

<b>MATERIAL APPROVAL SUBMITTAL</b> <i>(See Instructions on Reverse)</i>						
<b>TO:</b> <i>(Contracting Officer)</i>		<b>FROM:</b> <i>(Contractor)</i>			DATE (YYYYMMDD)	
CONTRACT NUMBER		SUBMISSION NUMBER			SUBMITTAL <input type="checkbox"/> NEW <input type="checkbox"/> RESUBMITTAL	
PREVIOUS SUBMISSION NUMBER			PROJECT NUMBER			
<b>TO BE COMPLETED BY CONTRACTOR</b>				<b>FOR GOVERNMENT USE ONLY</b>		
ITEM NO.	SPECIFICATION SECTION/ PARA NO./DRAWING NO.	DESCRIPTION OF MATERIAL <i>(Include Type, Model Number, Catalog Number, Mfg., etc.)</i>		AP- PROVED	DISAP- PROVED	SEE REVERSE
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>BY COMPLETING THIS FORM, THE UNDERSIGNED CONTRACTOR CERTIFIES THAT THE MATERIAL COMPLIES WITH ALL SPECIFICATIONS OF SUBJECT CONTRACT.</b>						
DATE (YYYYMMDD)		TYPE OR PRINT NAME AND TITLE		SIGNATURE		
<b>FOR GOVERNMENT USE ONLY</b>						
<b>TO:</b> (A/E)						
<b>For Evaluation and Action</b>						
DATE (YYYYMMDD)		TYPE OR PRINT NAME AND GRADE		SIGNATURE		
<b>TO:</b> (Project Engineer/COR)						
<b>RECOMMEND</b>		<input type="checkbox"/> APPROVAL <input type="checkbox"/> DISAPPROVAL AS INDICATED ABOVE AND SUBJECT TO ANY APPLICABLE COMMENTS ON THE REVERSE				
DATE (YYYYMMDD)		TYPE OR PRINT NAME AND GRADE		SIGNATURE		
<b>TO:</b> (VA Contracting Officer)						
<input type="checkbox"/> APPROVED <input type="checkbox"/> DISAPPROVED AS INDICATED ABOVE AND SUBJECT TO ANY APPLICABLE COMMENTS ON THE REVERSE SIDE. REQUEST RESUBMITTAL ON DISAPPROVED ITEMS WITHIN _____ DAYS OF DATE SHOWN BELOW.						
DATE (YYYYMMDD)		TYPE OR PRINT NAME AND GRADE		SIGNATURE		

**(Number to correspond with applicable Item Number on reverse)**

Review is only for general conformance with the design concept of the Project and general compliance with information given in the Contract Documents. Any actions shown or corrections or comments made on submittals do not relieve Contractor from compliance with Contract Documents. Contractor is responsible for confirming and correlating quantities and dimensions, fabrication processes and techniques of construction, coordinating contractors' work with that of other trades, and the performance of Contractor's work in a safe and satisfactory manner.

BY Scott Weaver DATE 06/12/2015

1. The term "material" is defined as articles, supplies, raw materials, equipment, parts, components, and end items that are to be incorporated into the work required by the contract.
2. This form is to be used by contractors for submitting Shop Drawings, Equipment Data, Manufacturer's Literature and Certificates and samples of Materials to the Government for approval in accordance with the provisions of this contract. Unless otherwise specified, it is to be prepared in 4 copies, signed, and provided to the contracting officer with appropriate attachments.
3. Item(s) to be approved will be clearly tabbed or identified. Data pertaining to item(s) to be approved will be clearly identified or tabbed, particularly where documents are voluminous, in order to properly evaluate the materials or articles to be incorporated in the work. Each attachment will be numbered to correspond with the item number shown on the face of this form.
4. Requests submitted shall be numbered consecutively, by contract, in the space entitled "Submission No.". This number, in addition to the Contract No., will be used to identify each Material Approval Submittal. Resubmissions will be indicated in the appropriate block and the insertion of previous submission number and data in addition to a new submission number. A single submission should be used for all work of a section of the specifications, but in NO instance should the submission include work for more than one (1) contract. Submittals requiring priority handling will be submitted by separate submittal using the form and so marked across the face of the form.
5. This Material Approval Submittal is not valid unless it is signed by the contracting officer. This approval is required as called for by the contracting officer under the terms of this contract.

RECEIVED

06/10/2015

CBLH DESIGN, Inc.

- ☐ No Exceptions Taken
- ☐ Rejected
- ☐ Submit Specified Item
- ☐ For Record Only

- ☒ Make Corrections Noted
- ☐ Revise and Resubmit
- ☐ Reviewed

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CBLH DESIGN, INC.

BY Scott Weaver

DATE 06/12/2015



## DESIGNWALL SERIES HIGH PERFORMANCE JOINT

# Introduction

## BENCHMARK BY KINGSPAN

### ARCHITECTURAL BUILDING ENVELOPE SOLUTIONS

BENCHMARK By Kingspan Designwall Series is more than an insulated panel wall system. It is a high performance building envelope solution that can be tailor-made for custom, out of the ordinary projects. Continuous innovation over the years that made complete creative design freedom into a reality. Designwall architectural wall panels are manufactured using either laminated or foamed-in-place processes.

BENCHMARK Designwall Series brings together all the elements of the building envelope to combine distinct architectural vision with superior energy performance for total design flexibility. The build speed, ease of use and installation, lifetime sustainability, and contribution to LEED achieved through BENCHMARK by Kingspan consistently exceed client expectations.

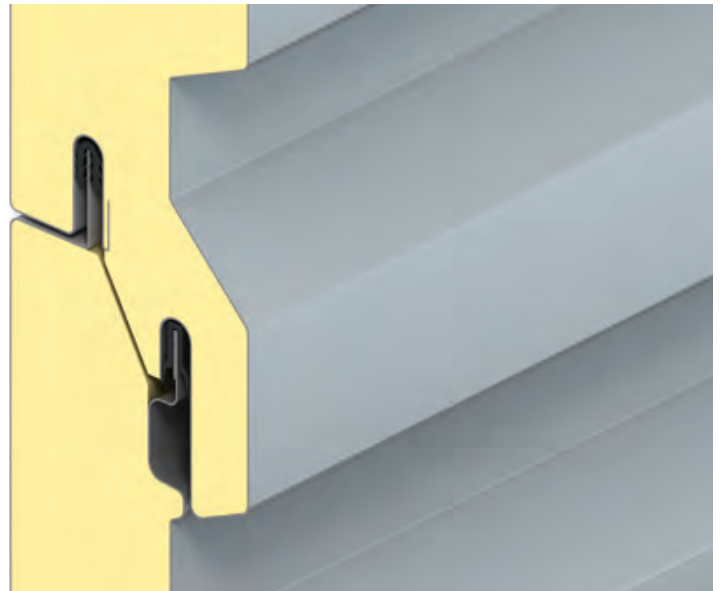


# Introduction

## DESIGNWALL PANEL JOINT

### SYSTEM BENEFITS

- Positive fastening of both faces for improved structural performance
- Increased insulation thickness behind the horizontal joint
- Sealed fastener holes (foam pad underneath clip)
- Increased panel thickness (up to 4")
- All insulation behind anchorage point is retained to maximize thermal efficiency
- Increased negative load capacity
- Double sloped drainage shelf, double pressure equalization chamber; and increased gutter height, improves air & water penetration resistance
- Double sealed joint (face and liner) provides for second line of defense



# Product Specification

## DESIGNWALL PANEL

### PANEL RANGE

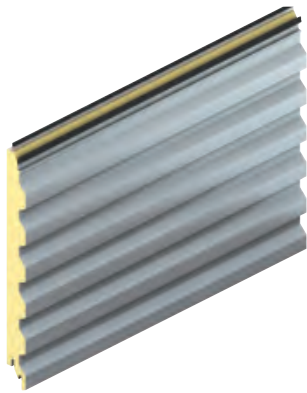
The Designwall panel system comes in a wide variety of profiles, modules, reveals to provide you nearly limitless design flexibility. Designwall can be laid both vertically and horizontally. The Designwall series readily integrates with other products to create truly unique projects.

Designwall is the original premium architectural panel system and is available in a number of different profiles:

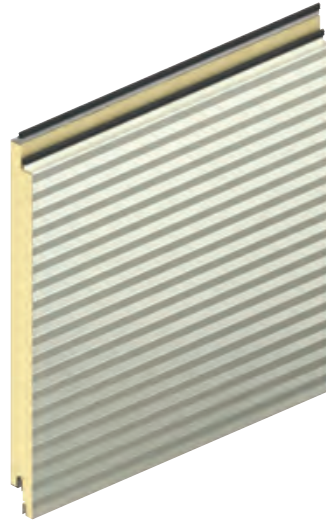
- Designwall 2000 – Flat
- Designwall 2000 Ribbed
- Designwall 2000 Shadowline
- Designwall 4000
- Designwall H-Wave
- Designwall 1000
- Designwall 3000
- Designwall 500



DW 2000 Flat



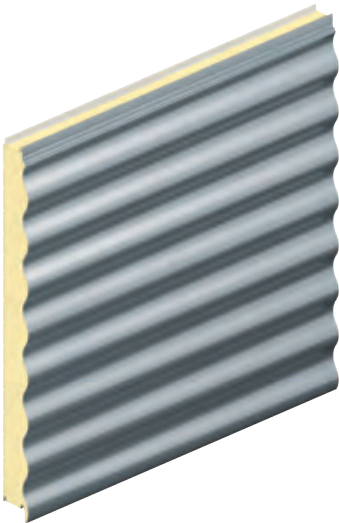
DW 2000 Ribbed



DW 2000 Shadowline



DW 4000



DW H-Wave



DW 1000



DW 3000



DW 500

\*All profiles available in smooth or embossed, except Designwall Granitstone.

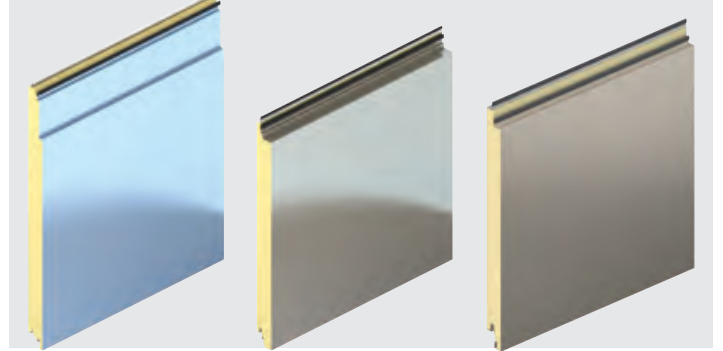
# Product Specification

## DESIGNWALL OPTIONS

WE ALSO OFFER A WIDE RANGE OF DESIGN OPTIONS INCLUDING:



Trimless ends



Variable reveals

Deep Joint

Granitstone



Integrated profiles



Radius profiles



Integrated window systems



Integrated louvers



Column and beam covers



Sunscreens and grills

# Product Specification

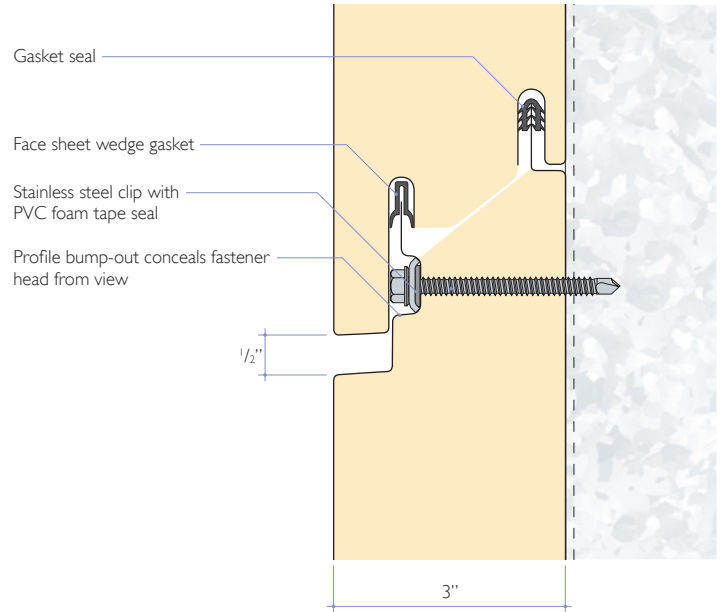
## DESIGNWALL OPTIONS

### BONDED (DESIGNWALL 2000)

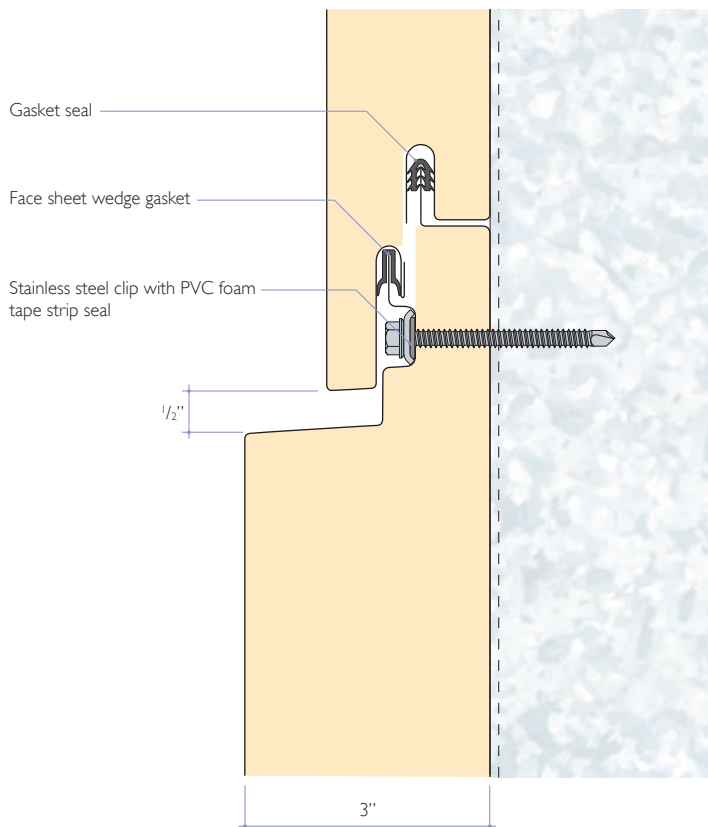
#### PANEL CHARACTERISTICS:

- Made in Columbus, Ohio & Modesto, California
- Thickness available: 2", 2.5", 3", 4"
- 8" through 46" wide variable
- Standard  $1\frac{1}{16}$ " depth joint or  $1\frac{1}{16}$ " depth joint
- Variable reveals up to 6" wide
- Ribbed panels 2.5" minimum to 4" thickness

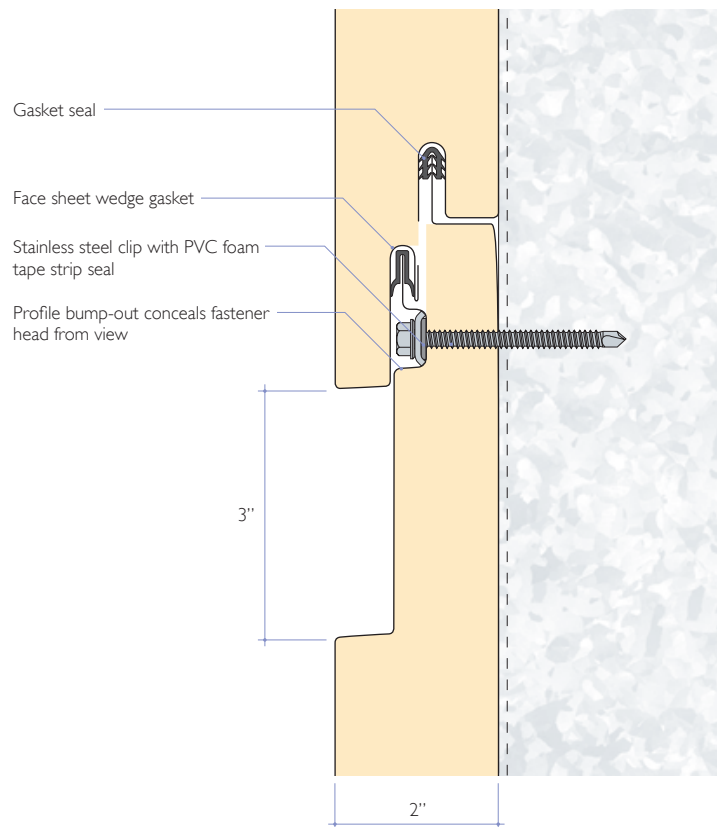
#### 3" Panel with Standard $\frac{1}{2}$ " Joint



