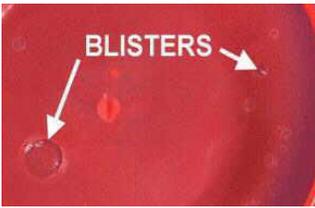


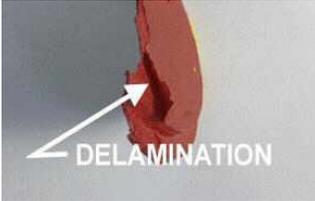


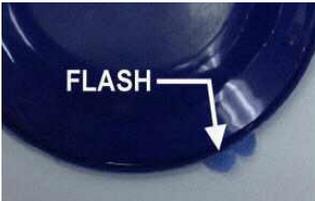
**Molding Defects, Causes,
& Corrective Actions**

Possible Molding Defects	Defect Description	Defect Causes	Corrective Action
<p>Blister, Blistering</p> 	<p>Unintended raised or layered area on the surface of the part</p>	<p>Tool is running too hot or the heater is malfunctioning</p>	<p>Test tool heat and eliminate any external sources contributing to heat on the tool, check cooling in area of tool</p>

Possible Molding Defects	Defect Description	Defect Causes	Corrective Action
<p>Burn Marks, Gas Burn, Air Burn</p> 	<p>Black or brown discoloration on material farthest from the mold gate</p>	<p>Injection speed of material is too high and/or the tool venting is not sufficient</p>	<p>Slow down the injection speed and/or test venting of tool to achieve proper shot speed and temperature</p>

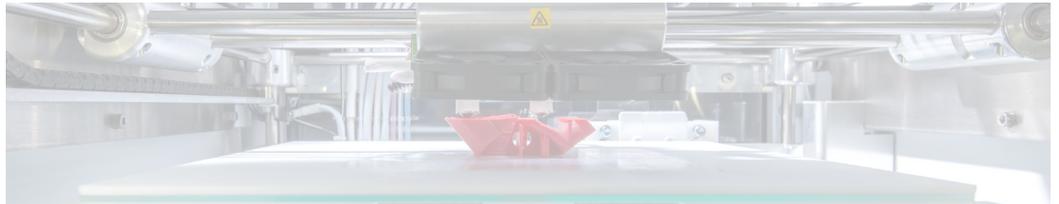
Possible Molding Defects	Defect Description	Defect Causes	Corrective Action
<p>Color Streaks, Streaking</p> 	<p>Undesired color change in areas of the material</p>	<p>Desired colorant isn't mixing properly with granules or has run low, revealing natural color</p>	<p>Check proper mixture rate for colorant and ensure colorant level in system feed is correct</p>

Possible Molding Defects	Defect Description	Defect Causes	Corrective Action
<p>Delamination</p> 	<p>Part walls are not solid and form layers of material instead of one solid piece</p>	<p>Dangerous situation that creates parts with very little strength, usually due to material contamination</p>	<p>Check material stock for contamination, try with new material source</p>

Possible Molding Defects	Defect Description	Defect Causes	Corrective Action
<p>Flash, Burrs</p> 	<p>Material flows outside of the mold cavity</p>	<p>Insufficient clamping force, debris on tool mating surfaces, or tool damage</p>	<p>Inspect tool for damage, clean mating surfaces of molds, and ensure proper clamping force on the mold</p>

Possible Molding Defects	Defect Description	Defect Causes	Corrective Action
<p>Embedded Contaminates, Embedded Particulates</p> 	<p>Undesired color change in areas of the material</p>	<p>Desired colorant isn't mixing properly with granules or has run low, revealing natural color</p>	<p>Clean the tool surface and cavity, inspect the barrel/hopper/feeder system for contaminants, check shear heat</p>

Possible Molding Defects	Defect Description	Defect Causes	Corrective Action
Flow Marks, Flow Lines	Material flow creates multiple visible lines and patterns on finished part	Injection speed of material is too slow and cooling too quickly	Increase injection speed of material

