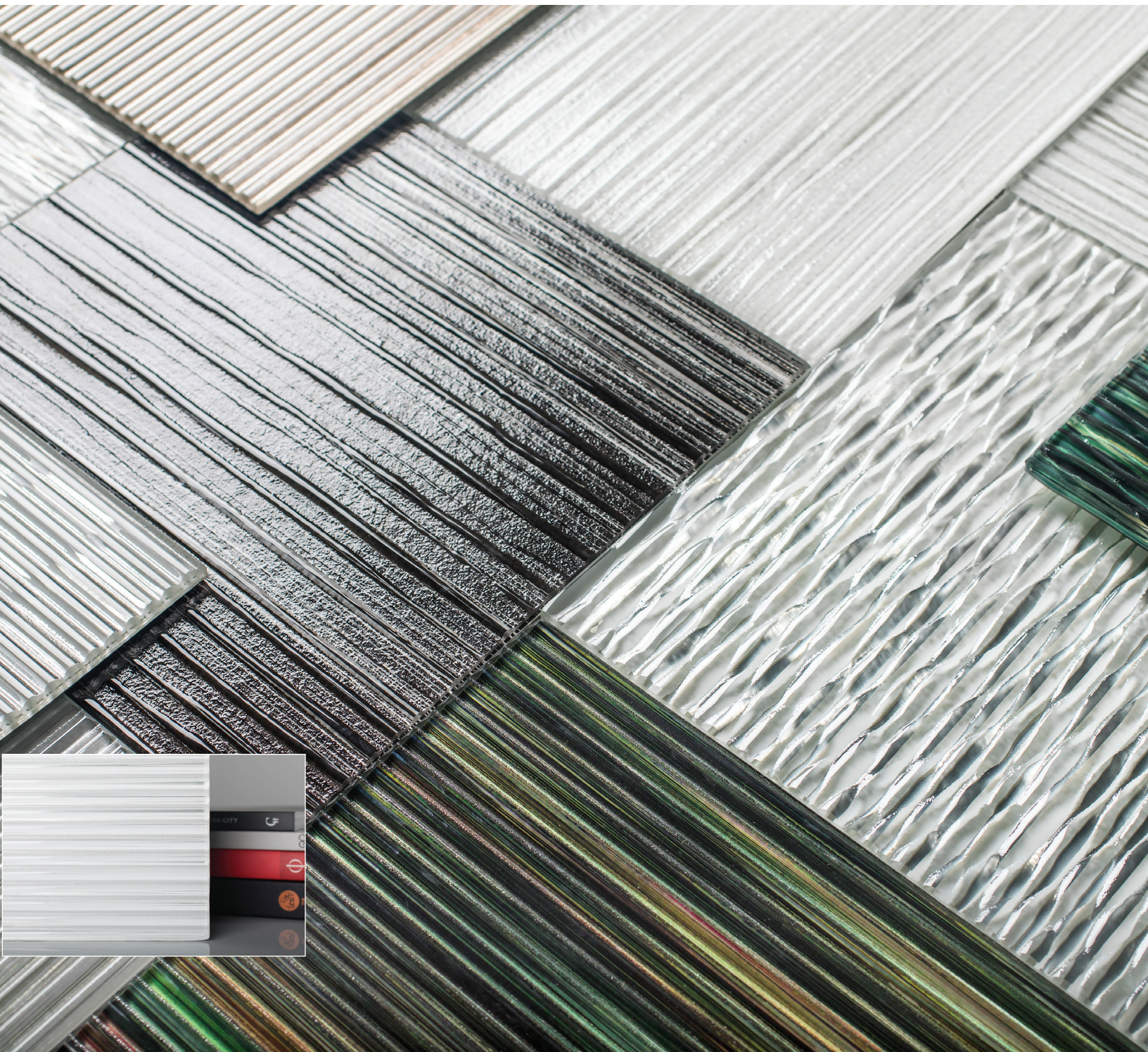




BERMANGLOSS® LEVELS™ KILN CAST GLASS

PRODUCT DATA





BERMANGLASS® LEVELS™ KILN CAST GLASS

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BermanGlass Levels is artisanal kiln cast glass laminated with color and graphic interlayers. This innovative collection draws on Forms+Surfaces expertise in two arenas – artistic cast glass design and sophisticated glass lamination technologies – to create a line of glass with unrivaled visual potential. Each sculpted Levels surface captures light on and through the glass. Interlayers optimized for each design add a sense of depth and dimension and accentuate shifting plays of light, texture, and color. Appropriate for the most demanding applications, Levels kiln cast glass is available exclusively in our LEVELe Wall Cladding and Column Systems, LEVELe Elevator Interiors, and LightPlane Panels.

