

INJECTION MOLDING LOW GLOSS VINYLs

TROUBLE SHOOTING GUIDE

Low gloss PVC compounds from Vi-Chem Corporation provide cost effective alternatives to painting vinyl parts. These materials are designed to provide a low gloss, soil resistant finish, without the cost incurred with painting or topcoating. In addition, they meet the current Florida and Arizona Automotive Weathering standards for PVC compounds.

To obtain the optimal appearance on a finished part, care must be exercised in the processing of these products. The following information will help in obtaining the optimum part appearance.

Many of the problems encountered while molding low gloss PVC have simple solutions. Close observation of each unsatisfactory condition will usually point to a logical solution. For example, if burning occurs, pull back the cylinder and take several air shots. Observe the purging to try to determine if the burning is occurring in the cylinder before the material even enters the mold. If it is, look for an indication of the burnt material coming from the nozzle portion or from further back in the cylinder. At this point, take corrective action such as checking the heating controls.

Another example is incomplete filling of the mold. Again, pull back the cylinder and take an air shot. If the purging appears cold and unplasticized, adjusting the mold temperature, pressure, etc. won't improve the situation. Instead, raise the stock temperature to improve the melt

1. Dull Streaks, Flow Lines

- a. Stock temperature too low
- b. Runner too small
- c. Improper gate size and/or location
- d. Mold temperature too low or too high

2. Blister or Bubbles

- a. Stock temperature too high (generally accompanied by decomposition)
- b. Trapped air due to improper venting (often in corners of raised letters)
- c. Material must be dried
- d. Contaminated/mixed materials

3. "Tiger Stripes" (alternating lower and higher gloss regions)

- a. Melt temperature too low
- b. Mold temperature too low
- c. Injection speed too high
- d. Improper mold gloss

4. Incomplete or Short Shots

- a. Insufficient shot size
- b. Insufficient pressure
- c. Stock too cold or cycle too short
- d. Ram forward time too short
- e. Cylinder packing -excessive feed, loss of injection pressure
- f. Gate too small for cavity size
- g. Empty or obstructed material hopper
- h. Check ring not seating properly

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5. Sink or Shrinkage Marks

- Insufficient shot size
- Insufficient injection and/or holding pressure
- Ram forward time too short
- Improper mold gate
- Improper mold design adjacent to thick and thin sections
- Stock temperature too high/too cold

6. Gate Blush, Orange Peel (generally around gates)

- Ram forward time too long
- Injection pressure too high
- Stock temperature too high
- Increase cold slug well
- Gate too small
- Gate area burned in mold

7. Poor Weld Lines

- Stock temperature too low
- Runner too small
- Inadequate cold welds
- Improper gate size or location
- Improve mold design
- Mold too cold
- Inadequate vents

8. Flashing

- Injection pressure too high
- Insufficient clamping pressure
- Stock temperature too high
- Mold faces not parallel
- Too much variation in wall thickness
- Unbalanced runner system
- Vents too deep

9. Burned Spots

- Ram speed too high
- Improper venting
- Stock temperature too high
- Gates too small
- Too many shots in the barrel
- Excessive residence time
- Improper check ring system and nozzle

10. Excessive Shrinkage at Gates

- Insufficient ram forward time
- Improper gating and venting
- Cycle time too short
- Insufficient pack pressure
- Insufficient cushion

11. Warping

- Excessive ram forward time
- Insufficient cooling in mold (too short a cycle)
- Improperly designed knockout or ejectors

12. Stock Discoloration or Breakdown

- Stock temperature too high
- Cycle too long or erratic
Gate too small (frictional heat breakdown)
- Machine not properly purged during start-up or shut-down
- Using too big of a machine will result in excessive residence time
- Improper or malfunctioning check ring system or nozzle
- Improper screw design

Recommendations

Vi-Chem does recommend drying any material used for the final part finish at 150°F for 2 hours (appearance). Also recommended are desiccant dryers and enclosed hoppers.

If normal corrective action doesn't alleviate the problem, just call Vi-Chem Corporation's technical service toll free line at 800-477-8501. ▼