

Saflex® Structural PVB interlayer

High-performance laminate designed for strength



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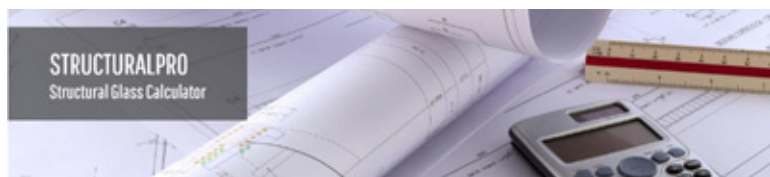
Saflex® Structural interlayer is a tough polyvinyl butyral interlayer (PVB) designed for applications where interlayer rigidity and high glass adhesion requirements are not met with standard glazing interlayers. Saflex Structural provides superior structural capacity compared with standard PVB interlayers. In properly designed systems, Saflex Structural is capable of keeping glass intact at high and low temperatures after impact and under load. It's formulated to provide robust resistance to delamination and excellent edge stability and is compatible with visibly reflective coatings and low-emissivity coatings.

Saflex Structural glazing is suitable for exposed edge laminates, floors, stairs, balconies, canopies, point glazing systems, clip systems, captured systems, curtain walls, and sloped and overhead glazing where glass needs to remain intact after breakage.

Due to the stiffness of Saflex Structural interlayer, laminates can either sustain higher uniform loads with the same glass thickness or the glass thickness can be reduced and still achieve the same loading. Saflex Structural can be used with annealed, heat-strengthened, and fully tempered glass. Glass selection should be based on required performance attributes such as load requirements, optical distortion, potential for spontaneous breakage, thermal stress capability, stress capability, and post-breakage performance such as glass shard retention, viewing, and the ability to withstand limited load.

Benefits

- **Post-breakage safety**
Higher load capability sustains safety after breakage.
- **Superior edge stability**
Enhances delamination resistance
- **Enhanced unit strength**
Facilitates oversized glass design
- **Enhanced interlayer strength**
Enables thinner glass to reduce weight and cost
- **Superwide 3.2 m width**
Improves throughput and reduces costs
- **Vanceva® Colors compatibility**
Creates thousands of color opportunities



Do you need to run glass stress calculations?

Visit www.saflex.com/tools, and start using Saflex StructuralPro. The software will perform calculations and provide a PDF report via email, detailing:

- Load resistance
- Glass stress
- Deflection for the requested configuration
- Effective thickness for the single-unit laminate from which the model was generated
- Overall thickness and weight of the glass

Saflex® Structural product offering

Product nomenclature	Thickness	Std. widths	Std. lengths	Transparency
Saflex® DG	0.76 mm (0.030 in.)	45–322 cm	250 m	Clear

Saflex® Structural mechanical and physical properties

Technical data	Property	Test method	Units	Test conditions	Saflex® Structural interlayer	
Physical	Specific heat	ASTM E1269	J/kg°C	28°–80°C	2150	
	Specific gravity	ASTM D792	g/cm³	—	1.09	
	Hardness	ASTM D2240	Shore D	Cut/stacked to 12.5 mm	52	
Mechanical	Elongation at failure	JIS K6771	%	23°C/50% RH	190	
	Tensile strength	JIS K6771	kg/cm	23°C/50% RH	330	
	Tear strength	ASTM D624	N/mm	23°C/50% RH	106	
	Poisson's ratio	ASTM D638	—	23°C/50% RH	0.476	
Thermal	Coefficient of thermal expansion	ASTM D831	10 ⁻⁶ /°C	–18° to 30°C	129 x 10 ⁻⁶	
	Thermal conductivity, K	ASTM F5930	W/m/(m²°C)	36°C	0.196	
					DG	DG XC
Solar	Solar transmittance	NFRC 300	D65	Clear 3-mm glass	76%	76%
	Visible transmittance	NFRC 300	D65	Clear 3-mm glass	89%	88%
	UV screening	NFRC 300	280–380 nm	Clear 3-mm glass	>99%	>99%

Note: The designed high adhesion may render this product inappropriate for lamination with thin annealed lites of glass when used as a single-layer interlayer where penetration resistance is required. Information regarding the safe handling and storage of Saflex Structural can be found in the Safety Data Sheet that is available from the Advanced Interlayers sales organization or at www.Eastman.com.

Additional benefits of Saflex laminated glass



Safety protection



Burglary protection



Storm protection



UV protection



Noise reduction

Architects and designers trust Saflex®.

Around the world, architects and designers trust Saflex when performance and safety are their most critical concerns. The reason for their confidence is simple. No matter what the specifications or performance targets, Saflex interlayer technology delivers advanced glazing performance for demanding applications.



