

Extrusion blow molding troubleshooting table

Find the defect you see, check the likely causes in order, and change one variable at a time. Record each change and its result. Defects that persist after process adjustments usually point to tooling wear, mold design or the resin grade.

■ PARISON PROBLEMS

DEFECT	COMMON CAUSES	WHAT TO CHECK OR ADJUST	
Parison hooks or curls instead of hanging straight	Uneven wall around the parison; dirty or warped die and mandrel; uneven head temperature; drafts or static on the parison	Re-center the die; clean the flow channel; check head heaters and shield the parison from moving air	☐
Parison sags or stretches	Melt too hot; resin melt strength too low; parison hangs too long; heavy tail; slow mold closing	Lower melt temperature; shorten drop time or raise extrusion rate; reduce tail weight; close the mold faster; review resin melt index	☐
Parison folds or webs (curtaining)	Melt too hot; wall too thin at the top; resin swell does not suit the tooling	Correct melt temperature; reprogram the top of the parison thicker; adjust pre-blow; match resin swell to die and mandrel size	☐

■ FORMING PROBLEMS

DEFECT	COMMON CAUSES	WHAT TO CHECK OR ADJUST	
Handle missing or webbed	Molds misaligned; parison hooking; parison too narrow for the handle	Realign molds; correct parison drop; lower melt temperature or use larger tooling so the parison reaches the handle	☐
Weak or cut pinch-off and weld	Melt or mold temperature too high or too low; mold closes too fast; too little material in the pinch; pinch-off lands too wide or flash pockets too deep	Adjust melt temperature in small steps; slow mold closing; program more material into the pinch; review pinch-off land and flash pocket design with the mold maker	☐
Hole, slit or thin wall at the parting line	Mold not fully closed; plugged vents; blow pressure too high for the clamp	Clean mold faces; check mold lock-up and clamp pressure; clean vents; review blow pressure	☐
Part does not blow fully	Parison too short; blow-up ratio too high; air leak or restriction; moisture or trapped air in the melt; clamp pressure too low	Increase shot size; review tooling diameter; check blow and exhaust air lines; check material handling for moisture	☐
Excessive flash	Parison diameter too large; flash pockets too shallow; mold not closing correctly	Reduce pre-blow or extrusion rate; review resin swell and tooling size; check mold closure and flash pockets	☐
Neck flash does not separate	Damaged shear ring, blow pin or cutting ring; not enough shear force at the neck	Replace or sharpen the shear parts; adjust blow-pin position or force	☐

■ APPEARANCE PROBLEMS

DEFECT	COMMON CAUSES	WHAT TO CHECK OR ADJUST	
Die lines or streaks	Contamination between die and mandrel; degraded material or carbon in the head; failed heater band; damaged tooling	Briefly open the die gap to purge; clean die and mandrel with a brass or copper tool; check heater bands and raw material cleanliness	☐

DEFECT	COMMON CAUSES	WHAT TO CHECK OR ADJUST	
Rough surface, pits or orange peel	Dirty tooling; melt fracture; poor mold surface or venting; low blow pressure; condensation in the mold	Clean tooling; adjust die gap, extrusion rate or melt temperature; check vents, blow pressure and mold temperature against humidity	☐
Bubbles or unmelted particles	Too little back pressure; worn screw or barrel; contamination or fines; melt too cold	Raise back pressure or use a finer screen pack; check screw and barrel wear; check regrind and fines; raise melt temperature	☐

■ DIMENSIONS AND STRENGTH

DEFECT	COMMON CAUSES	WHAT TO CHECK OR ADJUST	
Uneven wall around the part	Die not centered; uneven head temperature	Center the die; check heater bands and shield the head from drafts	☐
Wall too thin at the top of the part	Parison draws down from slow extrusion or high melt temperature; mold closes too late	Raise extrusion rate; reprogram the top thicker; lower melt temperature; close the mold sooner	☐
Warping, rocker bottom or oval neck	Not enough mold cooling; blocked cooling channels; cycle too short; mold opens before exhaust is complete; thick and thin sections in the design	Increase water flow or lower mold temperature; clean channels; lengthen cooling and exhaust time; review wall distribution	☐
Low top-load or impact strength	Uneven wall distribution; part too light; thin parting line or weak pinch; sharp corners in the design; too much regrind	Reprogram the parison; increase part weight; fix the pinch and parting line; add radii; reduce regrind	☐
Volume too high or too low	Part weight off target; part ejected too cold or too hot; wrong mold volume; blow pressure; storage temperature	Correct part weight; adjust mold temperature and cycle; check blow pressure; resize the mold or inserts	☐
Cap or closure leaks	Worn blow pin or shear steel; blow pin or mold misaligned; wrong neck insert or cap dimensions; pleating inside the neck	Replace worn neck tooling; align blow pin and mold; check neck insert and cap against the drawing; adjust pre-blow	☐

Based on: Polyethylene Extrusion Blow Molding Process Guide — Troubleshooting Guide (Formosa Plastics Corporation, U.S.A., 2008), <https://www.fpcusa.com/content/uploads/2021/06/PE-BMProcessGuide.pdf>. Always follow the safety rules and operating manual of your machine. Suzhou Tongda Machinery Co., Ltd. · www.tongdamachinery.com