



evguard[®] laminating film

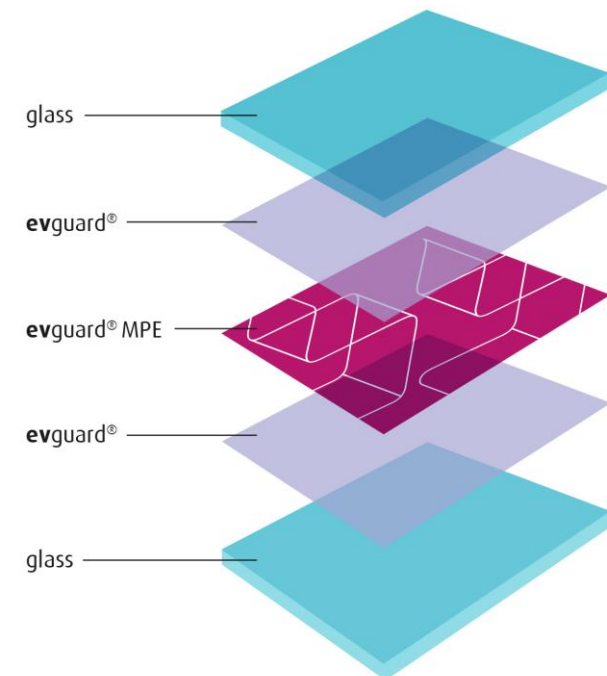
Certification of evguard[®] product family

Description



With its outstanding properties and performance, **evguard®** stands out as one of the few premium laminating films for the glass industry. Holding all key certifications for Germany, Europe, and the USA — including DIBt, impact resistance, weathering, and sound reduction — it delivers real added value to customers.

Folienwerk Wolfen GmbH also offers **evguard® - MPE**, a specialized, high-performance multi-layer polyester film designed for high-impact and printed laminated safety glass applications. This “Modified Co-Polyester” delivers significant improvements in strength, stability, durability, and shear modulus — and can be printed directly, opening up new design possibilities for architectural and decorative glass.



Certifications



DIBt – Deutsches Institut für Bautechnik	AbZ (national technical approval), expertise G-70-21-0003	LSG with evguard®	<i>Certified</i>
American National Standard Institute	ANSI Z97.1 -2009, CPSC 16 CFR 1201, CAN/CGSB 12.1-M90	33.3 33.1.MPE(200)	<i>Approved</i> <i>Approved</i>
	ASTM G155-05a (optical) ASTM D 1003-11 (transparency & haze) ASTM E313-10 (yellowing index) ASTM E308-12 (color change)	33.2 33.2.MPE(200)	<i>Approved</i> <i>Approved</i>
Resistance against Heat, Humidity and UV Radiation	DIN EN ISO 12543-4 (temperature, humidity & UV radiation)	44.1 44.2 44.2.MPE(200)	<i>Approved</i> <i>Approved</i> <i>Approved</i>

Certifications



Fire Classification & Reaction to Fire	DIN EN 13501-1 (classification)	44.2	<i>B-s1-d0</i>
	DIN EN ISO 11925-2 (ignition)		<i>No ignition</i>
	DIN EN 13823 (SBI)		<i>No afterburning</i>
Boil Test	ANSI Z97.1	33.2	<i>Approved</i>
Bake Test	DIN EN ISO 12543-4	44.1	<i>Up to 240 °C 464 F, without delamination</i>
Frost Resistance Test	GOST 30826-2014 (-70 °C (- 94 F), 14 days)	66.2	<i>Approved</i>
Sound Reduction	DIN EN ISO 10140-2	44.1	<i>36 dB</i>
		44.2	<i>37 dB</i>
		44.2.MPE(200)	<i>37 dB</i>
		44.2.MPE(400)	<i>37 dB</i>
		88.2	<i>40 dB</i>

Certifications



Miami-Dade Checklist #0445	ASTM G155/D638 (weathering) ASTM D1929 (self-ignition temp.: 377°C 711 F) ASTM D2843 (smoke density) ASTM D635 (rate of burn: C1)	22.2.MPE(200)	<i>Approved (NOA No. 25-0421.02)</i>
Miami-Dade Checklist #0445	ASTM C158 (flexural strength change) ASTM D1929 (ignition temp.: 440 °C 824 F) ASTM D2843 (smoke density) ASTM D635 (rate of burn: CC1)	33.1	<i>Approved (NOA No. 24-0117.03)</i>
Miami-Dade Certification	TAS 201-94 (large missile) TAS 203-94 @ ±120 psf (cycling)	55.4.MPE(800) 55.4.MPE(800)	<i>Approved Approved</i>
SGCC	SGCC – Safety Glazing Certification Council list of accepted interlayers (SD-099)	evguard® evguard® - MPE	<i>Listed Listed</i>

Certifications



Gel Rate	DIN EN 62788-1-6	evguard®	> 80%
Adhesion Test	DIN EN ISO 8510-2	180° - Adhesion Test (0.76 mm evguard® (cross-linked)	> 29 N/cm
Pummel Test (20 °C 68 F)	Internal Standard	44.2 44.2.MPE(200)	≥ 7 ≥ 7
Ball Drop Test at low Temperatures (0 °C 32 F / -20 °C (-4 F) / -40 °C (-40 F))	DIN 52338	44.2 44.2.MPE(200)	4.5 m fall height: did not break through / no penetration 6 m fall height : did not break through / no penetration

