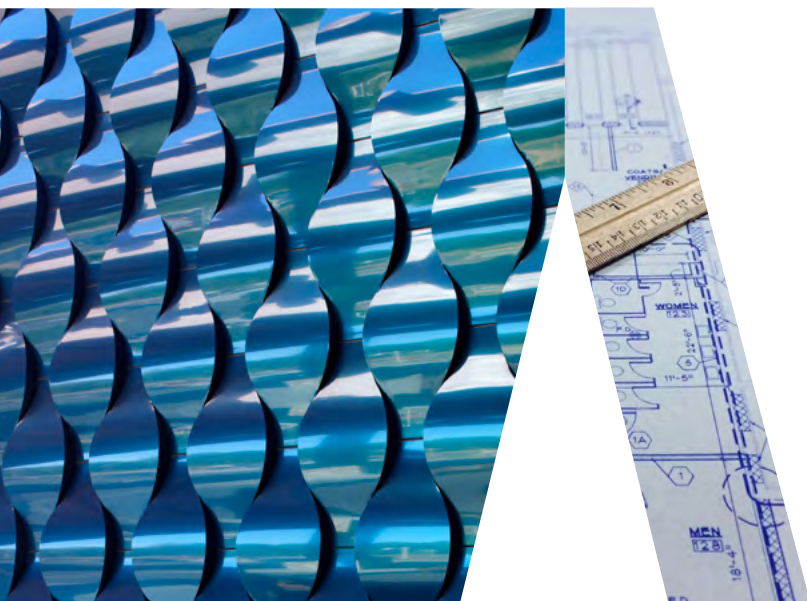




As the original “aluminum composite material,” ALUCOBOND PLUS consists of two sheets of smooth .020” aluminum thermo-bonded to a solid, fire retardant core and has been developed exclusively to allow architects and designers to meet today’s fire performance requirements set by the International Building Code (IBC) while using ACM as the material of choice. Proven product properties and benefits of ALUCOBOND PLUS include:

- Flatness & Rigidity
- Durability
- Ability to be perforated
- Formability
- Ease of fabrication
- Wide range of colors & finishes

The versatile characteristics of ALUCOBOND PLUS provide for a plethora of applications such as exterior and interior cladding, column covers, canopies, soffits and even signage, allowing architects to offer inspiring, creative, and innovative designs while meeting the standards of sustainable planning.

ALUCOBOND PLUS is available in all of our current finishes and custom colors.

## PRODUCT DESCRIPTION

### MATERIAL COMPOSITION

- Aluminum interior and exterior facings in 0.020” nominal thickness
- 4mm total nominal thickness, including proprietary fire retardant core

### SHEET WIDTHS

- Standard coil-coated width of 62”\*
- \* Some finishes are stocked in 40”, 49.2” or 50”. Please refer to stock material list
- Custom widths of 40” and 50” available on request

### SHEET LENGTHS

- Standard coil-coated length of 196”
- Reflect Mirror is offered in 146”
- Custom lengths for coil coating: maximum 400”
- Custom lengths for anodized: maximum 216”

### MINIMUM BENDING RADIUS

- The minimum bending radius of ALUCOBOND PLUS without routing the interior skin is 15 times the thickness
- The minimum bending radius for 4mm ALUCOBOND PLUS material without routing the back skin is 4”

### MANUFACTURING

- ALUCOBOND PLUS is made in Benton, Kentucky USA

## TECHNICAL SUMMARY

### TEMPERATURE RESISTANCE

- Withstands environmental temperature changes from -55°F to +180°F
- Coefficient of linear expansion is governed by the aluminum sheet

### TECHNICAL PROPERTIES

- Nominal thickness: 4mm
- Nominal weight: 1.56 lb/ft<sup>2</sup>
- Moment of inertia: .000212 in<sup>4</sup>/in
- Section of modulus: .00275 in<sup>3</sup>/in
- Rigidity: 2143 lb-in<sup>2</sup>/in

### SUSTAINABILITY DESIGN

- LEED 3
- LEED v4/4.1
  - LCA Industry Standard
  - EPD Industry Standard

### ACCEPTED EVALUATION REPORTS

- ICC-ES: 1185
- Florida Product Approval: FL29842
- Miami Dade County NOA: 15-0923.03
- Los Angeles Research Report: 24868
- Underwriters Laboratory: 19980

### WALL ASSEMBLY FIRE TESTING

- CAN/ULC S134\*\*
- NFPA 285\*\*

To download PDF or AutoCAD details and specifications, visit our [website](#).

Information contained herein, or related to, is intended for use at one’s own discretion. Such information is believed to be reliable, but 3A Composites shall have no responsibility or liability for results obtained or damages resulting from such use. 3A Composites USA, Inc. does not make any warranties, expressed or implied.