#### 2" to 3" Panel Integration



#### 2" Panel with Reveal Joint



# Product Specification

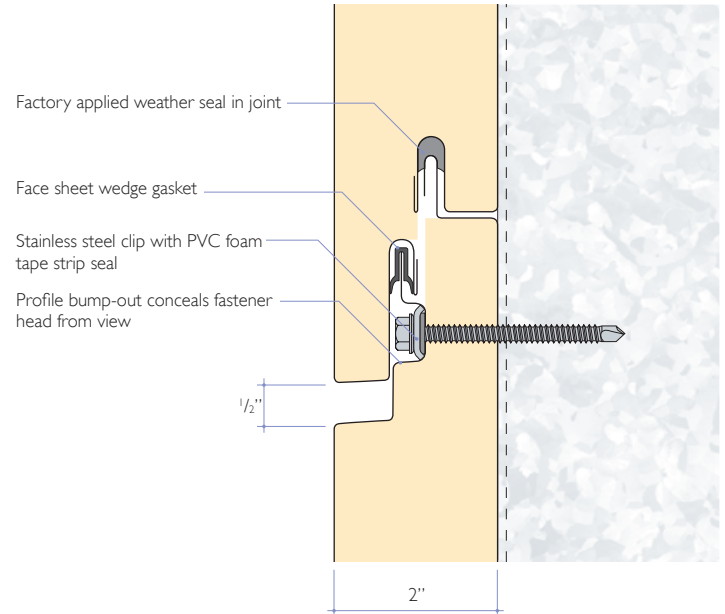
## DESIGNWALL OPTIONS

### FOAMED IN PLACE (DESIGNWALL 4000) PANEL CHARACTERISTICS:

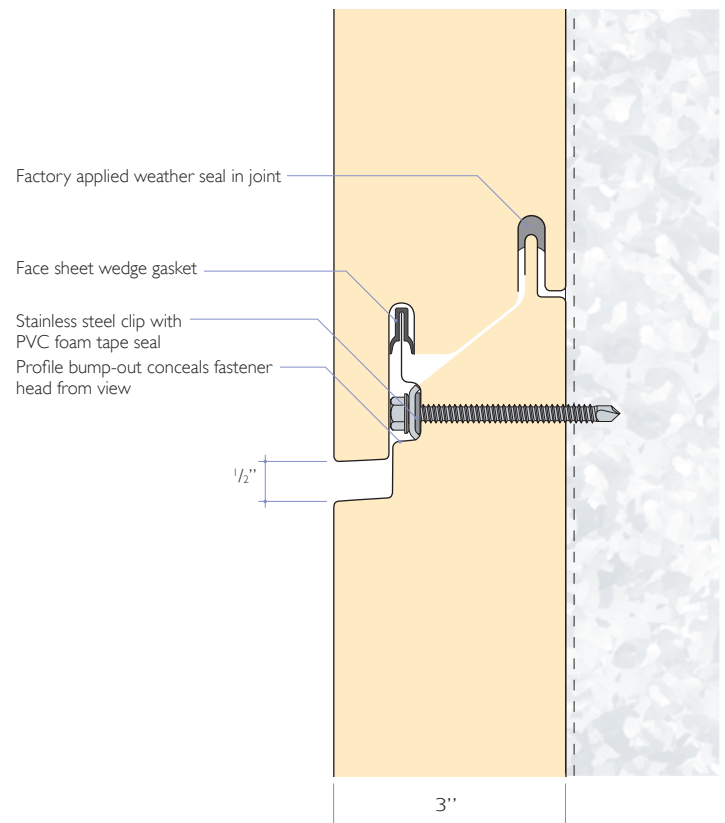
- Foamed-in-place core
- Factory applied weather seal
- Wedge gasket on face side joint
- Thickness available: 2", 2.5", 3", 4"
- 24", 30", 36", 42" wide
- Standard  $1\frac{1}{16}$ " depth joint
- Incremental reveals to 6" wide
- Gutter height of 3.25"



### 2" Panel with Standard $\frac{1}{2}$ " Joint



### 3" Panel with Standard $\frac{1}{2}$ " Joint



# Product Specification

## DESIGNWALL PANEL JOINT

### APPLICATIONS

Designwall Architectural panel systems offer unrivaled design freedom to enable architects to create truly unique projects. They offer the best combination of eye-catching aesthetics and superior performance. The wide array of profiles and design options enable architects to go beyond the traditional insulated panel designs to create inspired buildings in the same cost bracket.

### THICKNESS

2", 2.5", 3", 4"

### LENGTHS

#### Bonded

Standard Lengths: 4' - 24'

#### Foamed in Place

Standard Lengths: 8' - 24'

### R-VALUE

PIR Core: 14 - 28 (7.0 per inch)

EPS Core: 9 - 18 (4.5 per inch)

### GAUGE

Standard: 22/24 steel, 0.040"/0.040" aluminum  
(optional 20 Ga. face & 22 or 20 Ga. liner)

### EXTERIOR SURFACE

Steel: standard non-directional embossed or optional smooth  
(optional aluminum: standard non-directional embossed or optional smooth for bonded)

### REVEALS

#### Bonded

Designwall 2000: 1/8", 1/2", 1" - 6" in 1/4" increments

#### Foamed in Place

Designwall 4000: 1/8", 1/2", 1" - 6" in 1/2" increments

### WIDTHS

#### Bonded

Standard: 24", 30", 36"

Custom: 8" - 46"

#### Foamed in Place

Standard: 24", 30", 36", 42"

Custom: 10" - 44"

### INSULATION CORE

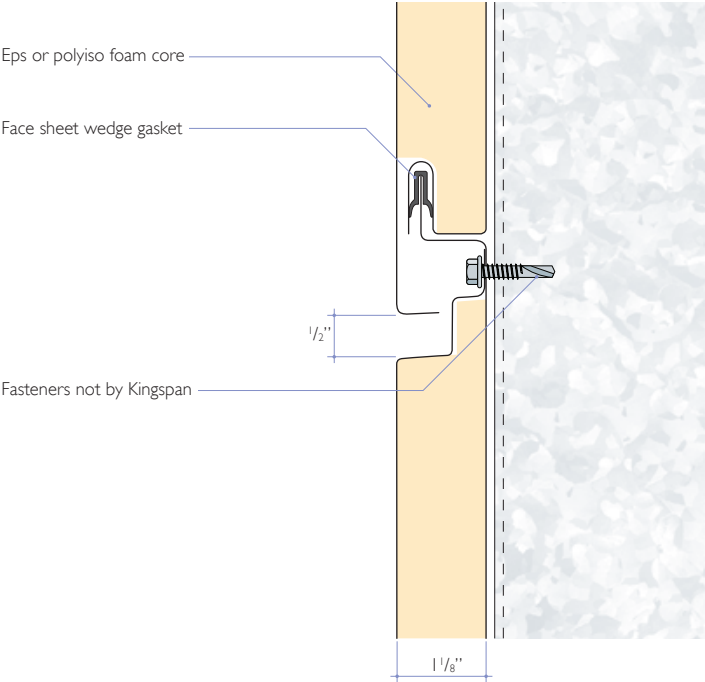
The Designwall series is manufactured with a Polyisocyanurate (PIR) core. We also offer an optional expanded polystyrene (EPS) core.



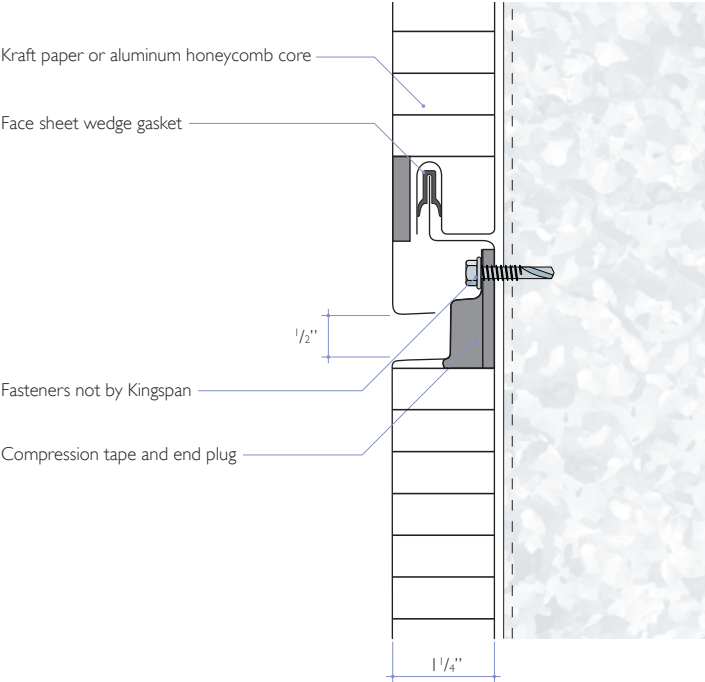
# Product Specification

## DESIGNWALL PANEL JOINT

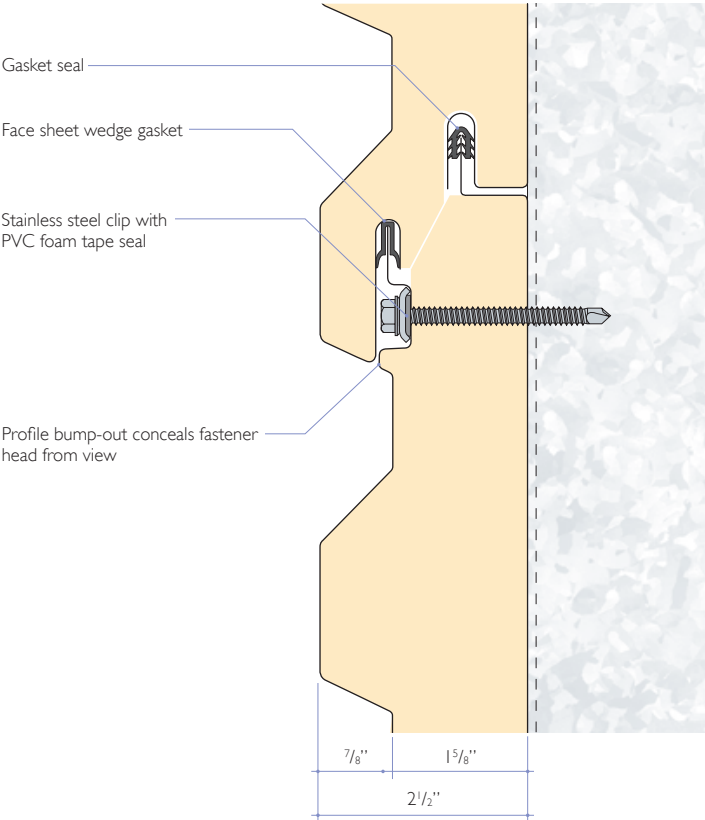
Designwall 1000 Panel – 1 1/8" Panel Standard 1/2" Joint



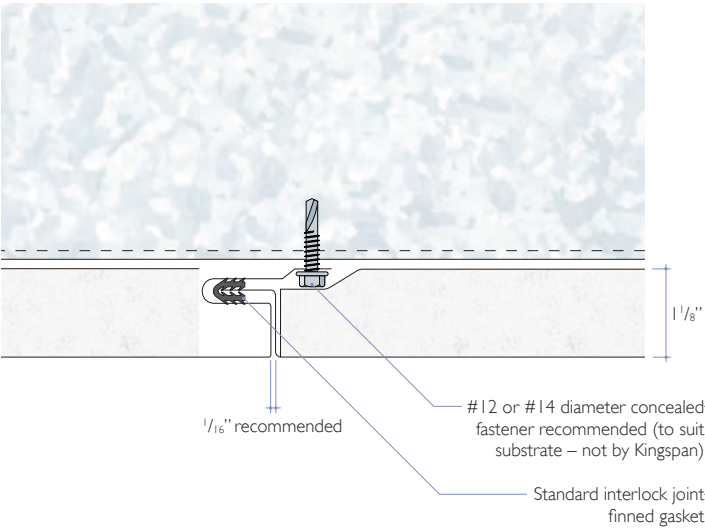
Designwall 3000 Panel – 1 1/4" Panel Standard 1/2" Joint



2 1/2" Ribbed Panel



DW500 Vertical Joint



# Product Specification

## TESTING & ACCREDITATION

The Designwall panel system meets specific building envelope performance criteria and requirements stipulated by US and Canadian building codes. Panels are tested in accordance with UL, FM and ASTM approval standards, testing methods and procedures.

- ASTM E283 & E331 – Static Air & Water Testing
- AAMA 501.1 – Dynamic Water
- ASTM E72 – Structural Testing
- ASTM C1363 – Thermal
- FM4880 Class I Listing for Exterior or Interior Walls
- FM4881 Listing for Exterior Walls
- NFPA 285 Multi-Story Fire Evaluation
- U.L. Canada – S127, & S134
- U.L. Canada – S101
- Miami-Dade – TAS 201, 202, 203
- Florida Product Approval
- LA Research Report

## SUSTAINABLE DESIGN BEGINS WITH THE ENVELOPEFIRST

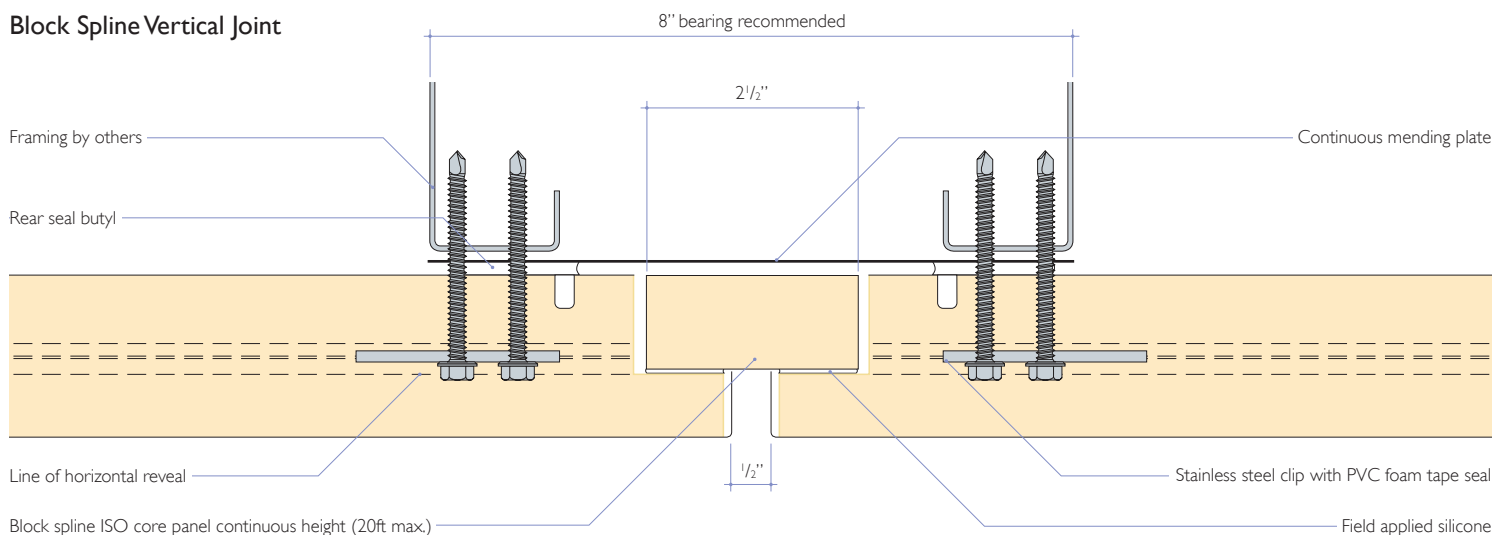
“Kingspan’s EnvelopeFirst™ energy efficiency is a first step strategy for optimizing a building’s performance and beginning the route to Net-Zero Energy. The building envelope and energy conservation measures must be designed to optimize performance in order to

achieve the Net-Zero Energy targets of the DOE Commercial Building Initiative.”

