

PRODUCT INFORMATION BULLETIN

Saflex® DG Structural Interlayer

Saflex® DG is a tough, resilient film produced from plasticized polyvinyl butyral (PVB). It is designed specifically as an interlayer for applications where increased interlayer rigidity and high glass adhesion is required relative to standard glazing interlayers. The designed high adhesion may render this product inappropriate for lamination with thin annealed lites of glass when used as a single layer interlayer when penetration resistance is required.

Saflex DG combines a more rigid rheology with the features of glass containment, UV screening, assembly and lamination properties that have come to expect from other Saflex® brand PVB interlayer products. Information regarding the safe handling and storage of Saflex DG can be found in the Material Safety Data Sheet that is available from the Advanced Materials Sales organization or at www.saflex.com.

Specific applications of Saflex DG include its use in structural glass applications, balcony, floor, fins and stair treads, to adhere the spall shield layer in bullet resistant glazing or in mass transit (train) applications, glass applications where creep at higher temperatures is a concern, point fixed glazing and areas where the edge effects from sealants is a primary concern for laminates. When used as part of a multi-interlayer laminate glazing system in place of one layer of standard PVB, Saflex DG can provide increased infill retention due to lower deflection as compared to a similar laminate system without Saflex DG. Saflex DG structural interlayer can be layered with Vanceva and Saflex colors. The modulus of the interlayer should be adjusted accordingly for calculations and color mottle should be verified through mock up panels.

Available Forms:

Saflex DG interlayer is supplied in standard lengths (up to 3.2 m) and widths. Saflex DG interlayer is available in 0.76 mm thicknesses and is supplied on a 15.2 cm (6 in) diameter core in roll form.

Saflex® DG structural interlayer	
Product Designation	DG41
Thickness	0.76 mm (0.030 inch)
Color	Clear

Please contact your Saflex Sales Manager, Customer Service Representative or visit www.saflex.com for further information.

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Storage Conditions:

Saflex DG interlayer should be stored inside the moisture barrier bag that the roll is shipped in. Saflex interlayers are supplied as refrigerated rolls that must be stored between 5°C and 10°C (41°F to 50°F) to prevent the material from sticking to itself (blocking) or as rolls interleaved with polyethylene (additional charge applies) that do not require refrigeration. Interleaving is not available for all products.

It is recommended that the interlayer be used within a two year period from purchase to minimize this blocking tendency.

Laminating Conditions:

A Laminating Guide which details recommended practices for storage, handling, and lamination is available to Eastman's laminating partners. This technical guide is available only from your Saflex Technical Service (TS) Representative or Saflex Sales Manager.

Saflex® DG Mechanical and Physical Properties

	Property	Test Method	Units	Test Conditions	Saflex® DG
Physical	Glass Transition Temperature (Tg)	---	°C	Frequency 1 Hz Heating Rate 3° C/min	46°C±1
	Roll Length		m		Ordered Minimum
	Specific Heat	ASTM E 1269	Joules/Kg – °C	41-80°C	2150
	Specific Gravity		g/cm ³		1.08
	Thickness	Micrometer	Mm	Nominal Gauge	+0.05 mm (0.002 inch) - .025 mm (0.001 inch)
	Width		Cm		Ordered Minimum

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	Property	Test Method	Units	Test Conditions	Saflex® DG
Mechanical	Elongation at Failure	JIS K6771	%	23°C / 50% RH	190
	Tensile Strength	JIS K6771	Kg/cm ²	23°C / 50% RH	330
	Shear Modulus	See table below			
	Young's Modulus	See table below			

Optical	Haze	ASTM D 1003	-	3 mm clear glass (laminated)	0.92
	Refractive Index	ASTM D 542	-	23°C	1.488
	Yellowness Index	ASTM D313	-	3 mm clear glass (laminated)	0.30

Thermal	Coefficient of Thermal Expansion	Thermal Mechanic	in/(in°F)	-40 °C -5 °C	189
	Thermal Conductivity, K	ASTM F 433	W/m / (m ² °C)	32 °C – 90 °C	0.205
	Emissivity	ASTM C 1371		19.5 °C	0.94

