



Cycletime Tips – Automotive

Volume 37: Gate Blush

Do poorly designed gates challenge your production department? If so, you are most likely seeing the after effects daily on the production floor. In our travels, our technical representatives are tempted to attenuate for these deficiencies with processing, design, or material changes. As we attempt to understand the issue, we will be reviewing the following in a four part series:

Gate Blush
Jetting

Gate Design vs. Material

Gate Location

Whenever possible, we try to attach the gate to an area of the part that is not visible to the consumer. Due to the fact that a high amount of shear occurs at the gate, we often times experience "blush" marks on the part. This defect produces what appears to be a gloss variation to the naked eye. If the tool designer is forced to attach any portion of the gate system to the cosmetic surface, the molders will pay. In all cases, this will have an impact on profits and we must plan accordingly.

As we cost-out the part to our potential customer, we need to understand that the gate location question needs to be asked. If we attempt to gate on the "A" surface, cycle time and process reliability will be negatively impacted (due to a long fill time). Slow fill rates also produce a more stress-laden part. We commonly attempt to compensate by looking at those "high flowing" material alternatives. This can be effective, but please understand that a mechanical property trade-off will result as molecular weight is reduced.

Another avenue often pursued is to increase the gate size. This is also an effective tool, but this too comes with a cycle time penalty, as the gate requires more time to solidify during the hold phase of the process. Again, cycle estimates during the planning phase will need to be more thoroughly discussed.

As you can see, gate design can be a very complex topic. Some gate types cannot be used if part characteristics won't allow for it (inconsistent wall sections, thick projections, "A" surface locations, etc.). All of the part quality woes to be reviewed could have one or more additional causes as well. Collect as much data as possible before assuming the issue is purely a gating deficiency. Knowing that we don't live in a perfect world, it's important to know the options and attempt to plan for the subsequent inefficiencies. Next month's installment will address what's known as "Jetting" or "Worm-tracking."

Bill Fierens
Ashland Distribution Co.
General Polymers - Automotive
wjfierens@ashland.com

Notice: All precautionary labels and notices should be fully read and understood by all supervisors, personnel and employees before using any product. For additional safety and health information, contact Ashland Distribution Company. Purchaser has the responsibility for determining any applicability of a compliance with federal, state and local laws and/or regulations involving use, particularly in making consumer products.

The information contained herein is correct to the best of our knowledge. The recommendations or suggestions contained in this bulletin are offered as a service to you and are made without guarantee or representation as to results. We suggest that you evaluate these recommendations and suggestions in your own laboratory prior to use. Recognizing that Ashland has received no compensation for providing such information, you hereby waive and Ashland hereby disclaims any and all responsibility for the results obtained, or damages incurred by you, in connection with your use of this information. Freedom to use any patent owned by Ashland or others is not to be inferred from any statement contained herein.

® Registered Trademark of Ashland Inc.
© 2004 Ashland Inc.