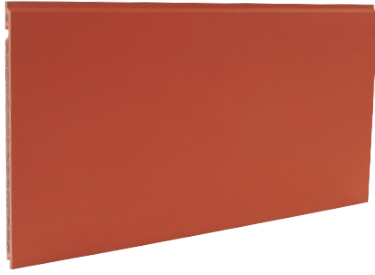
| Standard Test Method* | Description                                                          | Category         | 4mm                            |
|-----------------------|----------------------------------------------------------------------|------------------|--------------------------------|
| ASTM C-365            | Flatwise Compression Strength (Ultimate)                             | Mechanical       | 9291 psi                       |
| ASTM C-393            | Core Shear Properties (Perpendicular) Ultimate Facing Bending Stress | Mechanical       | 24,720 psi                     |
| ASTM C-393            | Core Shear Properties (Parallel) Ultimate Facing Bending Stress      | Mechanical       | 22,732 psi                     |
| ASTM D-790            | Flexural Modulus (Perpendicular)                                     | Mechanical       | 1891 ksi                       |
| ASTM D-790            | Ultimate Flexural (Perpendicular)                                    | Mechanical       | 18,573 psi                     |
| ASTM D-790            | Flexural Modulus (Parallel)                                          | Mechanical       | 1815 ksi                       |
| ASTM D-790            | Ultimate Flexural (Parallel)                                         | Mechanical       | 17,703 psi                     |
| ASTM D-790            | Yield Flexural Stress (Perpendicular)                                | Mechanical       | 6667 psi                       |
| ASTM D-790            | Yield Flexural Stress (Parallel)                                     | Mechanical       | 6930 psi                       |
| ASTM D-638            | Modulus of Elasticity (Perpendicular)                                | Mechanical       | 2930 ksi                       |
| ASTM D-638            | Tensile Strength (Perpendicular)                                     | Mechanical       | 7750 psi                       |
| ASTM D-638            | Tensile Yield at 0.2% Offset (Perpendicular)                         | Mechanical       | 6570 psi                       |
| ASTM D-638            | Elongation (Perpendicular)                                           | Mechanical       | 14.2%                          |
| ASTM D-732            | Punching Shear (Maximum Shear Load)                                  | Mechanical       | 2198 lbs.                      |
| ASTM D-732            | Punching Shear (Shear Strength)                                      | Mechanical       | 4615 psi                       |
| ASTM C-518            | Thermal Conductivity                                                 | Thermal          | U=6.5 Btu/hr ft² °F            |
| ASTM C-518            | Thermal Resistance                                                   | Thermal          | R=0.16                         |
| ASTM C-518            | Thermal Conductance                                                  | Thermal          | 6.25                           |
| ASTM D-648            | Deflection Temperature - Perpendicular                               | Thermal          | 185°F                          |
| ASTM D-648            | Deflection Temperature - Parallel                                    | Thermal          | 189°F                          |
| ASTM C-273            | Shear Test in Flatwise Plane (Ultimate Core Shear Strength)          | Bond Integrity   | 765 psi                        |
| ASTM C-297            | Tensile Bond Strength Test in Flatwise Plane (Ultimate)              | Bond Integrity   | 1016 psi                       |
| ASTM D-1781           | Bond Integrity                                                       | Bond Integrity   | > 22.5 in-lb/in                |
| ASTM E-90             | Sound Transmission (STC)                                             | Acoustical       | 30                             |
| ASTM E-90             | Sound Transmission (OITC)                                            | Acoustical       | 24                             |
| ASTM C-272            | Water Absorption                                                     | Physical         | 0.003%                         |
| ASTM D-696            | Coefficient of Linear Thermal Expansion                              | Physical         | 1.11x10 <sup>-5</sup> in/in °F |
| ASTM D-635            | Rate of Burning                                                      | Fire Performance | Classified CC1                 |
| ASTM D-1929           | Ignition Temperature - Self                                          | Fire Performance | 783°F                          |
| ASTM D-1929           | Ignition Temperature - Flash                                         | Fire Performance | 784°F                          |
| ASTM E-84             | Surface Burning Characteristics (Flame Spread)                       | Fire Performance | < 25                           |
| ASTM E-84             | Surface Burning Characteristics (Smoke Development)                  | Fire Performance | < 100                          |
| CAN/ULC-S102          | Surface Burning Characteristics (Flame Spread)                       | Fire Performance | < 25                           |
| CAN/ULC-S102          | Surface Burning Characteristics (Smoke Development)                  | Fire Performance | < 100                          |
| CAN/ULC-S134          | Flame Spread of Exterior Wall Assemblies                             | Fire Performance | Meets Criteria**               |
| NFPA 285              | Flame Spread of Exterior Wall Assemblies                             | Fire Performance | Meets Criteria**               |

\*The ASTM (American Society for Testing & Materials) Standard Test Method defines the way a test is performed and the precision of the result. The result of the test is then used to assess compliance with a standard specification.

\*\* Results based upon tests made with ALUCOBOND PLUS panels in specific wall assemblies. For more information about assemblies that have been tested, please contact technical support: [Thomas.rogers@3acomposites.com](mailto:Thomas.rogers@3acomposites.com)

# XB PRO 17

## VENTILATED FACADE SYSTEM



|                      |          |                                     |          |                                    |
|----------------------|----------|-------------------------------------|----------|------------------------------------|
| Altura<br>Height     | 300 mm   | 11 <sup>13</sup> / <sub>16</sub> in | 400 mm   | 15 <sup>3</sup> / <sub>4</sub> in  |
| Longitud<br>Length*  | <1200 mm | 47 <sup>1</sup> / <sub>4</sub> in   | <1200 mm | 47 <sup>1</sup> / <sub>4</sub> in  |
| Espesor<br>Thickness |          | 17 mm                               |          | 0 <sup>43</sup> / <sub>64</sub> in |
| Peso<br>Weight       |          | 25,5 kg/m <sup>2</sup>              |          | 5,32 lb/sqft                       |

