

Printing on 100% Polyester and Polyester Performance Fabrics

The Problem:

Dye migration or bleeding occurs on polyester garments when the Disperse dye in polyester fiber is heated to temperatures in excess of 265 degrees F. causing it to sublime. (The dye actually changes from a solid to a gas.) When plastisol inks are heated at temperatures higher than 265 degrees F., (Note: Most plastisol ink is cured at 320 degrees F.) these dyes are released into the ink causing a discoloration of the plastisol ink. Higher temperatures cause more severe migration so avoid curing temperatures above 320 degrees F. or 160 C.

Example: A red 100% polyester shirt is printed and cured at 320 degrees F. with a MH (non-low bleed / high opacity) White ink. The white ink begins to turn pink. Note that the migration may not become noticeable for 24 to 48 hours depending on the ink deposit or the quality of the dye used in the garment.

The Solution:

- Print with a quality low bleed (ML Series) ink as an under base when printing on 100% polyester or polyester performance textiles. Rutland's ML9749 Jersey White and ML9051 Dyno White are very effective options when printing on polyester. The type and color of the dyes in the garment can allow one product to work better than the other so testing new fabrics, new colors, and new lots is highly recommended.

Test Procedure:

- Test for migration by printing the fabric with enough white to insure complete coverage. This is normally printed through at least a 110 mc. /In. or 43 mc. / Cm. Print – flash – Print may be necessary to insure enough ink for 100% coverage.
- Cure the white ink in a dryer that is calibrated to insure that a temperature of 320 degrees F. or 160 degrees C. is achieved on the garment. Note: This should not be confused with a dryer setting of 320 degrees F. or 160 degrees C., but a measured temperature on the garment.
- Cut the print in ½. Place ½ of the print in a convection oven or a warm place to achieve 125 degrees F. or 52 degrees C. for 15 hours. This accelerated heat aging test will simulate several weeks of normal aging.
- Place the heat aged sample beside the non-heat aged sample to compare the differences in bleed.

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