

Troubleshooting

MATERIAL USE GUIDELINES

Incorrect heating is the most common cause when a forming problem arises. If a problem identify the possible cause and solution using the chart below.

Step 1: Check the heating times, temperatures, controls, and gauges

Heating Boltaron sheet too rapidly, at incorrect temperatures is the most common cause of thermoforming problems. Verify the accuracy of the gauges and controls and correct the conditions as necessary.

Step 2: Review the information in this guide

If the cycle times and temperatures are correct and the problem still persists, review the possible causes and solutions below.

Problem	Possible Causes	Solution
Bubbles, blisters in sheet or part	Sheet heating too rapidly Sheet overheating Sheet too close to heaters	Reduce heater temperatures Reduce heating time Increase space between heaters and sheet
	Uneven heating, hot spots	Use screening to deflect heat from hot spots Verify heaters are operating correctly Balance heater zones
	Sheet exposed to excessive humidity or moisture	Pre-dry sheet Heat sheet on both sides Reduce heater temperatures Increase dwell time as needed
Scorching, discoloration	Sheet surface overheated Sheet too close to heaters	Reduce heater temperatures (may need to increase dwell time) Reduce dwell time Increase space between heaters and sheet
Blush marks; whitening at corners	Sheet not heated sufficiently	Increase dwell time Reduce platen time and or vacuum delay Check heaters for accuracy
	Uneven heating, hot spots	Use screen to deflect heat from hot spots Verify heaters are operating correctly Balance heater zones
Localized glossy spots, streaks	Specific areas of sheet are being overheated	Adjust heaters where the problem appears If adjustments can't be made, use screens to deflect heat from the problem areas
Excessive sag in sheet	Sheet getting too hot	Reduce heater temperatures and/or dwell time
Webbing, wrinkling, bridging	Sheet getting too hot	Reduce heater temperatures and/or dwell time
	Vacuum not sufficient	Verify mold's vacuum level Check vacuum lines for blockages
	Improper draw ratio or mold design for part	Increase mold draft angle, radii Add a plug-assist Use take-up blocks to pull material from corners Use web moats or pockets in web areas In multi-mold designs, increase spacing between
Nippled part surface	Sheet getting too hot	Reduce heater temperatures and/or dwell time
	Vacuum holes too large	Plug holes and re-drill to smaller diameter

thermoforming