

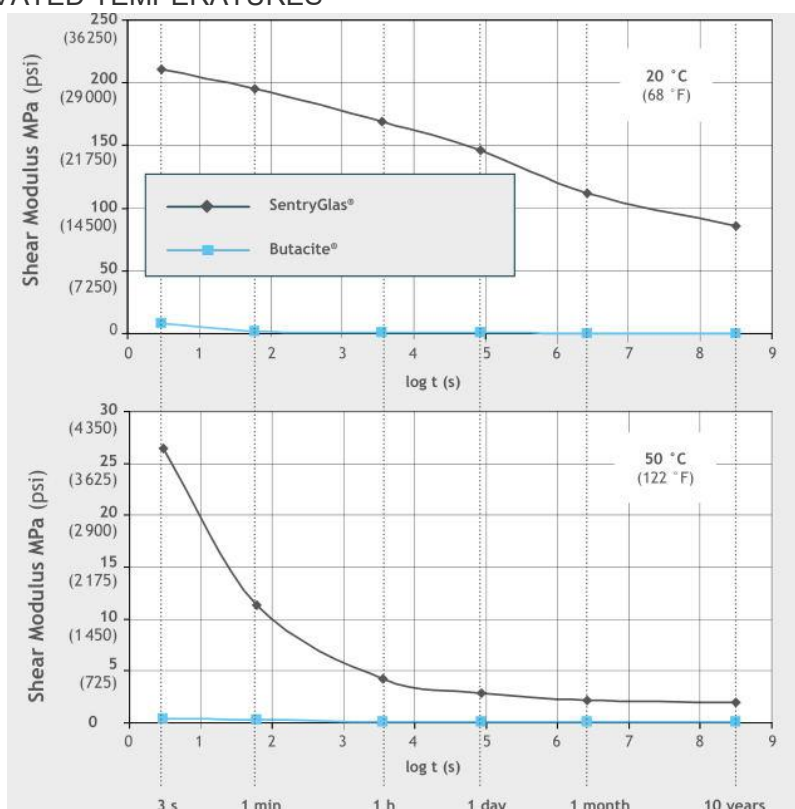
PVB/SGP interlayer shear modulus

If two sheets of glass, lying on top of one another, are placed under load, they will start to bend (distort) independently. Displacement occurs between the two inner surfaces, which are in direct contact with each other. This is because one of the two surfaces is being stretched while the other is being compressed. If both sheets are laminated with an adhesive polymer interlayer, this must be able to internally compensate for the distortional differences (i.e. absorb shear forces).

For designers of architectural glazing, it is therefore important to assess the likelihood of achieving full design load at the design temperature and load duration. How can structural designers ensure that the specified laminated safety glass interlayer is capable of meeting the design specification and building codes? The appropriate elastic property values need to be selected for the design case and assigned to an effective elastic interlayer.

The **shear modulus** describes the material's response to **shearing** strains. long-term loads. As a result, two glass sheets laminated together using **PVB** – and exposed to a long-term flexural load – behave in exactly the same way as two sheets that have not been joined together. The shear modulus of polyvinylbutyral (PVB) materials varies to a great extent, e.g. 1 – 400 MPa, over the temperatures and durations encountered for glass laminates in a building.

