



Horticultural Solutions Insulated Wall Panel Systems

Controlled Environment Solutions for Warm Temperature Applications



Growing and harvesting more starts with year-round temperature control.

Thanks to year-round farming, consumers have access to fresh flowers, fruits, vegetables, and a host of other agriculture products otherwise unavailable.

The first requirement for year-round horticulture is 24/7 temperature and humidity control. Maintaining a controlled climate through the extremes of winter and summer is critical, and why the cost of energy is the largest expense. To ensure an outstanding yield and profitable harvest, your facility must be properly insulated.

Kingspan is the world's leading provider of temperature and humidity control wall and ceiling solutions that help maintain accurate temperature and humidity at the highest level of efficiency to keep energy costs low.

Plus, Kingspan durability and CLEANsafe coatings stand up to the rigorous cleaning and decontamination requirements to ensure regulator compliance and full yield.





Structural integrity, energy efficiency.

Techniques for efficient indoor farming vary wildly. Some go vertical to maximize floor space while others rotate rooms depending on the stage of growth. To meet all these variances, growers need this flexibility in facility design.

Our **KS Series** panels with QuadCore® Technology are ideal for new build construction with quick panel connections to get you installed and operating sooner. Future expansion plans? KS Series panels with QuadCore® Technology are easy to remove and re-configure for facility expansion. Retrofitting an existing building?

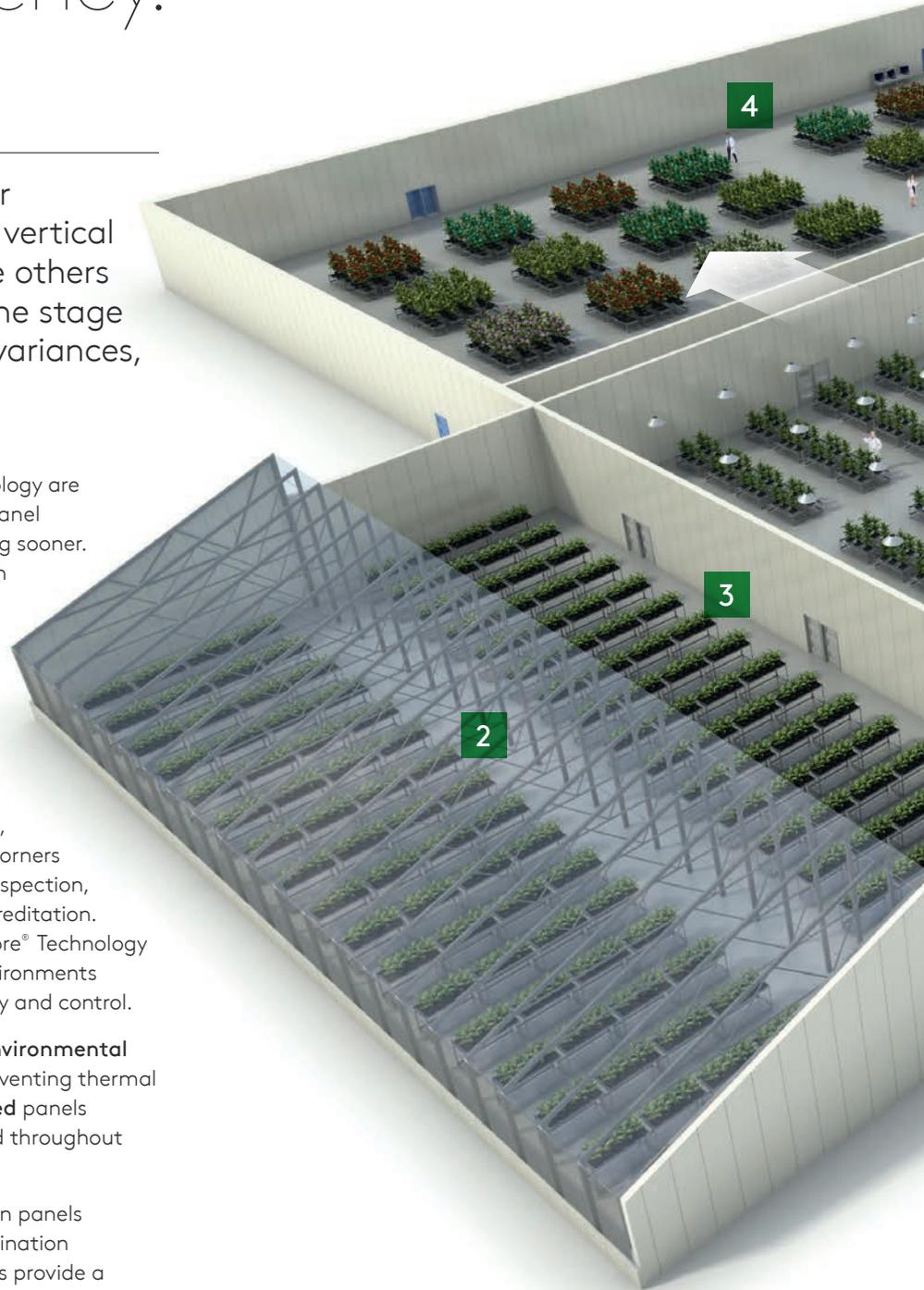
KS Shadowline Interior is a premium engineered wall and ceiling system specifically for interior applications.

