CNCGLASS
CNC Ucolin Interlayer Technology Co., Ltd.
SHENZHEN, GD, CHINA
Peter Lin · cnc@cncglass.com · WhatsApp / Mobile +86 15013829504
WeChat wecan365 · www.cncglass.com

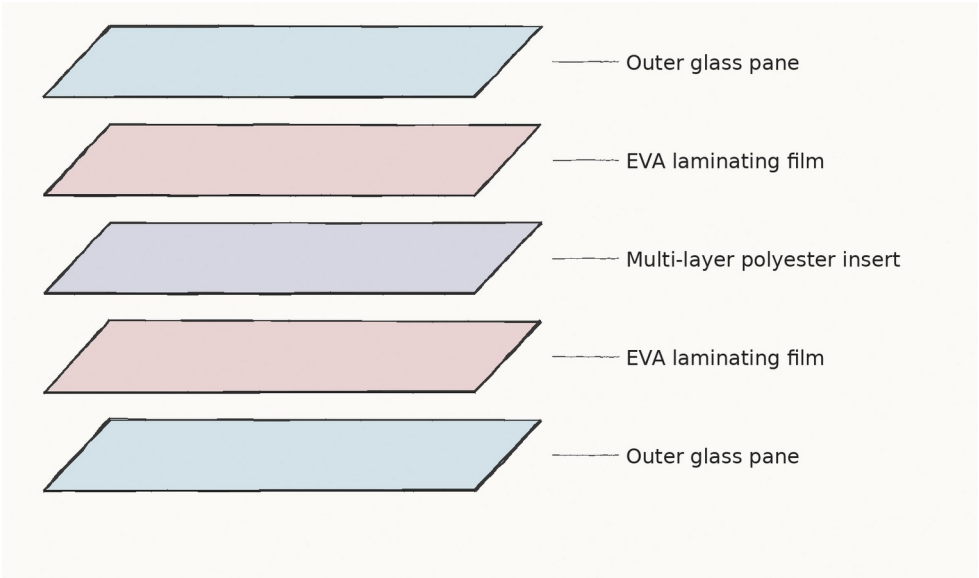
CNCGLASS Multi-Layer Polyester Insert for Laminated Safety Glass

CNCGLASS multi-layer polyester insert is a polyethylene terephthalate based thermoplastic sheet made to sit inside a laminated safety-glass makeup together with CNCGLASS EVA laminating film. It is not a stand-alone interlayer. The insert is there to raise the stiffness, the impact reserve, and the dimensional stability of the laminate, and to provide a printable surface for ultraviolet-offset, silk-screen, or digital printing when a graphic or a design is wanted in the glass. The EVA films on either side of the insert are what bond the stack to the glass and what form the cross-linked thermoset network during lamination.

The insert itself is a special copolyester formulation, colorless, transparent, and glossy, with a density of about 1.2 g/cm^3 and a glass-transition temperature of about 110 °C. Poisson's ratio is 0.49. Those figures, like the process remarks below, depend on a well-run laminating cycle and are given as typical indications, not as a warranty for a particular makeup.

How the insert sits in the laminate

A typical high-performance makeup places an outer glass pane, a sheet of EVA laminating film, the polyester insert, a second sheet of EVA laminating film, and the second glass pane. During lamination the EVA flows, wets the glass and the insert, and cross-links. The polyester layer remains a thermoplastic core. The result is a composite interlayer: the EVA provides adhesion and toughness, and the polyester core contributes stiffness and, where it is printed, the image that will be seen through or in the glass.



Typical makeup for laminated safety glass that combines EVA laminating film with a multi-layer polyester insert.

Process window and the form in which the insert is supplied

Because the insert is a PET-based sheet, the laminating window is tighter at the top end than it is for EVA film used alone. The useful range runs from a minimum of 105 °C to a maximum of 130 °C. The stack may be assembled by vacuum lamination, by a nip-roll pre-bond, or by autoclave lamination. Staying within the 130 °C ceiling protects the polyester core and the printed image, if there is one, from thermal distortion. Shops that are used to running EVA alone up to 160 °C should reset the recipe when an insert is added, rather than importing the higher temperature from a clear two-ply cycle.

The insert is supplied on reels. Thickness is offered from 0.2 mm to 0.8 mm, width from 1,000 mm to 1,600 mm, wound on a 76 mm cardboard core and packed on a pallet. Other dimensions and packing can be arranged. Store below 30 °C and below 80 % relative humidity, and use the material within twelve months of delivery. Opened rolls must be protected from direct sunlight and from dust.

