Kingspan®
BENCHMARK

Architectural

BUILDING ENVELOPE SOLUTIONS

EnvelopeFirst™

Kingspan Benchmark

Kingspan Benchmark Designwall™ Series is more than an insulated wall panel system. It is a building envelope solution that can be tailor-made for custom, out of the ordinary projects. Innovation through the years has made creative design freedom possible with architectural panels manufactured using both laminated and foamed in place techniques.

Designwall™ panel systems are a critical first step to LEED® and Net-Zero energy buildings by providing superior airtightness and moisture control, significant R-values, and utilizes highly sustainable metal.

From the design stage through installation, the Kingspan Benchmark team offers support to architects, the design teams and contractors which may include custom detailing, assistance with design, application, drafting and installation training to ensure successful project completion.

What's more, Kingspan's single component system can reduce on-site installation time and is suitable for new and retrofit architectural applications.

Start with the EnvelopeFirst™

Kingspan Benchmark
Columbus, OH, USA 1-877-638-3266; Modesto, CA, USA 1-800-377-5110
info.us@kingspanpanels.com / info.ca@kingspanpanels.com
www.kingspanpanels.us / www.kingspanpanels.ca

Follow Kingspan Benchmark on:

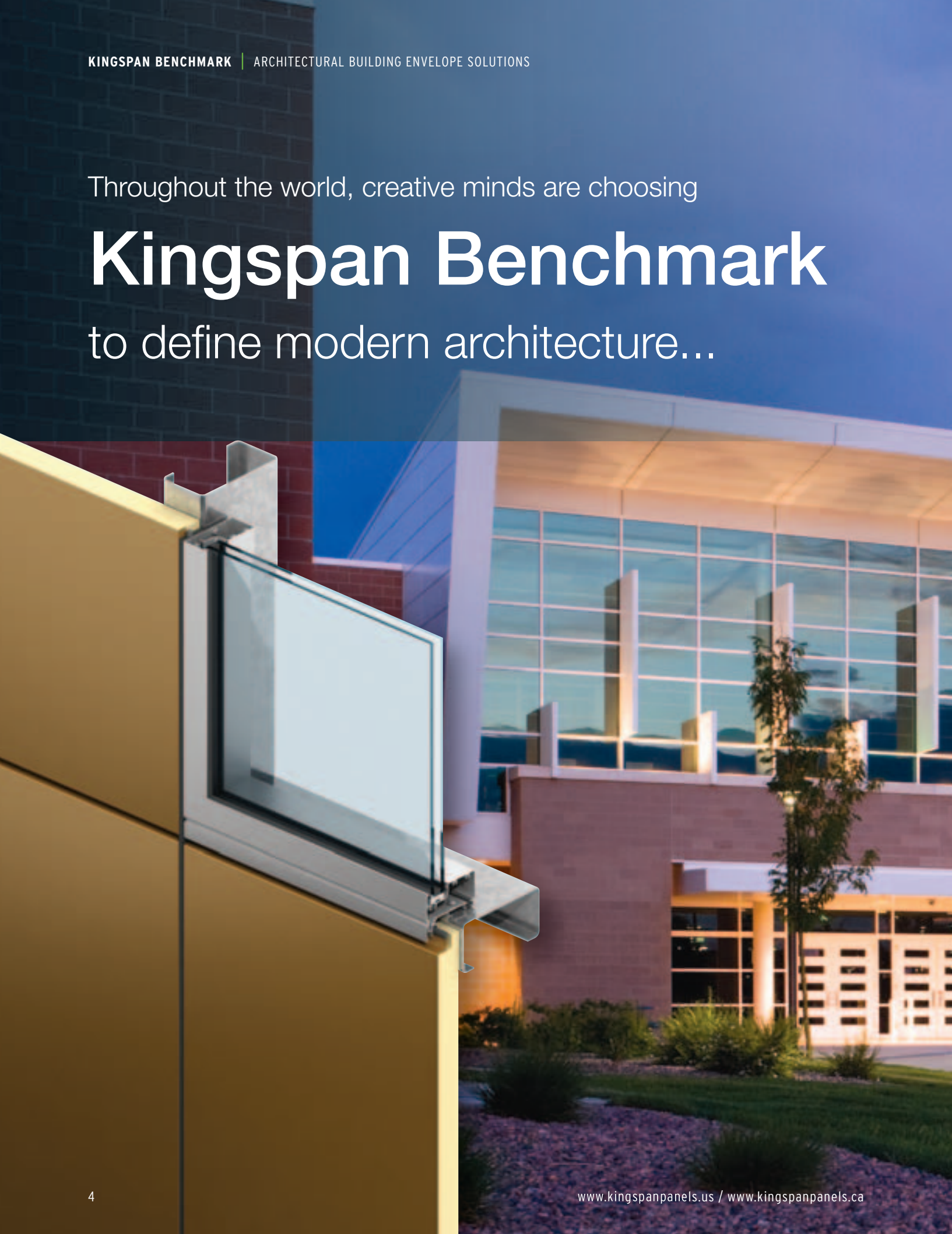
Contents

"A quality product, engineering, installation training and customer service... Benchmark was there"

Throughout the world, creative minds are choosing

Kingspan Benchmark

to define modern architecture...



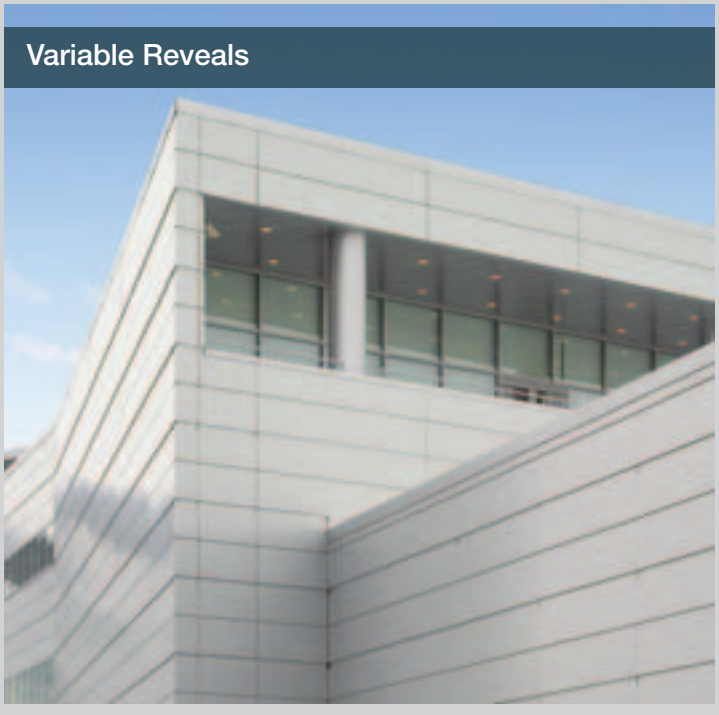
…resulting in both unique and extraordinary building features

