## PITTSBURGH CORNING GLASS BLOCK PRODUCTS

**HIGH PERFORMANCE LINE** – Pittsburgh Corning's High Performance Line of glass block products is comprised of products that offer the highest value, performance features and benefits related to improved safety, energy efficiency, aesthetics and decorative choices.



THICKSET® Block Cutaways show the greater face thickness of the THICKSET® Series Block. THICKSET® 60 Block on left vs. the THICKSET® 90 Block on right.



THICKSET® 90 Block DECORA® Pattern THICKSET® 90 block provides a 90-minute fire rating. The DECORA® pattern provides maximum light transmission with subtle visual distortion. The nondirectional faces make installation quick.



THICKSET® 90 Block ENDURA<sup>™</sup> Pattern THICKSET® 90 block provides a 90-minute fire rating. The ENDURA<sup>™</sup> pattern's narrow flutes provide moderate light transmission/maximum privacy.



THICKSET® 90 Block VUE® Pattern THICKSET® 90 block provides a 90-minute fire rating. The VUE® pattern transmits maximum light and allows ultimate visibility.

SIGNATURE LINE – Pittsburgh Corning's Signature Line of glass block products is comprised of high quality Premiere Series products and the largest selection of patterns and shapes. This line has become the standard in the industry and provides the most design flexibility in the selection and use of glass block for walls, windows, partitions, and showers in residential and commercial applications.

## Premiere Series Glass Block



ARGUS<sup>®</sup> Pattern Rounded perpendicular

flutes diffuse light while allowing maximum light transmission and a medium degree of privacy.



**DECORA®** Pattern

The trademark wavy undulations of this pattern provides maximum light transmission with subtle visual distortion. The nondirectional faces make installation quick.



ESSEX® AA Pattern The fine grid design of the closely spaced ridges in this pattern offers moderate light transmission and a maximum degree of privacy.



IceScapes® Pattern Non-directional pattern lets light in without sacrificing privacy. Maximum light transmission/medium to maximum privacy.



VUE® Pattern Faces are smooth and undistorted to transmit the most light and allow ultimate visibility. This is your best choice for passive solar collection and visual clarity.



FOCUS<sup>™</sup> Pattern This <u>new</u> circular pattern gives an exciting new way to bring more light and drama to any project.



THICKSET® 60 Block DECORA® Pattern THICKSET® 60 block provides a 60-minute fire rating. The DECORA® pattern provides maximum light transmission with subtle visual distortion. The nondirectional faces make installation quick.



THICKSET® 60 Block VUE® Pattern THICKSET® 60 block provides 60-minute fire rating. The VUE® pattern transmits maximum light and allows ultimate visibility.



DECORA® LX Pattern Fibrous glass insert adds moderate thermal and light characteristics. Maximum privacy. Please note: The "LX" fibrous glass insert is available in other patterns and sizes by special order. Minimum

order quantities apply.



### VISTABRIK<sup>®</sup> Solid Glass Block

3" solid glass block. Clear visibility, durable, impact, vandal and bullet resistant, low maintanance and aesthetically attractive. Excellent light transmission. Available in 8" x 8", 6" x 8" and 4" x 8" sizes.



#### Glass Block Solar Wall Tubes

An easy way to let light into a structure that is built with multi-wythe walls. The Solar Wall Tubes replace standard masonry units and allow light transmissin for LEED contribution. Improved thermal performance. Available in various sizes with choice of privacy levels.



### Energy Efficient Glass Block

Blocks out the sun's heat and ultraviolet light – to help keep interiors cooler in the summer. In winter, improved insulating ability helps keep interiors warmer. The blocks are available in DECORA®, DELPHI®, IceScapes®, and VUE® patterns.

## **SIGNATURE LINE** – (continued)

## Premiere Series Glass Block (continued)



Opal Plain With a smooth finish both inside and out, this style emits a softly diffused light over an entire area.



Opal Silk This fine grid pattern on the inner surface provides an elegant setting as it gently spreads light.

