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Clearing Trapped Air in Shaped Multi-Hole SGP Laminated Glass

A familiar stoppage on a difficult plate

Large, irregular SGP laminates are among the harder jobs a deep-processing shop can take. A five-sided outline, several openings, and a plate measured in square meters will often defeat a routine rolling cycle. In one such batch, the first nip left a wide field of bubbles. Re-bagging and a second vacuum still produced a full autoclave rejection, and the line stopped. The pattern is typical, and it is not cured by repeating the same bag step.

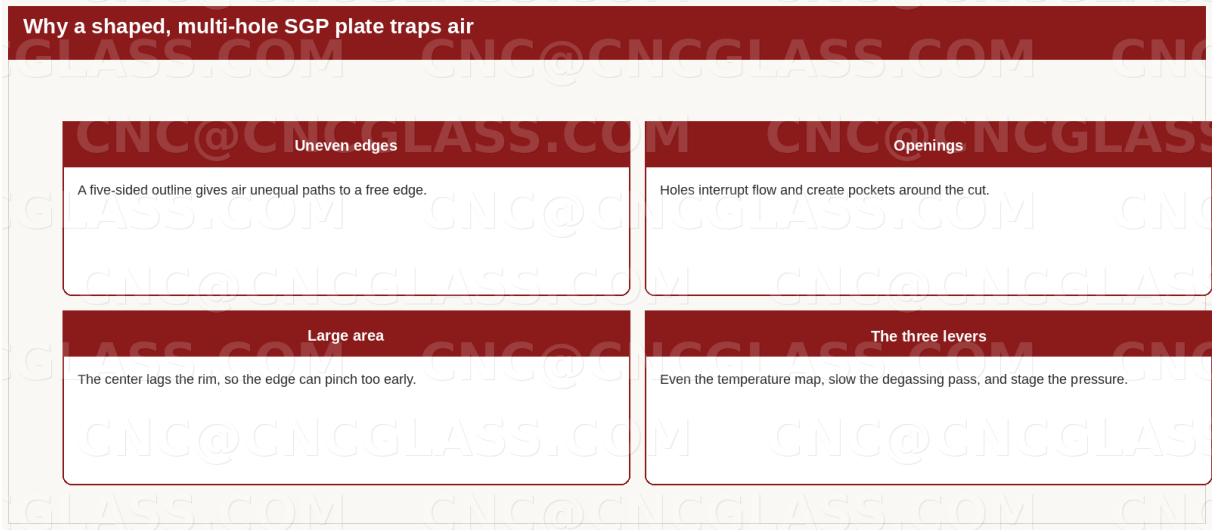


Figure 1. Four reasons a five-sided, multi-hole SGP plate traps air, and the three process levers that have to be moved together.

Why the air cannot leave

Ionoplast laminates are used on curtain walls, railings, and skylights because they are stiff and impact-resistant. Those same traits, on an irregular five-sided plate with holes, work against a standard process. Unequal edges give air unequal paths during the nip. Openings break the flow and leave pockets around each cut. A large area is hard to heat evenly, so the film does not soften as one sheet, and evacuation becomes still harder. The three problems add. A new bag after the rim has already pinched does not reopen a reliable path. The correction has to start in the process settings.

Temperature, speed, and staged pressure, then a transferable method

A useful intervention begins with a full look at equipment condition and at the recorded cycle, then with three coordinated changes. The heating map is adjusted so the ionoplast ply softens evenly from edge to center and around the openings. The rolling-speed curve is slowed in the critical degassing section so air has time to reach a free edge or a hole perimeter. Pre-press and main-press are separated so the rim does not close before the interior is clear.

The lasting value is that operators learn to anticipate where a shape will trap air, to watch the nip and adjust in time, to bag a perforated plate without pinching the vacuum path, and to tell a process bubble from other faults. In the subsequent production of the same five-sided, multi-hole, large SGP plates, autoclave yield reached 98 percent. Two lites still showed small bubbles at openings; a directed second autoclave cycle brought those two to the required standard and limited the waste. The method, not a single lucky batch, is what a shop should keep.

Trapped air in a large, five-sided, multi-hole SGP laminate is a mismatch among geometry, material response, and process settings. Even the temperature map, slow the degassing pass, and stage the pressure, and teach the line why those changes work. Yield then follows, as it did when subsequent plates in this class reached a 98 percent autoclave success rate.

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We can review temperature, roll-speed, and pressure settings for shaped or perforated ionoplast laminates, including recovery of isolated opening bubbles.