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CNCGLASS EVA Laminating Film, Colorless Transparent, for Safety, Security, and Architectural Glass

CNCGLASS colorless transparent EVA laminating film is an ethylene–vinyl acetate interlayer made for laminated safety glass, security glass, and architectural glass. In the roll the sheet is colorless and translucent. After a well-run laminating cycle it becomes colorless and transparent, and a highly cross-linked three-dimensional network forms in the bond line. That thermoset network is what gives the laminate its ability to hold glass, to take impact, and to remain bonded through the heat, moisture, and light of service.

The figures in this article are typical indications for the unprocessed film or for a properly processed laminate, as stated. They depend on the laminating cycle. They are not a listing, an approval, or a warranty for a particular makeup. The laminator must confirm that the chosen thickness, glass, and cycle are suitable for the intended use.

Process window and the form in which the film is supplied

The useful laminating window runs from 105 °C to 160 °C. The film may be processed by vacuum lamination, by a nip-roll pre-bond, or by autoclave lamination. Thickness is offered from 0.2 mm to 1.14 mm, width from 800 mm to 2,400 mm, wound on a 76 mm cardboard core and packed in cardboard boxes. Other dimensions and packing can be arranged. Store below 30 °C and below 80 % relative humidity, and use the film within twelve months of delivery. Protect opened rolls from direct sunlight and from dust.

Typical material and optical character

Density by ISO 1183 is 0.95 to 0.97 g/cm^3. Tensile strength by ISO 527-3 is typically greater than 5 N/mm^2 in both the machine and the cross direction before cross-linking, and greater than 20 N/mm^2 afterwards. Elongation at break by the same method is typically greater than 700 % before cross-linking and greater than 400 % afterwards, in both directions. Hardness is typically greater than 65 Shore A by DIN 53505. Adhesion, measured in a 180° peel according to DIN EN ISO 8510-2 on a 0.76 mm cross-linked film, is typically greater than 29 N/cm. The degree of cross-linking, expressed as a gel fraction according to DIN EN 62788-1-6, is typically greater than 80 % after a proper cycle — a useful workshop check that the thermoset network has actually formed.

The refractive index is 1.48. Light transmission of the laminated glass, between 400 and 750 nm, is typically greater than 85 %. The ultraviolet cut-off of this grade is 365 nm. That is a shorter cut-off wavelength than our 380 nm colorless grade, and the two films should not be treated as interchangeable when a specification has named a particular ultraviolet edge. Moisture absorption by DIN EN ISO 62 is typically below 0.067 % in the uncross-linked film and below 0.072 % after cross-linking. Water-vapour transmission by DIN EN ISO 15106-2 or ASTM F1249 is typically below 18 g/m^2·d. The coefficient of thermal expansion is 10^{-4} K^{-1} by DIN 52328. Poisson's ratio is 0.49.

Solar characteristics of a clear laminate are commonly assessed under DIN EN 410 and discussed alongside VDI 2078. For a clear 6 mm + 6 mm makeup, a solar heat-gain coefficient in the region of 0.80 and a shading coefficient of 1 are typical of uncoated clear glass with this class of interlayer, and they should be recalculated when coatings, tints, or different glass thicknesses are introduced. Comparative tracking index, for solid insulation questions, is assessed under DIN EN 60112; a value of CTI 925 has been recorded on a 3 mm laminate of this class of film and is quoted here as a material-class indication, not as an electrical listing.

A compact view of the typical figures

The table restates the principal material, optical, and supply figures for the colorless transparent grade.

Topic	Typical figure
Density (ISO 1183)	0.95 – 0.97 g/cm³
Appearance, as supplied / after lamination	Colorless translucent / colorless transparent
Tensile strength, uncross-linked / cross-linked (ISO 527-3)	Greater than 5 / greater than 20 N/mm², MD and CD
Elongation at break, uncross-linked / cross-linked (ISO 527-3)	Greater than 700 % / greater than 400 %, MD and CD
Hardness (DIN 53505)	Greater than 65 Shore A
Adhesion, 0.76 mm cross-linked (DIN EN ISO 8510-2)	Greater than 29 N/cm
Gel fraction (DIN EN 62788-1-6)	Greater than 80 %
Refractive index	1.48
Light transmission, 400–750 nm, in laminated glass	Greater than 85 %
Ultraviolet cut-off	365 nm
Moisture absorption, uncross-linked / cross-linked (DIN EN ISO 62)	Below 0.067 % / below 0.072 %
Water-vapour transmission (DIN EN ISO 15106-2, ASTM F1249)	Below 18 g/m²·d
Coefficient of thermal expansion (DIN 52328)	10^{-4} K^{-1}
Poisson's ratio	0.49
Laminating temperature window	105 °C to 160 °C
Thickness / width / core	0.2–1.14 mm / 800–2,400 mm / 76 mm cardboard
Storage	Below 30 °C, below 80 % RH, use within 12 months

Typical indications. Values after lamination assume a properly run cycle. Fitness for a given makeup must be confirmed by the processor.

