



## Troubleshooting Guide for INJECTION MOLDING Phenolic & Granular Polyester

### 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
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### PROBLEM

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 shorter insert.
- E. Check the condition of the mold plating and re-plate if necessary. If the mold is unplated, polishing or 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 or insulate the nozzle from the mold with a piece of corrugated cardboard.
- 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.
- M. Check to see if there is a problem with the material feeding out of the hopper and into the throat of the press.
- 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 or wear and repair or 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 feed zone.
- 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 those areas of the mold that tend to trap gas and stain.
- 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.



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- 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.