

CNCGLASS

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TECHNICAL NOTE

EVA Film Laminated Glass Process Practice Guide

《EVA 夹层玻璃生产工艺实践指南》

By Peter Lin

CNCGLASS · 1. Scope — Workshop Practice for EVA Laminates

This technical note merges six workshop practice notes into one coherent process guide for dry-melt adhesive EVA film laminated glass. It covers sample confirmation before batching, moisture and cleanliness control, decorative-insert selection and drying, furnace time–temperature discipline, cooling after exit, edge overflow management, and polishing timing — then closes with typical application scenes.

EVA film is a primary interlayer for safety and decorative laminated glass, but finished quality also depends on the laminating stove, process recipe, glass and auxiliary materials, workshop climate, and operator skill. Treat the points below as practical discipline — not as a substitute for the film datasheet or line calibration.

CNCGLASS · 2. Pre-Production Sample Test

Before using a batch of EVA film for mass production, laminate a trial panel to confirm film quality and color. Prefer a sample larger than 0.5 m² so optical and color judgment is realistic for project-size glass.

- Only after quality and color are confirmed should batch production proceed; otherwise finished panels may diverge from the approved sample.
- When a large quantity of the same film — especially colored EVA film — is used on one project, compare finished panels frequently during production so color drift or quality error is caught before mass scrap.
- Successful laminates depend on more than film grade alone: stove capability, technique, glass and inserts, environment, and operator responsibility all interact.

Sample Test Before Mass Production

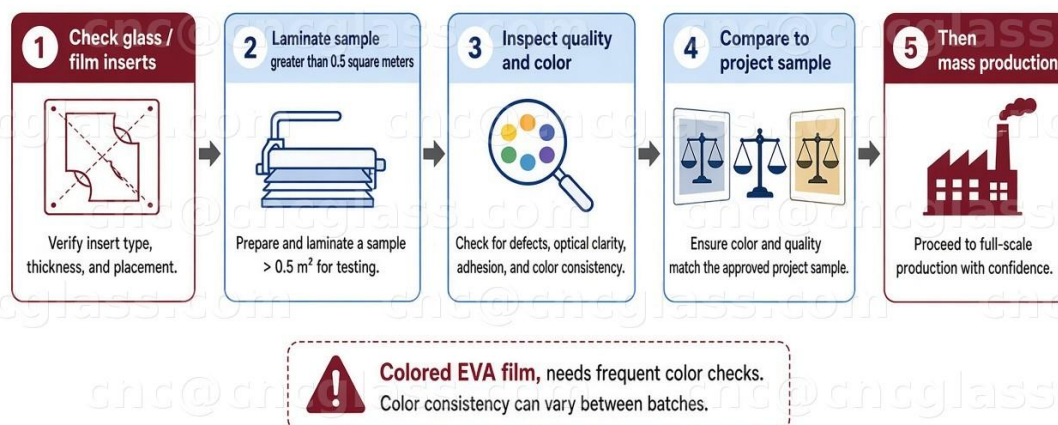


Figure 1 — Pre-production practice: laminate a sample larger than 0.5 m², confirm quality and color, then proceed to mass production (especially for colored film).

CNCGLASS · 3. Moisture & Cleanliness Control

On rainy days, or when workshop relative humidity is over 65%, EVA film, inserts, graphic materials, and glass can pick up moisture that weakens adhesion and raises the risk of later bubbles or delamination.

- Before layup, re-check cleaned glass: no water stain or vapor. Use a dryer if needed.
- Dry laminating materials (film and inserts) as well; moist intermediates are a common root of delayed bubble / delamination after storage.
- Where practical, avoid heavy-moisture days for critical decorative or safety runs.

Film inspection: install a daylight lamp under the layup table so foreign particles, black stains, or prints on the film surface are visible. Pick isolated contaminants carefully with a knifepoint. If a hole left in clear EVA film is smaller than half a rice grain, the sheet can often still be used; if many stains or foreign particles appear, stop and contact the film supplier before continuing.