STIFFNESS (SHEAR MODULUS) OF BUTACITE® PVB AND SENTRYGLAS® INTERLAYERS AT ROOM AND ELEVATED TEMPERATURES



Results of Dupont Butacite & Dupont SGP interlayer

Relaxation modulus G [N/mm ²]	Product type	Load duration										
		3 sec	30 sec	1 min	5 min	30 min	1 hour	1 day	5 days	3 weeks	1 month	1 year
10°C Temperature	Trosifol® BG	-	-	-	-	-	-	-	-	-	-	-
	Trosifol® ES	699	603	573	502	420	388	234	157	95	80	19
	SentryGlas®	236	228	225	220	217	206	190	178	172	171	161
20°C Temperature	Trosifol® BG	8	-	1.6	-	-	0.8	0.5	-	-	0.4	0.3
	Trosifol® ES	342	230	196	122	55	37	5.3	2.8	2.0	1.9	1.6
	SentryGlas®	211	206	195	188	175	169	146	130	115	112	96.5
30°C Temperature	Trosifol® BG	1	-	0.8	-	-	0.4	0.3	-	-	0.1	0.1
	Trosifol® ES	58	14	9.2	4.0	2.3	2	1.6	1.6	1.5	1.5	1.5
	SentryGlas®	141	119	110	82.8	66.1	60	49.7	24.7	12.9	11.6	6.8
40°C Temperature	Trosifol® BG	0.6	-	0.5	-	-	0.2	0.2	-	-	0.1	0.1
	Trosifol® ES	3.4	1.9	1.8	1.6	1.6	1.6	1.5	1.5	-	1.5	-
	SentryGlas®	63	36.6	30.7	19.4	11.4	9.3	4.5	3.6	3.4	3.3	3.1
50°C Temperature	Trosifol® BG	0.4	-	0.3	-	-	0.1	0.1	-	-	0.1	0.1
	Trosifol® ES	1.7	1.6	1.6	1.5	1.5	-	-	-	-	-	-
	SentryGlas®	26.4	13.5	11.3	7.3	4.9	4.2	2.8	2.4	2.2	2.2	2.1
60°C Temperature	Trosifol® BG	-	-	-	-	-	-	-	-	-	-	-
	Trosifol® ES	1.6	1.5	1.5	-	-	-	-	-	-	-	-
	SentryGlas®	8.2	4.3	3.7	2.6	1.9	1.7	1.3	1.2	1.2	1.1	1.0
70°C Temperature	Trosifol® BG	-	-	-	-	-	-	-	-	-	-	-
	Trosifol® ES	-	-	-	-	-	-	-	-	-	-	-
	SentryGlas®	2.9	2.1	1.9	1.4	1.0	0.8	0.6	0.6	0.5	0.5	0.5
80°C Temperature	Trosifol® BG	-	-	-	-	-	-	-	-	-	-	-
	Trosifol® ES	-	-	-	-	-	-	-	-	-	-	-
	SentryGlas®	1.3	1.0	0.8	0.6	0.4	0.3	0.3	0.2	0.2	0.2	0.2

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	--	--	--	--	--	--



QINGDAO MORN BUILDING MATERIALS CO.,LTD

Your turnkey China tempered glass/laminated glass/insulated glass supplier

Result:

1.DG41 interlayer shearing modulus is high under low temperature conditions,while when temperature comes over 30℃, the DG41 shearing modulus decrease significantly,so DG 41 is only suggested to be used in low temperature areas.

2.SGP interlayer offers high shearing storage modulus even under 50℃, so it can be used in any area-outdoor balustrades,curtain walls that need structural glass applications.

3.Normal PVB shearing modulus are not affected by the temperature,it can be used in normal conditions and just been used as safety glass.

Morn is your turnkey architectural glass –[laminated glass supplier](#),welcome contact us for more info.

More knowledge:

[What's Dupont SGP?](#)

[PVB laminated glass VS SGP laminated glass](#)

[Difference between PVB,EVA,SGP interlayer](#)

[Specification of SGP interlayer](#)

Tags: [BUTACITE PVB](#), [China laminated glass supplier](#), [Dupont SGP interlayer](#), [laminated glass](#), [laminated glass supplier](#), [Laminated Safety Glass](#), [PVB shear modulus](#), [safety glass supplier](#), [Saflex ® DG41](#), [SGP interlayer shear modulus](#)

About Morn Building Materials:

Morn Building Materials Co.,Ltd is trading company offering the right facade materials for a wide range of applications for architectural,design and system requirements.Cooperating with China premium glass fabricators,Morn is able to supply whatever glass products applied in facade,Spandrel ,roof ,handrail,partition,balustrade,canopy,greenhouse,sun room ,interior exterior application.



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Other facade materials:Aluminium alloy profiles,aluminium plates,aluminium windows&doors,Assa Abloy hardware,spider fitting,railing systems,shower rooms,polyurethane panels,machines&tools,steel structure, are also available since 2019.

From aesthetics, to strict environmental and energy specifications, to critical budget and delivery requirements, our input can make a difference.

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