Testing and field results show that insulated metal panels (IMPs) – including BENCHMARK by Kingspan line – contribute to sustainability and energy efficiency in a variety of ways. Among the most noteworthy:

- Energy efficiency. IMPs have a core of continuous, rigid insulation for industry leading R- and U-values with superior airtightness performance.
- Indoor environmental quality. IMPs help ensure a stable interior environment.
- Recycled and recyclable. The exterior skins contain a substantial amount of recycled steel, and the panels themselves are recyclable.
- Recycled, low-weight materials. Made with recaptured metals, IMPs weigh only 3 pounds per square foot, reducing transport and installation energy needs.
- Ease of construction. IMPs are simple to detail and attach, reducing schedules and installation errors.
- Life cycle benefits. IMPs like Kingspan Benchmark’s Designwall™ last as long as the service life of a typical commercial building. The durable panels also reduce operational costs for energy and maintenance, and offer multiple end-of-life reuse options.
- Building certification and green targets. IMPs contribute to LEED® certification programs and the path to Net-Zero Energy targets.

### Block Spline Vertical Joint



# Product Specification

## DESIGNWALL OPTIONS



ARCHITECTURAL  
BUILDING  
ENVELOPE  
SOLUTIONS

**BENCHMARK SUPPORT**

**BENCHMARK by Kingspan**

Columbus, OH, USA 1-877-638-3266

Modesto, CA, USA 1-800-377-5110

[www.BENCHMARKbyKingspan.us](http://www.BENCHMARKbyKingspan.us)

Caledon, ON CA 1-905-951-5600

[www.BENCHMARKbyKingspan.ca](http://www.BENCHMARKbyKingspan.ca)



Care has been taken to ensure that the contents of this publication are accurate, but Kingspan Limited and its subsidiary companies do not accept responsibility for errors or for information that is found to be misleading. Suggestions for, or description of, the end use or application of products or methods of working are for information only and Kingspan Limited and its subsidiaries accept no liability in respect thereof.

January 2015

Columbus VA - Chalmers ACC Bldg. 2 - Columbus, OH - Submittal Package, DW2000



November 1, 2012  
To Whom It May Concern,

Please accept this letter as our verification of Kingspan Insulated Panel's potential contributions to LEED®.

**Credit 7.1: Heat Island Effect—Non-roof**

Kingspan Benchmark architectural sunscreens, grills and louvers, and products provide shade including structures covered by solar panels that have a solar reflectance index<sup>2</sup> (SRI) of at least 29

**LEED Credit SS 7.2- Heat Island Effect—Roof**

Kingspan uses paints from Valspar® Cool Color Pallet. Twenty-eight of Valspar's colors meet LEED standards for steep slope roofs, while three colors meet low slope requirements. By using Valspar, Kingspan also meets standards for the ENERGY STAR qualified roof products for reflectivity.

**Energy and Atmosphere - EA**

Kingspan's Path to Net Zero program is an energy modeling service designed to help design teams understand scenarios contributing to optimization of the energy efficiency of insulated metal panel envelope assemblies based on ASHRAE 90.1

**LEED Energy and Atmosphere Prerequisite 2**

Kingspan insulated panels contribute to all envelope required energy efficiency prerequisites and minimum energy requirements as well as optimized energy efficiency. Kingspan's Path to Net Zero program (<http://www.pathtonetzero.com/>) is a performance energy modeling service offered on select projects to help design teams understand scenarios contributing to optimizing the energy efficiency of insulated metal panel envelope assemblies based on meeting or exceeding ASHRAE 90.1 requirements

**LEED Credit EA 1- Optimize Energy Performance**

Kingspan insulated panels, in a given whole building design, and depending on climate zone, contribute to LEED EA points singularly. Combined with the ECM (Energy Conservation Measures), Kingspan Insulated Panels can potentially exceed LEED's 48% benchmark.

**LEED Credit EA 2 Onsite Renewable Energy**

Kingspan's PV Power Panel with KingZip insulated metal roof panels contributes to renewable energy for zero/low energy building goals

**MR Credit 1.1: Building Reuse—Maintain Existing Walls, Floors and Roof**

Buildings that are constructed with Kingspan wall & roof insulated metal panels may contribute to this credit. Possible reuse applications include (but not limited to) fire panels, clean rooms and cold-storage. All relative code requirements need to be evaluated.

**MR Credit 1.2: Building Reuse—Maintain Interior Nonstructural Elements**

Kingspan insulated metal panels that are used as interior partitions may be able to contribute to this credit. All relative code requirements need to be evaluated.

### MR Credit 3: Materials Reuse

Kingspan Insulated metal wall panels, sunscreens, grills and louvers may be able to contribute to this credit by removing from existing site and installing on another project. All code requirements regarding material re-use would need to be evaluated

### LEED Credit MRc4.1 & 4.2-Recycled Content

#### LEED Credit MRc4.1 & 4.2-Recycled Content

Contributes with the recycled steel in Kingspan's insulated metal panels recycled content include the sum of postconsumer percentage plus 1/2 of the preconsumer percentage.

Below is an example of how Kingspan reports recycled content based on the Steel Recycling Institute's guidelines - <http://www.recycle-steel.org/en/Recycling%20Resources/LEED%20Documentation.aspx>.

#### Data needed to run calculation include:

- Thickness of panel
- Gage of exterior skin
- Gage of interior skin
- Total panel cost
- Where the steel was produced\*

**Note:** for most accurate reporting specific coil information is required and typically not available until job is "run". Any information prior to the "run" is a best estimate.

<b>Assembly Components:</b>	<b>Weight (lbs / sq.ft.)</b>	<b>% PC</b>	<b>% PI</b>
<b>Steel Facings</b>	<b>2.475</b>	<b>17%</b>	<b>14%</b>
<b>Polyisocyanurate Core</b>	<b>0.525</b>	<b>0%</b>	<b>0%</b>
<b>Totals:</b>	<b>3.00</b>	<b>17%</b>	<b>14%</b>

- Assembly Recycled Content = (Component Wt. x Recycled Content / Total Wt.) x 100 %
- Percentages are based on 1 sq.ft. of material at a weight of 3 lbs

**Kingspan also uses the Steel Recycling Institutes defaults for recycling when specific coil data is not available**

### LEED Credit 5 Regional Materials (\* see credit

Kingspan insulated metal panels, in some cases, may be able to contribute to the requirements of this credit including reporting on extraction (not always available), Steel supplier location, as well manufacturing, within 500 miles (800 kilometers) of the project site

### LEED Credit IEQ 4.1- Low-Emitting Materials—Adhesives and Sealants

Adhesives, and Sealants used or recommended by Kingspan comply with South Coast Air Quality Management District (SCAQMD) Rule #1168. Volatile organic compound (VOC) limits listed in the requirements substantiated by suppliers

#### Kingspan Insulated Panels

726 Summerhill Drive

Deland, FL 32724

tel: (386) 626-6789

fax: (386) 626-6884

toll free: (877) 638-3266

[www.kingspanpanels.us](http://www.kingspanpanels.us)

### **LEED Credit IEQ 4.2- Low-Emitting Materials—Paints and Coatings**

All metal is pre-coated (Primer and finish coat) before it is received to Kingspan I and is inert at time of installation. No VOC emissions.

### **LEED Credit ID 1: Innovation in Design**

Using Kingspan's Envelope First™ approach, buildings have the potential to go above and beyond the criteria set by LEED for energy efficiency. Envelope First strategies can also help contribute towards zero/low energy efficiency strategies.

### **Regional Priority Credits**

Kingspan's Path to Net Zero Envelope First Energy Efficiency strategy is designed to optimize the building envelope by regional climate zones beyond ASHRAE 90.1 requirements. See LEED references for states at:

<https://www.usgbc.org/RPC/RegionalPriorityCredits.aspx?CMSPageID=2435>

### **Pilot Credit 61: Material Disclosure and Assessment**

#### ***Note: Replaces LEED Pilot Credit 43***

Kingspan has the first of its kind, Insulated metal panels wall & roof, UL Environment ISO, 14025 Certified EPD - Environmental Product Declaration this meets the requirements of this Pilot See:

<http://www.pathtonetzero.com/cms/wp-content/uploads/docs/EPD-Document.pdf>

### **Requirements OPTION 1. Assessment and Optimization of Non-Structural Products**

**AND/OR Option 2. Assessment and Optimization of Structure and Enclosure**

*Note: Kingspan Insulated Panels are not considered structural but best fit into the enclosure category*

**Product Specific2 Declaration** Products with a publically available, critically reviewed Life Cycle Assessment compliant with ISO 219303 are calculated at half of their cost. Products carrying a Third party certified Type III Environmental Product Declaration (EPD) including external verification are calculated at twice their cost.

**Third-party Certified Type III EPD: Product Specific** – An ISO 14025 voluntary, third party reviewed LCA-based Environmental Product Declaration based on a Product Category Rule document and program operator for specific products.

EPD Pathway	Weight
Third party certified Type III EPD	Product Specific

### **Beyond LEED**

Kingspan's insulated metal panels contribute to a sustainable building envelope beyond the LEED program. Because they are a single component assembly, Insulated metal panels can save time and money during installation compared to traditional site built systems with little to no construction waste at the job site..

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Kingspan's durable panels can be installed in any weather condition making them ideal for projects where winter enclosure deadlines are essential.

Kingspan Insulated Panels has three U.S. manufacturing locations- Deland, FL, Modesto, CA and Columbus OH as well as two Canadian locations in Langley, BC and Caledon, ON. Before delivery, our quality control team carefully inspects all orders to ensure customer satisfaction. Panels arrive to the job site perfectly trimmed ready to install, leaving little onsite construction waste. Kingspan is also striving for panel end of life programs, zero landfill impacts and chain of custody principles where possible.

Some tax credits, incentives and grants are available for sustainable buildings on Federal, State, and local levels including the Energy Efficient Commercial Business Deduction and the Energy Investment Tax Credit. A full list of incentives on a state-by-state breakdown can be found at [www.dsireusa.org](http://www.dsireusa.org).

Kingspan Insulated Panels is committed to environmental responsibility and has instituted a corporate mandate to have all global facilities Net Zero Energy by 2020. Kingspan North America is also a BETA participant in the Health Product Declaration and has started sustainability reporting utilizing the GRI – Global Reporting Initiative reporting frame work.

To find even more environmental and financial benefits of building with Kingspan Insulated Panels, please see visit [www.pathtonetzero.com](http://www.pathtonetzero.com).

If you have need of further information, please feel free to contact me.

Regards,



Paul R Bertram, Jr, FCSI, CDT, LEED AP BD&C  
Director, Environment & Sustainability  
Kingspan Insulated Panels, North America  
Mobile 386-785-3063  
[paul.bertram@kingspanpanels.com](mailto:paul.bertram@kingspanpanels.com)

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toll free: (877) 638-3266

[www.kingspanpanels.us](http://www.kingspanpanels.us)



Phone: 304-527-2800

Fax: 304-527-0985

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Penn & Main Streets, P. O. Box 635, Follansbee, WV 26037

September 2013

**Subject: Leadership in Energy & Environmental Design LEED®  
Wheeling-Nisshin, Inc. Steel Products**

Wheeling-Nisshin, Inc. recognizes the importance and growing agenda of Leadership in Energy & Environmental Design (LEED®) practices, materials and standards. The U.S. Green Building Council (USGBC) developed the LEED Green Building Rating System® as a means to promote the design and construction of buildings that are environmentally responsible, profitable and healthy places to live and work. The LEED® building rating system encourages the adoption of green practices by giving recognition and visibility to appropriately qualified projects.

Wheeling-Nisshin, Inc. manufactures a variety of hot dip metallic coated steel sheet products in Follansbee, West Virginia. Our facility purchases cold rolled steel which is produced by several domestic steel makers.

All of Wheeling-Nisshin, Inc. metal products are produced with recycled material whether from an integrated mill (basic oxygen furnace) or mini-mill (electric arc furnace), with at least 25%\*\* of the raw material is from post consumer or post industrial scrap.

Wheeling-Nisshin, Inc. therefore confirms that all of its metal building products are manufactured to meet or exceed all applicable LEED® standards for coated steel products and would typically qualify for LEED Credit 4.1 (1 point) and LEED Credit 4.2 (1 point).

Further noted is that none of the materials used in the manufacturing or packaging of Wheeling-Nisshin's products contain mercury.

**Wheeling-Nisshin, Inc**

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\*\* Recycled Content

Steel contains a high percentage of recycled material, the exact amount depending on the steelmaking process as indicated below:

<b>Steelmaking Process:</b> (Source: Steel Recycling Institute <a href="http://www.recycle-steel.org">www.recycle-steel.org</a> )	<b>Basic Oxygen Furnace</b>	<b>Electric Arc Furnace</b>
Total Recycled Content	36.9%	89.9%
Post-Consumer Content Value	19.8%	69.0%
Pre-Consumer Content Value	14.4%	19.5%

This information was compiled from national averages for mill usage of scrap as available from the Steel Recycling Institute. (October 2012).

Details add to less than total due to exclusion of "home scrap" for LEED's purposes. Check websites for most current data.

<http://www.recycle-steel.org/>

<http://www.usgbc.org/>

## ENVIRONMENTAL PRODUCT DECLARATION

# INSULATED METAL PANELS

KINGSPAN INSULATED PANELS NORTH AMERICA  
INSULATED WALL & ROOF PANEL SYSTEMS



Kingspan Insulated Panels North America, announces the first of its kind UL certified ISO compliant Environmental Product Declaration (EPD). The EPD describes environmental manufacturing footprints from cradle to grave based on an ISO compliant Life Cycle Assessment (LCA).

Kingspan's LCA calculates the environmental footprint at each stage of the supply chain, manufacturing processes, product use and end of life. All the significant environmental impacts associated with the product, including the impact on water, air, land and climate change are reported based on ISO LCA standards.

Kingspan Insulated Panels North America is part of Kingspan Group plc, the world's largest manufacturer of insulated metal panels, and as such is committed to reducing the impact of its business operations, products and services on the environment.

Follow our sustainability journey at:  
[www.pathtonetzero.com](http://www.pathtonetzero.com)



## ENVIRONMENTAL PRODUCT DECLARATION



Kingspan Insulated Panels North America  
Insulated Metal Roof and Wall Panel Systems

According to ISO 14025

### UL Environment CERTIFIED

This declaration is an environmental product declaration in accordance with ISO 14025 that describes the environmental characteristics of the aforementioned product. It promotes the development of sustainable products. This is a certified declaration and all relevant environmental information is disclosed.

PROGRAM OPERATOR	UL Environment
DECLARATION HOLDER	Kingspan
DECLARATION NUMBER	110929.11CA21665.101.1
DECLARED PRODUCT	Kingspan insulated panels manufactured in North America.
REFERENCE PCR	Building Envelope Thermal Insulation UL110116 and draft Insulated Metal Panels UL 110217.
DATE OF ISSUE	September 29, 2011
PERIOD OF VALIDITY	5 years
CONTENTS OF THE DECLARATION	Product definition and information about building physics. Information about basic material and the material's origin. Description of the product's manufacture. Indication of product processing. Information about the in-use conditions. Life cycle assessment results. Testing results and verifications.
The PCR review was conducted by:	UL Environment Review Panel Wayne Trusty (Chairperson) PO Box 189, 136 Charlotte St. Merrickville ON, Canada, K0G1N0 T: 613-269-3795 F: 613-269-3796 wtrusty@sympatico.ca
This declaration was independently verified by Underwriters Laboratories in accordance with ISO 14025 <input type="checkbox"/> INTERNAL <input checked="" type="checkbox"/> EXTERNAL	 (Loretta Tam), EPD Verifier
This life cycle assessment was independently verified to be in conformance with the cited PCRs	 (Wayne Trusty), LCA Verifier

Environment

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Kingspan Insulated Panels North America  
Insulated Metal Roof and Wall Panel Systems

According to ISO 14025

## Description of company / organization and product

### Description of company

Kingspan Insulated Panels manufacture sustainable wall and roof systems designed for customized architectural, commercial & industrial and cold storage applications. They provide a range of U/R-values, include a weather resistant moisture / air barrier and are factory assembled ready for on-site installation. Insulated Metal Panels (IMPs) offer many design options, including a variety of profiles and the ability to integrate these profiles with variable reveals. The panels are available in various cover widths and lengths, in curved and formed corners, and with a variety of high performance coatings and surface textures. The metal facings come in a multitude of colors and textures for both exterior and interior applications. Interior coatings also provide easy cleaning and washing as well as high light reflectivity. Panels can integrate with other building envelope solutions such as windows, louvers and sunshades.

