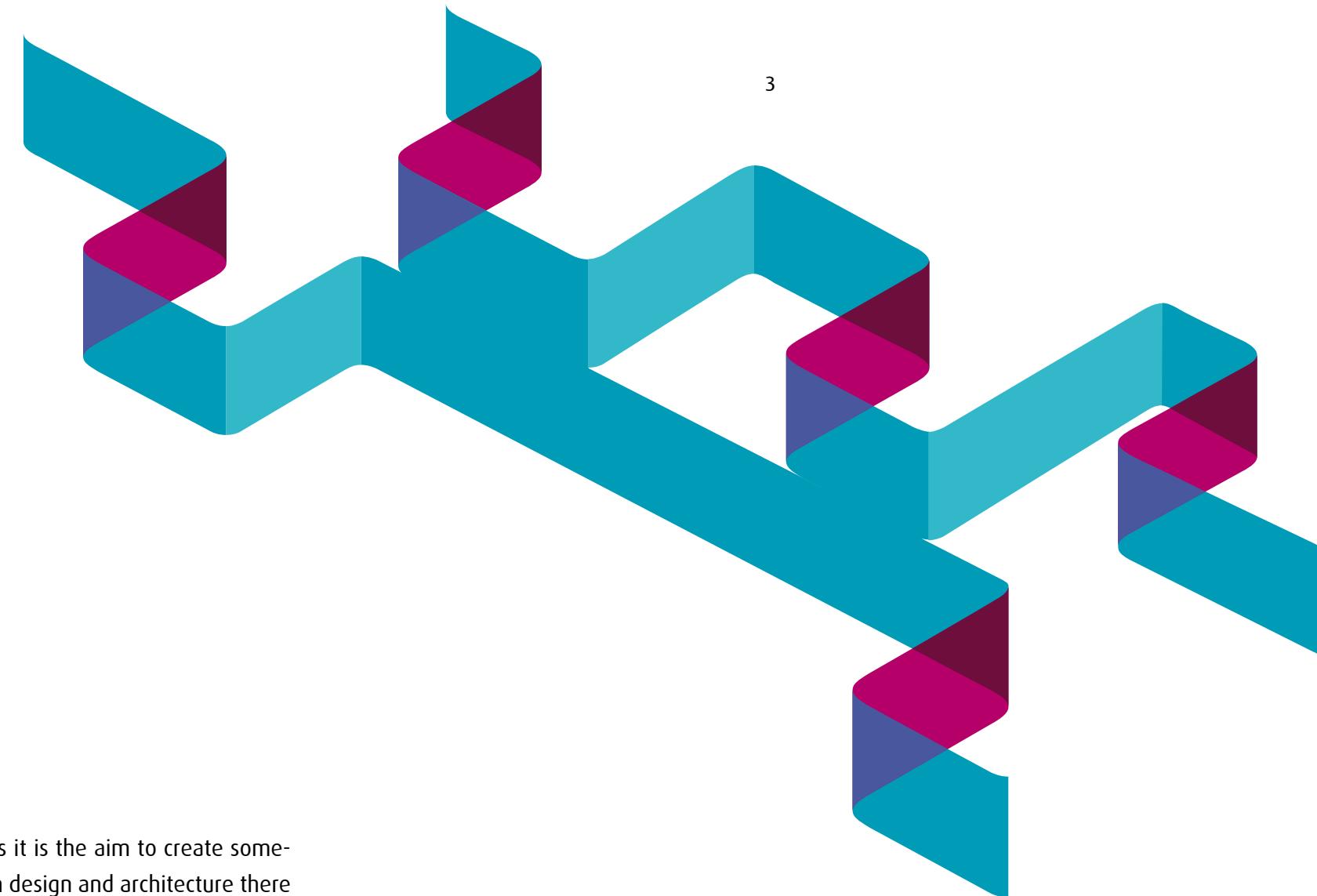




**The EVA laminating film
for safety, security &
decorative glass**



Innovation is key to any new business venture, as it is the aim to create something new which promises the greatest success. In design and architecture there are no limits for creativity. So there is, likewise, a limitless need for new ideas and innovation. The construction industry is similarly driven by a desire to push boundaries and defy resistance. With **evguard®** we can offer the right product for both worlds, enabling our customers to realize the most innovative ideas.