Design Flexibility

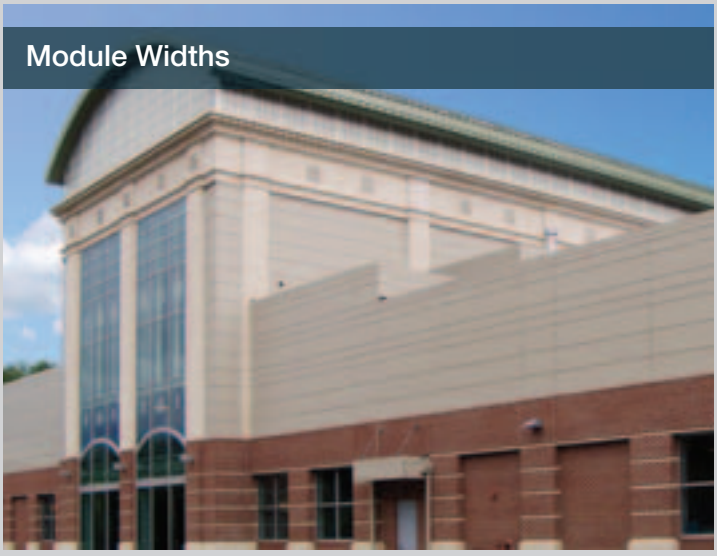
Trimless Corner Panels

Integrated Profiles

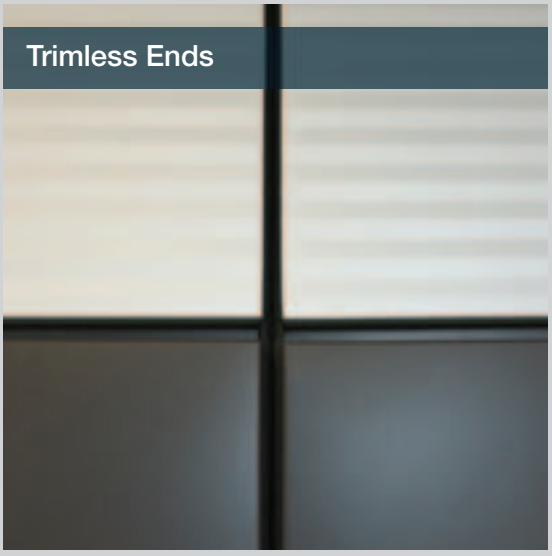
Variable Reveals



Module Widths



Trimless Ends



Irregular Shaped Panels

Horizontal Radius Panels

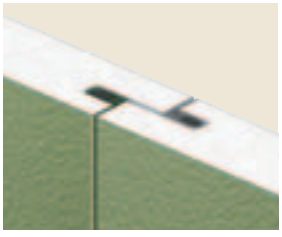
Designwall™ 2000 Applications

Horizontal

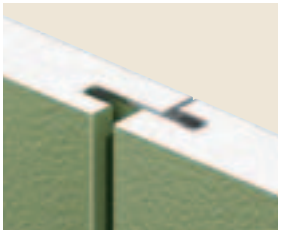
½" Reveal Joint (Standard)

Tight Joint (Optional)

Vertical



Tight Joint (Standard)



½" Reveal Joint (Optional)

Designwall™ 2000

The 2000 series features a double-gasket shiplap joint in both vertical and horizontal applications to maximize thermal efficiency and create a double barrier against air and water penetration. Laminated construction allows for maximum design flexibility for custom fabricated applications.

Designwall™ 2000 integrates with Flushglaze 4500 and 7500 window systems and Design Louvers.

In addition, Designwall™ 2000 allows for the use of expanded polystyrene or high strength extruded polystyrene as optional core materials.

Product Specification

Thickness
2” or 3” (51 or 76mm)

Widths
24”, 30” and 36” standard (special widths 8” min. to 46” max.)

Lengths
1’-0” to 24’-0” standard (30’-0” max.)

Exterior Surfaces
Steel: Standard non-directional embossed or optional smooth
Aluminum: Standard non-directional embossed or optional smooth

Standard Metal Gauge
22/24 steel, 0.040”/0.040” aluminum

Core Material
Polyisocyanurate (polystyrene optional)

R-Value
9 – 20

Manufacturing Process
Structurally laminated

“Designwall™ 2000 features a double-gasket shiplap joint in both vertical and horizontal applications to maximize thermal efficiency and create a double barrier against air and water penetration.”

Designwall™ 2000S (Shadowline)

A striated version of Designwall™ 2000 used for horizontal or vertical applications. Striations at .035" deep nominal x 5/8" wide provide a very distinct and attractive linear shadowing effect to walls.

The identical joint configuration readily integrates with Designwall™ 2000H, 2000R and 4000 flat panels as well as Flushglaze 4500 and 7500 windows and Design Louvers.

Designwall™ 2000S is available in various modules (standard or custom) that are noted for Designwall™ 2000 V & H.

Product Specification

Thickness
2" or 3" (51 or 76mm)

Widths
24", 30" and 36" standard (special widths 8" min. to 42" max.)

Lengths
1'-0" to 24'-0" standard (30'-0" max.)

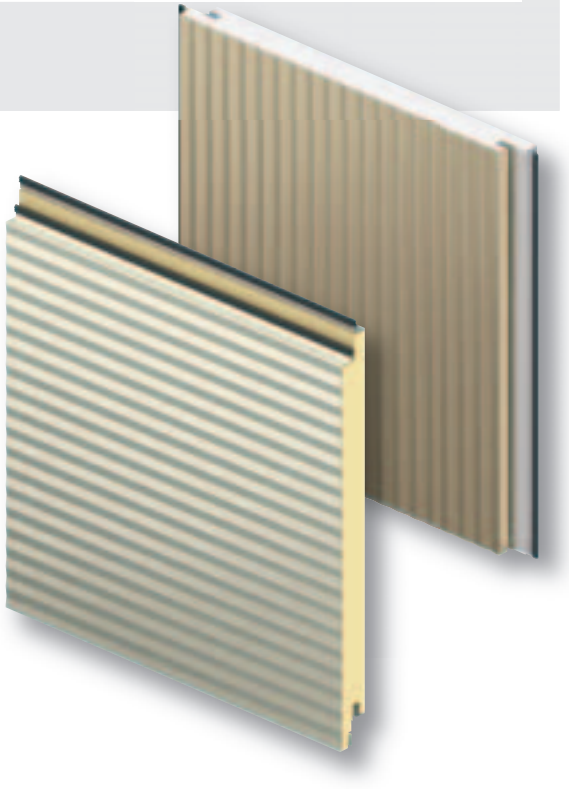
Exterior Surfaces
Steel: Smooth or non-directional embossed
Aluminum: N/A

Standard Metal Gauge
22/24 steel

Core Material
Polyisocyanurate (polystyrene optional)

