

Major Appliance Manufacturer Reduces Cost with HYTAC[®] LP

A major appliance company was challenged to improve margins by reducing rejects and material costs on a 17ft³ (0.48m³) freezer liner. CMT Materials was consulted to determine how HYTAC syntactic foam would assist these efforts.

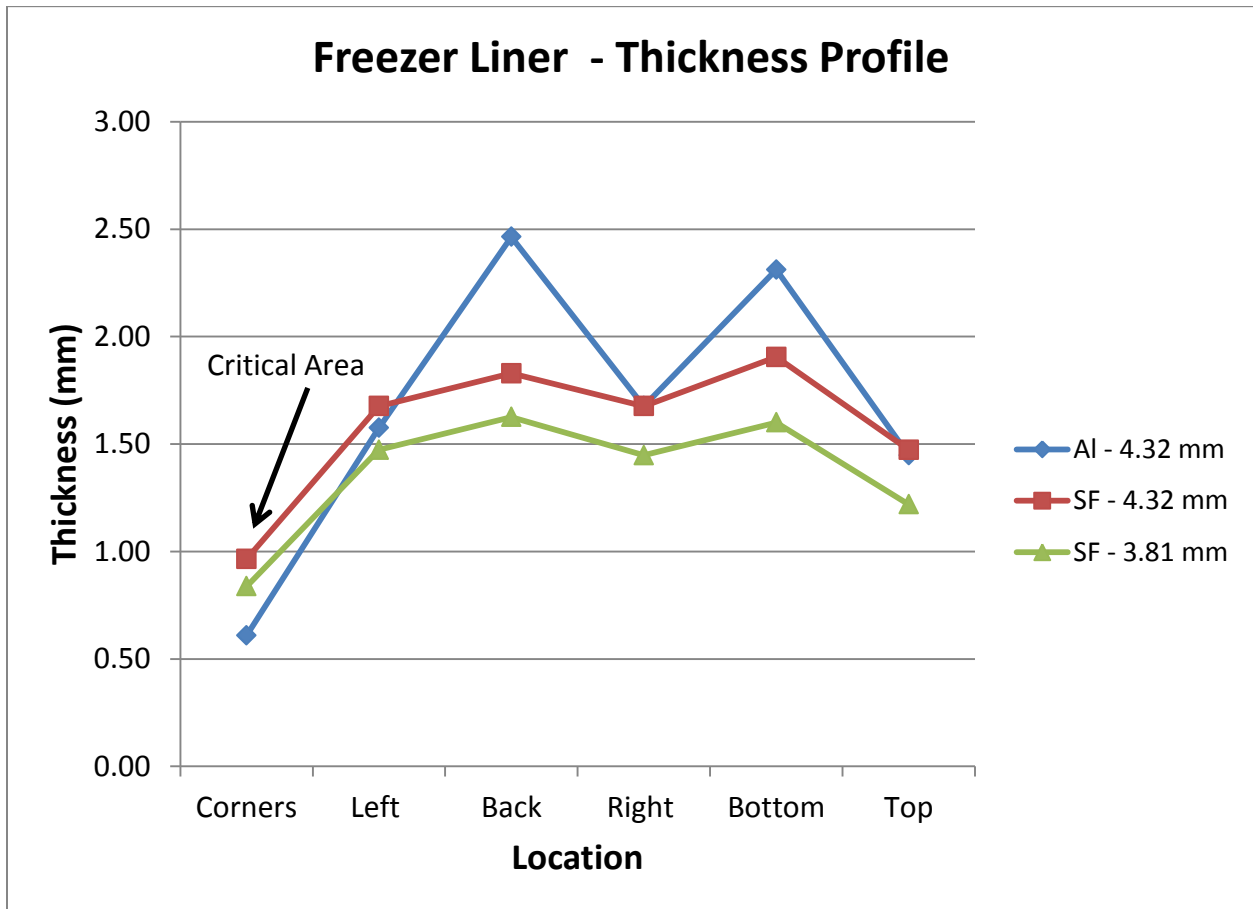
With a starting gauge of 0.170" (4.32mm) HIPS material, the company was looking to increase corner thickness and eliminate a corner reinforcement operation through improved material distribution. The process was being run on a 4-station rotary machine with gas catalytic pre-heating and ceramic elements used in the primary oven. The forming station configuration included a top-mounted plug assist with pre-billow, a water cooled mold and an aluminum plug heated to 240 °F. The cycle time was 59 seconds.

Using the aluminum plug as the baseline, the process was re-run with a new syntactic plug (custom-cast and machined to the required dimensions), while maintaining the same cycle speed. Two different sheet thicknesses were used: 0.170" (4.32mm) and 0.150" (3.81mm). With the syntactic plug, there was no longer a need to heat the plug and the pre-heat station was also eliminated.

Using ultrasonic thickness measurements for evaluation (44 in total), the findings were clear:

- Immediate energy savings through a 15% reduction in heat input and elimination of plug heat
- Material savings of 12% through effective down-gauging
- Improved material distribution (see chart)
- Elimination of secondary reinforcement of corners
- 2-week payback time for syntactic plug based on material savings alone
- No visual changes in the part

Starting Sheet Thickness	0.170" (4.32mm)	0.170" (4.32mm)	0.150" (3.81mm)
Plug Type	Aluminum	Syntactic	Syntactic
Avg Corner Thickness	0.024" (0.61mm)	0.038" (0.96mm)	0.033" (0.84mm)
Increase vs. Aluminum		0.014" (0.36mm)	0.009" (0.23mm)
Increase vs. Aluminum		58%	38%
Corner: Relative Std Dev	38%	13%	24%
Overall: Relative Std Dev	25%	12%	15%



The combination of faster start-up times, lower energy use and lower starting gauges resulted in better parts and significant cost savings. By using syntactic foam in heavy gauge thermoforming, processors can profit while their customers enjoy better performance.

More thermoformers and toolmakers choose HYTAC® plug material. What does your plug do for you?

REASON #2: REDUCE STARTING GAUGE



2 words: down-gauge and light-weight. Material typically accounts for >70% of part cost. HYTAC® plugs help reduce material thickness by ensuring optimal distribution and reducing sheet stick.