

## PRODUCT TECHNICAL DATA

### Saflex® Acoustic (Q series) PVB Interlayer

Saflex® interlayers are plasticized polyvinyl butyral (PVB) sheeting produced by Eastman Chemical Company. These interlayers are permanently bonded through a heat and pressure process to two or more pieces of glazing to produce laminates with impact and glass containment properties. Laminated glass with Saflex interlayers can be classified as safety glazing in accordance with, but not limited to, various regulations such as ANSI Z26.1, ANSI Z97.1, AS/NZS 2208; CNS 1183, and CPSC 16 CFR 1201.

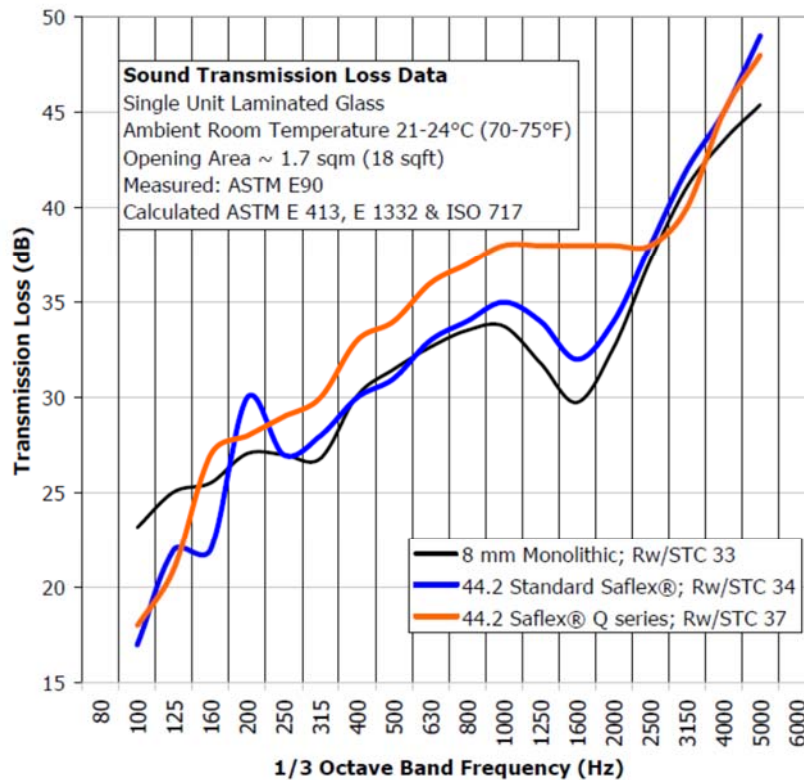
#### Product Overview:

Saflex Acoustic, Q series interlayer, is a multi-layer product designed to produce glass laminates with enhanced acoustical properties compared to monolithic glass and laminates made with standard polyvinyl butyral (PVB) interlayer. Saflex Acoustic has demonstrably met or exceeded many regulations for laminated safety glazing (including those listed above) when properly selected, laminated, and installed. Saflex Acoustic was specifically formulated to provide exceptional durability when exposed to natural weathering.

Saflex Acoustic suppresses the coincident effect of glass and is ideal for use in exterior laminated glazing to reduce rail, traffic, speech and other airborne noise, and to improve building sound comfort. It's also ideal for interior applications requiring sound reduction such as cubical dividers, office partitions and enclosed mall storefronts. Other Saflex Acoustic benefits:

- Delivers up to 10dB noise reduction (transmission loss) in the critical frequency range, compared to laminated glass made with conventional PVB interlayer.
- Designed to achieve noise reduction in the building using the same traditional overall glass thicknesses and may be able to achieve desired acoustical performance with thinner configurations allowing for more flexibility in the air space for increased energy conservation.
- Provides laminators with superior handling and processing as compared to monolithic acoustic interlayers.
- Meets most safety glazing impacts requirements globally and can therefore be used in areas deemed as hazardous locations by the building code such as doors, skylights and overhead glazing. Extensive application testing has been conducted, including vibration damping measurements and sound transmission loss measurements.