R-Value
9 – 20

Manufacturing Process
Structurally laminated



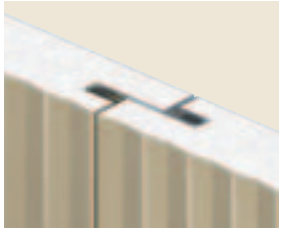
Designwall™ 2000S Applications

Horizontal

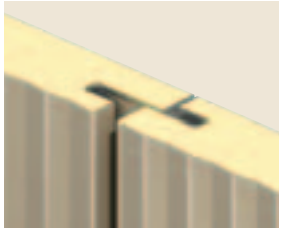
½" Reveal Joint (Standard)

Tight Joint (Optional)

Vertical



Tight Joint (Standard)

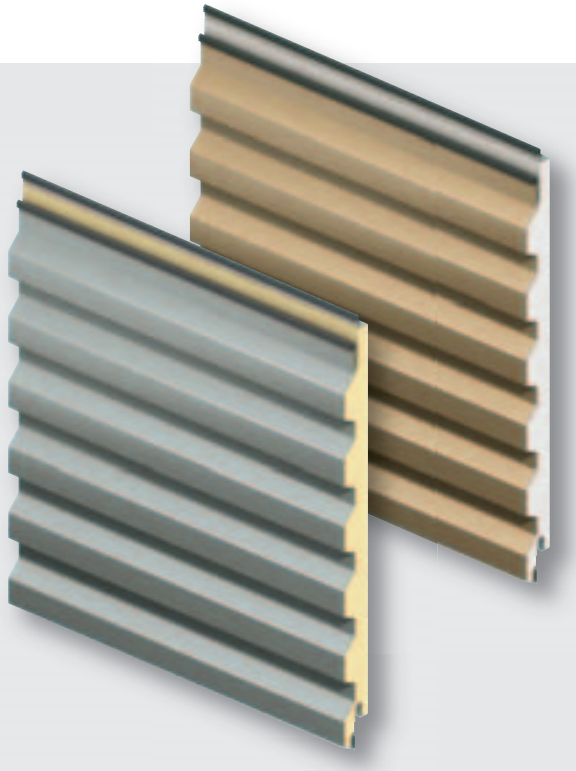


1/2" Reveal Joint (Optional)

British School
CHICAGO, IL.

"Designed for horizontal applications, the Designwall™ 2000R panel adds a bold, profiled look."

Designwall™ 2000R (Ribbed)



Designwall™ 2000R, a profiled, accent version of Benchmark Designwall™ 2000 Series with ribs at 13/16" deep and 4" on center. Designed for horizontal applications, the 2000R panel adds a bold, profiled look to commercial construction. Designwall™ 2000R interfaces and readily engages with Benchmark 2000 and 4000 series horizontal panels. The 2" panel option engages with Benchmark Flushglaze 4500 integral window system as well as Benchmark integrated louver system.

Product Specification

Thickness
2" or 3" (51 or 76mm)

Widths
12" and 24" (16" or 20" optional)

Lengths
1'-0" to 20'-0" maximum (30'-0" optional)

Exterior Surfaces
Steel: Smooth or non-directional embossed
Aluminum: Smooth or non-directional embossed

Standard Metal Gauge
22/24 steel, 0.040"/0.040" aluminum

Core Material
Polyisocyanurate or expanded polystyrene

R-Value
7 – 16

Manufacturing Process
Structurally laminated

Designwall™ 2000R Applications

Horizontal

Standard Joint

Hillsborough Community College
SOUTHSHORE, RUSKIN, FL.

"Designwall™ 4000 is ideal for large scale projects that require high thermal performance."

Designwall™ 4000

The 4000 series is suitable for large scale projects, and integrates with the 2000 series panel for increased aesthetic appeal.

In addition, Designwall™ 4000 integrates with Flushglaze 4500 and 7500 window systems and Design Louvers.

Product Specification

Thickness
2” or 3” (51 or 76mm)

Widths
24”, 30” and 36” standard
(special widths 24” min. to 44” max.)

Lengths
1’-0” to 24’-0” standard (30’-0” max.)

Exterior Surfaces
Steel: Non-directional embossed
Aluminum: N/A

Standard Metal Gauge
22/24 steel

Core Material
Polyisocyanurate

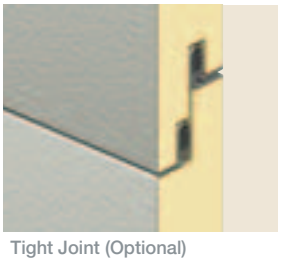
R-Value
14 – 20

Manufacturing Process
Foamed-in-place

Designwall™ 4000 Applications

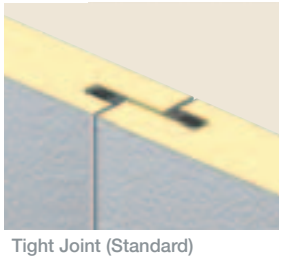
Horizontal

½” Reveal Joint (Standard)



Tight Joint (Optional)

Vertical



Tight Joint (Standard)

½” Reveal Joint (Optional)

Designwall™ 1000

Glazer Children's Museum
TAMPA, FL.

A popular choice for new and retrofit projects, Designwall™ 1000 is value engineered with thermal and structural properties sufficient for many applications. Identical in external appearance to Designwall™ 2000 and 4000.

Product Specification

Thickness
1-1/8" (29mm)

Widths
24" and 30" standard (special widths 8" min. to 36" max.)

Lengths
1'-0" to 24'-0" standard

Exterior Surfaces
Steel: Smooth or non-directional embossed
Aluminum: Smooth or non-directional embossed

Standard Metal Gauge
22/24 steel, 0.040"/0.040" aluminum

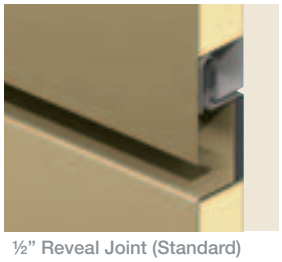
Core Material
Expanded polystyrene (polyisocyanurate optional)

R-Value
4

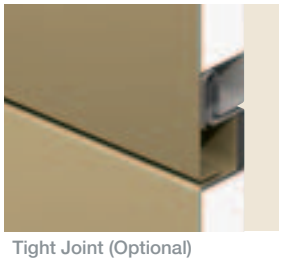
Manufacturing Process
Structurally laminated

Designwall™ 1000 Applications

Horizontal

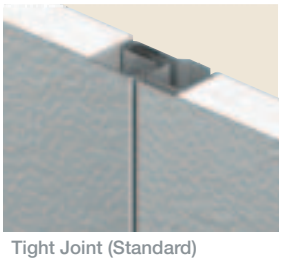


½" Reveal Joint (Standard)



Tight Joint (Optional)

Vertical



Tight Joint (Standard)

Kingspan
BENCHMARK

"Designwall™ 1000 is a popular choice for low-rise building and eye-appealing public buildings."

Highlands Plaza III
ST. LOUIS, MO.

"The most affordable laminated insulated metal panel in the range, ideal for low-rise facades and renovation projects."