## **Shapes and Finishing Units**



ARQUE<sup>®</sup> Block DECORA<sup>®</sup> and IceScapes<sup>®</sup> Patterns

ARQUE® Block is a brilliant way to create smooth, graceful curves and columns. ARQUE® Block forms a consistent, tight curve ideally suited for columns.



ENCURVE<sup>®</sup> Block, DECORA<sup>®</sup> and IceScapes<sup>®</sup> Patterns Arched, soft edges to round out your design options or finish panels. Use with 8" x 8" EndBlock™ Finishing Units for a stepped panel.



EndBlock<sup>™</sup> Finishing Unit DECORA<sup>®</sup> and IceScapes<sup>®</sup> Patterns 6" x 8" and 8" x 8" The rounded, finished surface on one edge of these blocks makes them virtually disappear when used vertically or horizontally on the edges of panels, walls or dividers.

## possibilitiesbegin.com

Visit our new website which was designed specifically to help you to imagine the possibilities.



HEDRON® Corner Block DECORA® and IceScapes® Patterns Hexagonal corner unit allows you to form 90-degree corners resulting in a gently rounded continuous glass face.



TRIDRON 45° Block® DECORA® and IceScapes® Patterns The unique shape of this block lets you create everything from 45-degree angles to full circles.

MADE TO ORDER PRODUCTS – Items listed below are subject to minimum order quantities and lead times.

## **Premiere Series Glass Block**



ARGUS® Parallel Fluted Pattern Rounded parallel flutes on each face diffuse light while allowing maximum light transmission and a medium degree of privacy. Compliments the SPYRA® pattern.



SeaScapes<sup>™</sup> Pattern The three dimensional circles appear to float within the glass block. The pattern lets in light and also provides a degree of privacy.



SPYRA® Pattern SPYRA® Pattern gives you many options for decorative patterns, such as bold circles, rounded corners and the illusions of waves. Maximum light transmission and minimal privacy.



PC® Custom Signature Block Custom manufactured with your corporate logo or other design pressed into one or both inside surfaces of an eight inch square, standard unit.



VISTABRIK<sup>®</sup> Stippled Glass Block

Solid 3" thickness of glass with a stippled finish to add privacy. Durable, impact, vandal and bullet resistant, low maintenance and aesthetically attractive. Good light transition/ medium privacy.



HEDRON<sup>®</sup> LX Corner Block, DECORA<sup>®</sup> Pattern

Hexagonal corner unit allows you to form 90-degree corners resulting in a gently rounded continuous glass face.