For more information on Saflex Acoustic, please contact your Eastman representative. The ability to reduce noise as perceived by the human ear can be measured. This measurement involves sending specific frequencies of sound through a material, in this case, laminated glass with Saflex Acoustic, and re-measuring what comes “through” the glass to determine what gets “filtered” out. The transmission loss is recorded and can be illustrated in graphical form as indicated in the chart below:



**Available Forms:**

All Saflex Acoustic is supplied in roll form on 15.2 cm (6 inch) diameter cores.

Saflex Acoustic is supplied in thicknesses; 0.64 mm (0.025 inch), 0.76 mm (0.030 inch) and 1.52 mm (0.060 inch), and a variety of roll lengths and widths. Most common standard roll length is 250 meters (820 feet) in thicknesses of 0.76mm (0.030 inch).

Saflex Acoustic is produced in clear form only; however, they can be layered with Saflex and/or Vanceva® colors to achieve almost any desired color with enhanced acoustical damping.

Please contact your Saflex Sales Manager, Customer Service Representative or visit [www.saflex.com](http://www.saflex.com) for further information.

**Storage Conditions:**

Saflex Acoustic should be stored inside the moisture barrier bag that the roll is shipped in. Saflex Acoustic is 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.

**Saflex® Acoustic Physical and Mechanical Data**

	Property	Test Method	Units	Test Conditions	Saflex® Acoustic (QS) Interlayer
<b>Physical</b>	Hardness	ASTM D 2240	Durometer A	23°C, 50%RH	63
	Thickness	Micrometer	mm	-	0.76
	Moisture	-	%	-	0.38 ± 0.07
	Specific Gravity	ASTM D792	-	23°C	1.06
	Specific Heat	ASTM E1269	Joules/Kg -°K	50°C	2050
BTU/lb -°F			122°F	0.41	
<b>Mechanical</b>	Tear Strength	ASTM D 624	N/mm	23°C, 50%RH	43.4
	Tensile Strength	JIS K6771	MPa	23°C / 50% RH	21
			Kg/cm <sup>2</sup>		210
			psi		3040
	Elongation at Failure	JIS K6771	%	23°C / 50% RH	250
Shear Relaxation Modulus (G) <sup>1,2</sup>	See Table Below				
<b>Optical</b>	Refractive Index	ASTM D542	-	23°C	1.476
<b>Thermal</b>	Coefficient of Thermal Expansion	ASTM E831	ppm/°C	-20°C -30°C	167
	Thermal Conductivity, K	ASTM F433	W/m-°K	48 °C	0.21
			BTU/hr-ft-°F	118 °F	0.11
<b>Flame Retardant</b>	Auto Ignition Temperature	ASTM D1929	°C	ASTM D1929- 96	360
			°F		680

1 - Data supplied based on Saflex QS31 (0.64 mm) and QS41 (0.76 mm) formulation in 3 mm Solar glass unless otherwise specified.

2 - Shear relaxation modulus (G) data are provided as a separate table below.

**Saflex® Acoustic (Q series) PVB interlayer Shear Relaxation Modulus**

Load Duration	Temperature						
	20°C	25°C	30°C	35°C	40°C	45°C	50°C
	MPa						
1 sec	2.39	1.61	0.98	0.49	0.44	0.37	0.30
3 sec	1.76	1.18	0.54	0.45	0.39	0.30	0.27
30 sec	0.78	0.46	0.42	0.32	0.28	0.23	0.16
1 min	0.54	0.45	0.37	0.29	0.26	0.19	0.14
5 min	0.45	0.36	0.29	0.25	0.18	0.13	0.08
10 min	0.42	0.32	0.27	0.22	0.15	0.11	---
30 min	0.35	0.28	0.23	0.16	0.12	---	---
1 hour	0.30	0.26	0.19	0.14	0.09	---	---

Applicable to Saflex Acoustic QS31 and QS41 formulations.

Note: If FEM modelling software requires the input of both E and the Poisson's ratio, the formula  $E = 3G$  will yield the calculated values which can be used for modelling. These are the closest approximations currently available.

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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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