Designwall™ 500

The most affordable laminated insulated metal panel in the range, ideal for low-rise facades and renovation projects. It has the same basic specifications as Designwall™ 1000, but with a flexible plastic backer in place of the interior metal skin.

Product Specification

Thickness
1-1/8" (29mm)

Widths
24" standard (special widths 8" min. to 24" max.)

Lengths
1'-0" to 18'-0" maximum

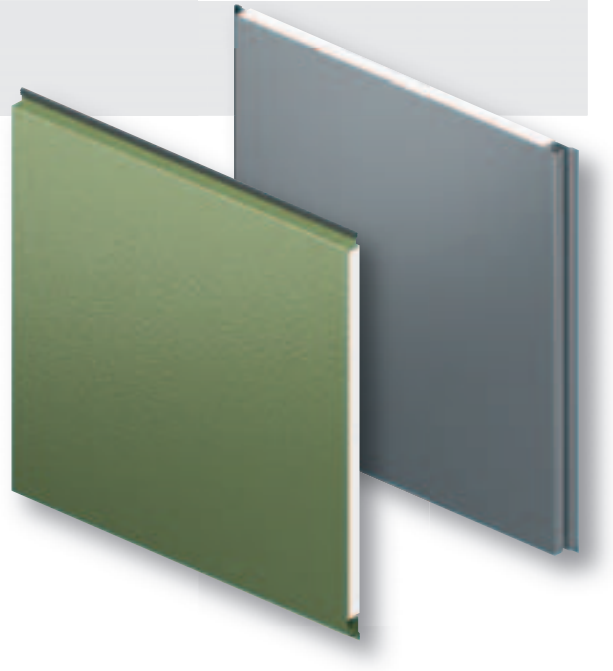
Exterior Surfaces
Steel: Non-directional embossed
Aluminum: Smooth or non-directional embossed

Standard Metal Gauge
22 steel, 0.040" aluminum

Core Material
Expanded polystyrene

R-Value
4

Manufacturing Process
Structurally laminated



Designwall™ 500 Applications

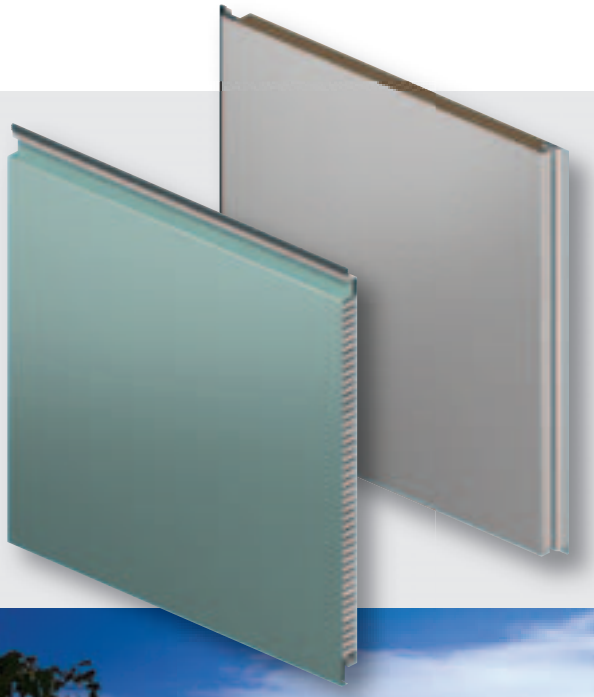
Horizontal

½" Reveal Joint (Standard)

Vertical

Tight Joint (Standard)

Designwall™ 3000



This lightweight 1-¼" thick panel features a honeycomb core between smooth or embossed skins of steel or aluminum. The uninsulated core allows uniform thermal expansion of the face and liner sheet, resulting in exceptional panel flatness under extreme temperature variations.

The 3000 series is offered with a Kraft paper honeycomb core or an optional aluminum core for use where non-combustible wall construction is required.

Product Specification

Thickness
1-¼" (32mm)

Widths
24", 30" and 36" standard (special widths 8" min. to 46" max.)

Lengths
1'-0" to 24'-0" maximum

Exterior Surfaces
Steel: Smooth or non-directional embossed
Aluminum: Smooth or non-directional embossed

Standard Metal Gauge
22/24 steel, 0.040"/0.040" aluminum

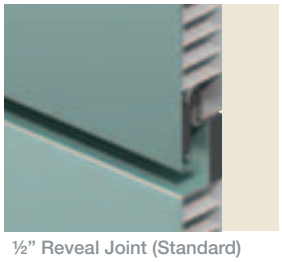
Core Material
Phenolic impregnated Kraft paper honeycomb (aluminum honeycomb optional)

R-Value
N/A

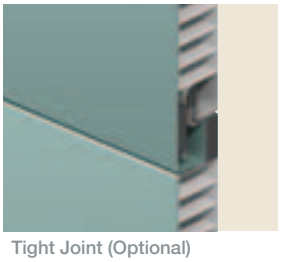
Manufacturing Process
Structurally laminated

Designwall™ 3000 Applications

Horizontal



½" Reveal Joint (Standard)



Tight Joint (Optional)

Vertical

Tight Joint (Standard)


"This lightweight 1-1/4" thick panel features a honeycomb core between smooth or embossed skins of steel or aluminum."
Lakeside Crossing
MARYLAND HEIGHTS, MO.

Designwall™ H-Wave

Designwall™ H-Wave portrays a continuous sweeping profile that creates beautiful shadowing effects.

Product Specification

Thickness
2" or 3" (51 or 76mm)

Widths
39.375" (1 meter)

Lengths
30'-0" maximum

Exterior Surfaces
Steel: Smooth and non-directional embossed

Standard Metal Gauge
22/26 steel

Core Material
Polyisocyanurate

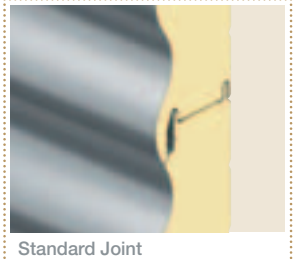
R-Value
18, 27

Manufacturing Process
Foamed-in-place

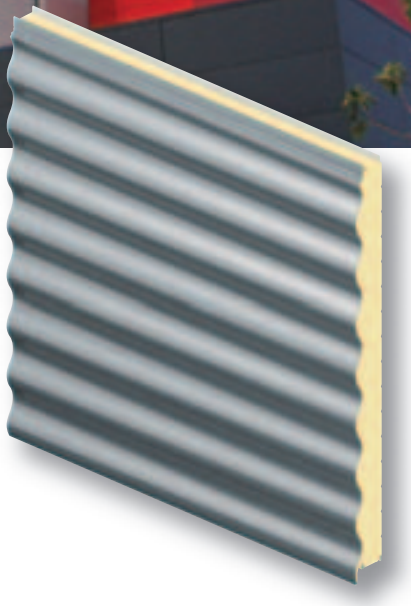
** Manufactured in Modesto, CA*

Designwall™ H-Wave Application

Horizontal



Standard Joint



Designwall™ Granitstone®

A factory-applied acrylic aggregate finish option when the architectural appearance of sprayed stucco is desired. Available in a variety of colors with Granitstone or Granitstone Quartz finish. Applicable on all panel options.