### Description of the product

**The Construction Specifications Institute Master Format Structure 07 40 00 Roofing and Siding Panels.**

An IMP is a wall or roof assembly composed of an insulated polyisocyanurate core material sandwiched between two cold rolled pre-coated steel (galvanized or AZ-50, pre-coated and finish coated) skins utilizing an interlocking joint for a weathertight vapor barrier and insulating system. Under code IMPs are required to resist wind, snow and thermal loads as evidenced via structural testing (ASTM E72, E330), air / water infiltration testing (ASTM E283/331), thermal testing (C518 and C1363) and fire safety accreditation by FM and UL. They are attached using various fasteners and clips to a supporting steel structure (by others).





Kingspan Insulated Panels North America  
Insulated Metal Roof and Wall Panel Systems

According to ISO 14025

### Range of Applications

IMPs are well suited for commercial buildings due to their excellent thermal and weatherproofing performance characteristics as well as their competitive in-place costs. Buildings such as airplane hangars, banks, convention centers, distribution centers, manufacturing plants, museums, office buildings, schools, sports facilities, and cold storage and food processing facilities have proven to be excellent applications for IMPs. The design requirements of the building would determine the type of panel used. Applications can range from a large scale industrial building in Saskatoon, Canada to a customized convention center in downtown Boston.

### Product Specifications

A partial list of key product standards is listed below. A complete list of standards, compliance and performance requirements for the products can be found on the Kingspan websites at [www.kingspanpanels.us](http://www.kingspanpanels.us) and [www.kingspanpanels.ca](http://www.kingspanpanels.ca) under Product Specifications.

- AAMA 501.1: Standard Test Method for Metal Curtain Walls for Water Penetration using Dynamic Pressure.
- AAMA 501.2: Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls and Sloped Glazing Systems.
- ASCE 7: Minimum Design Loads for Buildings and Other Structures.
- ASTM C518: Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
- ASTM C1363: Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus
- ASTM D1621: Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
- ASTM D1622: Standard Test Method for Apparent Density of Rigid Cellular Plastics.
- ASTM D1623: Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics.
- ASTM D1654: Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments.
- ASTM D1929: Standard Test Method for Determining Ignition Temperature of Plastics.
- ASTM D2126: Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging.
- ASTM D6226: Standard Test Method for Open Cell Content of Rigid Cellular Plastics.
- ASTM E72: Standard Test Methods of Conducting Strength Tests of Panels for Building Construction.
- ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials.
- ASTM E283: Test for Rate of Air Leakage through Exterior Windows, Curtain Walls and Doors (Air Infiltration).
- ASTM E331: Test for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.
- ASTM E1646: Standard Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference.
- ASTM E1680: Standard Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems.
- FM Approval Standard 4880; Class 1 Fire Rating of Insulated Wall or Wall and Roof / Ceiling Panels, Interior Finish Materials or Coatings, and Exterior Wall Systems.



## ENVIRONMENTAL PRODUCT DECLARATION



Kingspan Insulated Panels North America  
Insulated Metal Roof and Wall Panel Systems

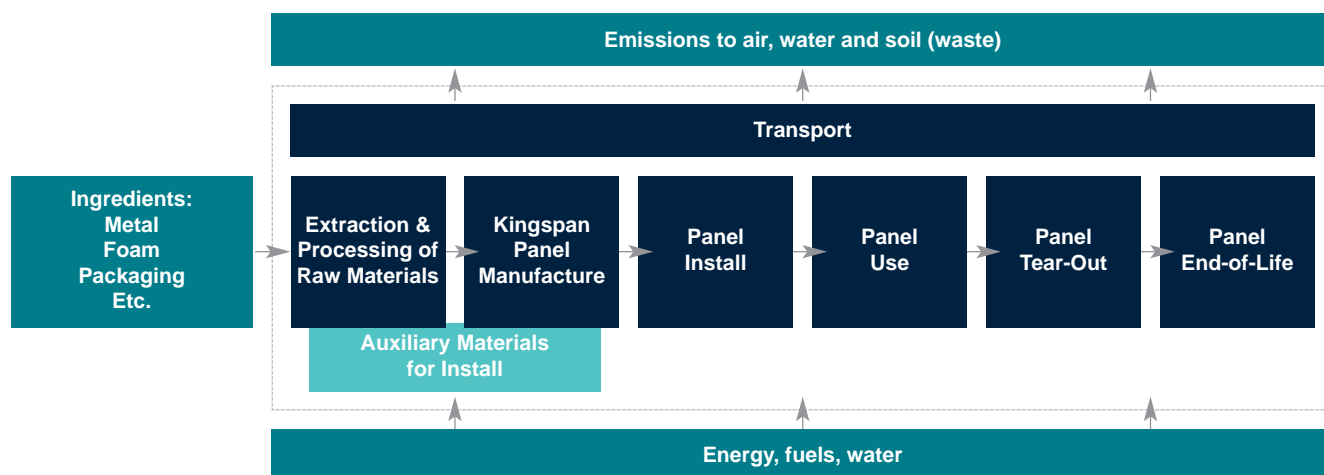
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- FM Approval Standard 4881; Class 1 Exterior Wall Systems.
- NFPA 259: Standard Test Method for Potential Heat of Building Materials.
- NFPA 285: Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components.

UL Canada (ULC) Approvals:

- CAN/ULC-S101: Standard Methods of Fire Endurance Tests of Building Construction and Materials.
- CAN/ULC-S102: Standard Method of Test for Surface Building Characteristics of Building Materials and Assemblies.
- CAN/ULC-S126: Standard Method of Test for Fire Spread Under Roof Deck Assemblies.
- CAN/ULC-S127: Standard Corner Wall Method of Test for Flammability Characteristics of Non-Melting Building Materials.
- CAN/ULC-S134: Fire Test of Exterior Wall Assemblies.

### Main Production Process



### Environmental Benefits During Use of the Product in a Building

The function of wall and roof IMPs is to insulate buildings, reducing energy demand and therefore greenhouse gases and energy bills. To evaluate these energy savings, an independent simulation analysis was performed by a third party (Architectural Energy Corporation) to evaluate the energy efficiency impact of improving typical buildings with insulated metal panel wall and roof systems, and the additional steps necessary to achieve net-zero energy buildings (study available at [www.kingspanpanels.us](http://www.kingspanpanels.us)). Net-zero energy demand buildings require additional energy conservation measures and the installation of on-site renewables, which are outside the scope of this LCA and EPD.

Three baseline buildings compliant with ASHRAE Standard 90.1-2004 and 90.1-2007 (school, office, and warehouse) were simulated in four locations. Each building's envelope was then improved with the insulated metal panel wall and roof systems. The manufacturing of the alternative building constructions are not compared – only the Use phase energy effects for the building itself.





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Insulated Metal Roof and Wall Panel Systems

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## Requirements for the underlying LCA

### Functional unit

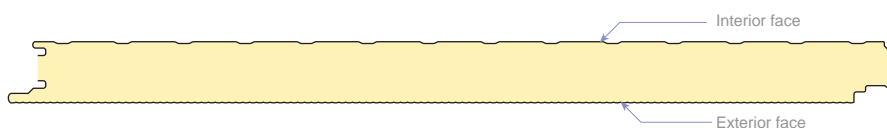
The functional unit (cradle to end of life) defined by the Thermal Insulation PCR is:

1 m<sup>2</sup> of insulation material with a thickness that gives an average thermal resistance  $R_{SI} = 1 \text{ m}^2\text{K/W}$  and with a building service life of 60 years (packaging included).

The functional unit has been set to 100 ft<sup>2</sup> of insulated metal panel that gives an average thermal resistance  $R_{US} = 24 \text{ h}\cdot\text{ft}^2\cdot^\circ\text{F/Btu}$  for Kingspan panels produced on a continuous production line (CPL) and  $R_{US} = 15 \text{ h}\cdot\text{ft}^2\cdot^\circ\text{F/Btu}$  for Kingspan panels produced by a laminated process, and with a building service life of 60 years, keeping the other considerations consistent. The current functional unit is derived from Kingspan's ISO 14040/44 verified LCA and is representative of the product as sold. The thermal insulation PCR has a functional unit of *1 m<sup>2</sup> of insulation material with a thickness that gives an average thermal resistance  $R_{SI} = 1 \text{ m}^2\text{K/W}$  and with a building service life of 60 years (packaging included)*. The R-value is the manufacturer's average value for the service life of the material and is determined by ASTM C 518 and/or ASTM C1303, whichever is applicable. This functional unit is relevant to the insulation component of the insulated metal panel product.

### Product content

#### Typical Insulated Metal Panel Example



#### Material Definitions

Galvanized or AZ-50 coil – hot-dipped, galvanized or AZ-50 steel coil.

Plastic peelcoat – polyethylene wrap to protect the face of the coil, to be removed during installation.

Foamstock – insulation material consisting of polyisocyanurate foam (which is sandwiched between two metal facings to complete the panel assembly).

Seam Tape – polyethylene tape used to contain the foam within the steel sheets during processing.

Adhesive – structural adhesive used to bond the foam to the panel's metal facings.



## ENVIRONMENTAL PRODUCT DECLARATION



Kingspan Insulated Panels North America  
Insulated Metal Roof and Wall Panel Systems

According to ISO 14025

### Material Content

Base Materials						
Component	Material	Availability	Mass % (Deland CPL)	Mass % (Modesto CPL)	Mass % (Columbus Laminated)	Origin
Galvanized Coil	Steel sheet 1.5mm hot dip Galvanized (or AZ-50)	Fossil resource, limited	69.33%	71.82%	81.86%	Global
Plastic Peelcoat	Polyethylene film	Fossil resource, limited	0.49%	0.51%	0.47%	North America
Foamstock	Polyisocyanurate foam	Fossil resource, limited	29.44%	26.66%	13.77%	North America
Seam Tape	Polyethylene film	Fossil resource, limited	0.17%	0.17%	0.00%	North America
Adhesive	Structural adhesive	Fossil resource, limited	0.57%	0.84%	3.89%	North America

### Packaging

Panels are wrapped in polyethylene wrap and stacked on pallets of plywood with dividers made of factory foam scrap or Expanded Polystyrene foam (EPS).

### System boundaries

The system boundaries studied as part of this LCA include extraction of primary materials, raw materials manufacture, panel manufacture, installation via crane, product installation & maintenance, and end-of-life as shown in the aforementioned main production process.

### Period under construction

Primary data collected from Kingspan for their operational activities related to the two insulation products are representative for the year 2008 (reference year).



## ENVIRONMENTAL PRODUCT DECLARATION

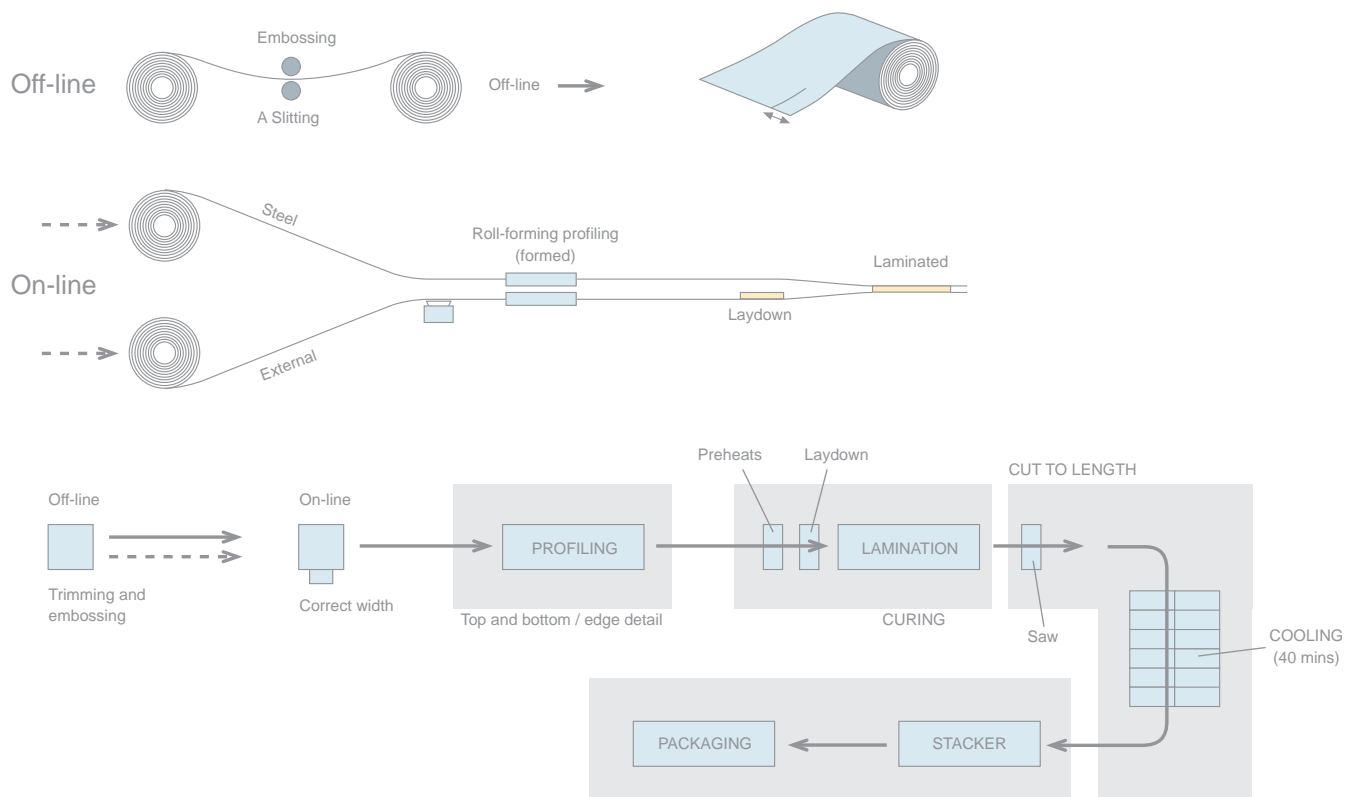


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### Manufacturing process

Insulated Metal Panels – Continuous Production Line (CPL).



Foam is applied as a liquid or froth between the sheets of metal. It undergoes a chemical reaction causing it to rise and bond to the metal skins, filling the interior cavity, creating a solid monolithic panel that maintains a consistent thermal value and resists moisture, insect and rodent infiltration.

CPL Unit Processes	Description
Forming and Trimming	Steel coil is embossed, formed, and trimmed to size
Preheat and Curing Oven	Foam is mixed in line between two coil layers, then cured
Cutting and Cooling	Cured panels are cut to length and cooled
Packaging	Panels are stacked and packaged

Environment

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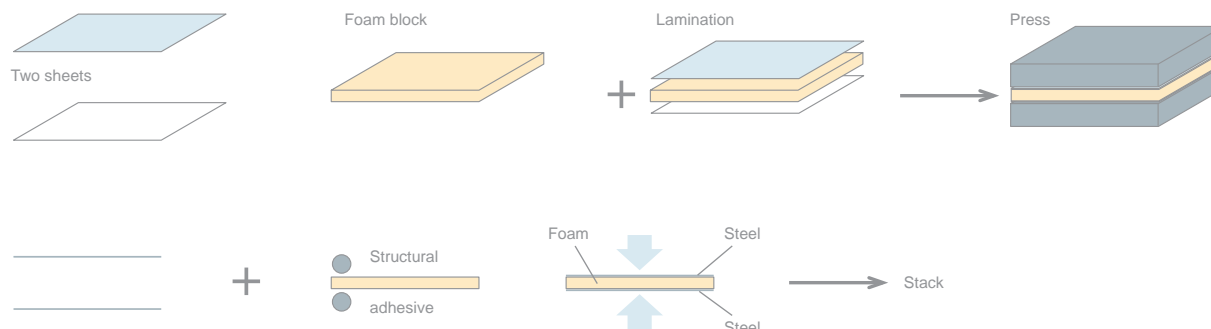
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Insulated Metal Panels – Laminated (i.e., discontinuous production line).



IMPs can also be manufactured by a laminating process. In this method, pre-cured foam board stock is adhered to preformed metal facers with structural adhesives and placed under pressure in a platen press.