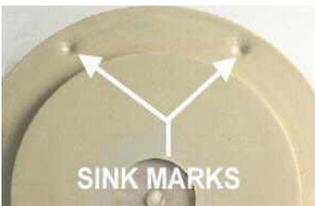


Possible Molding Defects	Defect Description	Defect Causes	Corrective Action
Jetting	Turbulent flow of material from gate causes part deformation	Injection speed is too high, poor overall tool design, poor placement of gate or runner	Check material injection speed, review design of tool



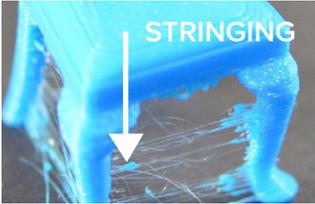
Possible Molding Defects	Defect Description	Defect Causes	Corrective Action
Polymer Degradation	Material composition failure in tensile strength, color, shape, etc.	Exposure of granules to excessive light, heat, water, or chemicals	Discard poor material, check storage and feeder system for contaminant issues

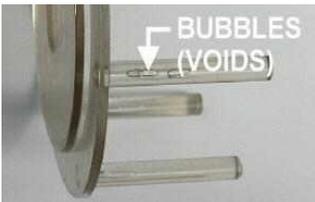


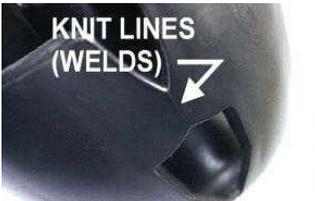
Possible Molding Defects	Defect Description	Defect Causes	Corrective Action
<p>Sink Marks</p> 	<p>Depression created in thicker material zones</p>	<p>Cooling time is too short, holding time post-injection is too short, or pressure during holding is too low</p>	<p>Test cooling and holding times post-molding, review proper pressure during molding</p>

Possible Molding Defects	Defect Description	Defect Causes	Corrective Action
<p>Short Shot, Non-Fill Mold, Short Mold</p> 	<p>Incomplete molded part</p>	<p>Not enough material entering the mold, injection speed of material is too slow, or tool pressure is too low to disperse material correctly</p>	<p>Increase injection speed of material and test pressure on part during molding</p>

Possible Molding Defects	Defect Description	Defect Causes	Corrective Action
<p>Splay Marks, Splash Mark, Silver Streaks</p> 	<p>Part has circular pattern in material at gate</p>	<p>Hot gas generated by moisture in the granules due to improper material drying procedure or technique</p>	<p>Use dry material, review material drying process, review material storage for contamination issues</p>

Possible Molding Defects	Defect Description	Defect Causes	Corrective Action
<p>Stringiness, Stringing</p> 	<p>Material from previous shot remains in mold, resulting in string-like appearance in part</p>	<p>Material temperature at nozzle is too high, gate can't complete shot cleanly</p>	<p>Reduce material temperature at nozzle</p>

Possible Molding Defects	Defect Description	Defect Causes	Corrective Action
<p>Voids</p> 	<p>Formation of unintended air pocket in molded part</p>	<p>Holding pressure is incorrect or mold is not correctly centered during forming, causing different wall thicknesses</p>	<p>Correct holding pressure during material cooling</p>

Possible Molding Defects	Defect Description	Defect Causes	Corrective Action
<p>Weld Line, Knit Line, Meld Line</p> 	<p>Line on completed part where material flow meets</p>	<p>Material is moving too slowly and cooling too rapidly, forming a line when it meets</p>	<p>Increase temperature of material and/or mold to achieve appropriate flow</p>

Possible Molding Defects

Warping, Twisting Part

Defect Description

Part is deformed and distorted

Defect Causes

Material is too hot and/or cooling time is too short, lack of cooling around the tool

Corrective Action

Correct cooling time and material temperature, investigate cooling of tool