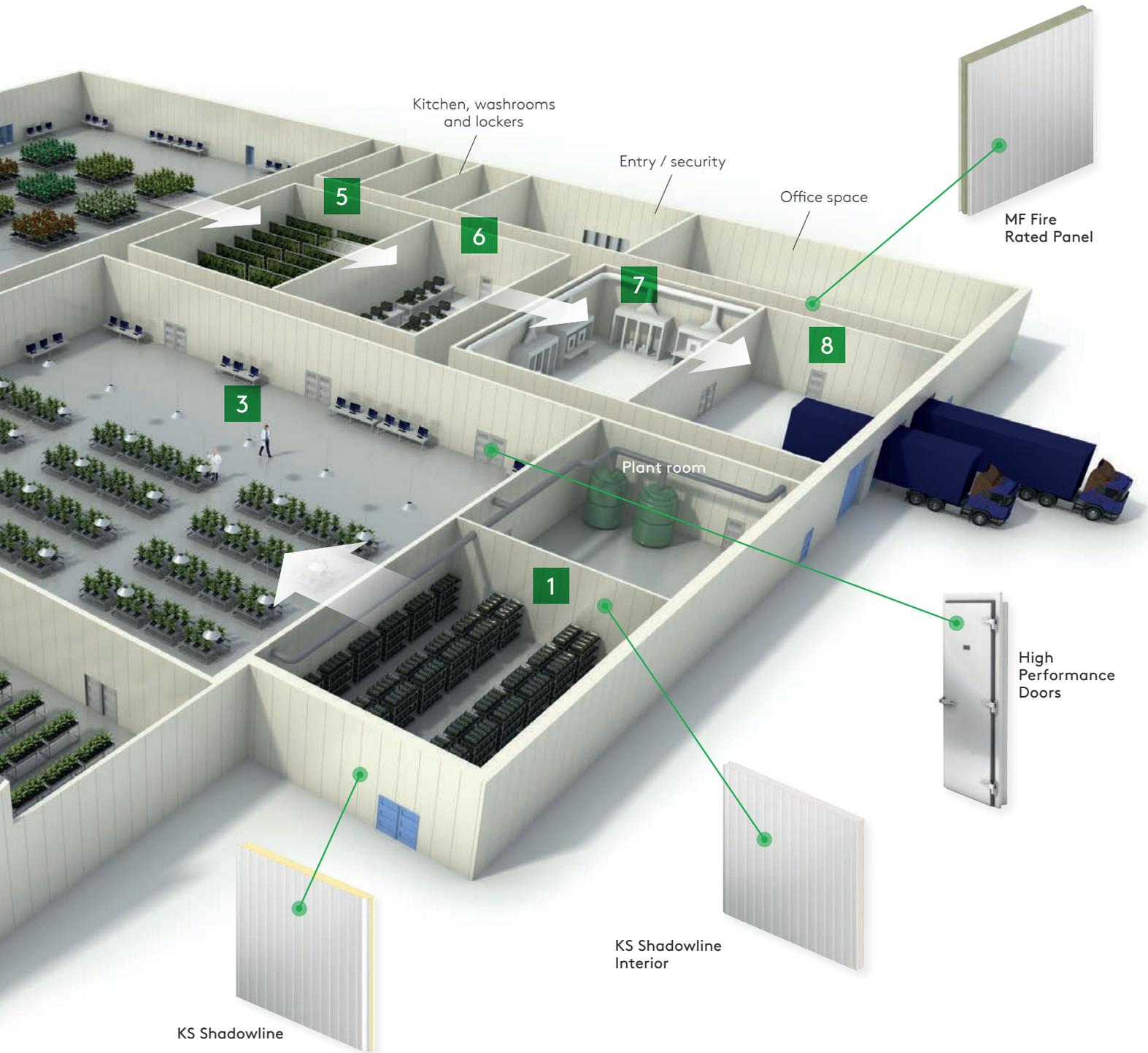
Hydroponics, aquaponics, and organics require strict control over light spectrum, CO₂, temperature, humidity, and ventilation. Cut corners and you risk losing an entire crop, failing an inspection, or even forfeiting CFIA or Health Canada accreditation. KS Series wall and ceiling panels with QuadCore® Technology provide the highest R-value for controlled environments delivering the highest level of energy efficiency and control.