For more than 25 years, we have provided the optimal film to meet the individual needs of our customers. As one of the first plastic manufacturers, we combined the properties of various polymers in one film, thanks to the multi-layer technology. Today, customers in the packaging, printing and smart card industries worldwide benefit from the "layer intelligence" in the film specially developed for them.

The EVA film **evguard®** is the result of many years of research and development, ensuring not only high transparency and reliable stability, but also the ability to process at low temperatures. Manufactured in Germany using European raw materials, we guarantee consistent quality every time.

systematic

We want to learn about your expectations in order to find the right film solution with you.

diverse

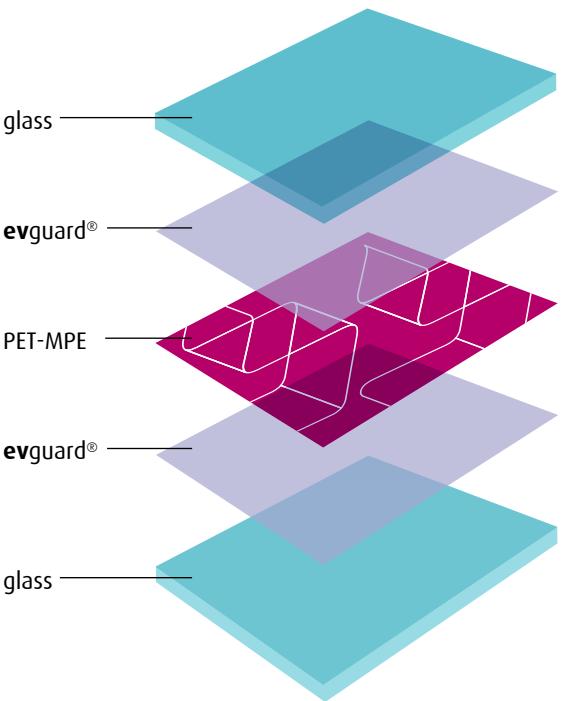
No matter what materials – there are no limits in the processing of our films.

reliable

With **evguard®** you are choosing a product on which you can rely on.

personal

We are available to assist you in the processing of our films.



Customized films

Our history lies in the extrusion of plastic films in customized dimensions and according to individual formulations.

	Film width	up to 2,250 mm (88.58 ins)	customized
	Film thickness	≥ 0.200 mm (0.008 ins) ≤ 1.140 mm (0.045 ins)	dimensions possible
	Film color	transparent milky-white	

The properties of the film can be adapted according to the specifics of the country. For example, providing higher UV protection in southern countries. Together with our dedicated research and development team we can work out the best individual solution.

evguard® is available as a transparent or milky-white EVA laminating film. For the lamination process, we have developed an optimized PET film (PET-MPE), which withstands high thermal loads. The film can be incorporated into the laminate as a colored or printed interlayer to ensure the desired design. Due to its improved impact resistance, the PET film also increases the stability of the laminated glass.

Certified with security

The stability provided by **evguard®** as a laminating film has been extensively tested inhouse to ensure consistent quality, and this is backed by certification from third party institutes.

	Ball drop test ¹	DIN 52338	44.2
	Pendulum test ¹	DIN EN 12600	44.1

Unlike conventional PVB and EVA films, **evguard®** already complies with the standard of the pendulum test at a composite structure of 44.1 [two panes of 4 mm (0.16 ins) thick glass and one layer of **evguard®** film 0.380 mm (0.015 ins)]. This means a real material saving for the processor as one layer of **evguard®** is sufficient to obtain the same solid and reliable result.