\*Longitud máxima disponible en intervalos de 1 mm  
\*Maximum length available in 1 mm intervals

## CARACTERÍSTICAS TÉCNICAS / TECHNICAL DATA

| Clasificación / Classification              |  | UNE-EN 14411:2007        |
|---------------------------------------------|--|--------------------------|
| Método de fabricación<br>Manufacture method |  | Extrusión<br>Extrusion   |
| Absorción de agua<br>Water absorption       |  | 3 ≤ E < 6 % (Grupo Alla) |

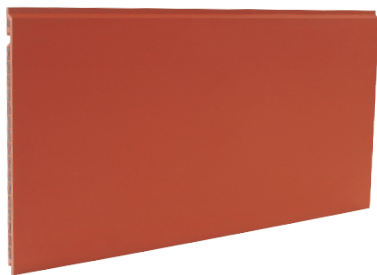
| Tolerancias dimensionales / Dimensional tolerance      |  | UNE-EN 14411:2007 |
|--------------------------------------------------------|--|-------------------|
| Tolerancia, sobre longitud<br>Tolerance on length      |  | ± 2 mm            |
| Tolerancia, sobre anchura<br>Tolerance on width        |  | ± 2 mm            |
| Tolerancia, sobre el espesor<br>Tolerance on thickness |  | ± 1 mm            |
| Rectitud en bordes<br>Straightness on width            |  | ± 0,3 %           |
| Ortogonalidad<br>Orthogonality                         |  | ± 0,5%            |
| Planitud de la superficie<br>Surface flatness          |  | ± 0,3%            |

| Propiedades físicas / Physical properties                                         |  | UNE-EN 14411:2007                                                                                   |
|-----------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------|
| Densidad aparente<br>Appareal density                                             |  | ≈2,3 g/cm <sup>3</sup>                                                                              |
| Absorción de agua<br>Water absorption                                             |  | <4,5% (en peso)                                                                                     |
| Reacción al fuego<br>Fire reaction                                                |  | A1*                                                                                                 |
| Resistencia a la flexión<br>Flexion resistance                                    |  | ≥ 11 MPa                                                                                            |
| Coefficiente de dilatación térmica lineal<br>Linear thermal expansion coefficient |  | ≤ 7 • 10 <sup>-6</sup> K <sup>-1</sup>                                                              |
| Resistencia al choque térmico<br>Termal shock resistance                          |  | Cumple<br>Complies                                                                                  |
| Resistencia a la helada<br>Frost resistance                                       |  | Cumple<br>Complies                                                                                  |
| Conductividad térmica<br>Thermal conductivity                                     |  | 1,04 W/(mk)                                                                                         |
| Durabilidad del aspecto superficial<br>Durability of superficial aspect           |  | Estabilidad del color satisfactoria a los rayos UVA<br>Satisfactory color stability to UV radiation |

\*Según Decisión 96/603/CE se clasifican en Clase A (sin contribución al fuego) / According to Decision 96/603/CE clasificated in Class A (no contribution to fire)

# XB PRO 17

## VENTILATED FACADE SYSTEM



|                      |                        |                                     |          |                                   |
|----------------------|------------------------|-------------------------------------|----------|-----------------------------------|
| Altura<br>Height     | 300 mm                 | 11 <sup>13</sup> / <sub>16</sub> in | 400 mm   | 15 <sup>3</sup> / <sub>4</sub> in |
| Longitud<br>Length*  | <1200 mm               | 47 <sup>1</sup> / <sub>4</sub> in   | <1200 mm | 47 <sup>1</sup> / <sub>4</sub> in |
| Espesor<br>Thickness | 17 mm                  | 0 <sup>43</sup> / <sub>46</sub> in  |          |                                   |
| Peso<br>Weight       | 25,5 kg/m <sup>2</sup> | 5,32 lb/sqft                        |          |                                   |

\*Longitud máxima disponible en intervalos de 1 mm

\* Maximum length available in 1 mm intervals

## CARACTERÍSTICAS TÉCNICAS / TECHNICAL DATA

| Características mecánicas / Mechanical characteristics                                         |                      |                                          |                                                                                                                                                       |                                                          | UNE-EN ISO10545-4:1997                  |
|------------------------------------------------------------------------------------------------|----------------------|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-----------------------------------------|
| Succión del viento<br>Wind suction                                                             | Vertical<br>Vertical | Hor. grapa goma<br>Hor. clip with rubber | Hor. grapa mecánica<br>Hor. mechanical clip                                                                                                           | Hor. grapa y perfil junta<br>Hor. clip and joint profile | Perfil horizontal<br>Horizontal profile |
| ≥ 2.400 Pa                                                                                     | 2.600 Pa **          | 3.600 Pa                                 | 3.600 Pa                                                                                                                                              | 2.800 Pa                                                 | >4.000 Pa ***                           |
| Presión del viento<br>Wind pressure                                                            |                      |                                          | 4720 Pa                                                                                                                                               |                                                          |                                         |
| Impacto de cuerpo duro<br>Hard body impact                                                     |                      |                                          | <b>1J</b> - Sin daño / No obvious damage<br><b>3J</b> - Rotura sin desprendimiento / Cladding element not cracked<br><b>10J</b> - Rotura / Cracked    |                                                          |                                         |
| Impacto de cuerpo blando<br>Soft body impact                                                   |                      |                                          | <b>10J</b> - Sin daño / No obvious damage<br><b>60J</b> - Rotura sin desprendimiento / Cladding element not cracked<br><b>300J</b> - Rotura / Cracked |                                                          |                                         |
| Propiedades físicas / Physical properties                                                      |                      |                                          |                                                                                                                                                       |                                                          | UNE-EN ISO 10545:1997                   |
| No evidencia de eflorescencias en esmaltados<br>No evidence of efflorescences in glazed panels |                      |                                          | Cumple<br>Complies                                                                                                                                    |                                                          |                                         |
| Resistencia a las manchas<br>Stain resistance                                                  |                      |                                          | Cumple<br>Complies                                                                                                                                    |                                                          |                                         |
| Anti-graffiti<br>Graffiti resistance                                                           |                      |                                          | Cumple<br>Complies                                                                                                                                    |                                                          |                                         |
| Facilidad de limpieza<br>Cleanability                                                          |                      |                                          | Cumple<br>Complies                                                                                                                                    |                                                          |                                         |
| Acabado fotocatalítico Active Plus<br>Photocatalytic coating Active Plus                       |                      |                                          | Disponible<br>Available                                                                                                                               |                                                          |                                         |