Laminated Unit Processes	Description
Forming and Trimming	Steel coil is embossed, formed, and trimmed to size
Foamstock Production and Shaping	Preblended foam is shaped and cut to size
Lamination	Formed coil and shaped foamstock are laminated
Packaging	Panels are stacked and packaged

With both types of IMPs a factory controlled, uniform foam thickness provides consistent insulation performance; all IMPs can be produced in a variety of styles and sizes depending on application.

### Installation

The installed Kingspan IMP is a system that also requires butyl sealant and fasteners. The butyl sealant and fasteners are included in the LCA. It is installed as a system over structural support systems such as wall framing, which are excluded from this EPD.

Auxiliary materials for installation are included but the entire wall or roof system is not modeled. After installation of the panel, other materials such as flashing, trim, molding, clips, and framed openings can be installed onto or attached to the IMP. Figure 2 and Figure 3, on the following pages, depict installation guidelines. The diagrams show that butyl sealant and fasteners are necessary to correctly install the panels – they have therefore been included in the LCA.



## ENVIRONMENTAL PRODUCT DECLARATION



Kingspan Insulated Panels North America  
Insulated Metal Roof and Wall Panel Systems

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Base Condition

Framed Opening Condition

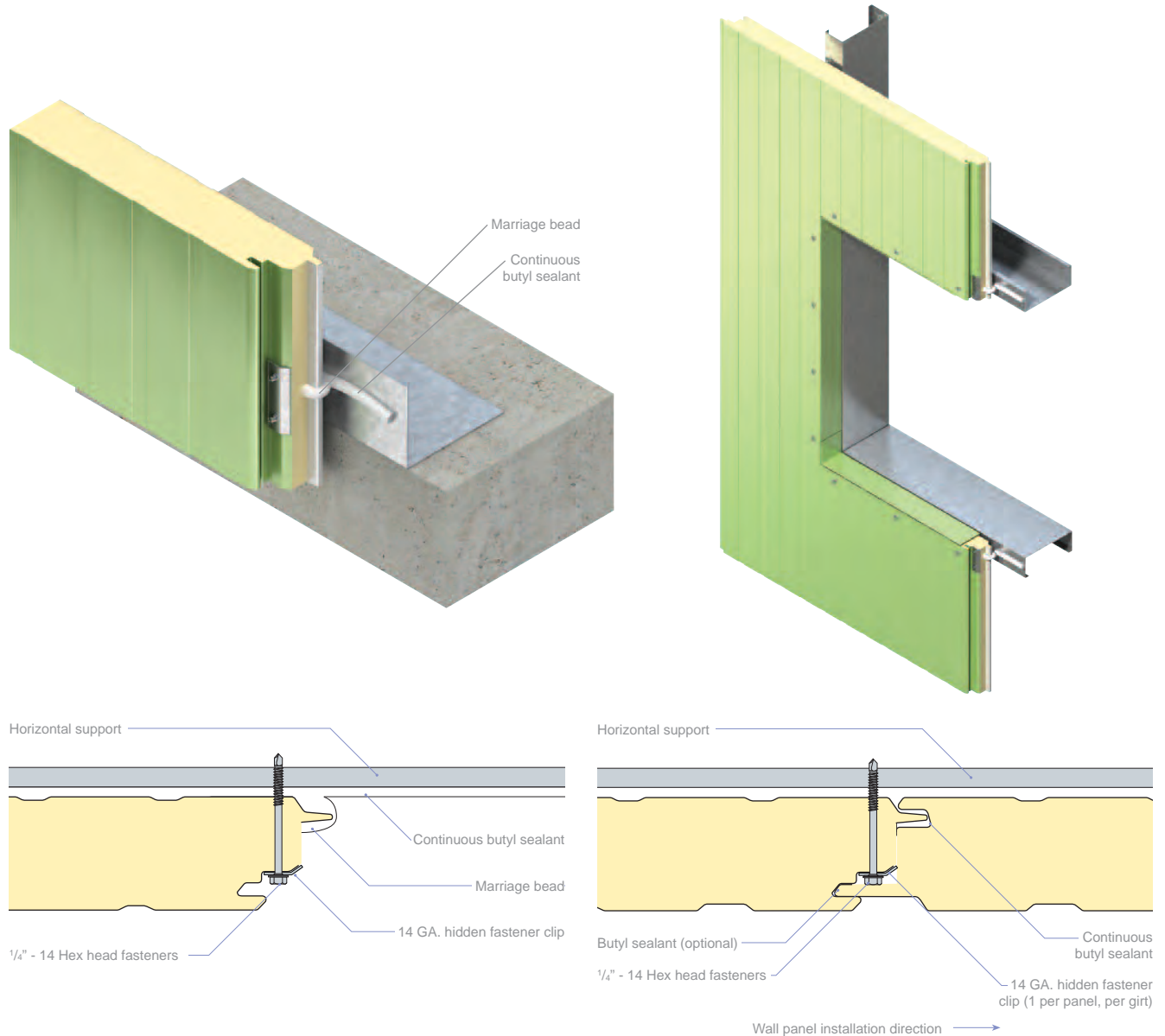


Figure 2: Example IMP wall installation guidelines

**Environment**

[10]



## ENVIRONMENTAL PRODUCT DECLARATION



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Panel Connection at Joint

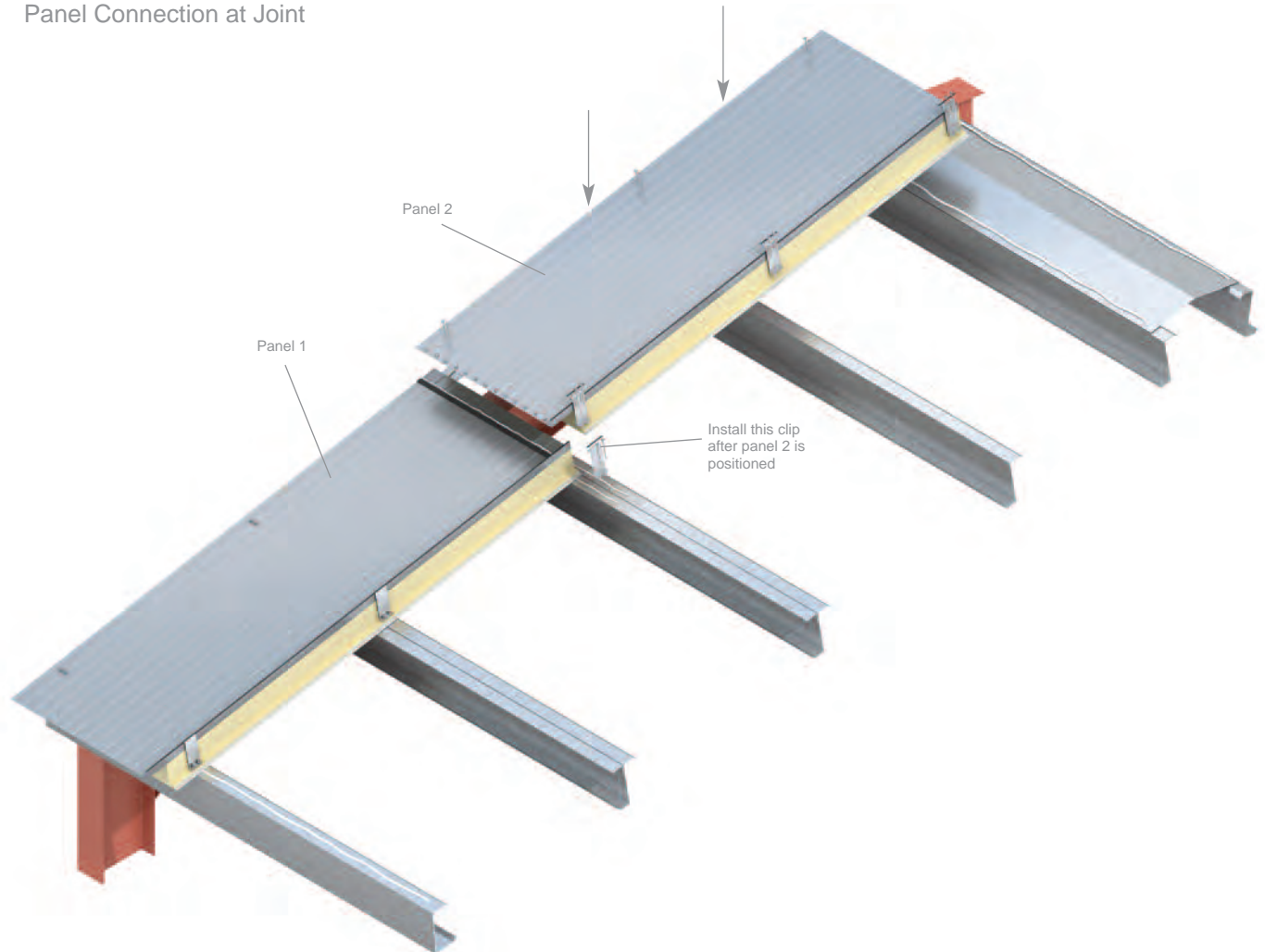


Figure 3 - Example IMP roof installation guide

**Environment**

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Insulated Metal Roof and Wall Panel Systems

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### Transport

Transportation emissions and fuels throughout all life cycle phases are included. All transport is assumed to be by truck, with an average distance of 100 miles.

### Disposal / Reuse / Recycling

Although the LCA assumes that Kingspan insulated metal panels go to the landfill at end of life, it is possible to recycle 100% of the steel and insulating material.

Steel scrap is generated during manufacturing related to off-quality, the roll-forming of coil, and cutting the finished panels to length. This steel is considered a valuable co-product, and was addressed in the LCA with system expansion. To be consistent with the Worldsteel dataset for Steel Coil, the scrap steel was given a credit based on the "Value of Scrap" model as described in a study of recycling methodologies (Avery & Coleman, Sept 2009). This model is included upstream in the production of Steel Coil and is consistent throughout the study.

### Cut-off rules

The following cut-off criteria were used to ensure that all relevant environmental impacts were represented in the study:

- Mass – If a flow is less than 1% of the cumulative mass of all the inputs and outputs of the LCI model, it may be excluded, provided its environmental relevance is not a concern.
- Energy – If a flow is less than 1% of the cumulative energy of all the inputs and outputs of the LCI model, it may be excluded, provided its environmental relevance is not a concern.
- Environmental relevance – If a flow meets the above criteria for exclusion, yet is thought to potentially have a significant environmental impact, it is evaluated with proxies identified by chemical and material experts within PE. If the proxy for an excluded material has a significant contribution to the overall LCIA, more information is collected and evaluated in the system.

The sum of the neglected material flows shall not exceed 2 % of mass or energy.

### Assumptions and estimations

The product mix presented is representative for the product range of the plant. For the life cycle assessment, each product type has been modeled separately and then an average value has been established.

The geographical coverage for this study is as follows:

- 2-inch Laminated Panels (R-15) – manufactured in Columbus, OH;
- 3-inch CPL Panels (R-24) – manufactured in Modesto, CA & Deland, FL;
- Packaging systems and installation materials production – manufactured in United States;
- Use of metal insulated panels – used around the United States; and
- Disposal / reuse / recycling disposition (panels and packaging waste) – disposed in the United States.





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### Allocation

Steel scrap generated during manufacturing was considered a valuable co-product, and was addressed with system expansion. To be consistent with the Worldsteel dataset for Steel Coil, the scrap steel was given a credit based on the “Value of Scrap” model as described in a study of recycling methodologies (Avery & Coleman, Sept 2009). This model is included upstream in the production of Steel Coil and is consistent throughout the study.

The environmental “Value of Scrap” is applied within the product life cycle as shown in the simplified diagram of Figure 4. In this example, the steel contains 10% scrap. Therefore, the cradle to gate production of 1 kg of steel receives the environmental burdens associated with combining 0.90 kg of primary steel with 0.10 kg of scrap steel. Upon disposal / reuse / recycling, 0.90 kg of scrap steel is produced, and therefore 0.90 kg worth of “Value of Scrap” is received. The “Value of Scrap” (per kg) awarded as credit during disposal / reuse / recycling is the mathematical inverse of that which adds burden to material production. In this example, the 0.90kg of scrap mathematically cancels the 0.10kg of scrap used during the initial manufacture, and provides a net 0.80 kg worth of the “Value of Scrap” credit plus 0.90 kg of primary steel production. Throughout this report, however, we separate the “Value of Scrap” used during product manufacture from that potentially available at disposal / reuse / recycling. This is done for two reasons: for transparency in modeling, and in recognition of the uncertainty around disposal / reuse / recycling treatment.

The “Value of Scrap” is calculated as the difference between producing a given amount of material by primary production and the same amount of material through secondary production means. Mathematically, this is represented as follows:

$$\text{LCI for 1 kg of steel including disposal / reuse / recycling} = X_{PR}(1-R_C)+X_{RE}(R_C) - Y(R_R - R_C)(X_{PR}-X_{RE})$$

Where:

The “Value of Scrap” =  $Y(X_{PR}-X_{RE})$

$X_{PR}$  = LCI for primary steel production

$X_{RE}$  = LCI for secondary steel production

$R_R$  = Recovery Rate at disposal / reuse / recycling

$R_C$  = Recycled content in steel object

$Y$  = Metallic Yield





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A simplified example, assuming no material losses during production, manufacturing or use.



Figure 4: "Value of Scrap" as applied in a Life Cycle

Allocation was used in creation of upstream datasets in the GaBi database, such as refinery products. Documentation for upstream data can be provided upon request or at <http://documentation.gabi-software.com/>.

## Data quality

### Description of data

Although it is difficult to conduct a comprehensive data quality and reliability check on the data reported from several production sites, consistency and internal quality checks for mass and energy balance results were conducted.

### Background Data

Data from the GaBi 4 database, the Worldsteel LCIs, the NREL USLCI, and the Polyisocyanurate Insulation Manufacturers Association (PIMA) LCI were used.





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## Life Cycle Assessment results and analysis

A life cycle assessment, complying with ISO 14040 / 14044, describing the declared product and based on plausible, transparent and credible data, is presented. Model assumptions with a relevant influence on the declared results are clearly stated below. The aggregated values of the life cycle inventory analysis and the categories of the life cycle impact assessment below are clearly scaled to the functional or declared unit.

