



SES CONSUMER PRODUCTS GROUP

A DIVISION OF STRESS ENGINEERING SERVICES, INC.

www.stress.com/packaging/index.htm

Color Them Carefully

What you need to know about the effect of colorant additives on the structural performance of molded closures.

In Marketing 101 you learned that color is an excellent tool for achieving product differentiation, and nowhere is this trend more evident than on molded closures for plastic bottles. However, tests conducted by Stress Engineering Services (SES) show that some colorants



used in closure molding can dramatically effect the structural performance of plastic. Certain colorants reduce the closure's ductility – its ability to stretch – during high speed capping. The result is cracking while the cap is being applied.



Avoiding a Closure Failure Nightmare

Identical closure designs, molded using the same plastic but blended with different colorants can exhibit widely varying performance. If these differences are not dealt with during a new package's design phase, closure failures can occur causing delays in product launch or worse, excessively high levels of consumer complaints.

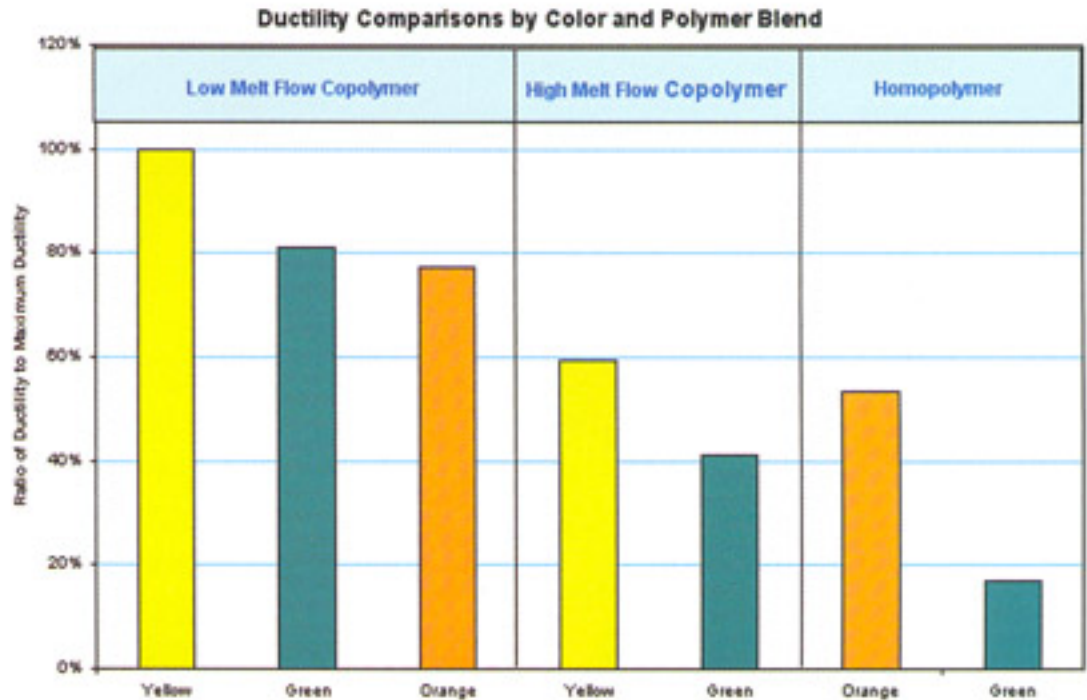


During assembly of the cap onto the bottle, the Tamper Evident (TE) band must stretch as it is forced over the retaining feature on the bottle. If the ductility of the cap material is too low, one of two kinds of failures can occur; either 1) the small bridges that attach the TE band to the cap will break, or 2) the TE band itself will split as it is being applied.



Ductility Comparison Chart by Color & Polymer Blend

This chart shows how dramatic the variation in ductility can be as a function of material type and color. Orange, yellow and green caps taken from commercially available packages were evaluated. All the samples tested were compared to the best performing material/colorant combination for that test.



Design Analysis & Material Testing Are Essential

The key to avoiding ductility problems is to conduct the appropriate closure design analyses and material testing while still in the design phase of the package development, before tooling or sourcing commitments are made. With this approach you can identify the best design and plastic/colorant material combination for your package before a single closure is molded.

SES can help you adopt a package development process that yields superior results, faster and at a lower cost.

Call us today

Visit our web site at www.stress.com/packaging/index.htm

Cincinnati 513-336-6701 • Houston 281-955-2900 • Atlanta 770-449-7887
 Chicago 847-692-6310 • Rocky Mountain Region 303-530-0525
 West Coast 800-935-8468 • New Orleans 504-828-4066