\*\*Distancia entre grapas 20 cm. / Distance between clips 20 cm.

\*\*\*El sistema ha superado el valor máximo posible recreado en el ensayo. / This system has exceeded the maximum value recreated in the test.

## PARKLEX PRODEMA

Products

### Wood wall cladding MUSTARD



Sold by:

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wood, HPL

**Location**

interior, exterior

**Installation type**

glued

**Style**

contemporary

**Finish**

textured, natural finish

**Color**

brown

**Aspect**

wood look

**Options**

sustainable

**Length**

2,440 mm (96 in)

## DESCRIPTION

NATURCLAD-B coatings allow you to install a supertextured cladding without the need for maintenance in ventilated facades. They are composed of a high-density bakelite body, a unique texture on the surface which creates no repeated patterns and an outer film that provides greater durability to the panels and protects the board from solar radiation, atmospheric agents and dirt.

The PEFC certification seal guarantees that our wood boards have been made with raw materials of forest origin managed in a socially and environmentally responsible way.

Maintenance-free HPL panels

PEFC-certified raw material

Resistance to extreme atmospheric agents

UV-ray resistant tone

Complete installation system

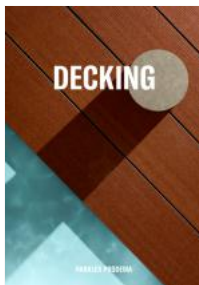
On-demand project assistance service

10-year warranty

Panel dimensions: 2440 x 1220 mm

Thicknesses: 6, 8, 10, 12, 14, 16, 18, 20, 22 mm

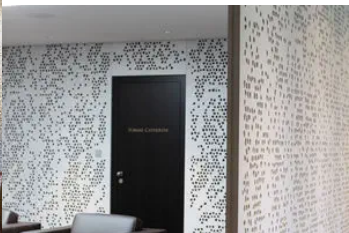
## CATALOGS



### DECKING

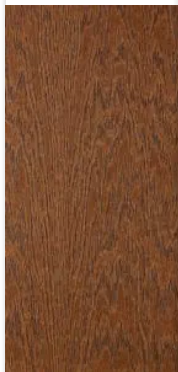
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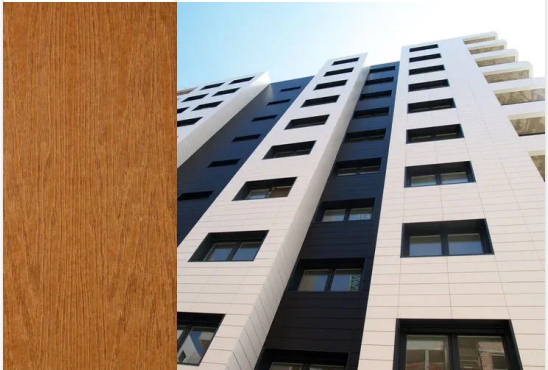
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CLADDING

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CERAMIC VENTILATED FACADE  
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- Wood wall cladding
- Panel veneer
- Gray wall cladding
- Interior veneer
- Wood look wall cladding
- Smooth wall cladding
- Flexible veneer
- White wall cladding

\*Prices are pre-tax. They exclude delivery charges and customs duties and do not include additional charges for installation or activation options. Prices are indicative only and may vary by country, with changes to the cost of raw materials and exchange rates.