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The results of insight™

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Glass railings and exposed edges

Saflex® Structural (DG41XC) PVB provides new possibilities.

Architectural glass railings can dramatically enhance a building's facade, and for occupants, the unobstructed views are priceless. Exposed edges have long been a challenge for manufacturers and installers, but advancements in interlayer products have resolved many of these issues. Saflex Structural polyvinyl butyral (PVB) interlayers are ideal for laminated glass railings, especially those in hot, humid climates. Laminated glass made with these interlayers can withstand high humidity and temperature deviations between hot and cold climates without compromising the integrity of the laminate edge when properly laminated.

Exposed edges get the heat in Miami, Florida.

Edge stability is a performance property that indicates Saflex interlayer's resistance to delamination when exposed edges are subjected to a hot and humid environment. For outdoor edge stability testing, Eastman selected a commercially operated site near one of the most tropical cities in the United States — Miami. Edge stability, as defined here, is a long-term event in which the samples are exposed to the natural, outdoor environment. The edges are unprotected and, consequently, wet in the early morning (with dew) and during episodes of fog or rain.

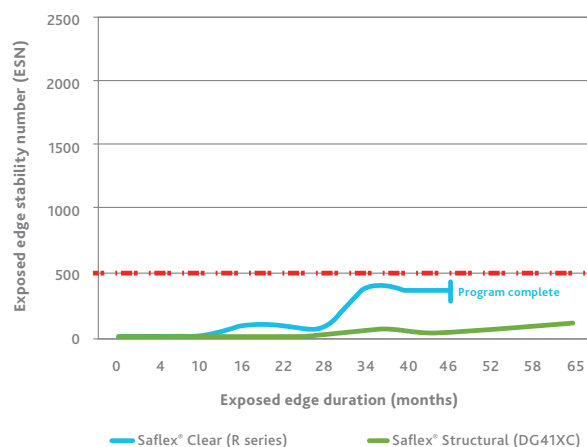
The edge stability number (ESN) is a weighted sum of "percent defect lengths" where the weight increases as the square of the depth (expressed in sixteenths of an inch). The maximum ESN number is 2,500, with the minimum number being zero; the smaller the number, the better the edge stability in this environment. Any product exhibiting an ESN of less than 500 is considered exceptional.



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Figure 1 shows the difference between the conventional Saflex Clear PVB interlayer and Saflex Structural PVB interlayer — both exposed at the aforementioned site for the corresponding duration. Understanding that an ESN of 500 is considered exceptional, Saflex Structural performance at 65 months is outstanding. Saflex Clear PVB interlayer formulation exposure was completed at 46 months; however, Saflex Structural was exposed longer.

Figure 1. Edge stability numbers for Saflex® Clear and Saflex® Structural



Salt fog testing for edge blush and delamination

Saflex Structural PVB interlayer performed well in salt fog testing conducted according to the ASTM B117-11 standard. Specimens were placed in a hot (35°C) environment and uniformly exposed to salt fog (created from a 5% saline solution). When compared with a Saflex Clear interlayer, Saflex Structural showed marked improvement in performance in edge blush and was less susceptible to edge delamination.

Saflex® Structural product offering

Product nomenclature	Thickness	Std. widths	Std. lengths	Transparency
Saflex® DG41XC	0.76 mm (0.030 in.)	45–322 cm	250 m	Clear

Sealant compatibility

Sealants can sometimes cause contact problems because of their various chemical compositions. Using National Glass Association (NGA) methodology, Eastman tested five different samples for 3,500 hours with cyclical UV light, heat and condensation exposure. On average, Saflex Structural PVB interlayer outperformed a standard interlayer on percentage of edge affected, average total depth and maximum depth affected.

Post-breakage behavior

Laminated glass can provide protection following a rare breakage situation. The glass adheres to the interlayer, reducing the likelihood of shards of glass falling on pedestrians at the street level.

Adding color

Saflex Structural PVB interlayer is compatible with Eastman's unlimited color possibilities via the Vanceva® Colors and Earth Tones collections. For distinctive color, subtle neutrals and whites, gradients, and patterns, Vanceva interlayer system offers unparalleled design options, giving architects the ability to make their projects unique.

Saflex Structural — unlimited design options

Saflex Structural is the ideal interlayer solution for glass railings, balustrades, canopies and other projects where exposed edges are involved. Extensive testing in both natural and lab conditions has shown that, when properly laminated and installed, glass with Saflex and Vanceva formulations can provide acceptable long-term performance when edges of the laminate are exposed to normal weathering.

Additional benefits of Saflex laminated glass



Safety protection



Burglary protection



Storm protection



UV protection



Noise reduction

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