Tight fitting panel joints and our **Hercules Environmental Door Systems** offer superior airtightness, preventing thermal bridging and condensation. Our **MF Fire Rated** panels make sure concerns in one room don't spread throughout the entire facility.

Additionally, Kingspan CLEANsafe coatings on panels and doors deliver the highest level of contamination protection available. These washable surfaces provide a sealed monolithic structure for maintaining hygiene-safe requirements when exposed to corrosive cleaning agents.

From greenhouse to retrofit to new build, Kingspan's suite of controlled environment solutions are perfectly crafted to meet your exacting requirements for any indoor environment.





- 1 Clone room
- 2 Greenhouse
- 3 Vegetative rooms
- 4 Flowering room
- 5 Curing / drying room
- 6 Processing room
- 7 Extraction room
- 8 Warehouse - packing, storage and despatch

KS Shadowline

KS Shadowline
Interior

MF Fire
Rated Panel

High
Performance
Doors

Solutions for every phase of your grow.

Cloning Room



Future success starts with sprouting clones to fulfill the promise of the mother plant. Our high performance **KS Shadowline Interior** wall and ceiling solutions help maintain proper temperature and humidity control during this very critical time.

Vegetative Room



As babies graduate into teens, they need room to grow. Temperature, humidity, air flow, and contamination mitigation are critical here. Our **KS Shadowline** wall and ceiling panels with QuadCore® Technology enable strict climate control and tight seals to protect against accidental air intrusion.

Flowering Room



This is where the magic happens and when farmers see the financial future of their labour. Room cleanliness, contamination control, and light spectrum are critical. Our **Hercules Environmental Door Systems** make sure accidental air intrusion never happens. And with **CLEANsafe** coatings throughout, you're protected against all forms of microbial contamination.



Every varietal is different with wildly varying temperature requirements. The same holds for nutrition, light and light spectrum, air-handling, processing and more.

Crop yields cannot be maximized unless conditions are ideal – and it all starts with climate control. From seedling through harvest, temperature and humidity must be precise. Only then can customized processes be crafted for every phase.

Curing / Drying Room



Processing Room



Extraction Room



As the crop dries in darkness, moisture fills the room. Dampness and absence of light are dangerous ingredients for rot that could infect your entire crop. The strict climate control enabled by **KS Shadowline Interior** and **CLEANsafe** coatings help ensure mould has no place to take hold.