Performance topics commonly applied to this class of interlayer

A colorless EVA safety laminate is usually discussed against a well-known set of mechanical, durability, and special-duty methods. Resistance to heat, humidity, and ultraviolet radiation is examined under DIN EN ISO 12543-4. A bake test under the same standard is sometimes taken to elevated oven temperatures, and properly processed laminates of this class have been discussed without delamination in bake work up to 240 °C — a severe laboratory condition, not a service temperature. Cold resistance is sometimes examined under protocols such as GOST 30826, which holds the laminate at −70 °C for fourteen days. Salt-spray exposure for long durations, for example 3,000 hours under ASTM B117 or ISO 9227, is used for coastal or winter-salting climates. A boil test under ANSI Z97.1 is a further check of bond stability in water.

Impact work includes pendulum testing under DIN EN 12600, ball-drop under DIN EN 356 and DIN 52338 — including low-temperature ball-drop at 0 °C, −20 °C, and −40 °C — and, where a railing or a freestanding barrier is involved, residual-capacity and deflection work under DIN 18008, BS 6180, AS/NZS 1170.1, and related national documents such as UNI 11678 and the Italian NTC. A pummel test at 20 °C, judged on an internal scale, is a practical adhesion check; values of 7 or higher are commonly sought. Reaction to fire of the finished laminate is commonly classified under DIN EN 13501-1, with ignition work under DIN EN ISO 11925-2 and single-burning-item work under DIN EN 13823. Airborne sound insulation under DIN EN ISO 10140-2 is often discussed around 36 dB for a 4 mm + 4 mm makeup, around 37 dB when the glass is a little heavier, and around 40 dB for an 8 mm + 8 mm makeup, always remembering that the glass and the frame govern much of the result.

Stiffness of the interlayer is needed for structural-glass calculations. Shear modulus is typically obtained from a bending test treated according to DIN EN 16613 with dynamic mechanical analysis, and Young's modulus is obtained from a DMA analysis over a temperature range that may run from about 10 °C to about 80 °C, with design tables commonly quoted between 25 °C and 60 °C for several load durations. Bending strength of the laminate may be followed under DIN EN ISO 1288-3 in a similar temperature window, for example 25 °C to 60 °C. The important qualitative fact is that the shear stiffness of a cross-linked EVA interlayer falls as the temperature rises and as the

load is held for longer; design should use a value that matches the load duration and the service temperature, not a single room-temperature number.

Where a specification looks at hurricane, security, or blast questions, further methods enter the conversation: flexural-strength change, ignition temperature, smoke density, and rate of burn under ASTM C158, ASTM D1929, ASTM D2843, and ASTM D635; weathering under ASTM G155 together with tensile work under ASTM D638; large-missile and cyclic-pressure work of the kind described by TAS 201 and TAS 203; shooter-attack work under ASTM F3561; ballistic and impact work under ASTM C1036 and CPSC 16 CFR 1201; and blast work under ASTM F2912 and ASTM F1642, in which insulating-glass units with this class of interlayer have been discussed at a low hazard level. Safety-glazing rules in ANSI Z97.1, CPSC 16 CFR 1201, and CAN/CGSB 12.1 are the usual North American references. Self-ignition temperatures measured by ASTM D1929 for this class of EVA interlayer are typically in the region of 440 °C.

Those methods are the evaluations commonly applied to laminated safety glass with this class of interlayer. They are not a claim that CNCGLASS holds a named national technical approval, a glazing-council listing, a notice of acceptance, or any other formal product certification, and they do not replace a test on the actual makeup, edge working, and process. National approvals and listings are issued to named products and named fabricators and should never be inferred from a typical data article.

The remarks in this article rest on our development work and on our experience with EVA laminating film. We may refine the grade as the product develops. 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

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