFA/LF

The Net Free Area of Ventilation Per Linear Foot is derived by multiplying the air space in inches by the length in inches of the PAC-Shield CV panel. The area of the wood spaces is then subtracted and the difference is divided by 4 or 8.

Airspace Dimension	NFA/LF
1.0"	7.5/9.5 sq inch
1.5"	11.25/14.25 sq inch
2.0"	15.00/19.0 sq inch

## CODES AND COMPLIANCES

- ▶ ASTM C 1289 Type II, Class 1 Grade 2 (20 psi)
- ▶ International Building Code (IBC) Chapter 26
- ▶ State of Florida Product Approval Number FL 46425
- ▶ Miami Dade County Product Control Approved

## UNDERWRITERS LABORATORIES INC CLASSIFICATIONS

- ▶ TGDY. R20624 Shingle Deck Accessory; PAC-Shield CV 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

## FACTORY MUTUAL APPROVALS

- ▶ FM 4450, FM 4470

## TYPICAL PHYSICAL PROPERTY DATA

Polyiso Foam Core Only

Physical Property	Test Method	Value
Compressive Strength	ASTM D 1621	20 psi (138 kPa, Grade 2)
Dimensional Stability	ASTM D 2126	2% linear change (7 days)
Moisture Vapor Transmission	ASTM E 96	<1 perm (57.5ng/(Pa·s·m²))
Water Absorption	ASTM C 209	<1% volume
Flame Spread*	ASTM E 84	< 75
Smoke Developed*	ASTM E 84	< 450
Service Temperature		-100° to 250°F (-73°C to 122°C)

\*Meets the requirements of the IBC code.

## FASTENING GUIDELINES

PAC-CLAD requires the use of the SIP SD Panel Fastener for steel deck applications, the SIP WD for plywood deck applications, and SIP HD for heavy duty steel decks.

## WARNINGS AND LIMITATIONS

Insulation must be protected from open flame and kept dry at all times. Store above ground on pallets and cover with breathable tarpaulins. Install only as much Polyiso as can be covered the same day with the completed roofing system. Do not leave

exposed. This panel consists of insulation, wood spacers, and the top layer of OSB or Ply. All materials are glued together for transportation and handling purposes only. Support the panel from the bottom layer when relocating to the desired location. Improper handling may cause components to separate. Separation of the components will not affect the performance of the products once properly installed. PAC-CLAD will not be responsible for specific designs by others, for deficiencies in construction or workmanship, for dangerous conditions on the job site, or for improper storage and handling.

## INSTALLATION – SINGLE-PLY SYSTEMS

- ▶ Install PAC-Shield CV only over fully supported structural decking
- ▶ **PAC-Shield CV is NOT a structural panel**
- ▶ PAC-CLAD recommends PAC-Shield CV 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 PAC-Shield CV
- ▶ Install PAC-Shield CV on slopes 3:12 or greater  
**NOTE:** When installing PAC-Shield CV over an acoustical deck, check local codes for fire ratings. The use of a 5/8" minimum gypsum fire barrier may be required.

### The Use of Synthetic Underlayments

PAC-CLAD 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

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. PAC-CLAD 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. This criteria varies with geological location therefore 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.

*Review manufacturer's specifications and details for complete installation information.*