CNCGLASS EVA film is produced in a dust-controlled workshop environment; customers should still inspect film under local workshop lighting before layup, because handling and storage after opening can introduce debris.

Moisture and Cleanliness Control for EVA Lamination

Risk (RH over 65%)

High humidity increases risk of:

- Moisture trapped in EVA
- Bubbles, haze, and delamination
- Reduced adhesion and long-term failure

RH > 65%
High moisture risk — do not laminate

Good Practice (Dry, Clean, Controlled)

- 1. Dry, clean glass**
Use dry, cleaned glass
Free of moisture and contaminants
- 2. Dry EVA film**
Keep EVA film roll dry and sealed until use
- 3. Dry insert fabric**
Use dry insert fabric
Store in dry conditions
- 4. Inspect and remove contaminants**
 - Inspect under daylight lamp
 - Remove tiny particles

Small hole smaller than half rice grain
OK
Acceptable if isolated and below this size.

Half rice grain (reference) | Small hole < half rice grain OK

Control moisture. Prevent defects. | Clean today. Laminate with confidence. | RH target: < 65% | Keep it dry. Keep it clean. | Good process. Better results.

Figure 2 — Moisture & cleanliness: RH > 65% / rain risk vs dry glass, dry film, dry inserts, daylight-lamp inspection; isolated hole smaller than half a rice grain may still be usable.

CNCGLASS · 4. Insert Selection, Drying & Edge Protection

Decorative or strengthened laminates often use intermediate inserts — non-woven cotton, paper or plastic prints, natural fabric, PET graphics, and similar materials. Inspect insert surfaces carefully: some coated or previously printed faces may react adversely with dry-melt EVA and reduce adhesion. Not every insert is suitable; test compatibility and effective bonding before mass production.

- Dry inserts before use to remove internal moisture; moist inserts raise delayed bubble / delamination risk after storage.
- Under heat and vacuum pressure, solid EVA melts and can outflow at the glass edge. Edge zones see the highest pressure, so the film there tends to thin; after cooling and contraction, edge bubble or delamination may appear.
- Use edge-blocking / protector material taller than the glass thickness during lamination to reduce vacuum-edge pressure and limit liquid-film outflow.
- Process tip: an EVA thermal cutter (electrically heated) can trim overflow film around finished edges efficiently — useful after lamination, not a hard product push.

Decorative Insert Stack and Edge Caution

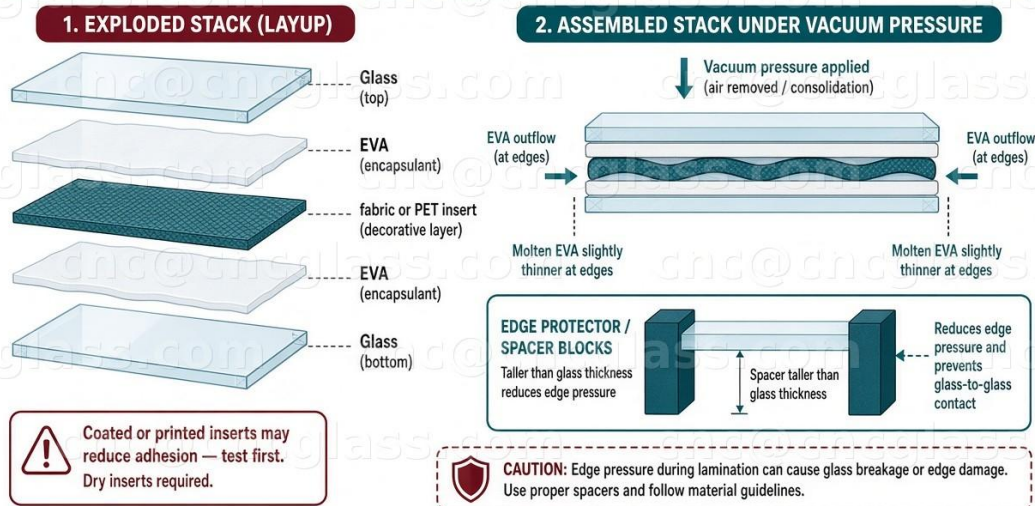


Figure 3 — Insert stack Glass + EVA + fabric/PET + EVA + Glass; check coated/printed inserts; dry inserts; edge protectors taller than glass thickness to limit edge outflow/thinning.