Solar	Solar Transmittance		D65	0.76 mm Saflex® DG Clear 3 mm Glass	76%	
	Solar Reflectance				7%	
	Solar Absorptance				17%	
	Visible Transmittance				89%	
	Visible Reflectance				8%	
	Solar Heat Gain Coefficient				SHGC (G value)	0.81
	Light to Solar Gain				LSG	1.10
	UV Screening				280 – 380 nm	>99%

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The shear storage modulus and calculated Young's modulus of Saflex® DG interlayer for a given load duration at temperature is provided for use in calculating structural capacity of laminated glass containing this product.

Saflex® DG41 Shear Storage Modulus

Load Duration	Temp								
	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C
	MPa								
1 sec	373	265	152	52	9.2	2.3	1.1	0.8	0.7
3 sec	341	237	108	27	3.7	1.3	0.8	0.7	0.6
30 sec	275	158	39	4.5	1.0	0.8	0.6	0.6	0.5
1 min	249	131	25	2.8	0.9	0.7	0.6	0.5	0.5
5 min	202	72	6.8	1.2	0.7	0.6	0.5	0.5	0.4
30 min	140	28	1.9	0.8	0.6	0.5	0.4	0.4	0.3
1 hour	107	16	1.4	0.7	0.6	0.5	0.4	0.3	0.2
1 day	22	1.7	0.7	0.5	0.4	0.3	0.2	0.1	0.1
5 days	6.5	0.9	0.6	0.5	0.3	0.2	0.1	0.1	--
1 week	4.8	0.9	0.6	0.5	0.3	0.2	0.1	--	--
3 weeks	2.3	0.7	0.5	0.4	0.3	0.2	0.1	--	--
1 month	1.8	0.7	0.5	0.4	0.2	0.1	0.1	--	--
1 year	0.8	0.6	0.4	0.2	0.1	--	--	--	--
10 years	0.6	0.5	0.3	0.1	--	--	--	--	--
15 years	0.6	0.4	0.2	0.1	--	--	--	--	--
50 years	0.6	0.4	0.2	--	--	--	--	--	--

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Saflex® DG41 Young's Modulus

Load Duration	Temp								
	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C
	MPa								
1 sec	1101	782	449	154	27	6.8	3.2	2.4	2.1
3 sec	1007	700	319	80	11	3.8	2.4	2.1	1.8
30 sec	812	466	115	13	3.0	2.4	1.8	1.8	1.5
1 min	735	387	74	8.3	2.7	2.1	1.8	1.5	1.5
5 min	596	213	20	3.5	2.1	1.8	1.5	1.5	1.2
30 min	413	83	5.6	2.4	1.8	1.5	1.2	1.2	0.9
1 hour	316	47	4.1	2.1	1.8	1.5	1.2	0.9	0.6
1 day	65	5.0	2.1	1.5	1.2	0.9	0.6	0.3	0.3
5 days	19	2.7	1.8	1.5	0.9	0.6	0.3	0.3	--
1 week	14	2.7	1.8	1.5	0.9	0.6	0.3	--	--
3 weeks	6.8	2.1	1.5	1.2	0.9	0.6	0.3	--	--
1 month	5.3	2.1	1.5	1.2	0.6	0.3	0.3	--	--
1 year	2.4	1.7	1.2	0.6	0.3	--	--	--	--
10 years	1.9	1.4	0.8	0.3	--	--	--	--	--
15 years	1.9	1.3	0.7	0.3	--	--	--	--	--
50 years	1.8	1.2	0.6	--	--	--	--	--	--

Young's modulus E' is calculated using formula $E' = 2G'(1+\nu)$ where ν = Poisson's ratio of approximately 0.476 for isotropic polymeric material as measured in accordance with ASTM D638.

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The data presented is derived from samples tested. Results are not guaranteed for all samples or for conditions other than those tested. Data and its respective measured, calculated or estimated single number ratings is for glass panels only – glazing installed in frames may differ significantly in performance.

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