MATERIAL DESCRIPTION

Levels Kiln Cast Glass is characterized by three parameters that define each design:

TEXTURE	INTERLAYER	CONFIGURATION	AVAILABILITY
Textures define the surface appearance of your glass. Each texture is formed by casting the glass on a hand-crafted mold that is fired in a kiln. Three standard textures are available.	Interlayers add the color aspect to to Levels glass. Color interlayers feature solid color. Graphic interlayers introduce graphics in a single color. Image interlayers incorporate multiple continuous tone colors. One standard color, three standard graphic interlayers and three standard image interlayers are available. Designs shown on pages two and three incorporate both texture and interlayer.	Refers to the amount of light transmitted - or not - through the glass. To a large extent, the end-use for your glass will determine the glass configuration. As outlined below, two standard options exist. Reflect is a single-sided configuration comprised of a color, graphic or image interlayer between a transparent lite of textured glass and a protective backer. LightPlane is a single-sided edge-lit configuration that consists of a color, graphic or image interlayer behind a transparent lite of textured glass.	Levels Kiln Cast Glass can be fabricated in any size up to 53" x 108" (1346mm x 2746 mm). Standard glass thickness is a nominal 6mm. Levels is sold exclusively as part of our wall cladding and other Systems. Please see the chart below for details.

PRODUCTS & APPLICATIONS

LEVELe ELEVATOR INTERIORS	LEVELe WALL CLADDING & COLUMN SYSTEMS	LIGHTPLANE PANELS
Levels Kiln Cast Glass is available as a standard inset option in LEVELe Elevator Interiors when using Capture panel frames.	Levels Kiln Cast Glass is available as a standard inset option in our LEVELe Wall Cladding and Column Systems when using Capture panel frames.	Levels Kiln Cast Glass can be used in our engineered, edge-lit LED LightPlane Panels. LightPlane Panels seamlessly integrate with our LEVELe Elevator Interiors and LEVELe Wall and Column Systems.

HOW TO SPECIFY

A Design Guide is available to lead you through the specification process in a simple, checkbox format. The Design Guide captures all the information needed to generate a quote: texture, interlayer, configuration, as well as other options.



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DESIGN OPTIONS: TEXTURE + INTERLAYER

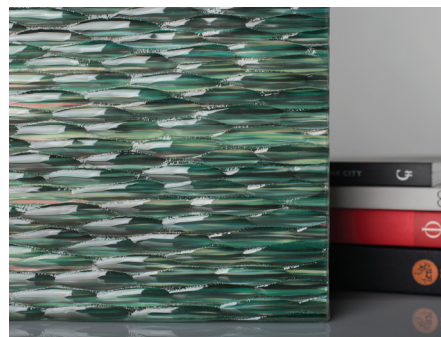
All designs shown on pages two to three can be specified in a horizontal or vertical orientation.



CORDUROY™ + CAPRICE™



HIKARU™ + OBSIDIAN™



NUV'EAU™ + LAGOON™



CORDUROY + SHIMMER™



HIKARU + SHIMMER™



NUV'EAU + SHIMMER™



CORDUROY + SWITCHBACKS™



HIKARU + SHADOW™



NUV'EAU + SHADOW™



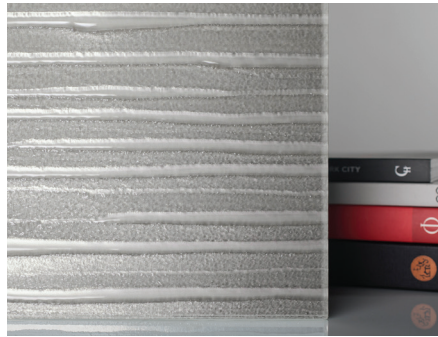
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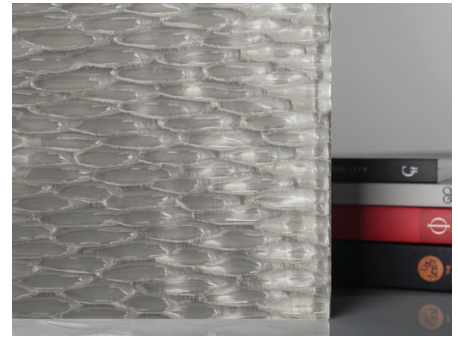
DESIGN OPTIONS: TEXTURE + INTERLAYER



CORDUROY + TAUPE



HIKARU + TAUPE



NUV'EAU + TAUPE

MATERIAL SPECIFICATIONS

Levels Kiln Cast Glass designs are available in the following Texture + Interlayer combinations.

