

CNCGLASS

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TECHNICAL NOTE

Common Problems of Ethylene Vinyl Acetate (EVA) Film Laminated Glass

By Peter Lin

This technical note summarizes common production problems seen when laminating glass with ethylene vinyl acetate (EVA) interlayer film—bubbles, delamination, spontaneous glass breakage during cooling, insufficient clarity, and weak adhesive strength—together with practical reasons and corrective actions for laminated-glass fabricators. Bubble and delamination guidance is stated at a high level from well-known EVA vacuum-lamination factors (vacuum integrity, temperature window, moisture, glass cleanliness, film thickness/quality, cooling, and bag loading), without inventing numeric process recipes.

CNCGLASS · Problems · Reason · Solution

Use the table below as a shop-floor checklist. Bubbles and Delamination rows summarize high-level process causes and corrections in formal English. Other rows retain the established shop guidance with polished wording.

Problems	Reason	Solution
Bubbles	Common process causes include incomplete vacuum or silicone-bag leaks; stopping vacuum before the laminate has cooled; oven temperature that is too high (local overheating / film decomposition to gas) or too low (incomplete melt and cure); uneven oven heating; excess moisture on glass, EVA film, or decorative inserts; dirty or contaminated glass surfaces; inadequate film thickness for tempered-glass roller-wave; and overloaded silicone-bag loading that impairs vacuum distribution.	Verify bag seals, fittings, and vacuum capacity; keep vacuum applied through the full heat cycle and into cool-down. Follow the EVA film manufacturer's temperature–time window; improve oven uniformity and sensor calibration; dry glass/film/inserts and store opened film sealed; clean glass thoroughly before lay-up; select film thickness suited to tempered flatness; and avoid overloading the silicone bag.
Delamination	Loss of glass–EVA adhesion typically traces to incomplete cure or under-heating; contaminated or poorly cleaned glass; excess moisture absorbed by the film or present at the interface; unsuitable film grade or film that was stored wet/open too long; incompatible edge sealants or primers; and mechanical stress from mismatched tempered-glass distortion or over-packed bags that leave uncured zones.	Complete the manufacturer's recommended heat/cure schedule; prepare and clean glass carefully before assembly; control storage humidity and re-seal unused film; select an EVA grade matched to indoor or outdoor duty; use sealants/primers confirmed compatible with EVA; improve bag loading so every stack reaches full cure; and match tempered plies to limit interlayer edge stress.
Self-breaking	Quality of the glass is poor.	Purchase glass from a good-quality glass supplier.
Self-breaking (<i>cooling</i>)	When cooling, heat is not well distributed across the laminate.	Separate laminated glass panes with wooden bars so cooling is even.
Not clear enough (<i>haze / incomplete clarity</i>)	Heating temperature is not high enough.	Increase the heating temperature to the level suggested by the EVA film manufacturer.
Adhesive strength too weak	Too many layers of laminated glass are processed in one silicone bag at a time.	Prolong the high-temperature heating time.
Adhesive strength too weak (<i>bag load</i>)	Too many layers of laminated glass are processed in one silicone bag at a time.	Reduce the number of laminated-glass layers in one silicone bag at a time.

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Vacuum and bag integrity. Bubbles and weak adhesion often share a vacuum root cause: leaking silicone bags, weak pumps, or releasing vacuum while the laminate is still hot. Hold vacuum through cool-down and inspect bag seams and valves regularly.

Temperature window. Follow the EVA grade manufacturer's suggested heat/cure settings. Too low leaves haze or incomplete melt; too high or uneven heating can generate gas bubbles or degrade the film locally. Calibrate probes and check oven uniformity.

Moisture and cleanliness. Dry glass, film, and decorative inserts before lay-up. Re-seal opened EVA rolls promptly. Contaminants and moisture at the glass–film interface reduce adhesion and promote bubbles or later delamination.

Bag loading and cooling. Overloading one silicone bag shortens effective high-temperature exposure per stack—prolong cure time and/or reduce layers. After lamination, separate hot panes with wooden bars so cooling heat is evenly distributed and thermal shock breakage is reduced.

For any other situation, or if you need process guidance on temperature, vacuum schedule, bag maintenance, moisture control, or cooling of EVA laminated glass, please feel free to contact us.

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