Avoiding accidental contamination is the priority. Our wall **KS Shadowline Interior** panels with **CLEANsafe** specifications ensure what started contamination-free stays that way.

Laboratory environments cannot be taken lightly. Expensive equipment under high pressure can create problems such as temperature fluctuations and fire risk. Our **MF Fire Rated** panels offer proven thermal reliability combined with fire rated solutions that ensure problems occurring in one room do not spread.



High Performance Insulated Panel Systems

We provide a wide range of high performance insulated panel systems, for both external roof and wall, and internal wall, partitioning and ceiling applications.

Within this range, our KS Series, KS Shadowline Interior, and MF Fire Rated systems are ideally suited to horticultural facilities, delivering flexible, attractive and affordable building envelope solutions.

Kingspan CLEANsafe Coatings

Temperature controlled environments take many different forms. Their performance and functionality depend on their specific project requirements and can be affected by the conditions the materials and systems are subjected to.

Kingspan CLEANsafe coatings, each designed specifically for temperature controlled environments, have particular properties suited to different environments. We offer and aid in choosing the right coatings to meet the appropriate classification of corrosive environment and type of activities.

CLEANsafe insulated panels and doors, all washable surfaces, provide a sealed monolithic structure for maintaining hygiene safe requirements in environments where protection against microbial contamination and mold prevention is critical. The tight fitting panel joints offer superior airtightness, preventing thermal bridging and condensation. The corrosive factors of an internal environment are determined by the presence of corrosive chemicals and / or micro-organisms in the internal atmosphere, relative humidity, as well as by the frequency of cleaning, aggressiveness of the cleaners, degreasers, sanitizers and method of cleaning.

	Corrosiveness	Inspection Frequency	Type of Application	Kingspan CLEANsafe Polyester	Kingspan CLEANsafe Kynar	Kingspan CLEANsafe Plastisol	Kingspan CLEANsafe Stainless Steel
C1	Very Low	Annually	Dry packaged cold storage, docks, locker rooms, toilets, offices, shops.	Yes	Yes	Yes	Yes
C2	Low	Annually	Storage, sorting and packing of fruit and vegetables, storage of packaged meat and dairy products.	Yes	Yes	Yes	Yes
C3	Medium	Every 6 months	Food production and preparation areas, dry process, ice cream production, butter production, breweries, dairies, wine cellars, processing of pre-cooked foods, baking facilities.	-	Yes	Yes	Yes
C4	High	Every 3 months	Wet process industrial kitchens and cooking, storage of unpacked fish, cheese, meat cutting, scalding and evisceration.	-	-	Yes	Yes
C5	Very High	Every 3 months	Primary live rooms, rendering, picking, cooking, preparation of marine products.	-	-	-	Yes

CLEANsafe



In 2011, the U.S. Food & Drug Administration (FDA) implemented the U.S. Food Safety Modernization Act (FSMA) ensuring U.S. food supply safety by shifting from response of contamination to prevention. Kingspan initiated CLEANsafe, an industry first, engineered to comply with the FSMA – approved by the U.S. Department of Agriculture (USDA), FDA, the Food Safety and Inspection Service (FSIS), and the Canadian Food Inspection Agency (CFIA).



KS Shadowline Interior

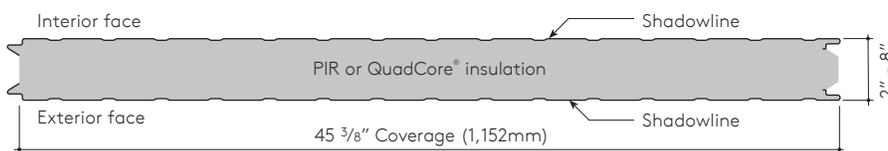
Specially designed to meet today's high performance standards in a wide variety of environments, KS Shadowline Interior is a premium engineered wall and ceiling system for interior applications.