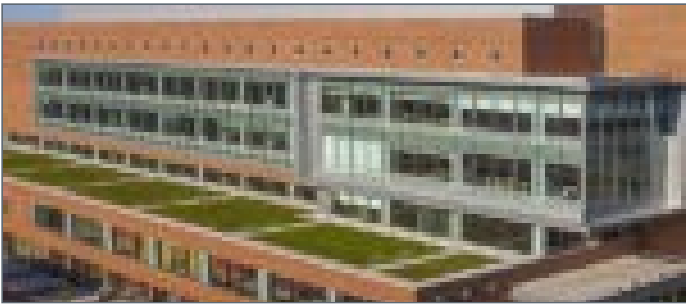
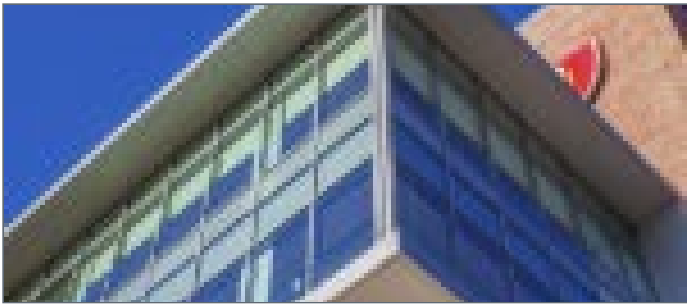
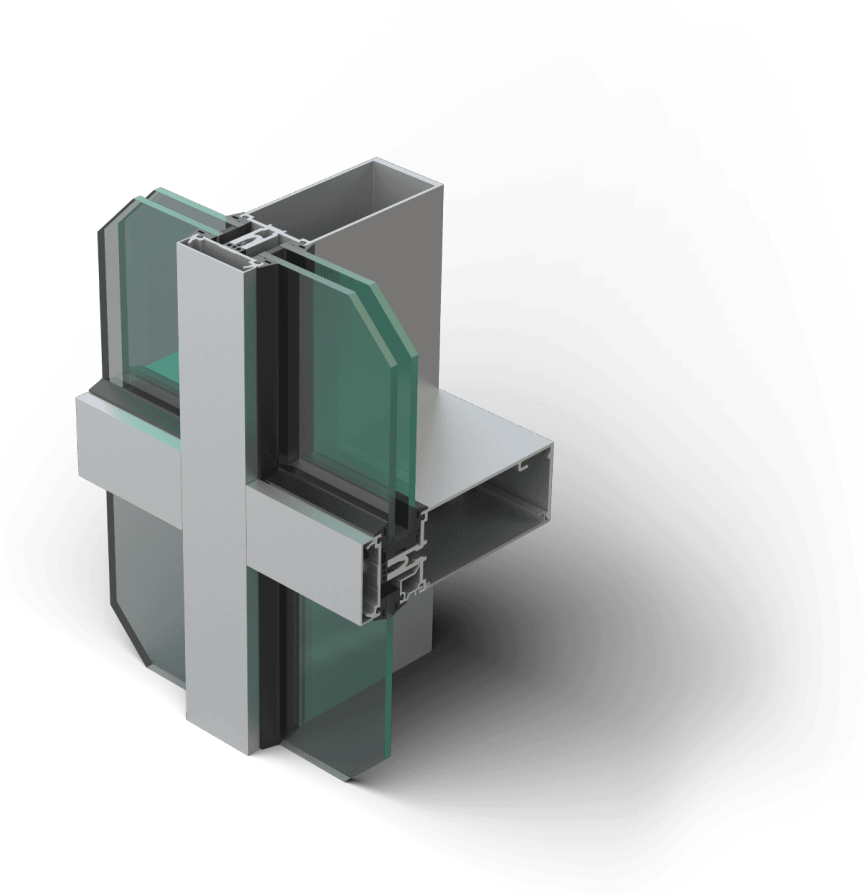


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+5

## CURTAIN WALL

# 1600 WALL SYSTEM®1 CURTAIN WALL

The 1600 Wall System®1 Curtain Wall is ideal for low- to mid-rise applications. Hurricane and impact resistant, the 1600 Wall System®1 can be used independently or integrated with 1600 Wall System®2 Curtain Wall for enhanced visual impact.

- 2-1/2" (63.5mm) sightline
- 6" (152.4mm), 7-1/2" (190.5mm) or 10-1/2" (267mm) depth
- Thermal performance
- Seismic (AAMA 501.4 and 501.6 standards)
- Low- to mid-rise applications
- Blast mitigation, hurricane resistance

[Features](#)[Sustainability](#)[Documentation](#)[Finishes](#)[Specs](#)[CAD Details](#)[Revit / BIM](#)[Warranty](#)[Safety Data Sheets](#)

- 
- Concealed fastener joinery creates smooth, monolithic appearance
  - Fillers produce uninterrupted seam lines by snapping onto optional open-back mullions
  - Meets current codes requiring protection of openings in windborne debris regions
  - Impact resistant framing options: 7-1/16" (177.8mm), 7-13/16" (198.43mm), 10-1/16" (255.58mm) and 10-13/16" (274.63mm)

**Cradle to Cradle Certified® Bronze:** The 1600 Wall System®1 Curtain Wall has been certified for its material content, recyclability and manufacturing characteristics.

Learn more about Cradle to Cradle certification at [www.c2ccertified.org](http://www.c2ccertified.org).

Cradle to Cradle Certified® is a certification mark of MBDC.

### Optional Features

- Steel reinforcing
- Rain screen and backpans
- Deep profile covers and bull nose covers
- Deep and heavy-weight mullions
- Profit\$Maker® Plus die sets
- Dual-color option

### Product Applications

- Ideal for low- to mid-rise applications
- Integrates with Kawneer Entrances, GLASSvent® and sun control products

### Thermal Technology

Find out more [here](#).

### Hurricane Resistant

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### Blast Resistant

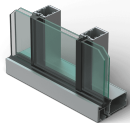
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ALL PRODUCTS

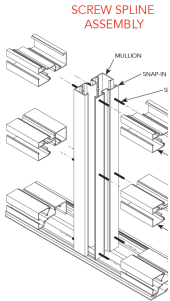




Trifab® VersaGlaze®  
451/451T Framing System →



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sightline

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Laws and building and safety codes governing the design and use of Kawneer products, such as glazed entrance, window, and curtain wall products, vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.