A compact view of the typical figures

The table gathers the material and supply figures for the polyester insert. Mechanical performance of the finished glass depends on the whole makeup — glass thickness, EVA thickness, insert thickness, and the laminating cycle — and is discussed as a set of evaluation topics rather than as a transferred list of approvals.

Topic	Typical figure
Composition	PET copolyester, special formulation
Appearance	Colorless, transparent, glossy
Density	About 1.2 g/cm³
Glass-transition temperature	About 110 °C
Poisson's ratio	0.49
Print methods	Ultraviolet-offset, silk-screen, and digital printing
Used together with	CNCGLASS EVA laminating film
Laminating temperature window	105 °C to 130 °C
Process route	Vacuum, nip-roll, or autoclave lamination
Thickness / width / core	0.2–0.8 mm / 1,000–1,600 mm / 76 mm cardboard
Packing	On a pallet, as reels
Storage	Below 30 °C, below 80 % RH, use within 12 months

Typical indications for the insert. The finished laminate must be qualified as a makeup, not as a film in isolation.

Performance topics for laminates that include a polyester insert

Laminated safety glass that combines a cross-linked EVA film with a PET-based insert is commonly examined under the same broad families of methods used for other safety laminates, with particular attention to heavy impact and to printed makeups. Resistance to heat, humidity, and ultraviolet radiation is assessed under DIN EN ISO 12543-4. Optical and weathering work often follows ASTM G155, ASTM D1003, ASTM E313, and ASTM E308. Long salt-spray exposures, for example 3,000 hours under ASTM B117 or ISO 9227, are used for coastal or winter-salting duty.

Impact is examined in several ways. Ball-drop at ordinary and at low temperature — including work at 0 °C, −20 °C, and −40 °C under DIN 52338, sometimes from heights of 6 m or 12 m — is used to judge whether the interlayer stack still holds the glass together when the polymer is stiff and less forgiving. DIN EN 356 is the usual reference for the P-class ball-drop series that façade and security specifications quote. Pendulum and deflection work appears under DIN EN 12600 and, for barrier and railing questions, under documents such as BS 6180, DIN 18008-3 (category B residual carrying capacity), and AS/NZS 1170.1. A pummel test at 20 °C, judged against an internal scale, is a shop-floor way of looking at glass-to-interlayer adhesion; values of 7 or higher on that scale are commonly sought for a well-bonded laminate.

Stiffness of the composite interlayer is a central reason for using an insert. Shear modulus is typically obtained from a bending test treated according to DIN EN 16613 with dynamic mechanical analysis. In that kind of work, a laminate that includes a polyester core is generally stiffer than an EVA-only makeup of similar overall interlayer thickness, and the stiffness still depends on load duration and on temperature. Airborne sound insulation under DIN EN ISO 10140-2 is often discussed in the region of 37 dB for 4 mm + 4 mm makeups, again with the usual caution that the glass, not only the insert, sets much of the result.

Where a specification looks beyond ordinary building impact, further methods enter the conversation: flexural-strength change, ignition temperature, smoke density, and rate of burn under the ASTM methods often grouped in hurricane-glazing checklists (including ASTM C158, ASTM D1929, ASTM D2843, and ASTM D635); large-missile and cyclic-pressure work of the kind described by TAS 201 and TAS 203; shooter-attack protocols such as ASTM F3561; and the safety-glazing rules in ANSI Z97.1 and CPSC 16 CFR 1201, sometimes together with ASTM C1036. Those are the evaluations commonly applied to laminated safety glass with this class of interlayer and insert. They are not presented here as listings, notices of acceptance, or council acceptances held by CNCGLASS, and they are not a substitute for a test on the actual printed or unprinted makeup.

The remarks in this article rest on our work with polyester inserts and EVA laminating films. We may refine the product as development continues. The user must verify suitability in the intended process. A planned use is binding on us only when we have confirmed it in writing at the time of the contract. Please contact cnc@cncglass.com for pricing.

Contact Us

Brand: CNCGLASS

Company: CNC Ucolin Interlayer Technology Co., Ltd.
Address: SHENZHEN, GD, CHINA
Contact: Peter Lin
Email: cnc@cncglass.com
WhatsApp / Mobile: +86 15013829504
WeChat: wecan365
Website: www.cncglass.com

Please contact cnc@cncglass.com to discuss CNCGLASS multi-layer polyester inserts used together with CNCGLASS EVA laminating film.