

# INJECTION MOLDING TROUBLESHOOT GUIDE

*VERSION 1.0*

*4/25/2019*

PROBLEM	CAUSE	SOLUTION
Short Shot	Molding  Mold	<ul style="list-style-type: none"> <li>• Increase shot size</li> <li>• Increase Injection time</li> <li>• Increase injection pressure</li> <li>• Increase cylinder temp</li> <li>• Open gates, runners, sprues</li> <li>• Adjust gates, vents, runners</li> <li>• Redesign parts</li> </ul>
Flash	Insufficient clamp pressure  Molding  Foreign material on mold surface	<ul style="list-style-type: none"> <li>• Increase clamp pressure</li> <li>• Use larger press</li> <li>• Reduce injection time</li> <li>• Reduce cylinder temps</li> <li>• Reduce injection pressure</li> <li>• Clean mold faces</li> </ul>
Sticking in cavities	Severe packing  Insufficient cooling  Mold design, condition	<ul style="list-style-type: none"> <li>• Decrease pack pressure and/or pack time</li> <li>• Increase cylinder temp and decrease fill pressure</li> <li>• Increase cycle time</li> <li>• Polish cavity surface</li> <li>• Remove undercuts</li> <li>• Increase draft</li> <li>• Modify geometry on core to increase friction</li> <li>• Relocate gates</li> </ul>

PROBLEM	CAUSE	SOLUTION
Sticking in cores	Severe packing  Cycle too long  Mold design or condition	<ul style="list-style-type: none"> <li>• See "Sticking in Cavities"</li> <li>• Reduce cycle time</li> <li>• Polish cores</li> <li>• Remove undercuts</li> <li>• Increase draft</li> <li>• Improve knock-out system</li> </ul>
Warp	Insufficient cooling  Stresses due to mold design  Molded-in stresses  Racking (distortion of parts on ejection)	<ul style="list-style-type: none"> <li>• Increase cycle time</li> <li>• Relocate gates</li> <li>• Redesign parts to minimize variations in wall thickness</li> <li>• Mold at high temps, low pressure, and moderate fill rates</li> <li>• Redesign ejection system</li> </ul>
Sink	Insufficient packing  Mold design	<ul style="list-style-type: none"> <li>• Increase pack pressure and/or pack time</li> <li>• Reduce cylinder temp and increase fill pressure</li> <li>• Reduce fill rate</li> <li>• Open gates</li> <li>• Gate into heavy sections</li> <li>• Reduce wall thickness of ribs and bosses</li> </ul>

PROBLEM	CAUSE	SOLUTION
Parts have improper dimensions	<p>Parts too small</p> <p>Parts too large</p>	<ul style="list-style-type: none"> <li>• Increase pack pressure and/or pack time</li> <li>• Increase cylinder temps</li> <li>• Increase gate size</li> <li>• Change resin</li> <li>• Rework tool</li>   <li>• Decrease packing pressure and/or pack time</li> <li>• Decrease cylinder temp</li> <li>• Change resin</li> <li>• Rework tool</li> </ul>
Splay (off-colored streaking)	<p>Wet Material</p> <p>Mold sweating</p> <p>Disorderly flow front</p> <p>Insufficient packing</p>	<ul style="list-style-type: none"> <li>• Dry Resin</li>   <li>• Run mold temp above the dew point</li>   <li>• Slow down fill rate</li> <li>• Reduce cylinder temps</li>   <li>• Increase pack pressure and/or pack time</li> </ul>
Flow marks	<p>Molding</p> <p>Mold</p>	<ul style="list-style-type: none"> <li>• Increase cylinder temps</li> <li>• Use moderate fill rates</li> <li>• Increase mold temp</li>   <li>• Move gate so that flow front impinges on some mold feature</li> <li>• Move gate to put flow marks in less critical area</li> <li>• Polish core and cavity surfaces</li> </ul>
Poor gloss	<p>Molding</p> <p>Mold</p>	<ul style="list-style-type: none"> <li>• Increase fill rate</li> <li>• Increase mold temp</li> <li>• Increase packing</li>   <li>• Polish mold</li> </ul>

PROBLEM	CAUSE	SOLUTION
Brittle parts	<p>Polymer degradation</p> <p>Molded-in stresses</p> <p>Contamination</p> <p>Part design</p>	<ul style="list-style-type: none"> <li>• Reduce cylinder temp and/or residence time</li> <li>• Change polymer</li> <li>• Raise cylinder temps</li> <li>• Use moderate fill rate</li> <li>• Reduce packing pressure and/or pack time</li> <li>• Change polymer</li> <li>• Check color concentrate for pigment, pigment disbursement, and base resin</li> <li>• Check polymer</li> <li>• Avoid sharp corners</li> <li>• Avoid knit or weld lines in critical strength areas</li> </ul>
Poor knit lines	<p>Highly nucleated polypropylene resin, resin with a dispersed phase, etc.</p> <p>Part design</p>	<ul style="list-style-type: none"> <li>• Change resin</li> <li>• Change gating to place knit line in less critical area</li> <li>• Use overflow tabs to induce polymer mixing at knit line</li> <li>• Use ribs, increase flow length after knit, etc.</li> </ul>
Poor color dispersion	<p>Color concentrate</p> <p>Dry color</p>	<ul style="list-style-type: none"> <li>• Change concentrate</li> <li>• Increase cylinder temp and lengthen residence time</li> <li>• Be sure that a good pre-mix is achieved</li> <li>• Switch to appropriate color concentrate</li> </ul>

PROBLEM	CAUSE	SOLUTION
Drool	Molding  Press  Mold	<ul style="list-style-type: none"><li>• Reduce cylinder, runner, temps, etc.</li><li>• Lengthen cycle times</li><li>• Use screw suck-back</li> <li>• Use shutoff nozzle</li> <li>• Use valve gating</li></ul>