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419 01 Duchcov  
Czech Republic  
Tel: +420 417 818 111  
Fax: +420 417 835 807

**Vitrablok s.r.o.**  
Via delle Robinie, 12  
50019 Sesto F.no  
Florence - Italy  
Tel: +39 055 449 51  
Fax: +39 055 455 295

**Seves Glassblock Inc.**  
10576 Broadview Road,  
Broadview Heights,  
Ohio 44147 - USA  
Phone: +1-440-627-6257  
Toll Free: +1-877-738-3711

VP 10/11 EN/FR/DE

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SEVES  
GLASS  
BLOCK  
DESIGN





# The “VetroPieno” block

## La brique “VetroPieno”

## Der ziegel “VetroPieno”

### 🇬🇧 Games of light and colour

Pure and clean aesthetics similar to those of ice and a captivating density full of delicate light and colour effects produced by the glassy matter inside the block.

The *VetroPieno* block is a 100% compact glass block that brings together the appeal of traditional blocks and the transparency and luminosity of glass. Unlike traditional products that are hollow inside, *VetroPieno* can count on visual effects and movement created deep within the block to add transparency, passage of light, new beauty and fascination to the usual properties of this construction element.

Introduced by Seves Glassblock as part of its collection, it comes in four versions: Neutral, Blue, Nordic and Siena, and provides another glass solution for decorating interiors and exteriors, focusing on more artistic and expressive qualities of the material. An original alternative to classic blocks to create stunning dividing walls that allow light to pass through into each room, or special nuances and furnishing accessories to add a touch of style, individuality and colour.

The standard size and versatile shape allows it to be installed both horizontally and vertically for creating smooth surfaces, traditional designs, delicate frames or coloured light reflections.

### 🇫🇷 Des jeux de lumiere et de couleur

Une esthétique pure et nette comme celle de la glace et une séduisante densité riche de jeux de lumière et de couleur très délicats, ce sont les effets de la matière verre à l’intérieur de la brique.

*VetroPieno* est la brique de verre 100% compacte qui unit la transparence et la luminosité du verre au charme des briques traditionnelles. Contrairement aux produits classiques creux à l’intérieur, *VetroPieno* peut compter sur les effets visuels et de mouvement qui se créent en profondeur à l’intérieur. Ce qui permet d’ajouter aux propriétés habituelles de cet élément de construction transparence, et passage de la lumière, nouvelle beauté et suggestion.

Seves Glassblock l’a mise dans sa propre collection, dans les quatre versions Neutre, Bleu, Nordica et Siena ; il s’agit d’une autre solution en verre pour l’ameublement interne et externe, avec une insistance particulière sur la valeur artistique et expressive du matériau. C’est une solution alternative aux briques classiques pour créer des cloisons de séparation de grand effet qui favorisent le passage de la lumière d’une pièce à l’autre, ou pour ajouter une touche de style, individualité et couleur sous forme de nuance ou de détail d’ameublement.

Grâce aux dimensions standard et à sa forme, on peut l’installer aussi bien horizontalement que verticalement pour créer de cette manière des surfaces fluides, des dessins traditionnels, des encadrements délicats ou bien des reflets de lumière colorés.

### 🇩🇪 Spiel von Licht und Farbe

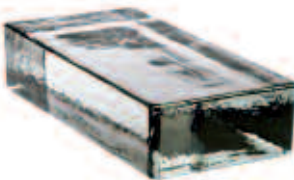
Eine reine und klare Ästhetik ähnlich der von Eis und eine einnehmende Dichte, die reich an zarten Spielen von Licht und Farbe ist, das sind die Effekte des Glases im Inneren des Ziegels.

Der Ziegel *VetroPieno* ist der zu 100 % kompakte Glasziegel, der die Faszination der herkömmlichen Ziegel mit der Transparenz und der Leuchtkraft des Glases vereint. Anders als das herkömmliche, innen hohle Produkt kann *VetroPieno* auf die Sicht- und Bewegungseffekte zählen, die tief in seinem Inneren entstehen, wodurch zu den üblichen Eigenschaften dieses Bauelementes Transparenz und Lichtdurchlässigkeit sowie eine neue Schönheit und Ausdruckskraft hinzukommen.

Er wurde von Seves Glassblock in den vier Versionen Neutral-Weiß, Blau, Nordisch-Anthrazit und Siena-Braun in die Kollektion aufgenommen und bietet eine weitere Lösung aus Glas für die Gestaltung von Innenräumen und Außenflächen, wobei auf die künstlerischsten und ausdrucksstärksten Wertigkeiten des Materials abgezielt wird. Eine originelle Alternative zu den klassischen Ziegeln für den Bau von sehr wirkungsvollen Trennwänden, die das Durchdringen des Lichtes zwischen den Zimmern begünstigt, oder als besonderer Touch und Ergänzung der Einrichtung, um dem Raum einen Hauch von Stil, Individualität und Farbe zu verleihen.

Dank seiner Standardmaße und der vielseitigen Form kann er sowohl waagrecht, als auch senkrecht verlegt werden, um so flüssige Oberflächen, herkömmliche Designs, oder zarte, von Lichtreflexen gefärbte Rahmen zu schaffen.

