

## **INJECTION MOLDING VINYL**

### **TROUBLE SHOOTING GUIDE**

Many of the problems encountered while molding 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 parison 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 parison appears cold and unplasticized, adjusting the mold temperature, pressure, etc. won't improve the situation. Instead, raise the stock temperature to improve the melt.

The following is a listing of some common occurrences and possible causative factors. In each case, simple corrective action will usually be the cure.

- 1. 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
- 2. Sink or Shrinkage Marks**
  - a. Insufficient shot size
  - b. Insufficient injection and/or holding pressure
  - c. Ram forward time too short
  - d. Improper mold gate
  - e. Improper mold design adjacent to thick and thin sections
  - f. Stock temperature too high
- 3. Gate Blush, Orange Peel (generally around gates)**
  - a. Ram forward time too long
  - b. Injection pressure too high
  - c. Stock temperature too high

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**4. Dull Streaks, Flow Lines**

Stock temperature too low  
Runner too small  
Improper gate size and/or location  
Mold temperature too low or too high

**5. Weld Lines**

Stock temperature too low  
Runner too small  
Inadequate cold welds  
Improper gate size or location  
e. Improve mold design (very long thin sections) f. Mold too cold  
g. Inadequate vents

**6. Flashing**

Injection pressure too high  
Insufficient clamping pressure  
Stock temperature too high  
Mold faces not parallel  
Improper venting (one cavity flashing while another fails to fill)  
Unbalanced runner system

**7. 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

**8. Burned Spots**

- a. Ram speed too high
- b. Improper venting
- c. Stock temperature too high
- d. Gates too small
- e. Too many shots in the barrel
- f. Improper check ring system and nozzle

**9. Excessive Shrinkage at Gates**

- a. Insufficient ram forward time
- b. Improper gating and venting
- c. Cycle time too short

**10. Warping**

- a. Excessive ram forward time
- b. Insufficient cooling in mold (too short a cycle)
- c. Improperly designed knockouts or ejectors

**11. Stock Discoloration or Breakdown**

- a. Stock temperature too high
- b. Cycle too long or erratic
- c. Gate too small (frictional heat breakdown)
- d. Machine not properly purged during start-up or shut-down
- e. Using too big of machine for that job, resulting in too many shots in the barrel or malfunctioning
- f. Improper or malfunctioning check ring system & nozzle

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