### Material and energy resources

#### Primary energy consumption

	100 square feet	Unit / 100ft <sup>2</sup>	Total Life Cycle	1. Raw Materials	2. Transport	3. Mfg Emiss & Scrap credits	4. Purchased Energy	5. Installation & Maintenance	6. End of Life
CPL	Primary Energy from Non-renewable Resources	MJ	1.45E+04	1.38E+04	1.29E+02	-4.59E+02	8.37E+02	1.18E+02	8.36E+01
CPL	Primary Energy from Renewable Resources	MJ	5.14E+02	2.94E+02	1.87E-01	2.68E+01	1.87E+02	2.45E+00	4.21E+00
CPL	Energies from Secondary Fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Laminated	Primary Energy from Non-renewable Resources	MJ	1.63E+04	1.33E+04	1.26E+02	-8.94E+01	2.83E+03	4.35E+01	7.65E+01
Laminated	Primary Energy from Renewable Resources	MJ	3.21E+02	2.84E+02	1.82E-01	5.46E+00	2.56E+01	1.13E+00	4.17E+00
Laminated	Energies from Secondary Fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00



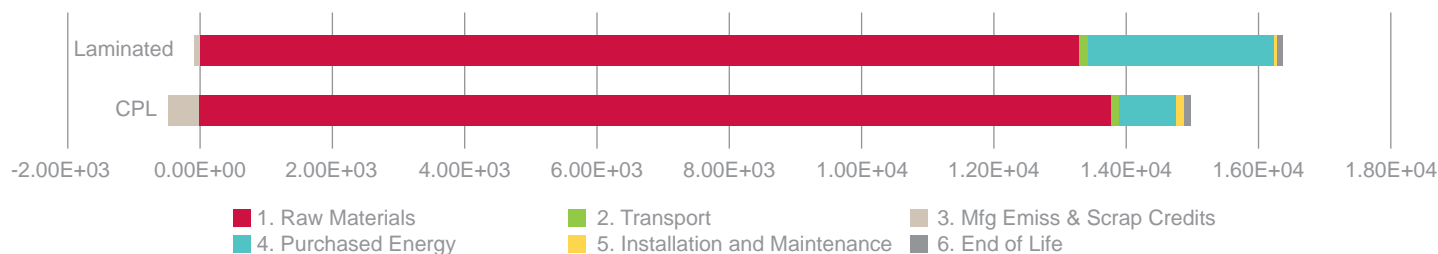
# ENVIRONMENTAL PRODUCT DECLARATION



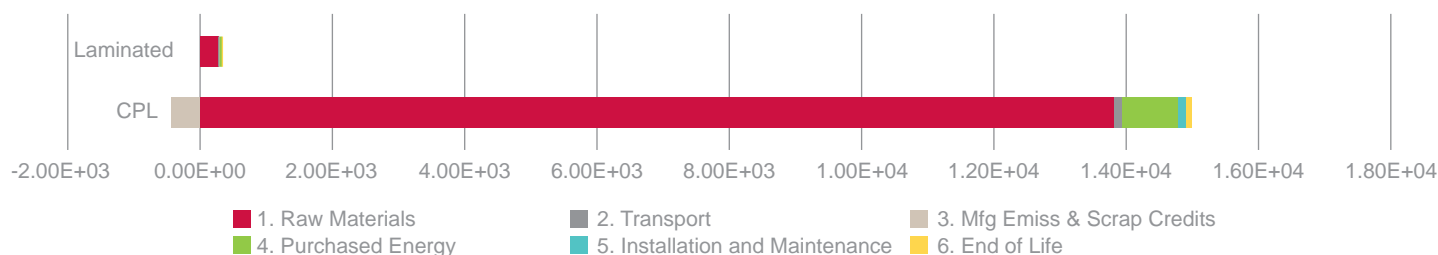
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## Primary Energy Demand – Non-renewable (MJ/100ft²)

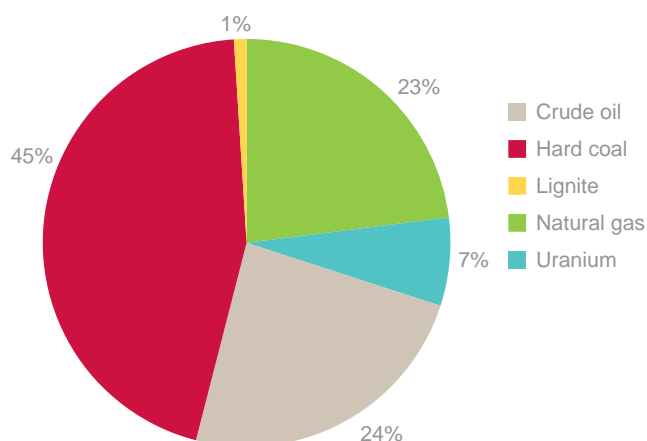


## Primary Energy Demand – Renewable (MJ/100ft²)

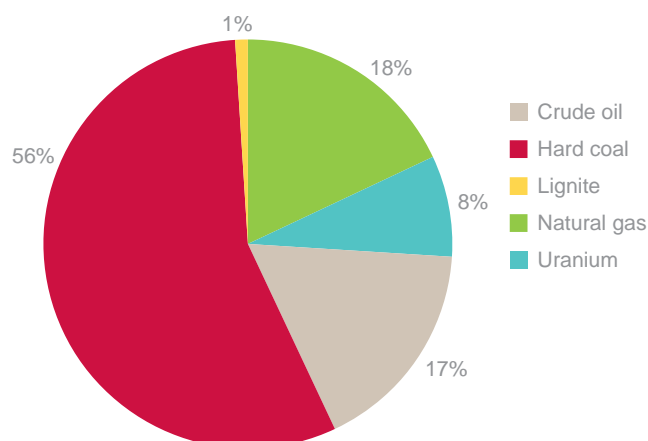


## Primary energy of non-renewable resources (MJ), subdivided into (%)

### Non-renewable Energy by Source – CPL



### Non-renewable Energy by Source – Laminated



## ENVIRONMENTAL PRODUCT DECLARATION

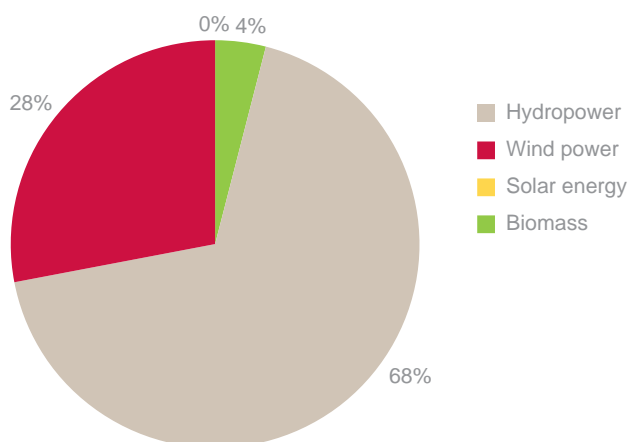


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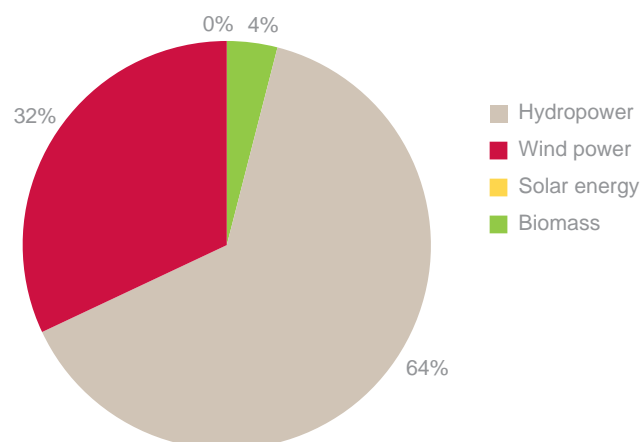
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### Primary energy of renewable resources (MJ), subdivided into (%)

Renewable Energy by Source – CPL



Renewable Energy by Source – Laminated



### Non-renewable material resources, Water utilization, and Wastes

	Unit / 100ft <sup>2</sup>	CPL	Laminated
Non-renewable resources	kg	2137.292	1456.492
Water	m <sup>3</sup>	6.016	3.754
<b>Wastes</b>			
Secondary Material (steel scrap)	kg	39.090	3.630
Consumer waste	kg	18.269	0.318
Hazardous waste	kg	3.421	1.107
Radioactive waste	kg	0.346	0.271
Stockpile goods	kg	2083.288	1400.222



## ENVIRONMENTAL PRODUCT DECLARATION



Kingspan Insulated Panels North America  
Insulated Metal Roof and Wall Panel Systems

According to ISO 14025

### Life cycle impact assessment (LCIA)

Impact Potential						
		Global Warming (kg CO <sub>2</sub> -Equiv.)	Acidification (kg SO <sub>2</sub> -Equiv.)	Eutrophication (kg Phosphate-Equiv.)	Ozone Depletion (kg R11-Equiv.)	Smog Creation (kg Ethene-Equiv.)
CPL	Total	9.25E+02	1.69E+02	1.70E-01	3.05E-05	1.75E-03
CPL	1. Raw Materials	8.60E+02	1.56E+02	1.23E-01	2.10E-05	1.59E-03
CPL	2. Transport	9.10E+00	5.84E-01	4.49E-04	2.04E-08	9.29E-06
CPL	3. Mfg Emiss & Scrap Credits	-4.40E+01	-4.79E+00	4.55E-03	1.67E-06	-1.43E-05
CPL	4. Purchased Energy	5.01E+01	1.40E+01	5.80E-03	7.56E-06	1.06E-04
CPL	5. Installation & Maintenance	8.95E+00	1.39E+00	1.05E-03	1.12E-07	1.67E-05
CPL	6. End of Life	4.09E+01	2.10E+00	3.48E-02	1.76E-07	4.03E-05
Laminated	Total	1.17E+03	2.51E+02	1.83E-01	4.23E-05	2.30E-03
Laminated	1. Raw Materials	9.39E+02	1.69E+02	1.24E-01	1.94E-05	1.63E-03
Laminated	2. Transport	8.88E+00	5.64E-01	4.29E-04	1.99E-08	8.91E-06
Laminated	3. Mfg Emiss & Scrap Credits	-9.48E+00	-9.00E-01	9.57E-04	3.33E-07	-9.69E-06
Laminated	4. Purchased Energy	1.97E+02	8.04E+01	3.36E-02	2.24E-05	6.30E-04
Laminated	5. Installation & Maintenance	3.81E+00	5.61E-01	4.05E-04	3.69E-08	7.44E-06
Laminated	6. End of Life	2.92E+01	1.97E+00	2.41E-02	1.43E-07	3.63E-05



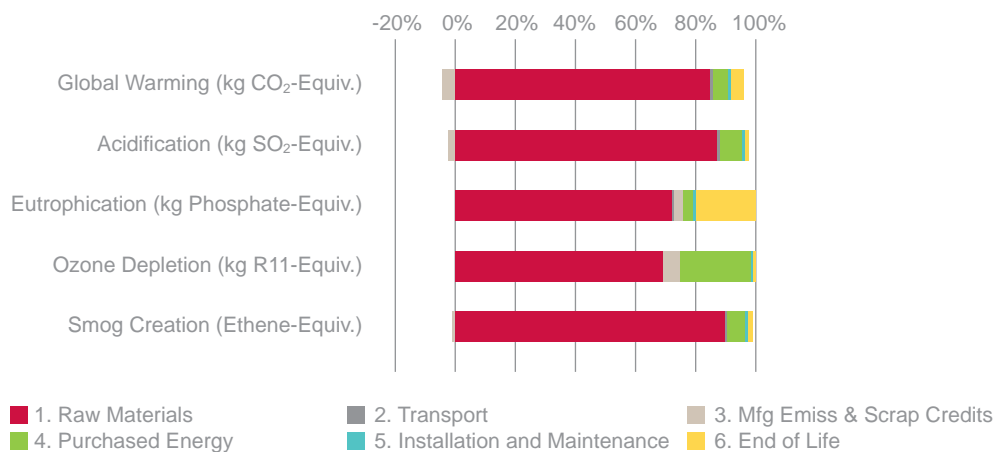
## ENVIRONMENTAL PRODUCT DECLARATION



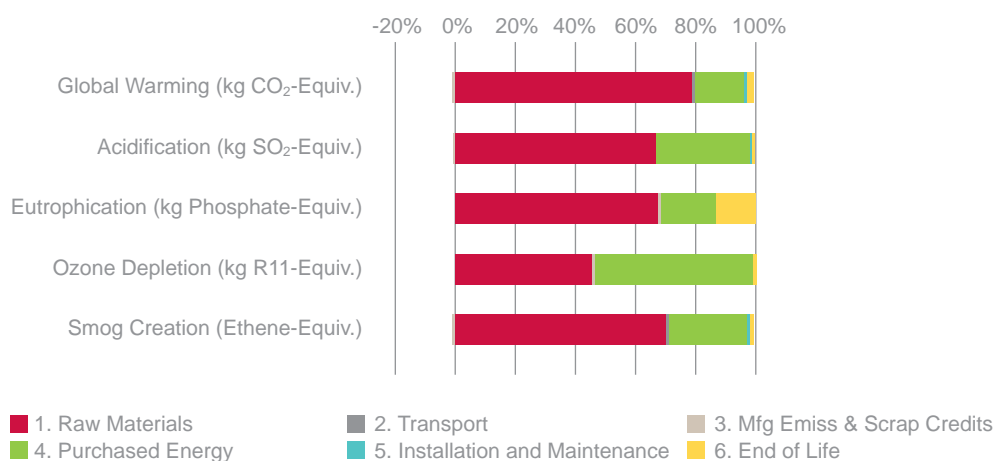
Kingspan Insulated Panels North America  
Insulated Metal Roof and Wall Panel Systems

According to ISO 14025

### LCIA Results – CPL Impact Potential (per 100 ft<sup>2</sup> normalized to 100%)



### LCIA Results – Laminated Impact Potential (per 100 ft<sup>2</sup> normalized to 100%)





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According to ISO 14025

### Interpretation of results

As indicated in the results above, raw materials clearly dominate the Cradle-to-Gate impacts. Manufacturing processes and energy, Transportation, Installation, and EOL all have small effects on the life cycle burdens.

Within the Raw Materials category, the main contributors are the materials with the greatest mass. Steel, MDI, and Polyol make up the largest percentage by mass compared to other foam additives and packaging. These three materials represent 95%, 86%, and 91% of the finished packaged product mass for Columbus, Deland, and Modesto respectively. Background data for the foam materials are relevant to the LCIA results, but no proxies were used and the LCIs were taken from industry average studies.

Plywood and Steel scrap provide impact credits which are represented as negative burden values in the results presented herein. The outbound packaging shipped with the finished product includes a considerable amount of plywood. Trees sequestered carbon dioxide upstream in the manufacture of plywood, represented by a negative CO<sub>2</sub> emission. The plywood could eventually be burned in an incinerator, balancing this CO<sub>2</sub> uptake. However, most plywood and waste in the US is sent to Landfill so an average PE landfill model is chosen for the plywood's EOL.

Approximately 50% of biomass in landfill actually decays. The remainder is sequestered in the landfill for 100 years or more. The standard landfill emissions were compared to the emissions of this fractional decay and were found to be very similar. Therefore, an industry average land-fill dataset for Commercial Waste was chosen to represent the EOL of plywood. The CO<sub>2</sub> up-take shown in the Outbound Packaging grouping does not balance the CO<sub>2</sub> emissions at EOL because of the partial sequestration of biomass in landfills. The second material for which a credit is being applied is valuable steel scrap sent to recyclers, causing negative burden values. The dataset chosen for this is the "Global Value of Scrap" data set. Both this dataset as well as the Hot Dipped Galvanized Coil data set were developed in the Worldsteel LCI project. Note that this credit is only applied to the steel scrap generated during manufacture. Kingspan has no documentation of steel from panels being recycled at disposal / reuse / recycling, so no recycling credit can be given.



## ENVIRONMENTAL PRODUCT DECLARATION

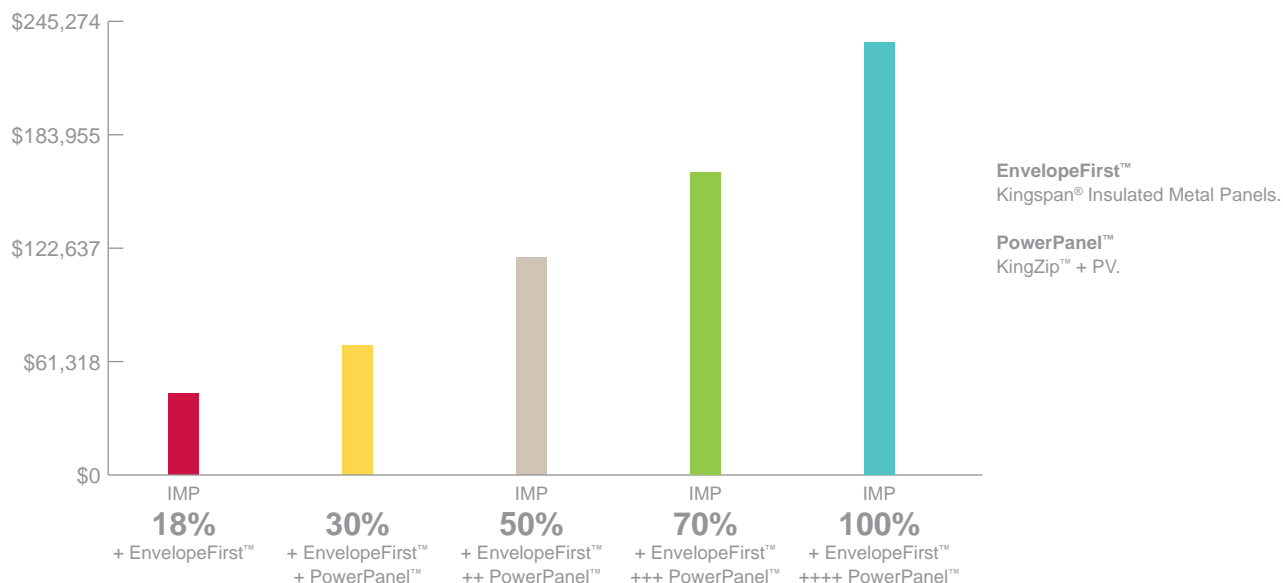


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### Path to NetZero™

Annual energy cost savings based on 110,348 ft<sup>2</sup> School in Minneapolis using 3" Kingspan insulated metal wall panels, 4" Kingspan insulated metal roof panels in comparison with Split Face block construction and baseline building method at ASHRAE 90.1 2004 standard.



