

CNCGLASS

Brand: **CNCGLASS**

Company: **CNC Ucolin Interlayer Technology Co., Ltd.**

Address: SHENZHEN, GD, CHINA

Peter Lin | cnc@cncGlass.com | WhatsApp/Mobile +86 15013829504 | WeChat wecan365 | www.cncglass.com

TECHNICAL NOTE

Producing Technique for Outdoor Safety Laminated Glass

《户外安全夹层玻璃生产工艺》

By Peter Lin

CNCGLASS · 1. Scope — Outdoor Architectural Safety EVA Laminates

This technical note focuses on producing outdoor architectural clear safety laminated glass with outdoor-grade EVA film on a one-step silicone-bag vacuum laminating oven. It is written for balcony / terrace railings, canopies, facade and other exposed safety glazing — not as a generic indoor decorative process summary.

Compared with a general EVA process overview, this note keeps the source outdoor cycle numbers, stresses edge polish and bag protection, layup trim discipline, bag spacing with a space frame, continuous vacuum through cool-down, and install-glue chemical compatibility for outdoor clear safety builds.

CNCGLASS · 2. Process the Pre-Laminated Glass

- Cut the glass to the required shape and size, then polish the edges. Edge polish helps prevent adhesive chips / smithereens that later appear as bubbles, and protects the silicone vacuum bag / sheet from sharp edges.
- Clean with pure water, deionized water, or solvent (acetone or ethanol). Dry with clean heat. Bonding faces must be free of dirt, water marks, and fingerprints before layup.

Outdoor clear safety laminates show haze and fingerprints more clearly in daylight — treat cleaning and drying as a quality gate, not a quick wipe.



Figure 1 — Glass preparation for outdoor safety laminates: polish edges (reduce chips → bubbles; protect silicone vacuum bag), clean with pure / deionized water or acetone / ethanol, then clean-heat dry — no dirt, water marks, or fingerprints.

CNCGLASS · 3. Combine — Layup & Bag Loading

- Spread outdoor clear EVA film over the bottom glass; gently press wrinkles flat. Place the top glass; align every edge of film and glass; consolidate with heat-resistant tape.

- Prune excess EVA at the edge — do not pull the film hard. Leave no oddments sealing the glass edge during vacuuming; sealed edges trap bubbles inside the laminate.
- When placing units on the silicone vacuum bag, keep **3–5 mm** space between each one.
- It is recommended to place a space frame around the glass for better vacuuming.

Also useful in practice: keep vacuum ports clear (e.g. mesh / fabric over holes so the upper silicone sheet cannot seal them shut).



Figure 2 — Layup: Glass + outdoor clear EVA + Glass; press wrinkles gently; align edges; heat-resistant tape; prune excess EVA without hard pulling (oddments at the edge can seal vacuum paths and trap bubbles).

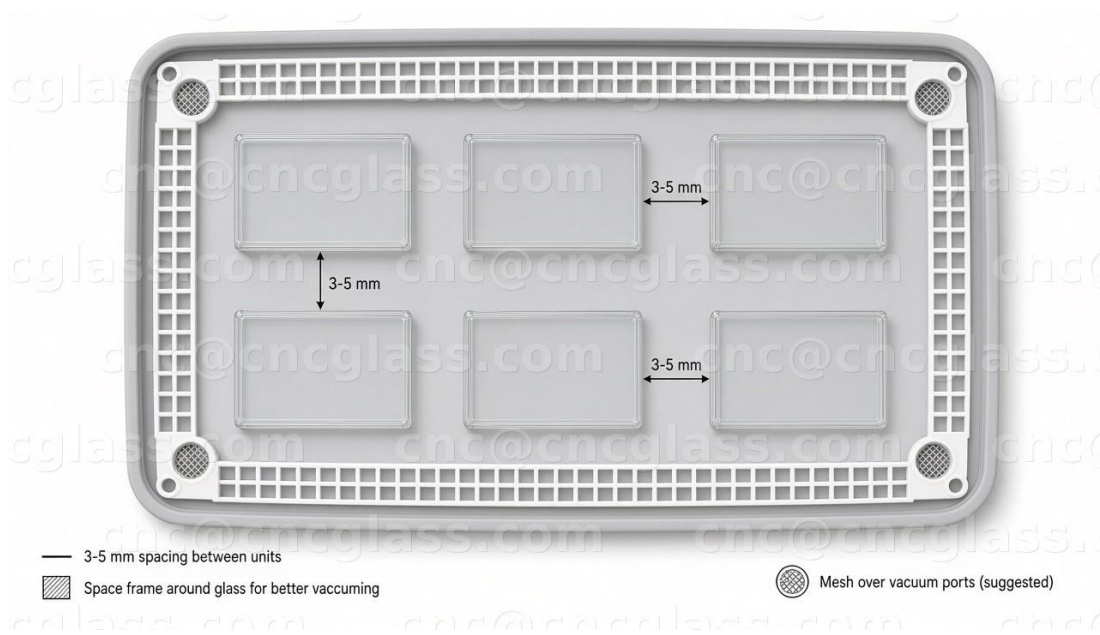


Figure 3 — Silicone vacuum bag loading: keep 3–5 mm space between units; place a space frame around the glass for better vacuuming.

CNCGLASS · 4. Forming — Vacuum & Oven Cycle

Before pushing the forming shelf into the oven, turn on the vacuum pump and check the bag for air leakage. If vacuuming is stable, hold ambient vacuum for 2–5 minutes, then enter the heat cycle.

- Source vacuum claim (ambient hold): Suggested practical target for EVA silicone-bag ovens: **≥ 700 mmHg vacuum (≈ -0.095 MPa)** steady for 2–5 minutes before heating — match your gauge convention and pump capability.

