**Harmonized Blue Dye Test**
**For**
**Printed, Finished Foodservice Products**

## Purpose

The purpose of this test is to use blue dye to reveal surface defects on coated paper (and polymer?) foodservice packaging products, and thus ensure the uniformity and consistency of coating coverage on such products.

## Materials

- Blue Dye Solution
  - Methylene Blue (Malachite Green may be substituted) .25%
  - Triton x-100 .10%
  - Distilled water 99.65%
  - Water 3.74 liters
  - Triton x-45 93.0 grams
  - Malachite Green Oxlate Crystals 8.75 grams
- Graduated Cylinder
- Large Mixing Vessel
- Covered Storage Container
- Blotter Stock or Paper Towel
- Sponge Brush
- Stirring Rod
- Dipper
- Stopwatch
- Data Collection Form
- Finished, Printed Coated–paper Foodservice Products

## Specimen Preparation

Obtain 3 samples from each production machine (or sample lot) for testing. Label the samples for variable to be tested. Specimens do not need to be preconditioned prior to testing.

## Testing Procedure

- Prepare and mix blue dye solution in large mixing vessel.
- Transfer the dye solution to the covered storage container.
- Set three specimens/samples on blotter stock on a flat surface.
- Using dipper, (sponge brush, paper towel) apply 3-mm blue dye solution to the entire surface of the first specimen and immediately start stopwatch.
- Pour dye into the second specimen at 20 seconds as indicated on the stopwatch, and pour dye into the third specimen at 40 seconds on the stopwatch.

- Let the blue dye sit on the surface of the specimens for 15-20 seconds (one minute).
- At the end of the test period, pour dye from the specimen back into the dye container and immediately rinse the specimen with (lukewarm, tepid) tap water and set specimen on blotter stock to dry.
- Observe blotter stock for any soak-through stains from the specimens.
- After the specimens have dried, turn them over and examine them for surface defects such as pinholes, cracking and other voids. (penetration at die scoring marks is normal and acceptable. Severe cracking is not acceptable. The dye will penetrate the cracks showing the severity of the cracking

**Reporting**

Report the rating of dye stain failure as follows:

- Rating 1 = None (no pinholes)
- Rating 2 = Slight (1-5 pinholes)
- Rating 3 = Few (6-10 pinholes)
- Rating 4 = Moderate (11-50 pinholes)
- Rating 5 = Great (50+ pinholes)

*Questions? Please send an email to fpi@fpi.org.*