



Cycletime Tips - Automotive

Volume 30: Molded Part Discoloration

Many of our customers injection mold or extrude materials that tend to shift in color within the same production run or from run-to-run. Depending upon the application, this color shift can deem the parts unacceptable even though the mechanical properties are unaltered. Here are some ideas to consider as you search out the root cause.

1. Material suppliers typically have an acceptable color tolerance for the raw materials. Often times, the lower cost materials will exhibit a wider range of “acceptable” color shift within the same lot or from lot-to-lot. This should be verified if color is critical for your application.
2. In the case of hygroscopic materials, take the time to reflect on your drying capabilities. Most of the dual desiccant bed dryers out there today will produce a severe momentary temperature spike as the beds rotate. Often times, this can cause a yellowing of the raw material. Dryers with greater than two beds are preferred for critical color match components.
3. Obtaining color plaques from the colorant supplier or compounder with a new lot is a good idea, provided you have the ability to measure color (or at the very least, a light booth). Measuring colorant pellets with a spectrophotometer isn’t a reliable means of verifying color quality.
4. Part gloss and tool texture have an impact on perceived color. Be sure that your tool’s texture is clean and that the texture hasn’t exceeded its useful life. Blasting the tool surface can give you a temporary resolution. Dry-ice blasting is a less abrasive means of cleaning the mold.
5. Most polymers will oxidize over time causing a color change. Even some polymer additives will react with moisture to produce a color change.
6. Your general-purposed screws typically have hang-up areas that will produce random color changes with partially degraded resin. Poor shot utilization or elevated melt temperatures will magnify this issue.
7. Leaving the material in the dryer longer than the prescribed time can result in a shift in yellowness. This is usually seen in a scenario where the drying hopper is too large for the material consumption rate.

As always, please feel free to contact me should you require further assistance.

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