Injection Molding Troubleshooting Guide

Problem	Source(s)	Cause(s)
Black Specks or Streaks	Machine	Excessive residence time in barrel
		Hang-up of molten material in injection barrel or runner system
		Contamination of injection barrel
		Degradation due to malfunctioning heater bands or thermocouples
		Defective nozzle shutoff mechanism
		Inefficient injection conditions
		Cracked injection cylinder or pitted screw
		Oil leaking into the injection unit
	Mold	Sprue bushing nicked, rough, or not seating
		Burned material caused by improper venting
		Contamination caused by grease or lubricants
		Mold too small for machine size
	Material	Contamination of raw material
		Wrong material used for particular mold
	Operator	Inconsistent process cycle
Blisters	Machine	Injection screw rotation (RPM) too high
		Screw back pressure too low
		Injection speed too high
		Cycle time too short
	Mold	Mold temperature too low
		Improper gate location
		Insufficient venting
	Material	Use of regrind that is too coarse
		Use of highly volatile materials
		Excessive moisture
Blush	Machine	Injection fill speed too fast
		Melt temperature too high or too low
		Injection pressure too low
		Nozzle diameter too small
		Nozzle temperature too low
Bowing	Machine	Clamp opens too quickly
		Ejector system not level or parallel
		Cooling time too short
		Parts not packed properly
	Mold	Temperature too low
		Inconsistent mold temperature
		Improper gate location
	Operator	Parts mishandled after ejection
Brittleness	Machine	Improper injection screw design
		Cycle time too short
		Excessive packing
		Excessive back pressure, screw RPM, or injection speed
		Nozzle too hot
		Injection pressure too low
	Mold	Gate and/or runner restrictions
		Condensation
	Material	Resin too cold
		Excessive moisture in resin
		Resin is degraded
Bubbles	Machine	Injection temperature too high
		Injection pressure too low
		Injection forward time too low
		Insufficient material feed
		Improper injection temperature profile
		Excessive injection speed
		Insufficient back pressure
	Mold	Improper venting
		Section thickness too great
Bubbles (cont.)	Mold (cont.)	Improper runners or gates
		Mold temperature too low
	Material	Excessive moisture
	Operator	Inconsistent cycle
Burn Marks	Machine	Excessive injection speed or pressure
		Excessive back pressure
		Screw speed too high
		Improper compression ratio of screw
		Faulty temperature controllers
		Nozzle too hot
		Excessive barrel temperatures
		Nozzle diameter too small
	Mold	Improper venting (size or lacation)
		Vents plugged or peened shut
		Improper gating (size or location)
	Material	Excessive regrind use
		Flow too soft
		Excessive lubricant
	Operator	Inconsistent cycles
Clear Spots	Machine	Barrel temperature too low
		Back pressure too low
		Screw speed too low
		Improper compression ratio of screw
		Faulty temperature controllers
	Material	Excessive regrind use
	Operator	Inconsistent cycles
Cloudy Appearance	Machine	Barrel temperature too low
		Back pressure too low
		Screw speed too low
		Excessive wear between barrel and screw
	Mold	Uneven packing
		Dull finish on mold surface
		Poor mold temperature control
	Material	Excessive moisture
	Operator	Inconsistent cycles
Contamination	Machine	Oil leaks and grease drips
	Mold	Excessive lubrication
	Material	Improper regrind usage
		Excessive moisture
	Operator	Poor housekeeping
Cracking	Machine	Molded in stresses
		Cooling cycle too short
	Mold	Excessive lubrication
		Insufficient draft allowance
		Improper injection
	Material	Improper regrind usage
		Excessive moisture
	Operator	Inconsistent cycles
Crazing	Machine	Molded in stresses
		Cycle time too short
		Inadequate injection speed and/or time
		Injection barrel temperature too high
	Mold	Excessive gate size
		Mold temperature too low
		Contaminated mold surfaces
		Improper ejection
	Material	Contaminated material
		Excessive moisture
Delamination	Machine	Injection speed too low
		Inadequate injection cushion
		Injection hold time too short
		Barrel temperature too low
	Mold	Mold temperature too low
		Sharp gate and runner corners
		Excessive mold release
	Material	Contaminated regrind
		Foreign materials and/or additives
		Excessive moisture
Discoloration	Machine	Excessive shot size ratio
		Excessive residence time
		Barrel temperature too high
		Nozzle temperature too high
		Excessive cycle time
		Improper screw design
	Mold	Mold temperature improper
		Inefficient cooling
		Inadequate venting
	Material	Contaminated material
	Operator	Inconsistent cycles
Flash	Machine	Excessive injection pressure
		Excessive residence time
		Barrel temperature too high
		Excessive cycle time
		Inadequate clamp pressure
	Mold	Improper parting line seal
		Inadequate mold supports
		Inadequate venting
		Sprue bushing too long
		Improper stackup dimensions
	Material	Improper flow rate
		Excessive mold lubricant
	Operator	Improper cycling
Flow Lines	Machine	Inadequate injection pressure
		Inadequate residence time
		Barrel temperature too low
		Nozzle temperature too low
	Operator	Inconsistent cycles
Gloss (Low)	Machine	Inadequate injection pressure
		Inadequate residence time
		Barrel temperature too low
		Nozzle temperature too low
		Excessive feed cushion
		Ram speed too slow
		Nozzle bore too small
		Inadequate cycle time
	Mold	Mold temperature too low
		Gates or runners too small
		Improper gate location
		Inadequate venting
		Inadequate polishing of molding surfaces
		Contaminated molding surfaces
	Material	Improper flow rate
		Inadequate lubrication
		Moisture in resin
	Operator	Inconsistent cycles