# **PHYSICAL & DESIGN DATA**

	PITTSBURGH CORNING GLASS BLOCK PRODUCTS										
	Pattern	Nominal Size <sup>1</sup> (Actual size is <sup>1</sup> /4" less than nominal; mm shown is actual)	Weight (lb/ft²) installed with mortar	Heat Transmission <sup>2</sup> U Value (Btu/hr ft <sup>2</sup> °F)	Thermal Resistance <sup>2</sup> R Value (hr ft <sup>2</sup> °F/Btu)	Visible Light Transmission <sup>3</sup> (%)	Shading Coef. <sup>4</sup>	Sound Transmission S.T.C.	Solar Heat Gain Coefficient⁵		
		THICKSET® Block — Nominal Thickness = 4"; Actual Thickness = 3%" (98mm)									
	THICKSET® 60 Block— DECORA® & VUE®	8" x 8" (197mm)	25	0.51	1.96	VUE®=75 DECORA®=49	0.65	48	.6668 <sup>5</sup>		
U E	THICKSET® 90 Block— DECORA® & VUE®	8" x 8" (197mm)	30	0.51	1.96	VUE®=70 DECORA®=38	0.65	50	.66685		
	THICKSET® 90 Block— ENDURA™	8" x 8" (197mm)	30	0.51	1.96	38	0.65	.65 50 .6668			
Ξ.		Glass Block with "LX" Fil	orous Glass Inse	rts — Nominal Thick	ness = 4"; Actual Thi	ckness = 31/8" (	98mm)				
Щ.	DECORA®	6" x 6" (146mm)†	20	0.48	2.06	44	0.45 <sup>4</sup>		.56		
ž	"LX" Filter	8" x 8" (197mm)	20	0.48	2.06	44	0.45 <sup>4</sup>	40	.56		
٩I		12" x 12" (299mm) <b>†</b>	20	0.48	2.06	44	0.454		.56		
N S		VISTA	BRIK <sup>®</sup> Solid Gla	ss Block — See Nom	inal/Actual Sizes List	ed					
PERFO	VISTABRIK® Solid Glass Block	8" x 8" x 3" Nominal 7%" x 7%" x 3" Actual (194mm x 194mm x 76mm)	40	0.87	1.15	90		53 (NRC=0.05)	.7578 <sup>5</sup>		
HBIH		6" x 8" x 3" Nominal 5%"" x 7%" x 3" Actual (143mm x 194mm x 76mm)	40	0.87	1.15	90			.75785		
		4" x 8" x 3" Nominal 35%" x 7%" x 3" Actual (92mm x 194mm x 76mm)	40	0.87	1.15	90			.75785		
	STIPPLE Finish	8" x 8" x 3" Nominal 7%" x 7%" x 3" Actual (194mm x 194mm x 76mm) <b>†</b>	40	0.87	1.15	83		53 (NRC=0.05)	53 .7578 <sup>5</sup> (NRC=0.05)		
		Energ	gy Efficient Glas	s Block — See Nom	inal/Actual Sizes Liste	ed					
	DECORA®, DELPHI®, Ice Scapes®, and VUE®	8" x 8" x 3½" Nominal 7 ¾" x 7 ¾" x 3½" Actual (197mm x 197mm x 89mm)	40	.45	2.22	63 33 50 76			.32		
		Standard Premiere	Series Block —	Nominal Thickness =	= 4"; Actual Thicknes	s = 3 <sup>7</sup> / <sub>8</sub> " (98mn	ו) בי בי				
	ARGUS®	6" x 6" (146mm)	20	0.51	1.96	55	0.65	37	.66685		
		8" x 8" (197mm)	20	0.51	1.96	55	0.65	39	.66685		
		12" x 12" (299mm)	20	0.51	1.96	55	0.65	35	.66685		
	DECORA®	6" x 6" (146mm)	20	0.51	1.96	75	0.65	37	.66685		
		8" x 8" (197mm)	20	0.51	1.96	75	0.65	39	.66685		
ш		12" x 12" (299mm)	20	0.51	1.96	75	0.65	35	.66685		
Ζ		4" x 8" (95 x 197mm)	20	0.51	1.96	75	0.65		.6668		
-		6" x 8" (146 x 197mm)	20	0.51	1.96	75	0.65		.66685		
Ш.	ESSEX <sup>®</sup> AA	8" x 8" (197mm)	20	0.51	1.96	45	0.45	39	.66685		
$\supset$	FOCUS™	8" x 8" (197mm)	20	0.51	1.96	92	0.65	39	.66685		
A	lceScapes®	8" x 8" (197mm)	20	0.51	1.96	67	0.65	39	.66685		
Z		12" x 12" (299mm)	20	0.51	1.96	67	0.65	35	.66685		
5		4" x 8" (95 x 197mm)	20	0.51	1.96	67	0.65		.66685		
•••		6" x 8" (146 x 197mm)	20	0.51	1.96	67	0.65		.6668		
	Opal Plain	8" x 8" (197mm)	20			19					
	Opal Silk	8" x 8" (197mm)	20			17					
	SeaScapes™	8" x 8" (197mm) <b>†</b>	20	0.51	1.96	64	0.65	39	.66685		
	VUE®	6" x 6" (146mm)	20	0.51	1.96	91	0.65	37	.66685		
		8" x 8" (197mm)	20	0.51	1.96	91	0.65	39	.6668		
		12" x 12" (299mm)	20	0.51	1.96	91	0.65	35	.66685		
		4" x 8" (95 x 197mm)	20	0.51	1.96	91	0.65		.66685		
		6" x 8" (146 x 197mm)	20	0.51	1.96	91	0.65		.66685		
	1/8" FLAT SHEE	T GLASS COMPARISON (3mm)		1.04	0.96	90	1.00	28			

**1 Size:** Block are manufactured to a  $\pm 1/16$ " (2mm) tolerance. 2 Heat Transmission/Thermal Transmission: heat gain through glass panels, see ASHRAE HANDBOOK OF FUNDAMENTALS, 2005, Section 31.3.