## VETROPIENO



NEUTRO VETROPIENO - RETTANGOLARE



NEUTRO VETROPIENO - QUADRATO



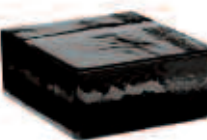
BLU VETROPIENO - RETTANGOLARE



BLU VETROPIENO - QUADRATO



NORDICA VETROPIENO - RETTANGOLARE



NORDICA VETROPIENO - QUADRATO



SIENA VETROPIENO - RETTANGOLARE



SIENA VETROPIENO - QUADRATO

|                                      | Weight (Kg)<br>Poids (Kg)<br>Gewicht (Kg) | No. Pieces/ m²<br>Nbre de pièces/m²<br>Stückzahl/m² | N.Pieces/box<br>Nbre de pièces/carton<br>Stückzahl/Packung | N.Pieces/pallet<br>Nbre de pièces/palette<br>Stückzahl/Palette |
|--------------------------------------|-------------------------------------------|-----------------------------------------------------|------------------------------------------------------------|----------------------------------------------------------------|
| <b>VETROPIENO</b>                    |                                           |                                                     |                                                            |                                                                |
| <b>RETTANGOLARE</b><br>24x11,7x5,3cm | <b>3,5</b>                                | <b>60</b>                                           | <b>5</b>                                                   | <b>300</b>                                                     |
| <b>QUADRATO</b><br>12x11,7x5,3cm     | <b>1,7</b>                                | <b>120</b>                                          | <b>10</b>                                                  | <b>600</b>                                                     |

### 🇬🇧 BASIC ELEMENTS FOR CALCULATING AND VERIFYING GLASS BLOCK STRUCTURES

Physical and mechanical properties of glass

Modulus of elasticity:  $\approx 760.000 \text{ kg/cm}^2$

Poisson's coefficient:  $\approx 0.20$

Density / specific weight:  $\approx 2.5 \text{ g/cm}^3$  (2500 kg/m³)

Hardness (Mohs scale):  $\approx 6.0$

Linear expansion (between -20 and +50°C):  $\approx 0.000007 \text{ cm/cm}^\circ\text{C}$

The glass blocks, manufactured with clear sodium lime glass or coloured in paste, are annealed and **do not contain harmful substances**.

The glass block structures cannot have load-bearing functions, **but they should only be used as curtains or dividers**.

These structures are considered **self-supporting and therefore do not play any structural role**, since they are only capable of safely sustaining their own weight together with the horizontal load generated by the wind and any perpendicular impact.

For information and technical assistance, please contact directly the reference offices.

### 🇫🇷 ÉLÉMENTS BASE POUR LE CALCUL ET LA VÉRIFICATION DE PRODUITS EN VETROARREDO

Propriétés physiques/mécaniques du verre

module d'élasticité :  $\approx 760.000 \text{ kg/cm}^2$

coefficient de Poisson :  $\approx 0.20$

densité/poids spécifique :  $\approx 2.5 \text{ g/cm}^3$  (2500 kg/m³)

dureté (Echelle de Mohs) :  $\approx 6.0$

dilatation linéaire (entre -20 et +50°C) :  $\approx 0.000007 \text{ cm/cm}^\circ\text{C}$

Les briques Vetropieno réalisées avec du verre de type calcium sodique neutre ou coloré en pâte sont soumises à un traitement de recuit et **ne contiennent pas de substances nocives**. Le projet ne doit pas attribuer aux structures en Vetropieno des fonctions portantes mais **uniquement de cloisonnement et de séparation**.

Ces produits doivent être considérés comme **autoportants et ne collaborant donc pas au niveau statique** car ils sont en mesure de supporter exclusivement leur propre poids, la charge horizontale engendrée par le vent et d'éventuels impacts perpendiculaires aux surfaces visibles.

Pour toute informations et assistance technique contacter les sièges de référence.

### 🇩🇪 GRUNDSÄTZLICHE PARAMETER ZUR BERECHNUNG UND GESTALTUNG VON GLASANWENDUNGEN MIT „VETROPIENO“

Druckfestigkeit:  $\approx 760.000 \text{ kg/cm}^2$

Querkontraktions-Koeffizient:  $\approx 0.20$

Dichte/Spezifisches Gewicht:  $\approx 2.5 \text{ g/cm}^3$  (2500 kg/m³)

Ritzhärte nach Mohs:  $\approx 6.0$

Lineare Ausdehnung (zwischen -20° und +50°C):  $\approx 0.000007 \text{ cm/cm}^\circ\text{C}$

Seves Glasprodukte werden aus geschmolzenem transparentem oder durchgefärbtem Kalknatronglas gefertigt und enthalten keine schädlichen Substanzen. Vetropieno können keine lasttragende Funktion haben und sollten daher nur als Raumteiler oder Trennelemente verwendet werden.

Diese Konstruktionen sind als selbsttragend zu betrachten, ohne strukturelle Funktion, da sie nur ihr Eigengewicht und eine seitliche Windlast tragen können.

Für Informationen und Kundendienst wenden Sie sich bitte an Ihr lokales Büro.



# SHORT FORM GUIDE SPECIFICATIONS



## PART I—GENERAL

### 1.1 Description

- a. Work Include  
These specifications cover precast, prestressed structural concrete construction including product design not shown on contract drawings, manufacture, transportation, and erection.
- b. Related Work Specified Elsewhere  
Flashing and sheet metal; sealants and caulking; painting.
- c. Work Furnished and Installed by Others  
Reglets for flashing.