Product Specification

Moisture resistance (ASTM D-2247)
14 days exposure, no deleterious effects

Salt spray (ASTM B-117)
1000 hours, no deleterious effects

Abrasion Resistance (ASTM D-968)
500 liters of sand, no deleterious effects

Accelerated Weathering (ASTM G-23)
Passes 2,000 hours

Freeze / Thaw (60 cycles)
No checking, cracking or splitting

Mildew Resistance (MIL STD 801B)
No growth of mildew

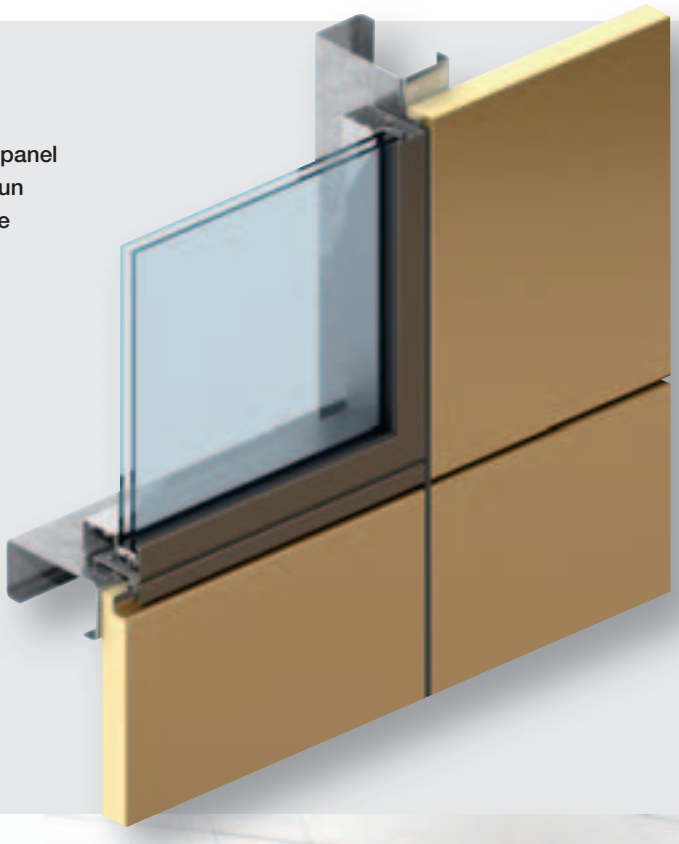
Flame Spread (ASTM E-84)
25, class 1 rating

Integrated Window Systems

Flushglaze 4500

Flushglaze 4500 satisfies an ever increasing need to integrate architectural window systems with horizontal panel joinery. The 4-1/2" deep system is ideal for continuous run fixed "strip" windows that are flush with the plane of the panels. Designed to preserve and maintain the same weather proofing principles as insulated metal panels.

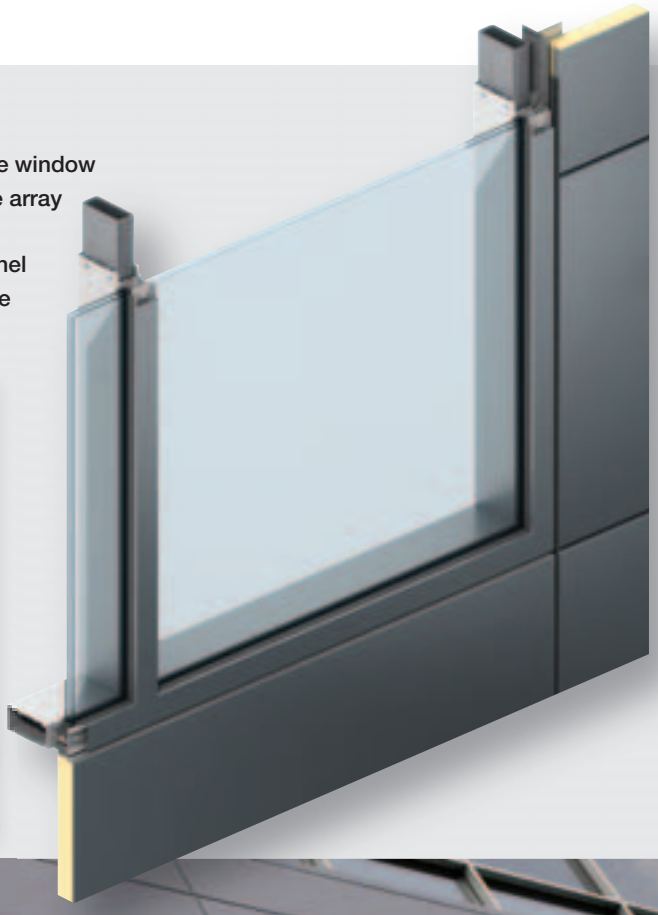
- Thermal breaks in all components
- Positive water barrier and drainage
- Concealed splice plates
- Front set glass pocket
- Snap-lock frame connectivity
- Window systems are reglazable without dismantle of insulated metal panel system
- Integrates with Designwall™ 2000, 2000S, 2000R, and 4000