Panels are suitable for both wall and ceiling conditions in critical temperature and controlled environment areas as well as in hygiene sensitive facilities. The superior engineered joint assures a tight, well-designed vapour barrier in enclosures of any size.

Insulation core	QuadCore® Technology or PIR
Profile	Exterior: Shadowline Interior: Shadowline
Embossing	Exterior: Stucco or non-embossed Interior: Stucco or non-embossed
Gauge	Exterior: 26, 24, 22 ga Interior: 26, 24, 22 ga
Width	45 3/8"
Thicknesses	2", 2.75", 3", 4", 5", 6", 8"
Length	8' - 53'
Orientation	Vertical
R-value	PIR: ≈ 7.2 per inch per ASTM C518 @ 75°F ≈ 8.25 per inch per ASTM C518 @ 35°F QuadCore®: ≈ 8.0 per inch per ASTM C518 @ 75°F ≈ 9.0 per inch per ASTM C518 @ 35°F



POWERED BY
QuadCore®
TECHNOLOGY





KS Shadowline

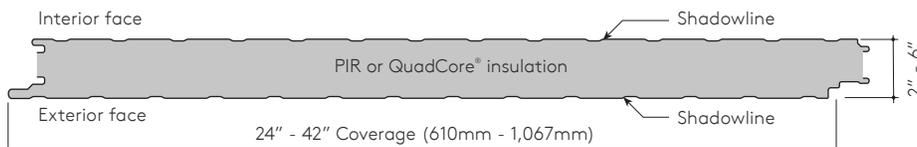
From the KS Series, KS Shadowline is a high performance wall system providing an attractive and affordable choice. Horizontally or vertically applied, the panels feature a patented double seal integrated joint.

CFIA approved Imperial White Siliconized Modified Polyester is the standard finish making KS Shadowline ideal for horticultural facility projects.

Insulation core	QuadCore® Technology or PIR
Profile	Exterior: Shadowline Interior: Shadowline
Embossing	Exterior: Stucco or non-embossed Interior: Stucco or non-embossed
Gauge	Exterior: 26, 24, 22 ga Interior: 26, 24, 22 ga
Width	24", 30", 36", 42"
Thicknesses	2", 2.5", 3", 4", 5", 6"
Length	8' - 53'
Reveal options	Vertical: 1/8" Horizontal: 1/8" or 3/8"
Orientation	Vertical or horizontal
Post fabrication	Trimless ends, folded corners (Manufacturing limitations apply. Please contact us for detailed information)
R-value	PIR: ≈ 7.2 per inch per ASTM C518 @ 75°F ≈ 8.25 per inch per ASTM C518 @ 35°F QuadCore®: ≈ 8.0 per inch per ASTM C518 @ 75°F ≈ 9.0 per inch per ASTM C518 @ 35°F



POWERED BY
QuadCore®
TECHNOLOGY





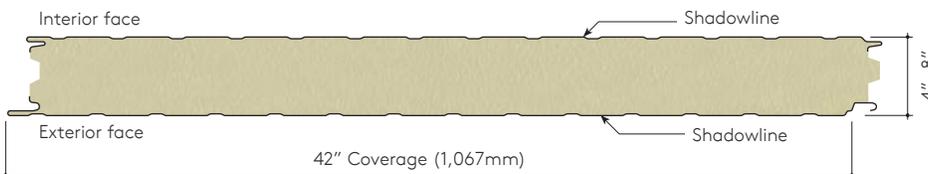
MF Fire Rated

For superior fire protection in cold storage environments, MF Fire Rated panels are an excellent choice. External and internal skins are available as embossed or non-embossed to suit heavy wash down needs.

The 42" cover width of MF Fire Rated allows for fast, easy installation.

Note: In certain light duty structures, unique hidden fastener details may be available depending on spans, structural loads and climatic conditions (please contact Kingspan Technical Services for detailed advice prior to specification or bid).