CNCGLASS · 5. Furnace Time & Temperature Practice

Do not process different glass types or different EVA films in the same stove with the same recipe — mixed loads make quality harder to guarantee.

- Colored EVA film often needs a slightly higher process temperature than clear film.
- Thick film or thick glass likewise tends to need a slightly higher process temperature than thin builds.
- Laminates with interlayer silk / fabric inserts often need a slightly higher process temperature than Glass–EVA–Glass alone.

If temperature should not jump suddenly high, extend soak / heat-preserving time so the stack approaches process temperature gradually. Appropriate cycle length depends on stove structure and heating power — confirm with practice on your line. When starting a new laminate structure or a new film grade, contact CNCGLASS for guidance rather than risking a large scrap batch.

Furnace Time and Temperature Practice

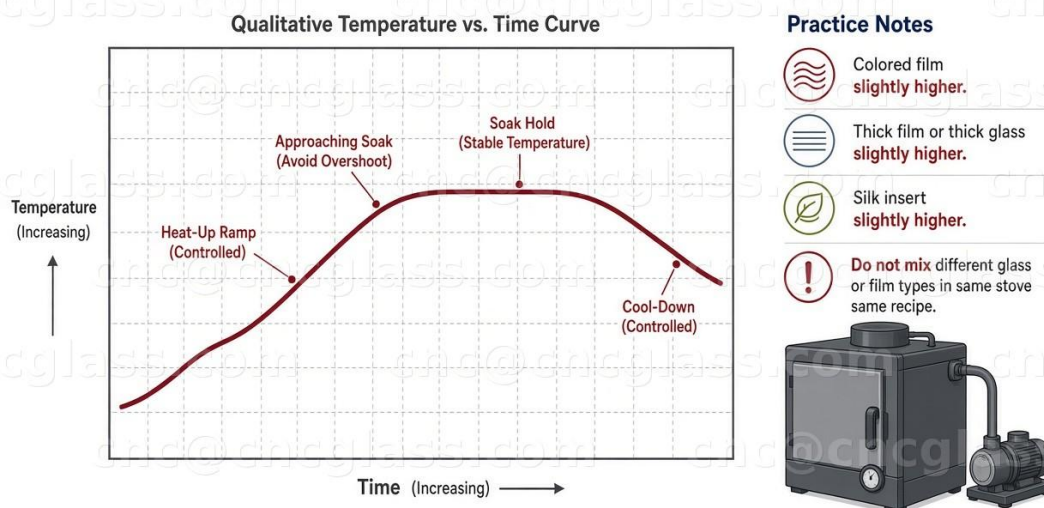


Figure 4 — Furnace practice: staged heat + soak (not a sudden high spike); colored / thick / silk builds often need a slightly higher process temperature; do not mix recipes.

CNCGLASS · 6. Cooling After Exit from the Furnace

Cooling of the finished laminate also matters. In theory, faster cooling of a clear EVA interlayer can favor optical clarity; in practice, a large temperature difference (ΔT) between the hot laminate and the surrounding air can crack glass or create edge / face bubbles.

- Summer / high ambient temperature: use a high-power fan to bring temperature down in a controlled way.
- Winter / low ambient temperature: the gap between furnace and room is large — extend natural cooling under vacuum both inside and outside the stove.
- It is appropriate to take the glass out when temperature declines steadily to about 40 °C.

Cooling After Exit from Furnace

Controlled cooling protects laminated glass quality.