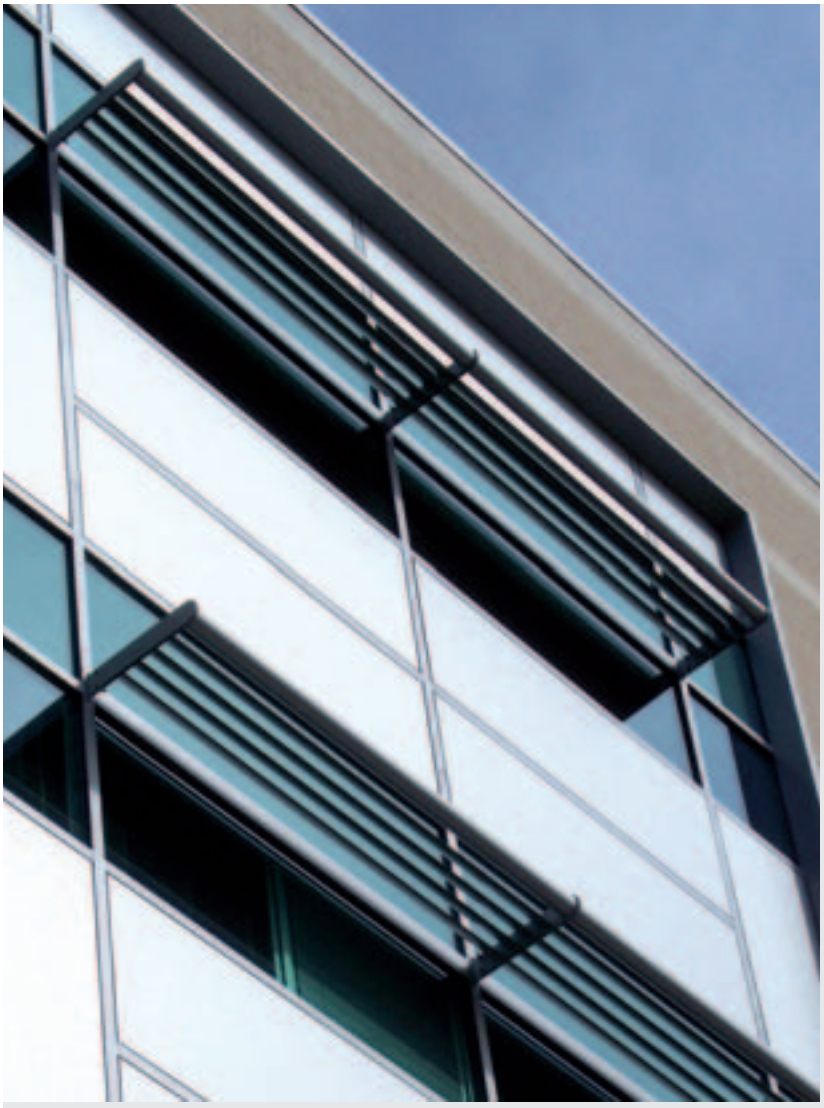
Flushglaze 7500

Flushglaze 7500 provides integration with curtainwall type window construction for “thru-tube” applications. Includes a wide array of panel adapter extrusions, curtainwall components and modified panel edge options to suit specific window / panel applications. Designed to preserve and maintain the same weather proofing principles as insulated metal panels.

- Versatile system that readily adapts itself to different construction needs
- All components are thermally broken
- Well suited for steel thru-tube “clad-over” applications as well as aluminum thru-tubes
- Appealing in both aesthetics and function with no secondary flashings or additional sight lines
- Window systems are reglazable without dismantle of insulated metal panel system
- Integrates with Designwall™ 2000, 2000S, 2000R, and 4000



Suncreens & Grills



Kingspan Benchmark offers sunscreens and grills by Quality Metalcrafts, LLC / Americlad. The durable, rust-resistant aluminum sunscreens and grills allow designers to create a custom aesthetic appearance while reducing a building's energy consumption. Sunshade design is carefully tailored to suit specific functional and artistic applications.

The sunscreens and grills are easy to install and are available in a variety of finish options.

Material Options

- Tube frame
- Airfoil profiles
- Bull nose facia
- Suspension rods
- Circular tube
- Clad facia
- Outrigger arm

Blade Options

- Extruded or formed aluminum
- Horizontal or vertical
- Welded or fastened connection for structural integrity
- Spacing
- Angles

Finish Options

Available in a variety of finishes and colors including:

- Hylar 5000™ / Kynar 500® painted aluminum
- Anodized aluminum

Column & Beam Cover Applications

Kingspan Benchmark offers column and beam covers by Quality Metalcrafts, LLC / Americlad which enhance the overall aesthetics of a building by converting unfinished I-beams into attractive metal features. The column and beam covers create a durable, high-tech look for any building, entrance, or interior application and allow designers to achieve unlimited radius and height by sectioning columns.

Column covers and aluminum plate beams are available in round, square, rectangular or oblong sections, and design options include tight joint, reveals, cap channels, or rod and sealant joints.

Material Options

- Aluminum plate
- Metal composite materials
- Stainless steel

Manufacturing Capabilities

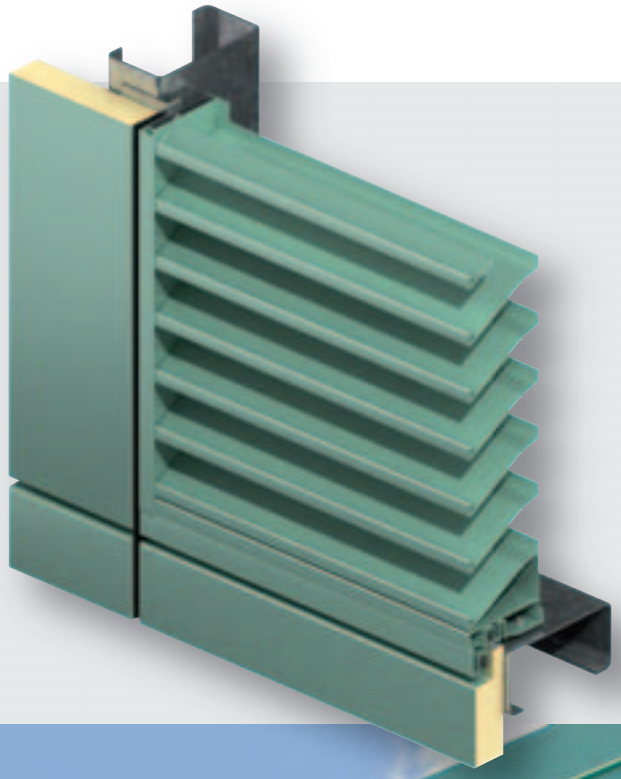
- Available in continuous lengths up to 14 feet
- 5 inch minimum radius
- Standard and custom horizontal joint designs

Finish Options

Available in a variety of finishes and colors including:

- Hylar 5000™ / Kynar 500® painted aluminum
- Anodized aluminum
- Stainless steel in a #4 brushed and #8 mirror finishes

Design Louvers



Fully integrated design louvers by AWV with high performance extruded aluminum construction, satisfy the HVAC requirements of the building, without the need for field cuts, flashings or exposed fasteners.

Product Specification

- Fully integrated with Kingspan Benchmark Designwall™ 2000H, 2000S, 2000R and 4000 2” and 3” panels
- Designed for horizontal panel integrations
- Extruded aluminum
- Anodized aluminum
- 70% Kynar 500® PVF Finish System
- Factory assembled
- Fixed or operable louvers, 4”, 5” or 6” deep

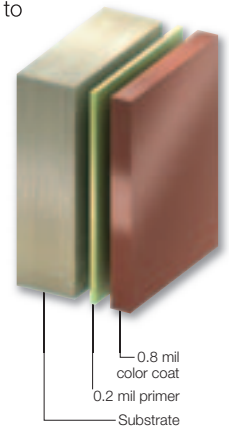
Color Coating Systems

Kingspan offers a full spectrum of vibrant colors for every color scheme. Kingspan cool color palette can reduce cooling energy consumption contributing to LEED® and Net-Zero Energy buildings.

Standard Colors

Solid Fluropon® PVDF Colors – Kynar 500® / Hylar 5000

Fluropon coatings are durable polyvinyldene coating system containing 70% Kynar or Hylar resins, ceramic and other inorganic pigments. This system provides a powerful chemical bond, superior resistance to ultraviolet radiation resulting in exceptional color retention, resistance to chalking and chemical degradation.



