



Troubleshooting Guide for INJECTION MOLDING Phenolic & Granular Polyester

PROBLEM	CORRECTIONS											
	Mold Temperature	Injection Pressure	Holding Pressure	Injection Speed	Barrel Temperature	Screw Speed	Screw Back Pressure	Clamp Pressure	Shot Size	Hold Time	Cure Time	Refer to Comment Sheet
Ball & Socket	3D	2I	2I	1D								4A
Bulge Opposite Insert	3I				4I		4I					1B & 2C
Cure Blister	2I			4D	1I		1I				3I	
Dull Appearance	1I				2I		2I					3E & 4Y
Flash - Excessive	4I	2D	2D		3I		3I	6I	1D			5F
Flow Lines	4D	2I	2I	1I	5D		5D			3I		6A
Hard Spots	4D	2D	2D	3D	1D		1D					5H
Injection Too Slow		1I		2I	3I		3I					4K
Mold Staining	4I	5D	5D	6D	3I		3I	7D				1U & 2Y
Mottled Surface Appearance	3D				2D		2D		1I			
Nonfills or Short Shots	4D	3I	3I		2I		2I		1I			5U & 6G
Nozzle Freezes Up	1D				2D		2D					3H
Orange Peel	3I	1I	1I	4D	2I		2I					
Rubbery Parts or Runner	1I				2I		2I					3AA
Screw Does Not Go "Home"		2I	2I		5D		5D		3D			1J, 4W & 6K
Screw Pickup is Erratic					1I	2D	1I					3M & 4G
Screw Pickup is Too Slow					2D	1I	2D					3T
Part Shrinkage - Excessive	2I	1I	1I		3I		3I				5I	4U
Part Shrinkage - Insufficient	1D		2D								4D	3U
Sink Marks	2I	3I	3I	4D					1I			5U
Skin Blisters	3D			1D					2D			4U
Sprue Sticking		3D	2D									1N, 4H & 5X
Sticking in Mold	3I		2D						4D		6I	1P & 5E
Subgates Sticking in Mold												1BB, 2CC & 3DD
Trapped Gas	6D	5D	5D	4D	3D		3D	7D				1EE 2U & 8Z
Warpage When Ejected												1P, 2E, 3R & 4V
Warpage After Cooling	1I			3D	2I		2I				5I	4U, 6S & 7A
Wood Screwing					2D	3D	1I					

Legend: Number = Priority I = Increase D = Decrease Other Letters = Comment ID



Comment Sheet for INJECTION MOLDING Phenolic & Granular Polyester

- A. Increase the size of the gate and if possible relocate it.
- B. Heat inserts to mold temperature before using.
- C. Use a reduced size insert.
- E. Check the condition of the mold plating and re-plate if necessary. If the mold is unplated, polishing and plating may be necessary.
- F. Check the parting line for wear or damage and repair as needed.
- G. Check the screw and barrel for wear and if necessary recondition or replace them.
- H. Check the sprue tip for a "soft bulb" on the end. If it is not soft, one of the following methods can be used to reduce the heat transfer from the mold to the nozzle: put an air blow on the nozzle; use a 1/2" spherical radius nozzle in conjunction with a sprue bushing having a 3/4" spherical radius.
- J. Increase injection time.
- K. If a mold is either too hot or too cold, it will be difficult to inject all of the material into the mold or the cavities will fill slowly. To determine if the mold temperature is causing the problem, vary it by 10°F in both directions and evaluate the results to determine the proper adjustment. Gate or runner maybe too small.
- M. Check to see if there is a problem with the material feeding out of the hopper and into the throat of the press. Material maybe bridging in hopper or feed throat. Check screw and barrel condition for excessive wear.
- N. Make sure that the orifice of the sprue bushing is larger than the orifice of the nozzle. Also, check the sprue bushing and nozzle for damage, wear or polish condition. Repair / replace as needed.
- P. Check the mold for wear or staining. Polish out any mold stains and remove any undercuts that may have been worn into the mold.
- R. Add undercuts to hold the part in the moving half of the mold until it is ready to be ejected.
- S. Use shrink fixtures to hold the parts flat as they cool.
- T. Increase the barrel temperature of only the rear zone. Check back pressure and screw speed.
- U. Check the vents and correct as needed. (See Section #6 "Thermoset Injection Mold Design Tips")
- V. Watch the dropping of the parts from the mold or observe the part picker to see if the parts are being deformed.
- W. Decrease the amount of cushion.
- X. Check the sprue puller design and revise as needed. (See Section #6 "Thermoset Injection Mold Design Tips")
- Y. Polish area of mold that are dull. Review vent location for gas removal.
- Z. Increase the gate and runner size.
- AA. Request from material supplier a version of the material that has a lower hot rigidity or deflection specification.



PLASTICS ENGINEERING COMPANY
SHEBOYGAN, WISCONSIN 53082-0758 U.S.A

3518 LAKESHORE ROAD
POST OFFICE BOX 758
PHONE 920-458-2121
F A X 920-458-1923

- BB. If a new mold, check subgate design and correct as needed.
- CC. If an existing mold, check subgates for damage or wear and repair or replace as needed.
- DD. Request from material supplier a version of the material that has a higher hot rigidity or deflection specification.
- EE. If mold is vacuum vented, check if system is pulling a minimum of 21" Hg in the mold. If not, resolve problem with vacuum system. Vacuum venting has been shown to be more effective when used for processing polyester materials than processing phenolic materials.

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This information is suggested as a guide to those interested in processing Plenco Thermoset molding materials. The information presented is for your evaluation and may or may not be compatible for all mold designs, runner systems, press configurations, and material rheology. Please feel free to call Plenco with any questions about PLENCO molding materials or processing and a Technical Service Representative will assist you.