Certifications



Ball Drop Test* DIN EN 356

22.2.MPE(200)

P1A

22.2.MPE(400)

P2A

22.2.MPE(800)

P4A

44.2

P1A

44.3

P1A

44.2.MPE(200)

P2A

44.2.MPE(400)

P3

44.4.MPE(600)

P4A

44.8.MPE(600)

P5A

DIN 52338

(0.7)2.2.MPE(200)

*6 m fall height : did not break
through / no penetration*

22.2.MPE(400)

*12 m fall height : did not break
through / no penetration*

* The in-house test was carried out in cooperation with Dresden University of Technology (Friedrich Siemens Laboratory), Germany

Certifications



Pendulum Test	DIN EN 12600	33.1	3(B)3
		33.2	2(B)2
		44.1	1(B)1
Bending Strength	DIN EN ISO 1288-3	44.1	<i>Temperature range 25 °C 77 F to 60 °C 140 F</i>
Glass Railing Category B	DIN-EN-1990,1991,1993,1999, DIN 18008-1 till -4 (Germany) UNI 11678:2017, NTC:2018 (Italy)	88.1	<i>Passed</i>
		88.2	<i>Passed</i>
		88.2.MPE(200)	<i>Passed</i>
		88.2.MPE(400)	<i>Passed</i>
		88.2.MPE(600)	<i>Passed</i>
Freestanding Barrier Glass / Glass Railings**	BS 6180 DIN 18008-3, category B residual carrying capacity, AS/NZS 1170.1	66.4.MPE(600)	<i>Approved</i>
		88.2	<i>Approved</i>
		88.2.MPE(200)	<i>Approved</i>
		1010.2	<i>Approved</i>

** independent evaluation by J.B. Colvin

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Deflection & Pendulum Impact Test	AS/NZS 1170.1	88.2.MPE(600) 88.4.MPE(600)	<i>Approved</i> <i>Approved</i>
Shooter Attack Test	ASTM F3561-22 (Active Shooter Certified)	—	<i>FTD-SA-C6</i>
Ballistic & Impact Tests	ASTM C 1036-06 16 CFR 1201	—	<i>Passed</i>
Blast Test	ASTM F2912-17 & F 1642-17	IGU	<i>Hazard level H4 (low)</i>
Solar Characteristics (G-value)	DIN EN 410 VDI 2078	66.2 (transparent)	<i>SHGC: 0.80 SC: 1</i>
Salt Spray Test (3,000 hours)	ASTM B117, ISO 9227	44.2 44.2.MPE(200)	<i>Approved</i> <i>Approved</i>

Certifications



Moisture Absorption	DIN EN ISO 62	evguard®	< 0.072 % (cross-linked)
Water Vapour Transmission Rate	DIN EN ISO 15106-2, ASTM F 1249	evguard®	<18 g/m ² /d
Shear modulus***	DIN EN 16613 DMA	44.1	Passed
		44.2.MPE(200)	Passed
		44.2.MPE(400)	Passed
		44.4.MPE(400)	Passed
		44.4.MPE(600)	Passed
Young's Modulus***	DMA-Analysis	44.1	Temperature range 10 °C 50 F to 80 °C 176 F
CTI - Comparative Tracking Indices (for solid Insulation)	DIN EN 60112	evguard® (3 mm laminate)	CTI 925

*** detailed figures are provided later in this document (see Shear modulus / Young's modulus tables)

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Shear modulus (evguard® : 44.1)

Shear modulus by Friedmann & Kirchner, Rohrbach/Germany (5% quantile values measured by bending test according to EN 16613 DMA, test load 166 N and for 30 °C 86 F), 2017.

Temperature in °C (°F)	3 s	1 min	10 min	1 h
25 (77)	2.172	1.947	1.825	1.725
30 (86)	1.775	1.589	1.488	1.381
40 (104)	1.492	1.360	1.249	1.136
50 (122)	1.060	0.961	0.898	0.823
60 (140)	0.701	0.616	0.563	0.451

Shear modulus G (MPa)

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Calculated values for Young's modulus (evguard® : 44.1)

Temperature in °C (°F)	3 s	1 min	10 min	1 h
25 (77)	6.516	5.841	5.475	5.175
30 (86)	5.325	4.767	4.464	4.143
40 (104)	4.476	4.080	3.747	3.408
50 (122)	3.180	2.883	2.694	2.469
60 (140)	2.103	1.848	1.689	1.353

Young's modulus E (MPa)

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Shear modulus (evguard® - MPE)

Shear modulus by Friedmann & Kirchner, Rohrbach/Germany (5% quantile values measured by bending test according to EN 16613 DMA, test load 166 N and for 30 °C 86 F), 2017.

Laminate build-up	3 s	1 min	10 min	1 h
44.2.MPE(200)	3.665	3.323	3.121	2.884
44.2.MPE(400)	6.000	4.900	4.433	4.166
44.4.MPE(400)	3.738	3.379	3.093	2.826
44.4.MPE(600)	4.058	3.705	3.408	3.086

Shear modulus G (MPa)