This study is available at [www.kingspanpanels.us](http://www.kingspanpanels.us) and was independently reviewed. One of the review comments was to include Return On Investment (ROI) as related to "first costs" at a minimum of 25 year use life. As a result [www.pathtonetzero.com](http://www.pathtonetzero.com) and the related App were developed as tools to help design teams understand the importance of thermal performance to optimize a building's envelope. For full details on energy cost savings and ROI, download the free App.



Environment

[21]





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### Other relevant information

#### Useful life of a Kingspan Insulated Panel

Wall and roof panels by Kingspan Insulated Panels are available with warranties of up to 20 years. Note that the panels must be replaced 3 times to achieve a 60 year coverage, per the PCR. To model this, all non-use phase impacts have been scaled up to cover the manufacturing, installation & removal, and disposal / reuse / recycling three times.

#### Health and safety

Kingspan North America has policies and systems in place to meet or exceed OSHA standards, address safety concerns and track accidents. Kingspan meets all Federal, State and Local requirements for health and safety.



## ENVIRONMENTAL PRODUCT DECLARATION



Kingspan Insulated Panels North America  
Insulated Metal Roof and Wall Panel Systems

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### Delivered product configurations

Panels are custom built to order and are delivered to site within the following parameters:

#### Insulated Metal Wall Panels – Continuous Production (CPL)

Panel Thickness	2" 2-1/2" 3" 4" 5" 6"
Panel Width	24" 30" 36" 42" (standard)
Lengths	8'-0" to 52'-0"
Joint Configuration	Double tongue and groove interlocking rainscreen joint
Panel Facings – Material	Zincalume® / Galvalume® or G-90, non-directionally stucco embossed steel
Orientation	Horizontal or Vertical

#### Insulated Metal Wall Panels – Laminated Production

Panel Thickness	2" 2-1/2" 3"
Panel Width	24", 30" and 36" standard (special widths 8" min. to 46" max.)
Lengths	1'0" to 24'0" standard (30'0" maximum)
Joint Configuration	Double tongue and groove interlocking rainscreen joint
Panel Facings – Gauges	22/24 gauge steel, .040"/.040" aluminum
Orientation	Horizontal or Vertical

#### Insulated Metal Roof Panels – Continuous Production (CPL)

Panel Thickness	2" 3" 4" 5" 6"
Panel Width	42"
Lengths	8'-0" to 52'-0"
Joint Configuration	Standing Seam, 2" high (nominal)
Panel Facings – Material	Galvalume® or Zincalume® pre-painted steel
Panel Facings – Gauges	Exterior 24 minimum, 22 available Interior 26, 24 or 22





Kingspan Insulated Panels North America  
Insulated Metal Roof and Wall Panel Systems

According to ISO 14025

## References

(2006). ISO 14025: Environmental labels and declarations – Type III environmental declarations – Principles and procedures.

(2006). ISO 14040 : Environmental management - Life cycle assessment – Principles and framework.

(2006). ISO 14044 : Environmental management - Life cycle assessment – Requirements and guidelines.

Avery, C., & Coleman, C. (Sept 2009). Life Cycle Assessment Methodologies for Quantifying the Benefits of Steel Reuse and Recycling.





## **PROPER STORAGE & HANDLING OF DESIGNWALL PANELS**

Kingspan-Benchmark recommends that all panel crates be unloaded from the truck using a forklift or crane using nylon straps. Chains or cables should not be used as they are likely to damage the panel surface or smash the side legs and gaskets.

Panel crates should be inspected immediately upon delivery for the presence of moisture or damage. If moisture is present, the crates should be opened immediately and dried.

All panel crates should be stored in a dry condition. An area should be provided, maintained, and assigned by the general contractor and/or owner. This area should be clean, level, accessible, and sufficiently compacted to support panel crates.

Panels should remain in their crates until ready for installation. If possible, panel crates should be stored indoors or under shelter; however, due to the nature of most jobsites, panels must be stored outside. If so, panel crates should be protected from the weather by a suitable covering until installation. Panel crates should be stored sloped to allow for drainage of condensation. Allow adequate ventilation to protect panels from condensation build up.

Panels with protective plastic coating (strippable) should be shielded from prolonged exposure to moisture, U.V. rays, heat, and excessive storage duration (over 90 days). These conditions may cause plastic coating to become difficult to remove or cause adhesive transfer from the plastic coating onto the panel finish. Kingspan-Benchmark will not be responsible for any costs incurred for the cleaning of panels caused by improper storage and/or improper removal of strippable film from panels.



**Kingspan Benchmark**  
720 Marion Road  
Columbus, OH 43207  
tel: (614) 444-0110  
fax: (614) 444-7759  
toll free: (877) 638-3266

[www.kingspanpanels.us](http://www.kingspanpanels.us)



# **Panel Maintenance Manual**

Rev. 02.09.11

Dear Customer,

Thank you for your purchase of Kingspan insulated panels. Our product, when properly installed, will provide many years of excellent service. As with any building material, occasional maintenance is required to keep our panels in top condition. Please read this Maintenance Manual for instructions regarding cleaning, paint touch-up, rust and mildew removal, sealants and general repairs. Should you need additional information, please feel free to contact our Customer Service department(s) at the numbers listed below.

Thank you,

Kingspan Insulated Panels

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Section 1 - Roof and Wall Annual Maintenance  
Section 2 - Panel Cleaning  
Section 3 - Trim  
Section 4 - Finish Repairs  
Section 5 - Dent or Tear Repairs  
Section 6 - Replacement Parts or Service

726 Summerhill Dr., Deland, FL 32724, USA 386-626-6789 p 386-626-6887 f  
2000 Morgan Rd., Modesto, CA 95358, USA 209-531-9091 p 209-531-9055 f  
720 Marion Road (P.O. Box 07928) Columbus, OH 43207, USA 614-444-0110 p 614-444-7759 f  
12557 Coleraine Dr., Caledon, ON L7E 3B5, Canada 905-951-5600 p 905-951-3944 f  
5202-272<sup>nd</sup> St., Langley, B.C. V4W 1S3, Canada 604-607-1101p 604-607-1142 f  
[www.kingspanpanels.us](http://www.kingspanpanels.us)  
[www.kingspanpanels.ca](http://www.kingspanpanels.ca)

02.09.11

## Section 1 – Roof and Wall Annual Maintenance

**Roof and Walls** – Do not store materials on top of the roof panels, or in contact with the wall panels. To prevent stains and possible corrosion, panels should not come in contact with wood, lead, or copper. Panels should be kept clear of dirt and soil. Air conditioning condensation water should not be allowed to drain onto your roof or wall panels.

**Roof Debris** - At least once a year, clean the roof and gutters of leaves or other debris which would trap or pond water on the roof. Wash dirt and debris from all panel surfaces. Local conditions should govern the frequency of these cleanings.

**Ice and Snow Buildup** - Excessive ice and snow should be removed from the roof perimeter areas. This is particularly important in gutter areas (eaves and valleys) and in areas of the roof sheltered from the wind (behind facades, step roof conditions, etc.). Exercise care during removal so as not to scratch the surface of the panels. Adequate fall protection should also be used to prevent injuries.

**Roof Traffic** - Roof traffic is a leading cause of roof leaks. If routine traffic is unavoidable, a dedicated walkway designed for use with the roof panel should be installed.

When walking on the roof is required:

*Avoid stepping on the ridge caps*

*Avoid stepping on lap joints in roof panels and flashings*

*Avoid walking near roof curbs or other roof penetrations*

*Avoid stepping on panel ribs between purlins*

*Do not step in or on gutters or the gutter hanging system*

*Do not step on or near skylights or other penetrations*

**Foliage** - While bushes and trees enhance the appearance of buildings, their contact with wall panels can produce scratches in the paint surface. Keep bushes and trees trimmed back from the panel surfaces.

**Yearly Roof Check** - Once a year, check the joints in the roof panels and associated trims for proper seals and loose fasteners. If any seals are broken, have your contractor remove the fasteners, take the connections apart, remove the existing sealant and closures, install new sealant and closures and reattach using new and/or larger corrosion resistant fasteners as necessary. Care should be taken that all seals are placed within the old screw line, or to the weather side of the screws. On those areas where taking the connections apart are not feasible or cost effective, have your roofing contractor wash the affected area, replace loose fasteners and cover the broken seal with foil-backed tape (such as polykentak) or a suitable elastomeric patch.

**Visual Inspection** – Twice a year, make a complete visual inspection of the panels and look for any changes in appearance such as creases, bulges or bumps. If any irregularities are observed, please contact Kingspan Customer Service for further assistance.

## Section 2 – Panel Cleaning

*Always test the cleaning process in a small inconspicuous area before using on a large scale*

**Routine Washing** – Bare Zincalume/Galvalume or painted roofing and siding should be washed with soap and water as necessary to maintain appearance. Carwash soap or a 5% solution of commonly used mild laundry detergent should work well for most cleaning situations. Always rinse thoroughly with water. Do not use wire brushes, steel wool, sandpaper, abrasives or similar cleaning tools which can mechanically abrade the coating surface. Use a cloth, sponge or a soft bristle brush for application. Cleaning should be done in the shade or on a mild cloudy day.

**Rust** - Panels should be inspected for rust once a year. If rust or rust stains are found, determine the source, such as steel filings from drilling and remove them. Rust stains can generally be cleaned off with one of the following: soap and water, mineral spirits, Soft Scrub, or a mild automotive polishing compound.

**Mildew Removal** - Mildew can be expected in areas of high humidity. Mildew is more of an appearance problem than an actual threat to the paint finish. Mildew can be removed by using a basic solution of the following:

- 1/3 cup of detergent
- 2/3-cup tri-sodium phosphate
- 1-quart sodium hypo-chloride, 5% solution
- 3 quarts of water

Rinse with clean water immediately after use.

**Non-Water Soluble Deposits On Polyester Finishes** - Use mineral spirits to remove non-water soluble deposits (tar, grease, oil, paint, graffiti, etc.) from the panel surface.

**Non Water Soluble Deposits On Kynar Finishes** - Solvents that may be used to remove these items from **Kynar panel finishes** include:

<b>Alcohols-</b>	No permanent effect on Kynar Denatured Alcohol (Ethanol) Isopropyl (Rubbing) Alcohol Methanol (Wood Alcohol) – Note: Methanol is toxic
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<b>Petroleum Solvents-</b>	No permanent effect on Kynar VM & P Naphtha Mineral Spirits Turpentine (Wood or Gum Spirits)
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<b>Aromatic and Others*-</b>	Use with caution on a Kynar surface. Xylol (Xylene) Toluol (Toluene)
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\* Limit contact time to 5 minutes maximum and test before using.

**Ketones, Esters, Lacquer Thinner** – (including Methyl Ethyl Ketone, Methyl Isobutyl Ketone). Use very cautiously on Kynar surfaces. Limit contact time to 1 minute maximum and test before using. Continued contact with these products could

result in loss of gloss or other blemishes. Kingspan is not responsible for damage caused by unrestricted use.

*Most organic solvents are flammable and/or toxic and must be handled accordingly. Keep away from open flames, sparks and electric motors. Use adequate ventilation, protective clothing and goggles.*

**Sealant Removal** - Precautions should be made to prevent sealants from getting on the painted surface as they may be difficult to remove. They should be removed promptly with a solvent such as WD-40, denatured alcohol or mineral spirits. *Caution: It may be possible for solvents to extract materials from sealants, which could stain the painted surface or could prove harmful to sealants. Test a small area first.*

**Protective Film Adhesive Residue** – For painted panels, bare aluminum and stainless steel, residue may be removed by using “Oil-Flo”, Titan Laboratories, Mountain View, CA (650-965-9900, [www.titanlabs.net](http://www.titanlabs.net)).

1. Panel cleaning should be performed away from direct sunlight.
2. Using a garden sprayer, apply the “Oil-Flo” solution (full strength) on the panel and let soak for two minutes. As the solution is absorbed, it identifies the residue spots.
3. Lightly scrub affected areas with a soft bristle brush (2” bristles) wet with “Oil-Flo”. If the residue is heavy, you may need to wipe with a rag soaked in the solution.
4. Thoroughly rinse the panels with water until the white colored solution is completely removed.

## Section 3 – Trim

**Gutter And Downspouts** – Clear all debris (leaves, dirt, etc.) from gutters and downspouts as required. The frequency of this cleaning depends on the building’s surroundings. At the minimum, cleanings should be done annually.

**Loose Trim** – Loose trim should be reattached to the building using stitch fastener or pop rivets as required.

**Damaged Trim** – Trim at wall openings (such as overhead doors etc.) sometimes gets damaged by vehicle traffic. Replacement trim can be obtained through Kingspan.

**Weep Holes** – Certain trims, such as head trims located at the top of framed openings may contain weep holes that should be checked annually to make sure they remain open.

## Section 4 – Finish Repairs

*This section involves repair methods for **non-warranted items only**. Please contact Kingspan Customer Service for instructions regarding warranted repairs – failure to do so before attempting any repairs will result in forfeiture of factory warranties.*

**Minor Paint Scratches** - Minor scratches should be repaired with an artist brush or “paint pen”. If the scratched area has not rusted, wipe clean the scratched area using a clean white rag dampened with the appropriate solvent for the panel paint system as indicated in **Section 2 - Cleaning**. Apply the touchup paint without surface preparation. If the area is rusted, remove the rust, prime the affected area then apply the color matched touchup paint. *Use only Kingspan supplied touchup*

*paint and primers. Primer and color matched touchup paint with brush applicator is available from Kingspan Customer Service.*

**Larger Areas Requiring Repainting** - For larger repair areas that require spray application, use the procedures outlined below for each type of paint system. Field painting of the pre-painted surfaces on our panels should be attempted only by a *skilled professional using the systems and methods outlined below.*

*Note: Color changes may not be uniform on surfaces that are not equally exposed to the sun and elements. In addition, slight shading differences may occur between field applied paint systems and pre-painted, coil applied systems. These differences are more noticeable when using mica or metallic paint colors.*

### **Modified Polyester, Silicone Modified Polyester and Ceramic Polyester Finishes**

1. All areas to be repainted should be pressure washed to remove all surface contaminants and to remove poorly adhered paint and clear coats. Washing process shall consist of high pressure washing of 2,000-5,000 psi (may be reduced on softer substrates such as aluminum) using the solution recommended in **Section 2 Panel Cleaning - Mildew Removal.**
2. Mask area to be repaired to eliminate any over spray onto existing structures.
3. Sand entire area to be repaired with fine sandpaper (400 grit) until surface is smooth and all nicks and scratches have been removed.
4. Wipe sanded area clean with a clean, white lint-free cloth dampened with Toluol or other suitable cleaner as identified in **Section 2 – Panel Cleaning.** Follow all instructions on proper handling of cleaning solutions, including use of proper safety gear and disposal.
5. If sanded to bare metal, pre-treat and prime the metal prior to painting to ensure proper adhesion of the air dry system.
6. For best results, primer and paints should only be applied when the temperature of the air and substrate is above 50 degrees F (10°C).
7. Prime entire part uniformly using a good corrosion resistant automotive type primer to achieve a smooth, consistent film with complete hiding of the metal, dry film of 0.40-0.50 mils.
8. Minimum dry film thickness should be measured with a Nordson Microtest Gauge or equal.
9. It is not necessary to prime areas that do not show bare metal. If it is necessary to prime the area, then follow the recommendations of the primer's manufacturer for reduction and application techniques. For large areas, you may choose to use a Binks hand spray gun (or equivalent) with a cup reservoir. For smaller areas, you may use an artist's air brush or Crown spray tool #8010 with #8011 power pack aerosol from Crown Industrial Products, Hebron, IL 60034. HVLP (low pressure, high volume spray) equipment should be used to conserve material and contain paint mist/overspray.
10. If priming is necessary, the primer should be tack-free and ready to topcoat in 4 to 6 hours or as recommended by the manufacturer. If handling is necessary prior to top-coating, overnight dry time is recommended.