TEXTURE	INTERLAYERS
CORDUROY	CAPRICE, SHIMMER, SWITCHBACKS, TAUPE
HIKARU	OBSIDIAN, SHIMMER, SHADOW, TAUPE
NUV'EAU	LAGOON, SHIMMER, SHADOW, TAUPE

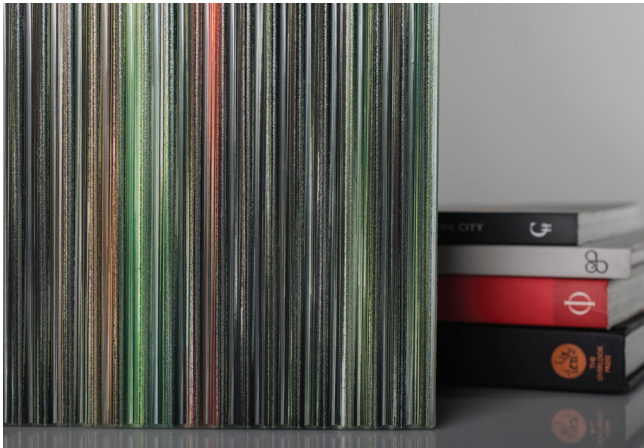


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CONFIGURATION OPTIONS

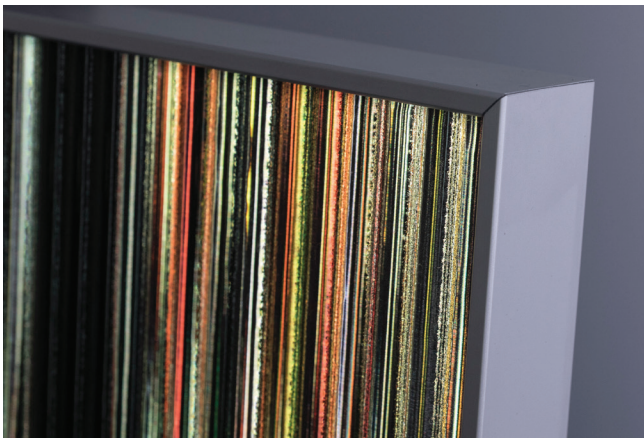
REFLECT



Levels Kiln Cast Glass, Reflect, is a single-sided configuration that consists of a color, graphic or image interlayer between a transparent lite of textured glass and a protective backer.

Typical Applications: Reflect is ideal for one-sided applications where glass will be used against another surface, for example, LEVELe Elevator Interiors, LEVELe Wall Cladding or Column Systems, or custom fabrications.

LIGHTPLANE



Levels Kiln Cast Glass, LightPlane, is a single-sided, edge-lit configuration that consists of a color, graphic or image interlayer behind a transparent lite of textured glass.

Typical Applications: LightPlane is ideal for one-sided applications where edge-lit glass will be used against another surface, for example, LEVELe Elevator Interiors, LEVELe Wall Cladding or Column Systems, or standalone LightPlane Panels.



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PRODUCT PERFORMANCE-COMPLIANCE WITH STANDARDS

Levels Kiln Cast Glass architectural glass complies with all major building codes as laminated safety glass and meets the following U.S. industry standards:

GLASS QUALITY	SAFETY GLAZING
<ul style="list-style-type: none"> • ASTM C1036—Specification for Flat Glass • ASTM C1048—Specification for Heat-Treated Flat Glass—Kind HS, Kind FT Coated and Uncoated Glass where heat treated glass is specified • ASTM C1172—Specification for Laminated Architectural Flat Glass augmented by Levels Kiln Cast Glass inspection guidelines for laminated glass, and level CBA rated in accordance with ASTM E-773—Test Method for Seal Durability of Sealed Insulating Glass Units • ASTM C1172-03—Specification for Maximum Allowable Overall Bow and Warp for Laminated other than Annealed Transparent Glasses • ASTM E-774—Specification for Sealed Insulating Glass Units where insulating glass is specified 	<ul style="list-style-type: none"> • ANSI Z-97.1-Safety Performance Specifications and Methods of Test for Safety Glazing Material Used in Buildings • CPSC 16 CFR 1201-Safety Standard for Architectural Glazing Materials, Category I and II

Levels Kiln Cast Glass architectural glass complies with and meet the following Canadian industry standards:

GLASS QUALITY	SAFETY GLAZING
<ul style="list-style-type: none"> • CAN/CGSB-12.1-M – Specification for M90 Tempered or Laminated Glass 	<ul style="list-style-type: none"> • CAN/CGSB-12.1-M – Safety Performance Specifications and Methods of Test for Safety Glazing Material Used in Buildings

GLASS DIMENSIONAL TOLERANCES

Units in the following table are expressed in inches (millimeters). Dimensional tolerances for length and width include any flare or mismatch. Closer tolerances may be achieved if required [for example, finished dimensional tolerances for frameless doors are +0", -1/16" (+0mm, -1.6mm)].