Profile	Exterior: Shadowline, Micro-Rib, Azteco™ or flat Interior: Shadowline
Embossing	Exterior: Stucco, Azteco™ or non-embossed Interior: Stucco or non-embossed
Gauge	Exterior: 24, 22 ga (26 ga available with Shadowline only) Interior: 26, 24, 22 ga
Width	42"
Thicknesses	4", 6", 8"
Length	4" & 6": 8' - 48' 8": 8' - 40'
Reveal option	N/A
Orientation	Vertical or horizontal
Post fabrication	N/A
Wall fire resistive rating	1 hour (4"), 2 hour (6"), 3 hour (8") per ASTM E119/ULC-S101
Ceiling fire resistive rating	1 hour (6" panel only) per ASTM E119/ULC-S101
R-value	≈ 4.0 per inch per ASTM C518 @ 75°F



Multiple applications:

- fire rated interior partitions
- demountable partition walls
- exterior rated wall cladding
- demising walls
- boundary walls





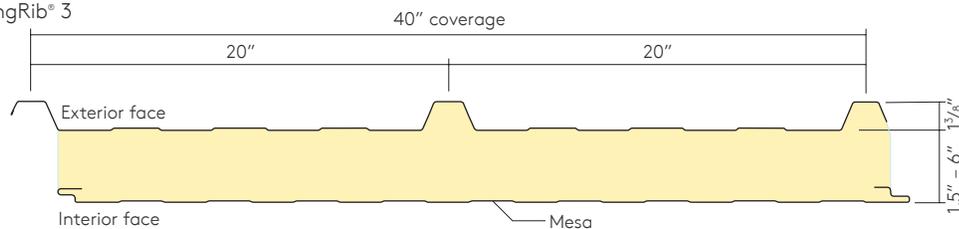
QuadCore®

KingRib® 3 / KingRib® 5

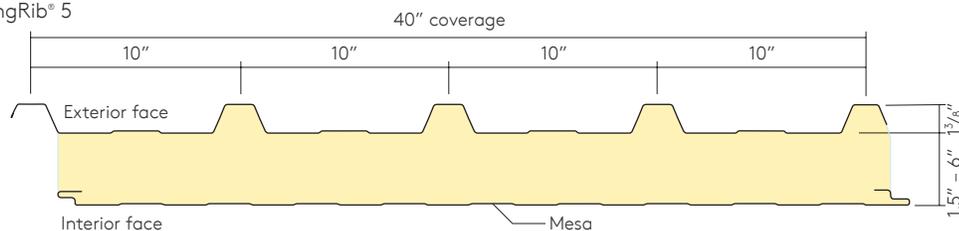
KingRib® insulated roof panels are the perfect option for a modern design combined with high energy-efficiency, durability, and high R-value.

Profile	Exterior: Mesa with Trapezoidal Ribs Interior: Mesa
Embossing	Exterior: Stucco or non-embossed Interior: Stucco or non-embossed
Gauge	Exterior: 26, 24, 22 ga Interior: 26, 24, 22 ga
Width	40"
Thickness	1.5", 2.5", 4", 5", 6"
Length	8' - 50'
Post fabrication	Cutbacks
R-value	≈ 7.2 per inch per ASTM C518 @ 75°F ≈ 8.2 per inch per ASTM C518 @ 40°F

KingRib® 3



KingRib® 5

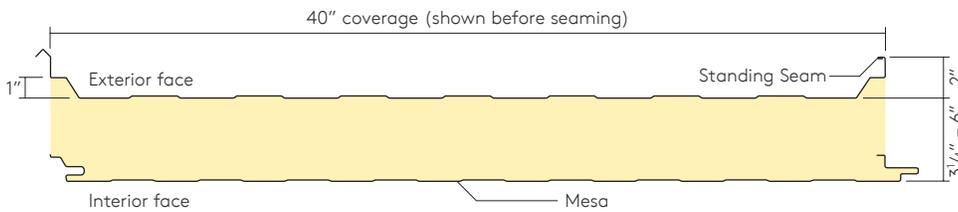




KingSeam®

KingSeam® insulated standing seam roof panels are designed to offer design flexibility and aesthetics combined with high R-values and unparalleled service life performance. Ideal for new and retrofit applications across a wide variety of building sectors.