4 Shading Coefficient: Estimated figures based on accumulated data. 5 SHGC: Default values as interpreted from

International Energy Conservation Code.

Winter night values. To calculate instantaneous 3 Light Transmission: Based on test results.

## **Installed Panel Weight**

Refer to Table on page 8 for weight of panels installed with mortar. Glass block panels installed with the ProVantage<sup>®</sup> Glass Block Installation System are up to 25% lighter per square foot than panels installed with mortar. Local building codes should be consulted for any limits on panel sizes or installation details.

## **Non-load Bearing**

Glass block panels are non-load bearing; adequate provisions must be made for support of construction above these panels. Panels are mortared at the sill, with jamb and head details designed to accommodate for building movement and lintel deflection. The compressive strength (for information purposes only) of all hollow glass block is 400 to 600 psi.; THICKSET<sup>®</sup> Series Glass Block is 2500 psi.; and VISTABRIK<sup>®</sup> Series is 80,000 psi.

## **Thermal Expansion Coefficient**

The thermal expansion coefficient of glass block is 47 x  $10^{-7}$  /(°F).

## **Detailed Drawings**

Structural members illustrated on page 14 and other "detail" pages indicate general principles of construction. Member sizes should be determined by structural analysis to avoid excessive deflections. Maximum deflection for supports shall not exceed L/600.





Glass Block between TRIDRON 45° Block®							
	a (in.)	s (in.)	d (in.)				
None	4.75	11.45	12.40				
1-4"x8"x4"	8.75	21.08	22.83				
1-6"x8"x4"	10.75	25.90	28.05				
1-8"x8"x4"	12.75	30.72	33.27				
1-4"x8"x4" + 1-8"x8"x4"	16.75	40.36	43.71				
2-8"x8"x4"	20.75	50.00	54.15				
1-4"x8"x4" + 2-8"x8"x4"	24.75	59.64	64.59				
3-8" x 8" x 4"	28.75	69.28	75.03				

## **Maximum Panel Dimensions**

	Premiere Series			Thinline® Series			VISTABRIK®		
	A (Sq.Ft.)	H (Ft.)	W (Ft.)	A (Sq.Ft.)	H (Ft.)	W (Ft.)	A (Sq.Ft.)	H (Ft.)	W (Ft.)
EXTERIOR*	144	20	25	100	10	15	100	10	10
INTERIOR	250	20	25	150	10	15	150	10	15

A = Area H = Height W = Width

\* All exterior areas and dimensions are based on 20 psf design windload with 2.7 safety factor.

Mortar Mix and Estimating Tables An optimum mortar mix for installing Pittsburgh Corning Glass Block is:							
Portland Cement	Lime	Sand					
1 Part	½ Part	3.4 Parts					
1.0 cubic foot	0.5 cubic foot	3.4 cubic feet					

## Number of Block for 100 Sq. Ft. Panel

300	
)	300

Columns can be All-TRIDRON 45° Block $^{\otimes}$  (left) or interspersed with 4" x 8" or 8" x 8" glass block.

NOTE: All mortar joints are 1/4".

## **PHYSICAL & DESIGN DATA**

## INSIDE RADIUS MINIMUMS FOR CURVED PANEL CONSTRUCTION



RADIUS MINIMUMS FOR CURVED PANEL CONSTRUCTION								
Block Size	Inside Radius	Number of Blocks	Vertical Joint Thickness In Inches					
	Inches	in 90° Arc	Inside	Outside				
4" × 8"	32	13	1/8	<sup>5</sup> /8				
6" x 6"	48 <sup>1</sup> / <sub>2</sub>	13	1/8	<sup>5</sup> /8				
8" x 8"	65	13	1/8	<sup>5</sup> /8				
12" x 12"	981/2	13	1/8	5/8				

### NOTES:

- It is suggested that curved areas be separated from flat areas by intermediate expansion joints and supports, as indicated in these drawings.
- When straight, ladder-type reinforcing is used on curved walls, the innermost parallel wire may be cut periodically and/or bent to accommodate the curvature of the wall.



