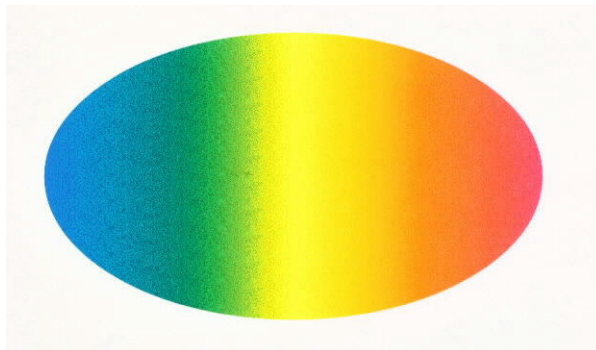


Bead Brite Research

Technical Bulletin And Starting Formulations

Outdoor Properties Testing of Bead Brite Glass for Vinyl Finishes



Temperature Test 1

Outdoor temperature testing was done at Stratford Laboratories Englewood. Testing was done at 12:00 noon, 95 degrees F, with no wind. Standard vinyl using a polyester/urethane top finish was compared to the same vinyl and top finish with 5% glass IB18 beads. Temperature readings were taken at the surface using various colored vinyl. All showed improvement with black showing the most improvement. The black standard vinyl reached 142 degrees F. With the 5% IB18, the vinyl reached 121 degrees F. 142 degrees is too hot to touch, however 121 degrees vinyl feels warm but is not unbearable.

Temperature Test 2

At Uniroyal Naugahyde both vinyls were placed in an oven at 140 degrees F. Three technicians and one chemist all felt the vinyls after removal from the oven. All agreed that the vinyl with 5% IB18 felt much cooler. It is believed that the ceramic IB18 must be a better insulator than the standard vinyl top finish. After being in an oven and reaching the same temperature the glass modified vinyl transfers heat much slower, therefore feeling cooler.

U.V. Reflection

In Zenon arc testing up to 8 full G.M. cycles sun degradation simulation was run. IB18 bead and crushed glass were used at a number of different loadings (percentages) in finishes on auto interior products. Using 5% loadings or more compared to a control material without glass, very large gains in life expectancy were seen. We observed from 2 to 5 times life expectancy improvements with the glass. When the glass is mixed with equal amounts of pearl pigments, improvements were seen larger. No change or aging were seen after 8 full G.M. cycles. We reran the test to make sure we had not made any mistakes. Glass gives us large improvements in outdoor weathering. These tested coatings are only 0.2 mils thick. We feel even greater improvements can be made with coatings that approach 1.0 mils thick.

It is the opinion of this chemist that although the above work was done primarily in polyester/urethane systems for automotive applications, these glass products can be used for performance enhancement of gel coats, marine finishes and architectural coatings with the same or even better results.

**Paul Roe
Chemist and Color Designer
Bead Brite Research**

Processing Questions:

Is the material made on a extruder with sheet die, or plastisol casting line, or a calender, if there is resistance to answer?

Material Question:

What is the total plasticizer content in parts per hundred?

Answers:

The materials CMI and Uniroyal make are plastisol cast coated and have 65 to 90 parts plasticizer. It has a nice soft feel. The softer products are usually weaker in physical properties like abrasion. Seating material can also be made with calendaring and extrusion. Calendaring usually uses 40 to 70 parts plasticizer and lots of filler. It is cheaper to make upholstery this way but the seating feel harder and cheaper. Extrusion is usually used to make ridged vinyl with little or no plasticizer. Like PVC pipe, it could be used to make soft products but for some reason is seldom used much for this. With glass in the top finish, plastisol coated products can have both great strength and great softness.

High Abrasion Resistance Glass Coating for Vinyl

HIGH GLOSS

Jameson 8784	100 Parts
Mini Beads	1 to 3 Parts

MEDIUM GLOSS

Jameson 8784	100 Parts
IB18	3 to 6 Parts
CG13 (used to correct gloss)	1 to 3 Parts
Teflon Powder	1 to 3 Parts

LOW GLASS

Jameson 8784	100 Parts
IB18	3 to 7 Parts
CG13 (lowers gloss)	2 to 7 Parts
Teflon Powder	1 to 3 Parts

Use 65 to 90 line Gravure shells.
Teflon powder Shamrock Chemical SST-3

Urethane Coating for Vinyl made by:

CF Jameson
72 S. Kimball Street
Haverhill, MA 01835
978-374-4731

NOTE: Formulas can be used in any Urethane

Color correct is printed on vinyl (for appearance)

Before Jameson / Glass top finish (for gloss control and mar resistance)

COLOR CORRECT FINISH

92 parts 12% Vinyl Acrylic Solvent Coating Base Finish

5 to 10 parts Pearlescent Pigment

1 to 2 parts Mirrors

1 Part Mini Beads

100 Parts Total