Profile	Exterior: Mesa with Trapezoidal Ribs Interior: Mesa
Embossing	Exterior: Non-embossed Interior: Stucco or non-embossed
Gauge	Exterior: 26, 24, 22 ga Interior: 26, 24, 22 ga
Width	40"
Thickness	3.25", 4", 5", 6"
Length	8' - 50'
Orientation	N/A
Post fabrication	Cutbacks
R-value	≈ 7.2 per inch per ASTM C518 @ 75°F ≈ 8.2 per inch per ASTM C518 @ 40°F



Hercules Controlled Environment Door Systems

Hercules Controlled Environment Doors has been a leader in the industry for over 65 years.

Our engineering staff has the capability to design doors to meet the specific design criteria of your projects. The proven performance and customer satisfaction of the Hercules product line is worldwide. Hercules specializes in custom designed door products for the cold storage, controlled environment, food and beverage processing / distribution and pharmaceutical industries.

The Hercules Door offers a complete line of specialty doors for your specific applications including Grow Facilities, Blast Freezers, Freezers, Coolers, Docks, Processing, Ripening Rooms, Automotive Test Cells, Research Facilities and Distribution Facilities. With more than a dozen different designs, Hercules has the door to suit your climate controlled needs.

For the complete climate controlled building envelope, use Kingspan Insulated Wall and Roof panels along with Hercules doors.

Our insulation material consists of foamed-in-place urethane modified isocyanurate, in thicknesses of 4" and 6" equating in R-values as high as 49.

In an effort to continuously improve our services, please understand that we reserve the right to modify our products and details based on our professional review of each specific application. This ensures that the products you receive from Kingspan are truly premium quality.

HERCULES
Controlled Environment Door Systems





**Tested &
Approved**



**Building
Certification
& Green Targets**



**Indoor
Environmental
Quality**



**Lifecycle
Benefits**

Standard Product Range

We refer to these door models as 'standard' because they happen to be our most popular designs. They are basic operating designs, because every Hercules Door is custom built. Adding custom features to suit specific applications or difficult locations is part of the individualized service we are proud to offer at Hercules Doors.



Vertical Lift Door

- Ideal for applications where there is minimum side room, or when several door openings are close together
- Suitable for drive-thru traffic in conjunction with forklifts and other freight transfer vehicles
- Available with electric or manual operation
- Double vertical lift door is also available if head room is limited to slightly more than half the door height
- Available with electric or manual operation

Infitting / Overlap Hinged Door

- Designed for use in environmentally controlled buildings such as grow facilities, freezers and coolers where only hand truck and personnel movement is necessary
- Suitable for both interior and exterior applications
- Available as a two-panel or 'double' hinged door for larger openings

Bi-Parting Horizontal Sliding Door

- Ideal for applications where fast opening and closing is important, especially in areas where material handling equipment such as forklifts and pallet jacks operate
- Suitable for grow facilities, coolers, freezers, warehouses and industrial buildings
- Available with electric or manual operation

Horizontal Sliding Door

- Utilized for both pedestrian and material handling traffic, this design is perfectly suited for applications where space limitations restrict the use of swinging doors, or when installation space is available only on one side of the door opening
- Most suitable when opening speed is not of great importance
- Available with electric or manual operation

Notes

Contact Details

USA

DeLand | FL
T: 877-638-3266

Modesto | CA
T: 800-377-5110

E: info.NA@kingspanpanels.com
www.kingspanpanels.us

Canada

Caledon | ON
T: 866-442-3594

Langley | BC
T: 877-937-6562

E: info.NA@kingspanpanels.com
www.kingspanpanels.ca

For the product offering in other markets please contact your local sales representative or visit www.kingspanpanels.com

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