 $\mathsf{ARQUE}^{\circledast}$  Block used along with other Pittsburgh Corning Block sizes, allows you to form consistent curves of various radii. Radii shown are to inside face of curve.

WIND LOAD RESISTANCE – MORTAR SYSTEM (Based on Standard Nominal 4" Thick Premiere Series Glass Block. Installed with mortar. Based on 2.7 Safety Factor)



160 ц • 4' x 4' 140 Max. Wind Load in Pounds/Sq. 120 100 4' x 8 80 60 40 0 • 6' x 12' 20 0 20 40 50 60 70 80 90 100 0 10 30 Area of Panel in Sq. Ft.

## WIND LOAD RESISTANCE – PROVANTAGE® SYSTEM

(Based on Standard Nominal 4" Thick Premiere Series Glass Block Installed with ProVantage® Silicone System). Based on 2.0 Safety Factor.

### **RESISTANCE TO SURFACE CONDENSATION**



**Example:** At a relative humidity of 40%, an outside temperature of approximately -3 °F will cause condensation on Premiere Series Glass Block or approximately 3 °F above zero on Thinline® Series block. Under the same conditions, condensation will form on a single-glazed flat glass window at 34 °F above zero.

# FIRE RATINGS & CODE INFORMATION

All sizes (exceptions listed below) of Premiere Series and Thinline<sup>®</sup> Series glass blocks have at least a 45 minute fire rating when used as a window assembly within a one hour fire-rated wall assembly. All THICKSET® 90 (thick-faced) and solid glass blocks have fire ratings of up to 90 minutes, and the THICKSET® 60 and ESSEX® AA Pattern glass blocks have fire ratings of up to 60 minutes, when used as window assemblies and where permitted by code.

### Pittsburgh Corning Glass Block units that are not fire-rated:

- All 12" x 12" sizes
- All DELPHI<sup>®</sup>, pattern block
  All HEDRON<sup>®</sup> Corner block, TRIDRON 45° Block<sup>®</sup> units, EndBlock<sup>®</sup>, ENCURVE<sup>®</sup> and ARQUE<sup>®</sup> finishing units
- All paver units
- VISTABRIK<sup>®</sup> Corner Block

### PANEL SIZES AND DIMENSION LIMITATIONS

Pittsburgh Corning Glass Block listed above have been tested and classified by Underwriters Laboratories® (UL®) for use as fire-rated window assemblies to panel sizes and dimension limitations listed below.

- With the exception of all 12" x 12" sizes, finishing blocks, corner blocks and the DELPHI® pattern block, all Premiere Series and Thinline® Series glass blocks in panels up to 120 square feet in masonry walls or 94 square feet in non-masonry walls are classified by Underwriters Laboratories, for use as 45-minute rated window assemblies.
- These panels are usually acceptable as window assemblies for use in fire separation walls that are rated one hour or less.
- THICKSET<sup>®</sup> 60 Block are listed for use as 45- or 60-minute fire rated window assemblies in panels up to 100 square feet.

- THICKSET<sup>®</sup> 90 Block and VISTABRIK<sup>®</sup> Solid Glass Block are all listed for use as 45-, 60- or 90-minute fire rated window assemblies in panels up to 100 square feet.
- Where permitted by building codes, glass block fire-rated window assemblies having a fire resistance rating of not less than 45 minutes may be used as "opening protectives". These assemblies shall not exceed 25% of the wall areas separating a tenancy from a corridor or a corridor from an enclosed vertical opening or one fire-rated area from another firerated area.
- Exception: Although glass block masonry systems have been tested as window assemblies (not wall assemblies), they may be used as one hour fire partitions as required for corridors in the enclosure of atriums only when sprinkler protection is provided on occupied sides.

