



## TECHNICAL SERVICE REPORT

# Screen Printing 101

### 1. What causes the ink to wash out when laundered?

The most common reason for wash-out is undercure. The ink film must reach the temperature recommended by the ink manufacturer in order to achieve a total cure. Most plastisol inks must reach a temperature of 320°F (160°C). It is important that the ink film itself reaches that temperature. Dryer readouts and temperature strip readings from the garment do not ensure that the ink is reaching the required temperature. Refer to the Dryer Mapping and Ink Testing sections in the Wilflex User's Manual for further information.

### 2. What causes the ink to crack when laundered?

Again, the most common culprit is undercuring. Wash-out usually occurs with thin deposits of ink, whereas cracking is common on thick undercured ink deposits. Test the ink film to make sure it is reaching the cure temperature recommended by the ink manufacturer.

### 3. What causes the ink to fade when laundered?

Ink wash-out can give the appearance of a fade, but the most common cause of fading is fibrillation. This condition is caused by the shirt fibers pushing through a thin ink deposit, creating an illusion of fading. Thicker deposits of ink or a clear overprint like SuperGuard HT will reduce the effects of fibrillation.

### 4. Why doesn't the ink adhere to the garment?

In the case of total separation of ink from the substrate, two reasons are most prevalent: undercure and incorrect ink selection. Different substrates require different ink or ink preparation in order to ensure good adhesion. Refer to the Recommended Substrates section of the ink's Product Information Bulletin for more information.

### 5. How do I test my dryer?

The ultimate goal of your dryer is to bring the ink film to the cure temperature recommended by the ink manufacturer. With this in mind, the best way to test your dryer is to take a temperature reading of the ink itself, either by using a Thermoprobe with the crosshairs placed in the ink or temperature strips placed in the wet ink before it passes through the dryer. Refer to the Dryer Mapping section of the Wilflex User's Manual for more information.

### 6. Why is the shirt color bleeding into my ink?

Two common reasons for bleeding are poor ink selection and cure problems. Refer to the PIB's Recommended Substrates section to ensure correct ink selection. When a white ink is fully cured correctly, the print should appear white when it comes out of the dryer,

and it should change little during the following weeks. If the garment shows an immediate bleed, chances are that the dryer is too hot or the garment is staying in the heat chamber for too long. If the garment bleeds days or weeks after it comes out of the dryer, chances are that the dryer was too cool or the conveyor belt was too fast. The best solution is to set your dryer belt to run as quickly as possible, while achieving the full cure temperature required by the ink while it is in the heat chamber. Again, mapping your dryer is the best defense for this problem.

### **7. Do I need an adhesive additive for polyester garments?**

The answer is NO. Plastisol ink will adhere to polyester substrates without the aid of catalysts or additives. Introduction of catalysts or additives will reduce the bleed-resistance of the ink. Polyester garments will bleed unless printed with pure bleed-resistant inks. Be sure to check the label on the garment before you proceed with the print. Many substrates look similar but they require different print parameters.

### **8. Do I need an adhesive additive for nylon substrates?**

In most cases, the answer is YES. A catalyst like Hugger catalyst must be added to the plastisol to ensure a stronger adhesion to the substrate. In the case of woven nylon bags, Wilflex offers One-Step Nylon ink. This line of inks does not require a catalyst when printed on nylon substrates with a heavy texture. However, these materials may be treated for waterproofing, in which case the coating must be removed and a catalyst added to the ink. Be sure to check the label on the garment before you proceed with the print. Many substrates look similar but require different print parameters.

### **9. What can I do to improve opacity?**

Ink selection is very important. Be sure that the product you choose is listed as an opaque ink. However, selecting an opaque ink will not ensure a totally opaque print. Factors such as print parameters and screen preparation contribute to achieving maximum opacity. When printed correctly, thicker stencils on screens will allow greater amounts of ink to be laid on the surface of the garment. The most effective way to print is with a hard flood that fills the stencil space completely and a low-pressure print stroke with a hard, square squeegee. This print method allows the ink to stay on the surface of the substrate. Opacity is greatly diminished if the ink is driven into the substrate.

### **10. Are there different types of inks for different types of substrates?**

In a word, YES. Polyester fabrics need bleed-resistance, nylon fabrics need better adhesion qualities, Lycra needs an ink with great elongation, etc. Though it would be nice to create a do-all ink, the properties of the different substrates make it impossible to create such a product. You must know your substrate, and then research the ink line you would like to use. All Wilflex products are outlined in PIBs found in the Textile User's Manual, which is available from your distributor.

PolyOne © Corporation  
PolyOne © Corporation

The logo for PolyOne, featuring the word "PolyOne" in a stylized, italicized serif font with a horizontal line underneath.

The information contained herein is believed to be reliable, but no representations, guarantees, or warranties of any kind are made as to its accuracy, suitability for particular applications, or the results to be obtained therefrom. The information is based on laboratory work with small-scale equipment and does not necessarily indicate end-product performance. Because of the variations in methods, conditions, and equipment used commercially in processing these materials, no warranties or guarantees are made as to the suitability of the products for the application disclosed. Full-scale testing and end-product performance are the responsibility of the user. PolyOne shall not be liable for and the customer assumes all risk and liability of any use or handling of any material beyond PolyOne's direct control. POLYONE MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Nothing contained herein is to be considered as permission, recommendation, nor as an inducement to practice any patented invention without permission of the patent owner.