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World Leader in Narrow Web Sublimation Printing

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Dye Sublimation

Overview

Trans-Tex LLC prints narrow web fabric using dye sublimation, a printing process that permanently decorates polyester webbing (including ribbon and elastic) with artwork specified by our customer.

In general, dye sublimation has two steps. First, we print a reverse image of customer art onto transfer paper using “inks” that are really polyester dye molecules suspended in a water soluble base. Second, we use a rotary drum press to transfer the image onto customer specified polyester webbing.

Art

As a custom printer, our process begins with art provided by our customer. Our goal is to reproduce customer art faithfully, taking into account the physical constraints of our production process.

We have published parameters for submitted art, which is available on a separate tear sheet or on our web site. Our art department evaluates art as soon as we receive it. We always need a customer contact person who can answer questions and discuss production issues about the submitted art.

Common discussion points about provided art often relate to “dot gain” inherent in the dye sublimation production process. From time to time, we have to “open up” areas that are likely to fill in when dyes are applied to filaments of the yarn. This is especially common when printing copyright or trademark symbols or using white lettering.

Printing Transfer Paper

The steps required to prepare art for production depend on the printing process we will utilize for the job. We have capabilities for printing transfer paper using either flexographic presses or digital ink jet printers. We evaluate each job to determine which process would be most cost effective given the complexity and size of the art, volume of webbing or elastic to be printed, and due date for the job.

For jobs that will be printed on our flexographic presses, our artists define a repeating pattern within the art, make color separations and printing plates. Our press operators use Mark Andy presses to print transfer paper. Jobs run on our flexographic presses can be printed using four color process, four color process with up to two additional spot colors, or up to six spot colors.

When using our Mimaki digital presses, there is less processing and preparation required because we do not need to create color separations or printing plates. However, the digital presses run more slowly and use more expensive paper and ink. Therefore, it is usually more cost-effective to print short-run jobs on our digital presses than on our flexographic presses.

Whether transfer paper is printed on our flexographic or digital presses, it is the medium that we use to print customer artwork onto fabric.

Decorating Fabric

Our process of transferring the desired image from the transfer paper to the fabric is called dye sublimation. Sublimation is a chemical bonding process in which the dye molecules on the transfer paper attach to the polymer chains that make up the fabric. Accordingly, the substrate must be a polymer, most often polyester.

One major advantage of dye sublimation over all other methods of decorating fabric is the permanence resulting from the chemical bonding process. The art actually becomes part of the fabric. Although exposure to the elements could cause the fabric to fade over time, we can counteract those effects by applying anti-UV and anti-moisture coatings to webbing that is intended for prolonged outdoor use.

Shrinkage and Waste

In order to achieve the transfer of art from paper to fabric, both the transfer paper and the fabric are exposed to heat and pressure for a period of time in our rotary heat transfer presses. Most webbing will shrink when exposed to the required temperatures. This is an important consideration for any customer that provides us with fabric to be printed.

We have evaluated the rate of shrinkage for all webbing that we regularly print. When working with a new fabric, we will test the webbing for shrink rate.

In addition to shrinkage, there is a certain amount of waste inherent in our transfer process. The waste is created when lining up the bands of webbing with the pattern on the transfer paper at the beginning of each strand of webbing or ribbon, and whenever there is a splice in the webbing or ribbon. There is also some waste at the point where the transfer paper runs off between rolls.

Taken together, normal shrinkage and waste can be as high as 10% for some fabrics. Additionally, some customers may choose to engineer waste into their process in order to obtain a desired repeating pattern and effect when cut into pieces.

So considering the effect of shrinkage and waste, 100 yards of supplied fabric are unlikely to produce 100 yards of printed goods. If a customer is supplying us with webbing to be printed, we should discuss the effect of shrinkage and waste and mutually determine how many yards of unprinted fabric should be sent to Trans-Text for processing.