### 45- AND 60-MINUTE RATED CONSTRUCTION

- All 45- and 60-minute rated Pittsburgh Corning Glass Block may be used in both masonry and non-masonry (steel or wood stud framing with gypsum board) walls.
- These rated glass block windows may be framed and anchored with either PC® Panel Anchor construction or channel-type restraints
- The use of a fire retardant type sealant for head and jamb locations is required.
- Specifications and construction details for such panels are as per Pittsburgh Corning Corporation recommendations
- Non-masonry, fire-rated steel stud with gypsum board wall assemblies must conform to UL® listed wall assembly #U465.

• Framing and support of the rated glass block window assembly shall be provided with double-studding at the jamb locations with height of supporting wall limited to no more than 3 feet.

### 90-MINUTE RATED CONSTRUCTION

- Where permitted by building codes, all 90-minute rated Pittsburgh Corning Glass Block may be used in masonry walls only.
- 90-minute rated glass block window assemblies must be framed and anchored with 1/4" thick steel (not aluminum) channeltype restraints or masonry chases. The use of panel anchor construction is not permitted.
- The use of a fire retardant type sealant for head and jamb locations is required.
- Specifications and construction details of such panels are as per Pittsburgh Corning Corporation recommendations.
- Twice the typical thickness (3/4" total) of expansion material is required at head and jamb locations.

### **45-MINUTE RATED CURVED** CONSTRUCTION

• The glass blocks noted under 90-minute rating and those 8" x 8" x 4" sized glass block noted under 45-minute rating are classified for use in masonry walls as curved window assemblies, provided that the radius of the assembly is at least twice the opening width (i.e. chord length).

## CODE COMPLIANCE

All of our fire-rated glass block products are listed in the Underwriters Laboratories current issue of the Fire Resistance Directory – Volume 3. A listing of our products can also be viewed on the Underwriters Laboratories Website at www.ul.com.

- U.L. Classification: R2556 (For Glass Block)
- U.L. Classification: R18572 (For Plastic Spacers)
- In accordance with NFPA 80, Chapter 14

### **CITY CODE APPROVALS**

- New York City Materials and Equipment Acceptance MEA 406-'90-M. Vol.IV
- Los Angeles Research Report RR-24486
- Dade County Acceptance 07-0626.10 04-0301.01
- 04-0824.01
- 05-1107.02 08-0731.08
- State of Florida Approvals FL 1363 FL 1366 FL 5357 FL 8039 FL 11669
- Texas Department of Insurance WIN #s 62, 63, 64, and 540

#### BUILDING CODE AND NATIONAL STANDARDS **REFERENCES:**

- International Building Code (IBC)
- International Residential Code (IRC) • Canadian Standards Association (CSA) A371-94 "Masonry
- Construction for Buildings" • Canadian Standards Association (CSA) S304.1-94 "Masonry Design for Buildings"
- TMS 402/ACI 530/ASCE 5 "Building Code Requirements and Specification for Masonry Structures'

## Fire Ratings — Glass Block Assemblies

Premiere Series Glass Blocks, THICKSET® 60 Blocks, THICKSET® 90 Blocks and 3" thick VISTABRIK® Solid Glass Block units have been tested and classified by Underwriters Laboratories (UL®) for use in fire-rated window assemblies to panel sizes and dimension limitations as listed.

	Masonry Wall Construction					Non-Masonry Wall Construction				
	Panel Li	Fire Rating			Panel Limitations		Fire Rating			
Product	Max. Area/Panel	Max Ht. or Width	45 Min.	60 Min.	90 Min.	Max. Area/Panel	Max Ht. or Width	45 Min.	60 Min.	
Thinline <sup>®</sup> Series**	120	12	Х			94	10.75	Х		
Premiere Series**	120	12	Х			94	10.75	Х		
THICKSET® 60 and ESSEX® AA Pattern**	100	10	Х	Х		94	10.75	Х	Х	
THICKSET® 90	100	10	Х	Х	Х*	94	10.75	Х	Х	
VISTABRIK®	100	10	Х	Х	Х*	94	10.75	Х	Х	

\* ¼" steel channel. ¾" thick expansion material at head and jambs, and fire retardant sealant are required.

\*\* Includes "LX" option.