The **evguard®** laminated glass film is a durable material that, thanks to its reliability and static properties, opens up new possibilities, particularly for the construction sector. What's more, laminated glass with **evguard®** has a life period of several decades alongside optimal sound protecting properties.

Resistance against heat, humidity and UV radiation ¹	DIN EN ISO 12543-4
Noise protection ¹	DIN EN ISO 10140-2

Using **evguard®** in the laminated glass structure 44.2 (two panes of 4 mm (0.16 ins) thick glass and one layer of film 0.760 mm (0.030 ins)), an airborne sound reduction of at least 37 dB can be reached – without additional sound absorbing layers.

Following additional certifications are already passed:

DIIB – Deutsches Institut für Bautechnik	AbZ (national technical approval)	approved
American National Standards Institute ¹	ANSI Z97.1	approved

¹not certified for **evguard®** milky-white

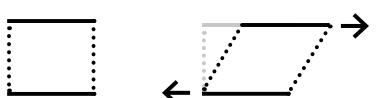
The cross-linking makes the difference

Glass creates a sense of openness and transparency, and so is progressively becoming more and more important, for example, in corporate architecture. The transparent building material is increasingly integrated in the façade engineering, both as individual surface and as entire glass façade. These applications put high demands on the laminated safety glass that traditional materials usually cannot meet.



If **evguard®** is laminated in the composite, this EVA film cross-links. Later, this cross-linking prevents the film from losing its stiffness again and from softening when exposed to wind and heat. Façades, in particular frameless glass fronts, thus remain solid. Therefore **evguard®** provides an increased stability and an improved appearance of the element.

This modulus of shear effect has already been tested in its function and convinces our customers.



schematic representation modulus of shear effect
(examination of a linear elastic deformation with shearing force or shearing stress)

Diverse processing options

Because **evguard®** can be processed at low temperatures, even temperature-sensitive inserts can be laminated into the composite – whether they be colored films, photos, marble, sand stone, metal grids, coffee beans, blades of grass, bamboo, ...



Source: skara KG. interior design products



Minimum temperature	105 °C (220 F)
Maximum temperature	160 °C (320 F)

evguard® can be laminated both in vacuum and autoclave (pre-lam nip roll), where PVB is processed.

Storage recommendation



Temperature	< 30 °C (85 F)
Humidity	ca. 50 %
Shelf life	use by 12 months after date of production

In the original packing **evguard®** remains protected from direct sunlight, dust and other incompatible factors.

A PLACE OF PIONEERING SPIRIT



folienwerk
wolfen®

Folienwerk Wolfen GmbH

With the **evguard®** series, we have created an innovative product with diverse design and processing options in façade engineering and glass design. For more than 25 years, we have manufactured and supplied high quality plastic films on PET, PC and PLA basis. This portfolio is completed by films from ethylene vinyl acetate (EVA). The company was founded by employees of the traditional Filmfabrik ORWO, and currently employs about 160 people generating an annual turnover of approx. 40 million euros.

Folienwerk Wolfen is also internationally known for the target-group-specific production of films for blister packages and smart cards as well as for films for medical devices. From our location in Bitterfeld-Wolfen, near Leipzig, we deliver to customers in more than 60 countries, including Russia, the USA and Middle East. The share of the international sales is around 70 percent.



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Disclaimer

Our information about our products and processes is based on extensive research and our considerable experience in the field of applied engineering. We provide this information, which to the best of our knowledge is correct, orally and in writing. In doing so, we do not assume any liability other than the liability agreed upon in the respective individual contract, and we reserve the right to make technical modifications in the course of our product development. However, this shall not release user from its obligation to verify the suitability of our products and processes for its own use. Purchaser's specifications of intended use shall only be binding, if we, at the time of contract conclusion, have confirmed in writing that the delivered goods are suitable for the use intended by Purchaser. This shall also apply to the protection of third party industrial property rights and to applications and processes.