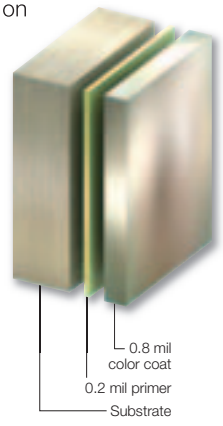
Warranties

Kingspan and their suppliers provide coating warranties for up to 20 years.

Premium Colors

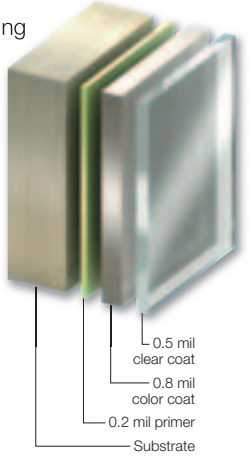
Mica Fluropon Classic® II PVDF Colors

The coating system consists of a special primer and a durable color coat containing mica pearlescent flakes. Due to the orientation of aluminum / pearlescent flake pigments during application, the appearance will be directional in nature on metallic coatings.



Metallic Fluropon Classic® PVDF Colors

Metallic coatings employ metal flakes in the color coat. The system uses a special primer, a 70% Kynar 500® or Hylar 5000® resin based Fluropon color coat and a clear topcoat, to provide outstanding color and gloss retention, increased abrasion resistance and added protection against atmospheric contaminants.

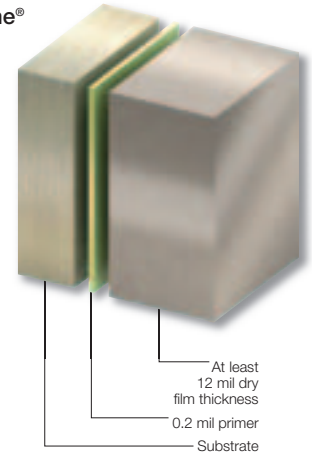


Granitstone®

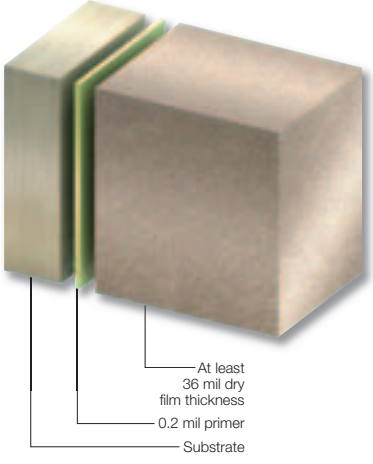
Granitstone® Panel Colors

Granitstone® coatings have an oven-baked epoxy primer and a factory applied finish of an air-dried 100% acrylic bonder with natural silica aggregate, minimum 12 mils dry film thickness, finished to resemble sprayed stucco.

Granitstone®



Granitstone® Quartz



Build Speed

Architectural insulated metal panels are a single component system that increase the speed of build, minimize delays and the need for multiple trades.

Construction Schedule: Verizon, Roanoke, VA

Step 1

With support steel in-place, panel installation can start at the corners, the most critical dimension.
Steel framing tolerances necessary for architectural panel applications are considerably tighter than industrial applications.

Step 2

Panels are installed on multiple elevations, simultaneously, allowing interior trades to enter the building earlier in the job schedule.

Step 3

The end result is an enclosed envelope, offering superior thermal and moisture protection, installed in less time than conventional multi-part built-up systems.

1 Single Component

The lightweight nature of Kingspan Benchmark panels makes them easier to handle and get into position.

The panel as a single component reduces the need for multiple trades on site. Panels can be installed in all weather conditions.

To view installation videos, visit KingspanTV.

www.kingspantv.com

Verizon
ROANOKE, VA

Thermal Performance

The easiest, fastest and most cost effective strategy to reduce energy demand and construction costs is to utilize the high thermal performance, superior airtightness and "cool" wall benefits of Kingspan Benchmark wall systems.

High R-Value

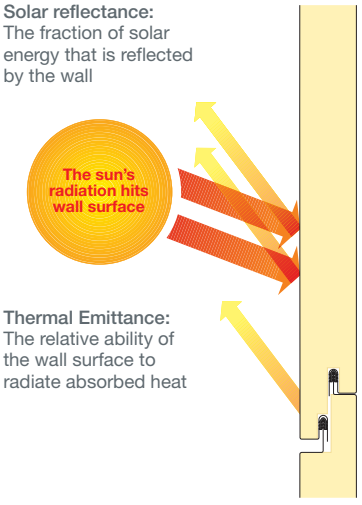
Kingspan Benchmark insulating cores provide superior thermal performance with tested R-values of up to 27. Most importantly, the insulation is on the exterior of the building structure to provide the best possible thermal envelope by reducing thermal bridging typical of cavity wall systems. In addition, the panels feature excellent insulation core-to-core contact, which provides an unbroken thermal shield against heat transfer.

Superior Airtightness and Weathertightness

One of the biggest sources of building heat loss (or heat gain) is air leakage i.e. – "leaky buildings". Kingspan panels are rigorously tested to ensure that they remain both airtight and weathertight over the life of a building.

Cool Walls

Walls that are highly reflective and highly emissive, such as insulated prepainted metal panels, significantly reduces heat gain into the building.



M3 (Corporate Office)
TUCSON, AZ.

Testing & Accreditation

Kingspan panels have been extensively tested for compliance with various industry standards and building safety codes.

Fire Performance: Kingspan insulated panels have passed Factory Mutual FM-4880 Class 1 (including ASTM E84 and D 1929) and Multi-Story Fire Test NFPA 285.

Thermal Transmission: Panels have been tested for insulating values in accordance with ASTM C236 / C1363 methods.

Air Infiltration: Panel joints have been tested for air penetration in accordance with ASTM E283.

Water Penetration: Panel joints have been tested for water penetration in accordance with ASTM E331 and AAMA 501.1.

Structural: Panels have been tested per ASTM E72 methods.

Warranty: All products manufactured by Kingspan Benchmark are warranted to be free from defects in material and workmanship for a period of two years from the date of shipment in accordance with the terms and conditions of our "Limited Warranty". The coverage period of the Limited Warranty may be extended by Kingspan Benchmark at time of issue.

