

# Sportswear Transfer System

## What are Sportswear Transfers?

Sportswear Transfers are an indirect printing method, specifically designed for specialist transfer applications where flexible soft transfers are required onto sports garments (e.g. Football Shirts). Rather than printing directly onto the garment, inks are printed onto specialised transfer paper, then 'transferred' with a heat press onto the garment. For some applications excellent resistance to dye bleed (i.e. sublimated garments) can be achieved.

The production of Sportswear Transfers combines the use of two distinct ink systems: a solvent drying ink and plastisol adhesives. Solvent inks are capable of air drying, although increased production speed can be obtained by Jet / IR drying at elevated temperatures. The plastisol adhesives require setting under elevated temperatures.

## Printing Guidelines

### Paper

Release coated paper is required. The coating on the transfer sheets helps prevent the ink from adhering to the paper. The gloss levels and coating on the paper help determine the finish of the resultant print.

### Colours (Inks)

The recommended ink system is Nylotex NX. Maximum adhesion and wash-fastness is achieved by catalysing the ink with Nylobag Catalyst. Typically levels of catalyst added are 5%. Additions of up to 1% Flow Additive can also be added to improve printability.

**Meshes:** Typical recommendation for printing Nylotex colours is through mesh counts 34-62. The best stencil recommendation for printing Nylotex is Dirasol SuperTex Emulsion.

**Drying:** Inks are dried either by air drying for 24 hours or by force drying (Jet / IR at up to 80°C). **Inks should be completely dried before the adhesive is applied.** The prints should not be exposed to temperature in excess of 80°C as the ink systems fully cross link. This cross linking leads to poor inter-coat adhesion and resultant poor wash-fastness.

**Opacity:** Maximum opacity is achieved by backing-up with Nylotex White NX021. For an additional increase in opacity 1% addition of Hold Out Additive may be used.

Increasing the viscosity of the ink, thickens the ink film, resulting in a higher opacity print.

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## Dye Bleed Resistance

Use of a specific metallic silver allows the creation of a unique dye blocking layer. VVX44 Nylobag Silver is a two-pack solvent-based ink, which when suitably cured creates a barrier between the adhesive and the colours. This foil like barrier reduces the occurrence of dye bleed.

Typically mesh counts of 43-62 threads per cm should be used.

## Adhesive

Recommended adhesives are MultiTran XM Plastisol Adhesives. Incorporating plastisol technology allows greater production variety, white and clear adhesives are available.

Recommended meshes are No. 43-62, with the adhesive set at 100-110°C for 10-15 seconds.

## Transfer

Transferring is performed with a heat press, typically set at 175-190°C. The garment is placed on the lower platen of the heat press and the transfer is placed on top of the garment, print side down. The press is closed (typically at pressures of 60 psi) and left for 10-15 seconds. When the print is fully cooled, the transfer paper is carefully peeled from the garment, leaving the print in place.

Transfers will give good resistance to multiple domestic washing, I.S.O. Test No.3 (60°C). **Transfers are not suitable for use on Nylon.**

## Troubleshooting

Problem	Reason / Solution
Ink does not release from the paper.	a. Insufficient transfer dwell time. Increase dryer temperature and dwell time. b. Incorrect side of transfer paper being used.
Poor registration.	a. Paper shrinkage. Pre-shrink paper prior to printing by passing through dryer, maintain paper temperature by placing in warm oven.
Poor adhesion to garment.	a. Insufficient transfer pressure. b. Insufficient transfer temperature. c. Insufficient transfer dwell time d. Adhesive layer not fully cured before transfer. e. Adhesive level too low, use coarser mesh.
Poor adhesion between ink layers.	a. Ink film not fully dried. Increase drying period between ink layers before backing up with adhesive. b. Ink film over dried. Reduce drying period.
'Bubbling' or flat areas in transferred prints.	a. Solvent trapped in ink film.

## Tips

1. To prevent Nylotex ink drying in the screen under extreme hot shop conditions, use up to 10% Nylo Retarder.
2. To ease removal of ink after production, the coating of a layer of Serigel helps prevent the ink film from drying in the mesh, prior to Ink Stain and Stencil Removal.
3. For heat sensitive materials, the Sportswear Transfer System will transfer with limited adhesion down to 150°C, for maximum adhesion transfer should take place at 170-190°C for 10-15 seconds.
4. Test transfers for wash-fastness 24 hours after application, to ensure full cross-linking has occurred.

## Summary

Using the Sportswear Transfer System can be of enormous benefit, both to the wash-fastness of garments, the ease of use, and the speed of production. It should be remembered, however, as with all printing techniques, that it requires testing and practice to achieve the best results.