Oven set-points from source (outdoor clear safety starting point):

- Low stage: **60 °C / 15 min.**

- High stage: **130 °C** oven setting; glass surface should reach **125 °C** for **30–50 min** typical hold. Ensure glass surface **≥ 125 °C** for **at least 30 min** — silicone bag heat lag means chamber air ≠ glass surface.

Low-stage 60 °C is kept as the source outdoor starting point (black). Validate on your oven and outdoor EVA grade; do not treat any public table as a fixed factory standard.

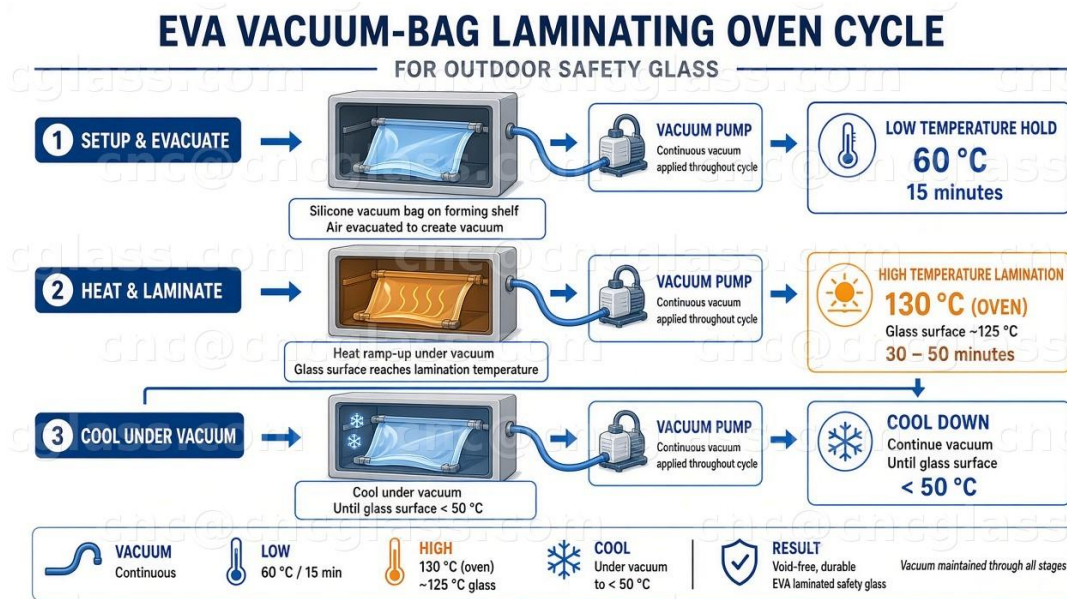


Figure 4 — Forming cycle sketch: leak-check → ambient vacuum 2–5 min → low 60 °C / 15 min → high 130 °C (glass surface ≥ 125 °C for ≥ 30 min, typical hold 30–50 min) → cool under vacuum; open after < 90 °C; keep vacuum until glass < 50 °C.

CNCGLASS · 5. Cooling & Unload

- After heating, let the inside temperature decrease automatically to under **90 °C**. Then open the oven door, pull the forming shelf out, and cool evenly with a fan.
- Do not stop vacuuming until shelf and laminated glass are below **50 °C**.

Source tip: correct temperature plus faster cooling helps outdoor clear transparency. Practical caveat: “as fast as possible” must still respect thermal-shock risk — cool evenly with fans; avoid blasting one face with cold water or a large ΔT that can crack glass or reintroduce edge bubbles.

CNCGLASS · 6. Installation — Glue Caution

- Prefer mechanical fixing for outdoor safety glass. Avoid glass glue where possible to reduce chemical risk at the edge.
- If sealant is required, use a fast-dry neutral silicone (or other compatible neutral system). Pre-test the glue against the outdoor EVA grade to avoid chemical reaction and delamination.

Outdoor edges see more UV, rain, and thermal cycling — incompatible sealants show up later as edge clouding or peel. Keep a small coupon test record with the batch.

CNCGLASS · 7. Outdoor Application Scenes

Typical uses for outdoor clear safety EVA laminates produced with this route include tempered glass balcony and terrace railings, entrance canopies and overhead glazing, and facade / curtain-wall panels where post-breakage retention and outdoor weathering performance matter.



Figure 5 — Typical outdoor architectural scenes for clear safety EVA laminates: balcony / terrace railings, entrance canopies, and facade glazing.

CNCGLASS · 8. Quick Process Checkpoints

- Edges polished; bag protected from sharp chips.
- Bonding faces clean and dry — no prints or water marks.
- EVA pruned without hard pull; no edge oddments sealing vacuum paths.
- Bag spacing **3–5 mm**; space frame fitted; leak-check before heat.
- Ambient vacuum 2–5 min at practical target (see blue/green note).
- 60 °C / 15 min → 130 °C with glass surface ≥ 125 °C ≥ 30 min (typical 30–50 min hold).
- Cool to < 90 °C before opening; keep vacuum until glass < 50 °C; even fan cool.
- Install: avoid incompatible glass glue; pretest neutral fast-dry silicone vs EVA.

CNCGLASS · Contact

Brand: CNCGLASS

Company: CNC Ucolin Interlayer Technology Co., Ltd.

Address: SHENZHEN, GD, CHINA

Contact: Peter Lin

Email: cnc@cncGlass.com

WhatsApp / WeChat / Mobile: +86 15013829504 · **WeChat:** wecan365

Website: www.cncglass.com

CNC Ucolin Interlayer Technology Co., Ltd. · SHENZHEN, GD, CHINA · Peter Lin