### 1.2 Reference Standards

- a. ACI 301 — Specifications for Structural Concrete; American Concrete Institute International; 2010 (Errata 2012).
- b. ACI 318 — Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute International; 2011.
- c. ASTM C260/C260M — Standard Specification for Air-Entraining Admixtures for Concrete; 2010a.
- d. AWS D1.1/D1.1M — Structural Welding Code // Steel; American Welding Society; 2011 w/Errata.
- e. PCI MNL 116 — Manual for Quality Control for Plants and Production of Precast Concrete Products;
- f. PCI MNL 120 — PCI Design Handbook // Precast and Prestressed Concrete; Precast/Prestressed Concrete Institute; Seventh Edition, 2010.
- g. PCI MNL 123 — Design and Typical Details of Connections for Precast and Prestressed Concrete; Precast/Prestressed Concrete Institute; 1988, Second Addition.
- h. PCI MNL 135 — Tolerance Manual for Precast and Prestressed Concrete Construction; Precast/Prestressed Concrete Institute; 2000.

### 1.3 Submittals

- a. Shop Drawings  
Indicate layout, unit locations, configuration, unit identification marks, integral insulation, panel system connectors, connection details, support items, dimensions, openings, and relationship to adjacent materials. Provide erection drawings.

### 1.4 Quality Assurance

- a. Manufacturer Qualification  
The precast concrete manufacturing plant shall be certified by the PCI (Prestressed Concrete Institute), Plant Certification Program prior to the start of production. Precast concrete manufacturer must have produced product similar to what is being specified for a minimum of two years.
- b. Design Engineer Qualifications  
Design precast concrete units under direct supervision of a Professional Engineer experienced in design of precast concrete and licensed in the respective state.
- c. Welder Qualifications  
Qualified in accordance with AWS D1.1/D1.1M and AWS D1.4/D1.4M.

## PART II—PRODUCTS

### 2.1 Manufacturers

- a. Prestressed Structural Precast  
Any manufacturer holding a PCI Group C3A Plant Certification for the types of products specified; see [www.pci.org](http://www.pci.org).
- b. Integrally Insulated Panel System

### 2.2 Precast Units

- a. Precast Concrete Units  
Comply with PCI MNL-120, PCI MNL -122, PCI MNL 123, and PCI MNL-135.

# SHORT FORM GUIDE SPECIFICATIONS



(2.2 Precast Units, continued. . .)

b. Concrete Mix

Minimum 5000 psi, 28 day strength.

c. Design Loads

Static loads, anticipated dynamic loading, including positive and negative wind loads, thermal movement loads, and erection forces as defined by applicable code.

## 2.3 Concrete Materials

a. Cement

ASTM C150/C150M, Type I or III—Normal Portland type.

b. Admixtures

Air-entraining admixtures, ASTM C260; Water reducing, retarding accelerating, high-range water reducing admixtures, ASTM C494.

c. Aggregates | ASTM C33 or C330

d. Water

Potable and free from foreign materials in amounts harmful to concrete and embedded steel.

e. Reinforcing Steel

*Bars*—Deformed Billet Steel (ASTM A615), Deformed Rail Steel (ASTM A616), Deformed Axle Steel (ASTM A617), Deformed Low-Alloy Steel (ASTM A706);  
*Wire*—Cold Drawn Steel (ASTM A82);  
*Wire Fabric*—Welded Steel (ASTM A185), Welded Deformed Steel (ASTM A497).

f. Strand

Uncoated, 7 wire, stress-relieved or low relaxation strand (ASTM A416) (*including supplement*) Grade 250K or 270K;

g. Anchors and Inserts

*Materials*—Structural Steel (ASTM A36 minimum);  
*Finish*—Manufacturer's Standards.

h. Grout

*Cement grout*—Portland cement, sand and water sufficient for placement and hydration.

## 2.4 Insulation

a. Integral Insulation

Expanded polystyrene insulation.

## 2.5 Accessories

a. Bearing Pads

High-density plastic in combination with hard board shims.

## 2.6 Fabrication

a. Fabricate in general conformance with PCI MNL 116 guidelines.

## PART III—GENERAL

### 3.1 Erections

a. Installation

Installation of precast, prestressed concrete shall be performed by the manufacturer or a competent erector. Members shall be lifted by means of suitable lifting devices at points provided by the manufacturer. Temporary shoring and bracing, if necessary, as shown on the approved shop drawings, shall comply with the manufacturer's recommendations.

b. Alignment

Members shall be properly aligned and leveled as required by the approved shop drawings. Any variations between adjacent members that exceed industry standards shall be reasonably leveled out by jacking, loading or any other industry standard method as recommended by the manufacturer.

# SHORT FORM GUIDE SPECIFICATIONS



## 3.2 Field Welding

- a. Field welding is to be completed per the approved shop drawings in accordance with AWS D1.1/D1.1M and AWS D1.4/D1.4M.

## 3.3 Attachments

- a. Subject to approval of the architect/engineer, and manufacturer, precast, prestressed products may be drilled or “shot” provided no contact is made with the prestressing steel. Should spalling occur, it shall be required by the trade doing the drilling or the shooting to make repairs.

— END OF SPECIFICATION —