11. Top-coat using a good exterior grade acrylic paint of the same gloss range as that of the surrounding area. Correct spray viscosity is dependent upon the application equipment selected and the recommendation of the paint manufacturer. Some degree of trial and error may be necessary to achieve the required appearance depending upon the conditions where the repair is being performed.

## **Product Sources – Polyester Finishes**

Air dry acrylic products may be obtained through Kingspan Customer Service, your local paint store that does custom matching or your local automotive paint store (if you have a color chip for them to match).

Many customers have had success using Sherwin Williams Metalatex Semi-Gloss Coating B42 series.

## **Kynar (PVDF) Finishes**

Primer is required when the Kynar coated surface has less than three (3) years of weather exposure\*. “ADS” is a Kynar based air-dry field repair touchup finish. It is supplied as a solution coating ready for on-site application.

ADS has excellent exterior exposure qualities and is the best method for repairs.

1. All areas to be repainted should be pressure washed to remove all surface contaminants and to remove poorly adhered paint and clear coats. Washing process shall consist of high pressure washing of 2,000-5,000 psi (may be reduced on softer substrates such as aluminum) using the solution recommended in **Section 2 Panel Cleaning - Mildew Removal**.
2. Mask area to be repaired to eliminate any over spray of material to existing structures.
3. Sand entire part to be repaired with fine sandpaper (400 grit) until surface is smooth and all nicks and scratches have been removed.
4. Wipe sanded area clean with Toluol dampened lint free cloth. Follow all instructions on proper handling of cleaning solutions, including use of proper safety gear and disposal.
5. If sanded to bare metal, pre-treat the metal prior to painting to ensure proper adhesion of the ADS.
6. For best results, *primer and paints should only be applied when the temperature of the air and substrate is above 50 degrees F (10°C)*.
7. Prime entire area uniformly with Fluoroceram ADS Primer 727 (or equivalent) to achieve a smooth, consistent film with complete hiding of metal (dry film thickness of approximately 0.2-.4 mils).
8. Minimum dry film thickness should be measured with a Nordson Microtest Gauge or equal.
9. For priming large areas, use a Binks (or equivalent) hand spray gun with a cup reservoir or equivalent. For smaller areas, you may use an artist's air brush or Crown spray tool #8010 with #8011 power pack aerosol from Crown Industrial Products, Hebron, IL 60034. HVLP

(low pressure, high volume spray) equipment should be used to conserve material and contain paint mist/overspray.

10. Primer will be tack-free and ready to topcoat in 1 to 2 hours. If handling is necessary prior to topcoating, overnight dry time is needed.
11. Topcoat with Fluoroceram ADS, using the same type(s) of equipment that was used for the primer, to a dry film thickness of 1.0-1.5 mils. To spray Fluoroceram ADS, you may need to thin slightly with Methyl Isobutyl Ketone (MIBK).
12. If this spray is too wet, use Methyl Ethyl Ketone (MEK) as a quicker dry alternative. If cob webbing of spray occurs, reduce viscosity approximately one third more with additional solvent.
13. Correct spray viscosity is dependent upon the application equipment, therefore, some degree of trial and error may be necessary. Improper reduction will result in unacceptable appearance. Dry time is 1 to 2 hours tack free, overnight to handle.

### **Product Sources – Kynar (PVDF) Finishes**

Fluoroceram Ads and suitable primer may be purchased directly from Kingspan Customer Service.

### **Graffiti Removal:**

The following procedure should be used with care to minimize the potential for further damage to the finish:

1. Thoroughly wet a clean white cotton rag with the proper solvent for the paint system being cleaned (see **Section 2 – Panel Cleaning**). Wring out rag to prevent dripping.
2. Using moderate hand pressure, rub area to be cleaned with cloth to remove graffiti. Rinse rag often to prevent contamination of unaffected areas.
3. Do NOT use abrasive material or excessive pressure as damage to the finish may result.
4. Depending on the nature of the graffiti paint, as well as the amount of time the graffiti has remained on the panels, removal may be unsuccessful. For these situations, total repainting of the affected area(s) may be required.
4. Follow all safety procedures when using solvents, including proper ventilation, eye and skin protection, and proper disposal.

## **Section 5 – Dent or Tear Repairs**

There are three main methods of dent or metal facing damage repairs. The first two involve patching or overlays, the third involves repair to the existing metal panel surface.

**Patching method:**

1. Field fabricate a patch from a section of matching metal skin.
2. If metal facing is torn and foam is damaged, repair foam by injecting two part urethane into the void and let fully cure.
3. Seal the patch to the panel face with matching silicone sealant and pop-rivet into place.

**Overlay method:**

Panels that become damaged from dents, large or multiple dings or irreparable scratches may be field-repaired by using an overlay sheet of the appropriate profile. *Please contact Kingspan Customer Service for more specific instructions regarding this repair method.*

**Panel surface repair method:**

1. *We strongly recommend that the services of a local qualified automotive body shop be used for this repair method.*
2. Determine the type of paint system on the panel to be repaired (polyester or Kynar).
3. Mask off area to be repaired.
4. If metal facing is torn and foam is damaged, repair foam by injecting two part urethane into the void and let fully cure.
4. Remove paint and primer by sanding down to bare metal around area to be repaired.
5. Repair damage to face of panel with automotive body filler.
6. Use separate piece of matching metal skin to imprint proper embossing texture into filler (if required to match existing).
7. Prime and repaint over repaired area using proper touch-up procedures outlined in **Section 4**.
8. “Dentless repair” methods may also be attempted depending on the shape and size of the damage. Consult with a qualified automotive body shop to determine applicability of this repair method.

*Note: Large areas of damage may require complete panel replacement.*

## **Section 6 – Replacement Parts or Service**

Replacement panels, trim pieces and accessories may be obtained through your local Kingspan panel contractor, or may be ordered directly through Customer Service at the plant where the product was initially manufactured. When calling to place an order, please reference the original Kingspan job number (if available), project name, year built, original panel contractor and jobsite address.

726 Summerhill Dr., Deland, FL 32724, USA 386-626-6789 p 386-626-6887 f  
2000 Morgan Rd., Modesto, CA 95358, USA 209-531-9091 p 209-531-9055 f  
720 Marion Road (P.O. Box 07928) Columbus, OH 43207, USA 614-444-0110 p 614-444-7759 f  
12557 Coleraine Dr., Caledon, ON L7E 3B5, Canada 905-951-5600 p 905-951-3944 f  
5202-272<sup>nd</sup> St., Langley, B.C. V4W 1S3, Canada 604-607-1101p 604-607-1142 f  
[www.kingspanpanels.us](http://www.kingspanpanels.us)  
[www.kingspanpanels.ca](http://www.kingspanpanels.ca)



## LIMITED WARRANTY – PANELS

PROJECT: \_\_\_\_\_ OWNER: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

KINGSPAN JOB NO.: \_\_\_\_\_ DATE OF SHIPMENT: \_\_\_\_\_  
PLANT LOCATION: \_\_\_\_\_  
PANEL TYPE(S): \_\_\_\_\_

KINGSPAN INSULATED PANELS INC. (OR KINGSPAN INSULATED PANELS LTD. FOR PROJECTS LOCATED IN CANADA), HEREINAFTER REFERRED TO AS KINGSPAN, SHALL EXTEND A LIMITED WARRANTY FOR A PERIOD OF TWO (5) YEAR(S) ON THE INSULATED PANELS FURNISHED BY KINGSPAN FOR THE PROJECT REFERENCED ABOVE SUBJECT TO THE FOLLOWING TERMS AND CONDITIONS:

### TERMS AND CONDITIONS

#### I. WARRANTY DESCRIPTION AND DURATION

Kingspan warrants to the owner of the building (“Owner”) that the panels covered hereunder are free from defects in material and workmanship under normal use and service. Panels will not show evidence of excessive deflection or delamination when properly installed under conditions within panel design limits as determined by Kingspan. The warranty period commences on the date of substantial completion, or six months from date of shipment, whichever occurs first.

#### II. OWNER’S OBLIGATIONS

1. Owner, or his designated Contractor, shall, prior to installation, inspect the material received from Kingspan, and shall forthwith notify Kingspan of any nonconformity of the material. Installation of the material shall constitute acceptance of the material as in conformity with the material ordered. Owner, or his designated Contractor shall inspect the panels received from Kingspan prior to installation so as to mitigate expenses of Kingspan to repair or replace the panels.
2. Owner shall periodically clean the panels to remove debris, silt and other contaminants and obstructions to flow of runoff. This cleaning shall be performed at least as frequently as outlined in the maintenance instructions.
3. Owner must provide Kingspan free access to all panels on the subject building during normal business hours to conduct any and all investigations and repairs.
4. Any claim arising from this warranty for any cause whatsoever shall be deemed WAIVED by Owner unless written notice thereof is given to the Kingspan plant location listed above within thirty (30) days after discovery of claimed defect or thirty (30) days from time such defect should have been discovered after exercise of reasonable diligence and within the dated warranty period. Owner’s notice shall include Kingspan order number, date of shipment and date of panel installation. Owner shall, on demand, present evidence that establishes any claimed defect due to a

breach of the warranty stated herein, and that the owner's obligations under the warranty have been fulfilled.

5. Kingspan shall be given reasonable opportunity to inspect the installation prior to Owner making or causing to be made any repairs to the panels. All repair attempts made must be pre-approved in writing by Kingspan. Owner agrees to reimburse Kingspan for all investigation costs incurred by Kingspan for claims not warranted hereunder. No components or materials shall be returned to Kingspan without Kingspan's inspection and approval and receipt from Kingspan of written shipping instructions.

### III. EXCLUSIVE REMEDY

1. If it is determined to Kingspan's reasonable satisfaction, upon inspection by Kingspan, that the panels are defective, Kingspan's liability and Owner's sole remedy shall be limited to repair or replacement by Kingspan at Kingspan's option. Liability under this agreement shall be limited to the actual cost of the warranty repair work, and in no event shall be more than the original cost of the material supplied by Kingspan. Kingspan shall not be liable for claims resulting from improper or incorrect installation of Kingspan's panels.
2. Should the product covered under this warranty be discontinued, Kingspan reserves the right to substitute a product of equal quality and price at its discretion. It is understood and accepted by Owner that normal exposure to the elements may preclude a perfect color match between the original and replacement material.
3. Owner hereby WAIVES all remedies not expressly provided herein, including, but not limited to, damages to property and incidental or consequential damages for loss of use, loss of revenue or loss of profit.

### IV. WARRANTY LIMITATIONS

1. THE WARRANTY DESCRIBED HEREIN SHALL BE EXCLUSIVE AND IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED INCLUDING THE WARRANTY OF *MERCHANTABILITY* OR FITNESS FOR A PARTICULAR PURPOSE. KINGSPAN ALSO DISCLAIMS AND OWNER WAIVES ANY LIABILITY OF KINGSPAN IN TORT, STRICT OR OTHERWISE, FOR DAMAGES, DIRECT OR CONSEQUENTIAL, RESULTING FROM A DEFECT IN DESIGN, MATERIAL, WORKMANSHIP, OR MANUFACTURE, WHETHER OR NOT OCCASIONED BY KINGSPAN'S NEGLIGENCE.
2. Kingspan shall have no liability or responsibility under or in connection with this TWO (2) year Limited Panel Warranty should one or more of the following conditions exist, whether or not such conditions result from or are occasioned by the negligence or fault of any other party:
  - a. Failure of Owner to fulfill his obligations as set forth in Section II above.
  - b. Alteration or repair of panels other than as specified in Section II above.
  - c. Improper installation, including but not limited to non-compliance with information set forth in current Kingspan installation manuals, Kingspan shop drawings or Kingspan approved shop drawings, or non-conformance to SMACNA principles for sheet metal practices.
  - d. Alterations made to the panels including but not limited to, structures, fixtures, or utilities being placed upon or attached to the panels without prior written authorization from Kingspan.
  - e. Damage caused by settlement, expansion, deflection of structural load-bearing members or movement of roof, walls, steel frame or secondary structural members of building

systems or equipment including building foundations and vibrating, reciprocating or rotating machinery.

- f. Damage resulting from natural or man-made disasters such as tornadoes, hurricanes, hail, floods, cyclones, sand storms, earthquakes, lightning, fire, acts of war, vandalism or terrorism.
- g. Damage resulting from acts of negligence including but not limited to improper storage, shipping and/or handling, accident or misuse, aggressive cleaning products or methods etc.
- h. Damage resulting from falling objects, projectiles, however propelled, foot traffic, recreational activities, or storage of material of any kind in contact with the panels.
- i. Changes in building usage or utilization without prior written consent of Kingspan.
- j. Standing water (ponding).
- k. Corrosion due, but not limited to, drainage from roof top equipment, exposure to marine (salt water) atmosphere, atmospheric contaminants or contaminants generated inside the building, including moisture build-up due to inadequate or poor ventilation of interior. The fact that contaminants may not have been identified or existent at time of installation shall not obligate Kingspan under the provisions of this warranty.
- l. Movement or deterioration of metal components and/or dissimilar metals in direct contact with or adjacent to the panels unless such components are an integral part of the panel system and have been approved or designated by Kingspan as a part of the panel system purchased by Owner.
- m. Failure of any materials, assemblies or components furnished by others whether identified to Kingspan at the time of warranty offer or not.

#### V. TRANSFERS, ASSIGNMENTS AND REPRESENTATIONS

- 1. This Limited Warranty is extended to the above named Owner only and is non-transferable and non-assignable. No rights against Kingspan shall be created by any transfer or assignment. Owner or its agents or representatives shall not claim, represent or imply nor permit its customers, distributors, applications, or contractors to claim, represent or imply that this warranty extends or is available to parties other than Owner. Owner shall cause any party to cease and desist any such misrepresentations. This condition shall constitute a material term of this Limited Warranty and its violation by Owner shall excuse Kingspan from its obligations hereunder.

#### VI. TERMINATION

- 1. Kingspan reserves the right to terminate this Limited Warranty offer prior to the time that this document is signed and dated by all parties per the Warranty Responsibility section.

#### VII. ENTIRE AGREEMENT/MERGER

- 1. Oral statements made by Kingspan's representatives and written descriptions of the products appearing elsewhere than on the face hereof are not warranties and shall not be relied upon by Owner. This writing constitutes the final, complete and exclusive expression of the terms of the parties' agreement. Any modifications hereof, to be effective, shall be in writing, shall expressly refer to this warranty, and shall be signed by an authorized representative of Kingspan.
- 2. Kingspan will not participate in any claims or pay any claims until the full contract price for all work performed and materials furnished is received by Kingspan, unless the claim of an alleged

failure of the warranted product is made prior to completion of the installation. This requirement also includes payment to Kingspan for the additional cost of this Limited Warranty, if any.

3. Kingspan's failure at anytime to enforce any of the terms and / or conditions stated herein shall not be construed to be a waiver of those provisions.
4. In the event of a material breach by the Owner of any of the conditions of this Agreement, Kingspan shall have no liability for any Product failure claims.
5. The laws of the state of Florida shall govern the construction, interpretation and performance of this agreement, except for projects located in Canada which shall be governed by the laws of the province of Ontario. In the event that any provision of these terms and conditions shall be deemed illegal, unenforceable or null and void, all remaining provisions shall remain in effect. Any dispute under this Limited Warranty shall be brought, for products used in the United States, in the state or federal courts located in the State of Florida, and, for products used in Canada, in the provincial or federal courts located in the Province of Ontario.

### **WARRANTY RESPONSIBILITY**

Date of Issuance: \_\_\_\_\_

Kingspan: \_\_\_\_\_

Date: \_\_\_\_\_

**SAMPLE**

726 Summerhill Dr., Deland, FL 32724, USA 386-626-6789 p 386-626-6887 f  
2000 Morgan Rd., Modesto, CA 95358, USA 209-531-9091 p 209-531-9055 f  
720 Marion Road (P.O. Box 07928) Columbus, OH 43207, USA 614-444-0110 p 614-444-7759 f  
12557 Coleraine Dr., ON L7E 3B5, Canada 905-951-5600 p 905-951-3944 f  
5202-272<sup>nd</sup> St., Langley, B.C. V4W 1S3, Canada 604-607-1101 p 604-607-1142 f  
[www.kingspanpanels.us](http://www.kingspanpanels.us)  
[www.kingspanpanels.ca](http://www.kingspanpanels.ca)

04.12.12