NOMINAL THICKNESS GLASS, INTERLAYER	THICKNESS RANGE	DIMENSIONAL ANNEALED	TOLERANCES STRENGTHENED
9/32 (6.9) 2 lts 1/8, 0.037 (3, 0.9)	0.267–0.305 (6.74–7.70)	+5/32, -1/16 (+4.0, -1.6)	+7/32, -3/32 (+5.6, -2.4)
5/16 (7.7) 2 lts 1/8, 0.067 (3, 1.7)	0.297–0.335 (7.54–8.50)	N/A	+7/32, -3/32 (+5.6, -2.4)
13/32 (10.9) 2 lts 3/16, 0.037 (5, 0.9)	0.397–0.435 (10.04–11.00)	+1/4, -1/16 (+6.4, -1.6)	+1/4, -1/8 (+6.4, -3.2)
7/16 (11.7) 2 lts 3/16, 0.067 (5, 1.7)	0.427–0.465 (10.84–11.80)	N/A	+1/4, -1/8 (+6.4, -3.2)
17/32 (12.9) 2 lts 1/4, 0.037 (6, 0.9)	0.475–0.525 (12.02–13.30)	+1/4, -1/16 (+6.4, -1.6)	+1/4, -1/8 (+6.4, -3.2)
9/16 (13.7) 2 lts 1/4, 0.067 (6, 1.7)	0.505–0.555 (12.82–14.10)	N/A	+1/4, -1/8 (+6.4, -3.2)
25/32 (20.9) 2 lts 3/8, 0.037 (10, 0.9)	0.747–0.849 (18.94–21.52)	+1/4, -1/16 (+6.4, -1.6)	N/A
13/16 (21.7) 2 lts 3/8, 0.067 (10, 1.7)	0.777–0.879 (19.74–22.32)	N/A	+5/16, -1/8 (+7.9, -3.2)

GRAPHICS DIMENSIONS AND TOLERANCES

GRAPHIC FEATURE	DIMENSION	
	in	mm
Size	±1/8	±3.2
Registration	±1/8	±3.2
Color Trap	+1/8	+3.2
Panel-to-Panel Match	±1/4	±6.4

Registration is placement of the interlayer within the glass area. The **Color Trap** is the overlap of adjoining imprinted densities or colors. **Panel-to-Panel Match** can be controlled more tightly in the field, during glazing, when the glazing system is designed to accommodate shimming.

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INSPECTION GUIDELINES

VISION AREA GLAZING - To incorporate unique product characteristics, the following table supersedes ASTM C1172, Table 3.

CHARACTERISTIC	SIZE THRU 25 SF (2.33M2)		SIZE OVER 25 SF (2.33M2)	
	CENTRAL	OUTER	CENTRAL	OUTER
Boil (Bubble)	1/16"	3/32"	1/8"	3/16"
	1.6mm	2.4mm	3.2mm	4.8mm
Blow-In, Edge Boil	N/A	C 1/4"	N/A	C 1/4"
		6.4mm		6.4mm
		E 1/32"		E 1/16"
		0.8mm		1.6mm
Discoloration	None	None	None	None
Fuse	1/32"	1/16"	1/16"	3/32"
	0.8mm	1.6mm	1.6mm	2.4mm
Hair, Lint (Single Strand)	Light	Med	Light	Med
Inside Dirt (Spot)	1/16"	3/32"	3/32"	5/32"
	1.6mm	2.4mm	2.4mm	4.0mm
Concentrated Lint (Area)	Light	Light	Light	Light
Slippage, Mismatch	N/A	1/16"	N/A	3/32"
		1.6mm		2.4mm
Separation, Delamination	None	1/4"	None	1/4"
		6.4mm		6.4mm
Short Interlayer	N/A	C 1/4"	N/A	C 1/4"
Unlaminated Area Chip	6.4mm		6.4mm	
		E 1/16"		E 3/32"
		1.6mm		2.4mm
Interlayer Scuff, Dirt Streak	Light	Light	Light	Light
Interlayer Edge Ripple (15.2cm) Maximum Length	N/A	C 1/2"	N/A	C 1/2" - 6" (15.2 cm)
	12.7mm	12.7mm		
		E 3/8"		E 3/8"
		9.5mm		9.5mm
Interlayer Pinholes, Voids	No	Clusters	No	Clusters
1/16" (1.6mm) Maximum Diameter	Clusters		Clusters	
Interlayer Streaking, Mottling	Med	Med	Med	Med
Interlayer Roll-Wave Distortion	Heavy	Med	Heavy	Med