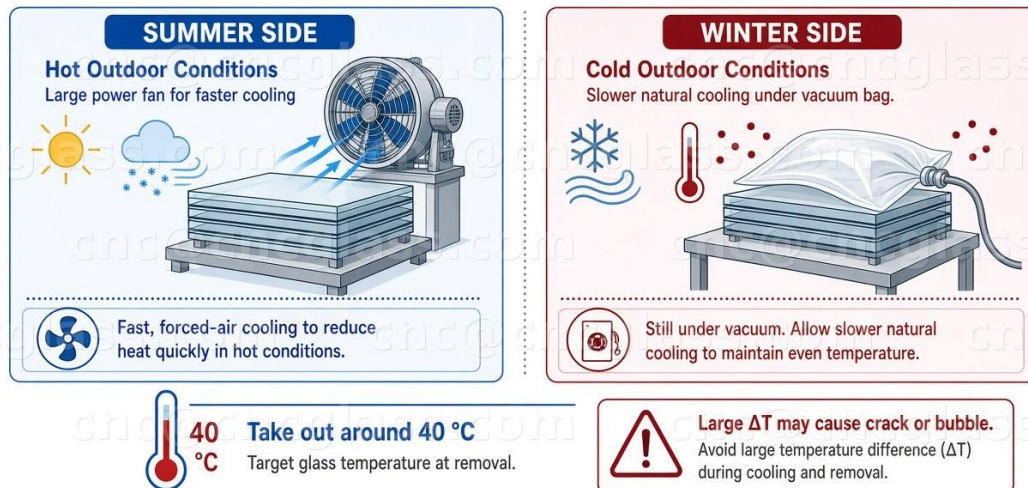


Figure 5 — Cooling after exit: summer fan cool; winter extend vacuum cool; take out when temperature declines to about 40 °C; avoid a large ΔT that may crack or bubble.

CNCGLASS · 7. Edge Overflow, Thermal Trim & Polishing Timing

Do not polish the edge of a freshly laminated panel immediately — early grinding can weaken edge adhesion and promote edge delamination. Prefer polishing after at least 24 hours from lamination completion. Cut / trim overflown EVA film first, then polish.

- Use a fine grinding wheel with repeated light passes. Avoid coarse wheels that readily create micro-cracks and damage the edge.
- Optional good practice: polish glass edges before lamination to support adhesion and reduce water-seepage / bubble pathways at the edge.
- For crude fibre and other highly water-absorbing inserts, polish glass edges before lamination — exposed fibre that absorbs moisture during post-lamination wet polishing can later drive delamination.



CNCGLASS · 8. Quality Checkpoints (Quick List)

- Sample $> 0.5 \text{ m}^2$ confirmed for quality and color before batch.
- Workshop RH and rain risk reviewed; glass / film / inserts dry.
- Film inspected under daylight lamp; contaminants handled; stop if contamination is widespread.
- Inserts compatibility-tested; coated/printed faces flagged; inserts dried; edge protectors taller than glass thickness.
- One stove / one recipe for matched glass–film builds; soak extended rather than sudden overheating.
- Cooling path matched to season; take-out near about 40°C .
- Edge polish ≥ 24 h after lamination; trim overflow; fine wheel; absorbent inserts → prefer pre-lamination edge polish.

CNCGLASS · 9. Application Scenes

These process controls matter most where decorative inserts and tempered outdoor safety glass meet demanding optics and durability:

- Indoor decorative partitions and feature walls with fabric, paper, or PET inserts encapsulated in EVA.
- Outdoor tempered laminated railings, canopies, and façades where edge integrity and bubble-free clarity are critical.
- Colored EVA safety glass projects that need batch-to-batch color consistency checks during production.
- Hybrid Glass–EVA–insert builds where moisture control and edge finishing timing protect long-term adhesion.

CNCGLASS · 10. Practical Takeaway

Treat EVA laminated-glass production as a closed loop: prove the sample, keep the line dry and clean, qualify inserts, run matched furnace recipes with staged heat, cool with season-aware ΔT control, and finish edges only after the bond has rested. Following that sequence reduces avoidable scrap far more reliably than relying on film grade alone.

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