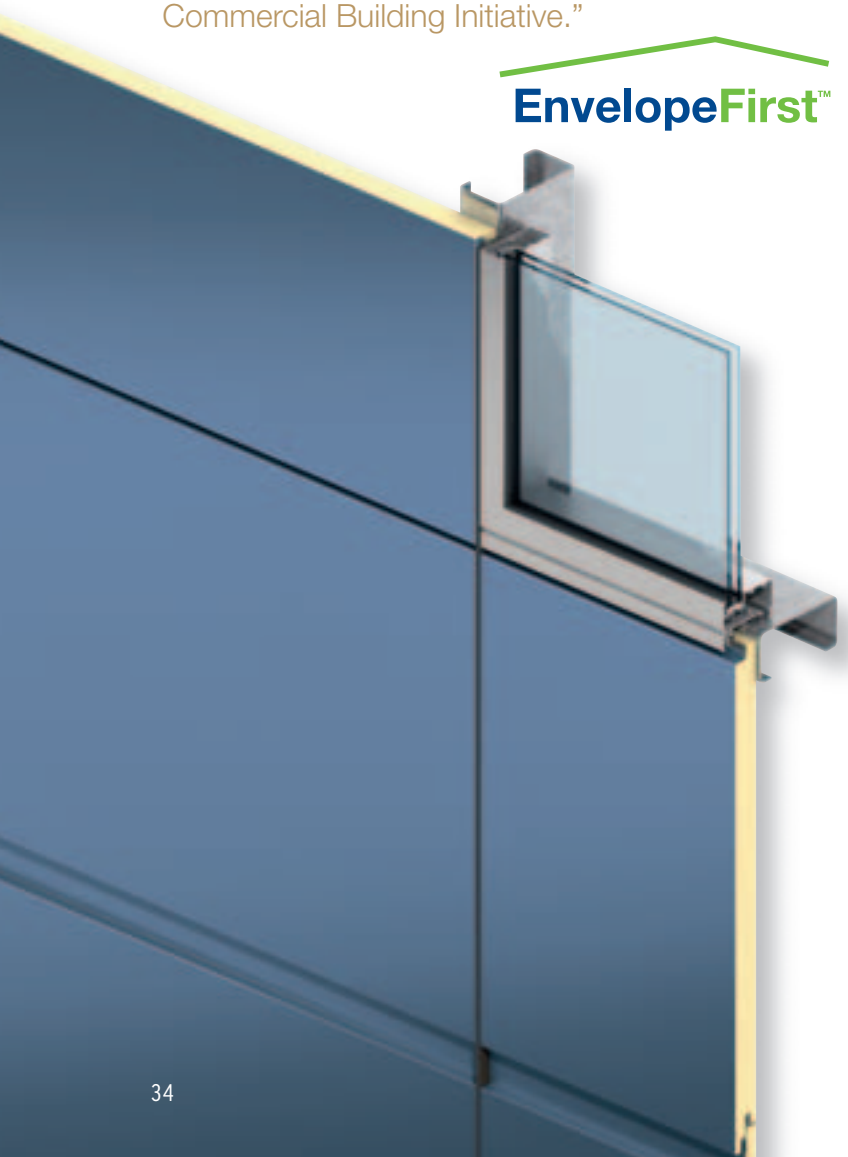
Test	Procedure	Results
Fire	FM-4880	Class 1 classification rating of insulated wall or wall and roof / ceiling panels, interior finish materials or coatings, and exterior wall systems without sprinkler protection
	ASTM E84	Flame spread <25, smoke developed <450
	CAN / ULC-S101	Fire endurance tests: 10 min stay in place
	CAN / ULC-S102	Flame spread: 20 Smoke developed: 55-200 for panel with facings
	CAN / ULC-S127	Flame spread <500 for insulation core
	UL 263	Classified as component of 1 hr or 2 hr fire-rated wall assembly
	NFPA 285	Intermediate scale multi-story fire test: passed acceptance criteria
	NFPA 259	Test method for potential heat of building materials 11,500 BTU/lb
Thermal Performance / Resistance	ASTM C1363	R = 4 – 27 °F – ft² – hr/BTU
Weather & Vapor Barrier	ASTM E283	Air leakage <0.01 CFM/ft² at 20 psf pressure
	ASTM E331	No uncontrolled water penetration at 40 psf differential pressure
	AAMA 501.1	No uncontrolled water penetration at 15 psf with liner seal broken
Structural	Miami-Dade	N.O.A. 09-0713.01 Designwall™ 2000 (expires May 20, 2014)
	Miami-Dade	N.O.A. 09-0713.02 Designwall™ 4000 (expires May 20, 2014)
	ASTM E72 / E330	Standard test methods of conducting strength tests of panels
Fatigue Tests	Cyclic test positive and negative wind loading to 20 psf	The panels exceeded 2 million alternate cycles without failure or damage
Pressure Equalization	ASTM E1233 AAMA 508-07	Panel horizontal and vertical joints exhibit rapid pressure equalization under ±25 psf cyclic pressure fluctuations
Blast Load	ASTM F1642 GSA TS01	Shock of 6 psi peak pressure and 42 psi-msec impulse pressure with no debris, fragments or components

Sustainable Design Begins with the EnvelopeFirst™

Kingspan Benchmark's Designwall™ panels consist of a highly efficient continuous insulation encapsulated between two metal skins. These systems are attached directly to steel or concrete structures, with interlocking, weathertight joints. IMPs offer integral sunscreens, louvers, and window systems.

"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."

EnvelopeFirst™



The Green Benefits of IMPs

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

1. Energy efficiency. IMPs have a core of continuous, rigid insulation for industry leading R- and U-values with superior airtightness performance.
2. Indoor environmental quality. IMPs help ensure a stable interior environment.
3. Recycled and recyclable. The exterior skins contain a substantial amount of recycled steel, and the panels themselves are recyclable.
4. Recycled, low-weight materials. Made with recaptured metals, IMPs weigh only 3 pounds per square foot, reducing transport and installation energy needs.
5. Eased construction. IMPs are simple to detail and attach, reducing schedules and installation errors.
6. 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.
7. Building certification and green targets. IMPs contribute to LEED® certification programs and the path to Net-Zero Energy targets.

LEED®

Kingspan is committed to supporting green rating systems such as LEED® and Green Globes. Specification of effective systems and materials is key to achieving these certifications. With this in mind, Kingspan provides a LEED® credits guide to assist the building team on how IMPs contribute to overall building performance and ratings criteria.

Visit www.kingspanpanels.us/sustainability/leedinformation to download Kingspan's LEED® statement for project submittals.

Path to NetZero™

Path to NetZero™ is a unique tool for the building industry that will simulate the process of achieving high performance and net-zero energy buildings. Experts report on modeling results that evaluate energy savings and the impact of using insulated metal panels (IMPs). This tool is accessible through interactive mobile applications available on the web as well as via free apps for the iPad, iPhone, iPod Touch and Android mobile devices.

Visit www.pathtonetzero.com to download the appropriate version.

Kingspan
Path to NetZero™

To evaluate the impact of high-performance IMP wall and roof systems on building efficiency, Kingspan commissioned a study by the Architectural Energy Corporation that simulated three buildings – school, office and warehouse – in four locations. The IMP buildings were compared against EIFS, split-faced block, tilt-up and single skin with batt insulation. Results indicated that continuous insulation with high effective R-value and superior airtightness achieved significant energy savings, followed by renewables, such as PV systems and energy conservation measures. This demonstrates the importance of EnvelopeFirst™, a high performance building envelope design strategy.

Available on the App Store

Download for Android

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