The **Central Area** is an area formed by an oval or circle whose axes or diameters, when centered, do not exceed 80% of the overall dimension; the **Outer Area** is the remaining perimeter.

C = Conventionally glazed, unexposed edge; **E** = Butt-glazed or other exposed edge

Light = Barely noticeable when viewed from a distance of three feet (one meter) under normal lighting conditions

Medium = Noticeable from three, but not 11 feet (one, not 3.5m)

Heavy = Plainly noticeable from any viewing distance



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ULTRA-VIOLET SCREENING

Levels Kiln Cast Glass transmits less than one-tenth of one percent of UV. It blocks over 99.5% of solar radiation at wavelengths 380 NM and below, where by comparison, 1/4" clear float glass transmits over 70%.

RECEIVING, STORAGE, HANDLING, PROTECTION, AND MAINTENANCE

ORDERING	RECEIVING
<ul style="list-style-type: none">• Plan the order to avoid off-site storage and to minimize rehandling and time in storage at the job site before installation.• Prepare boxing, trailer and floor loading schedules in consideration of weight limitations and handling and distribution needs.	<ul style="list-style-type: none">• Levels Kiln Cast Glass is sold and shipped on an F.O.B. FACTORY basis. Inspect all glass upon arrival.• Before unloading, inspect handling equipment, rigging and surrounding conditions for safety compliance and inspect the general condition of the shipment for load shifting or possible damage in transit.• Inspect the shipment for any shortage, abuse, wetness or other transit damage; note such on the bill of lading or delivery ticket and obtain the driver's signature as acknowledgment.• Inventory received materials; immediately report any shortage to Levels Kiln Cast Glass and report concealed damage to the carrier.• If necessary, file a written freight claim with the carrier and order replacement glass from Levels Kiln Cast Glass.
STORAGE	HANDLING
<ul style="list-style-type: none">• Store indoors at moderate temperature (above the dew point).• If outdoor storage is required, shade from direct sunlight and cover with tarpaulins or plastic (for plastic, particularly, allow for air circulation in and around the cases—condensation can lead to glass surface staining).• Support both sides of vertically stored cases.• Wet glass must be towel dried prior to storage as prolonged moisture exposure can cause permanent surface staining.	<ul style="list-style-type: none">• During handling, wear hard-hats, safety shoes, gloves, and glazing gauntlets and follow all established safety procedures.• The movement and installation of glass needs to be handled with suction cups suitable for textured glass.• Remove the lid of the crate and unpack lite-by-lite; never end-pick glass or move partially unpacked cases.• Exercise care to prevent damage to the glass; edge damage may lead to thermally associated glass breakage after installation.• Cushion lites at bottom-edge quarter points on soft, firm blocks, free from glass chips, dirt or foreign matter.• Stack glass on edge and lean against a structural column or other sturdy upright or rack at an angle of five to seven degrees from vertical; place interleaving between lites. Never slide one lite against another.• Check finished surfaces and glass edges for damage before installation; set only acceptable material.
PROTECTION	MAINTENANCE
<ul style="list-style-type: none">• Install finished materials after potentially damaging construction activities nearby—such as welding, sandblasting and fireproofing—have been completed. If the construction schedule does not allow for this, protect the glazing from damage by other processes.• Immediately after glass is set, identify the openings with streamers or ribbons suitably attached to the framing or surround and held free from the glass; do apply warning markers directly to the glass.	<ul style="list-style-type: none">• Never use fluoride salts or hydrogen-fluoride producing compounds to wash the glass or surrounding surfaces; avoid use of razor blades or abrasive cleansers.• Use soft, clean, grit-free cloths and a mild soap, detergent or glass cleaning solution for normal washing, rinse with clean water, and squeegee dry; ordinary window-washing techniques are appropriate. Windex® or similar glass cleaners are recommended. Harsh chemicals can damage the glass coating.• Remove any stains from weathering steel by washing frequently during the weathering period (according to the steel manufacturer's recommendations).• Remove any runoff from concrete, stucco or other alkaline materials by frequent window washing.