

# Dye Sublimation

Dye sublimation is a transfer process that produces a full-color, photo-quality reproduction of a digital image using ink that turns into gas when heat is applied. The gas permeates, or dyes, the substrate – becoming an inherent part of whatever material it's applied to. Dye sublimation is a tremendously versatile technology with applications in apparel, awards, promotional products, signage and much more.

## DYE SUBLIMATION PROCESS

### IMAGE DESIGN:

Create a customized graphic using professional graphics software. Sublimation images are capable of rendering millions of colors in high resolution to produce photo-quality images as well as vector graphics and text.

### PRINTING:

Print your customized graphic to an inkjet printer using sublimation inks on sublimation-compatible paper.

### DYEING:

Place the printed image face down on the sublimation-ready surface, such as a 100% polyester T-shirt. You may wish to secure or "tack" the paper to the item with repositionable adhesive spray, found at craft and hardware stores. Place the product and sublimation print under a heat press, following manufacturer directions for temperature and time. (Usually, recommended temperature for T-shirts is around 400° F for about 50 seconds at 30-40 PSI.) Strive to achieve continuous contact between the heated platen and the sublimation transfer. When time is up, use heat protective gloves to remove the transfer. When the item has cooled, it's ready to wear.



## DYE SUBLIMATION EQUIPMENT AND SUPPLIES

- **COMPUTER:** A desktop or laptop computer with graphics software such as Adobe Creative Suite. Wide format systems may require RIP software, a printer driver that can be calibrated for color and quality for your specific print set-up.
- **DYE SUBLIMATION-COMPATIBLE INKJET PRINTER AND INK:** Choose from a growing number of dye sublimation printers, many from the same manufacturers that produce home-office inkjet printers.
- **HEAT PRESS:** Clamshell or swing-away presses with a platen large enough for apparel items.
- **SUBSTRATE:** Only 100% polyester garments such as the GILDAN® PERFORMANCE™ 42000 and 42400 T-shirt families are suitable for dye sublimation. White or very light-colored garments are also essential, since any background color will affect the appearance of the image
- **DESIGN:** Generally, high-resolution JPEG art produces the sharpest, most vibrant images.



# Heat Transfer

## glitter and rhinestones

Adding special effects such as glitter and rhinestones lets you create dazzling designs that grab attention for your customers - and your business. You can achieve this form of head-turning decoration using heat transfer, which is ideal for quick turn-around times and small quantities, including one-off items.

### HEAT TRANSFER PROCESS

#### IMAGE DESIGN:

Create a customized graphic using professional graphics software, incorporating any of hundreds of ready-made rhinestone designs, from lettering to licensed sports team logos. When the design is complete, flip it horizontally to create a reverse image. This can also be created with a screen print process and is not limited to digital software. The preparation cost to print a transfer is the same as for a classic screen print (film, screen, ink). The advantage of a transfer is that you can print easily on a manual press, print a few more transfers if you need on stock for later use, and create transfers for specialty garments such as polyester and polyester blends and/or for special positions where a machine cannot work.

#### TRANSFER IMAGE PREP:

Print your reversed digital image onto transfer paper using an inkjet printer and heat transfer-compatible ink. Transfer images, including graphics utilizing glitter ink, can also be screen printed onto transfer paper. Special heat-resistant, self-adhering rhinestones are available on special transfer paper, ready for application.

#### PRINTING:

Place your garment on a platen to keep it wrinkle-free, and heat press for three to five seconds to remove moisture and wrinkles. (If combining rhinestones and transfer, use a cover sheet to protect the entire print area, so that ink will not stick to the upper platen.) Remove the rhinestone or glitter transfer from its backing and position carefully on the shirt. Follow manufacturer's application instructions - typically using medium-firm pressure at around 350°F for 10 to 12 seconds for rhinestones, and 15 seconds for glitter.



### RHINESTONE & GLITTER HEAT TRANSFER EQUIPMENT & SUPPLIES

- **Computer with graphics software**, e.g., *Adobe Creative Suite*
- **Heat transfer-compatible inkjet printer, ink and transfer paper; glitter and rhinestone transfer**
- **Heat press**
- **Substrate:** Heat transfer is suitable for cotton, cotton blend and polyester garments. Light colors are preferable, but dark colors can be successfully printed with proper preparation.



# Screen Printing on 100% Polyester

Screen printing (also known as silk screening) is a printing technique that uses stencils and ink to create designs on fabric. Although it requires significantly more set-up time than digital printing or heat transfer, screen printing is the most economical method for producing large quantities. Commonly used on cotton or cotton blend apparel, screen printing can be done on 100% polyester using special inks and additives.

## SCREEN PRINTING PROCESS

Screen printing on 100% polyester presents two unique challenges.

The first is dye migration - ink discoloration that occurs when exposure to high temperatures causes dye to "migrate" from the garment into the screen print ink. To prevent this problem, use highly opaque ink or print a base layer of a barrier material, and cure at the lowest recommended temperature.

The second challenge is shrinkage. To avoid this, careful handling is essential when applying heat to polyester fabric, which can shrink or burn at high temperatures.



## FOR SUCCESSFUL SCREEN PRINTING ON 100% POLYESTER, FOLLOW THESE RECOMMENDATIONS:

- Work with your ink supplier to select the correct ink for your project - usually a one-step nylon ink or an opaque plastisol ink with a nylon hardener. (The hardener will shorten the life of the ink, however, so prepare only as much ink as you will use in an hour of production.)
- When preparing screens, use a high-tension mesh with thin thread. Use consistent off-contact printing (leaving space between the screen and the substrate), which allows a uniform application of ink to the shirt's surface.
- Polyester fabrics tend not to adhere to the pallet as securely as cotton fabrics, therefore be cautious not to shift the garment during printing. Apply ink with a single stroke, which is sufficient to achieve good coverage. In addition, use a direct screen print only if you have a one-color print, or print two colors only if they do not butt up against one another.
- Follow ink manufacturer's directions for curing time and temperature. Generally, polyester garments are cured at temperatures under 320°F. To achieve this, you may need to use a catalyst in your ink to reduce the curing temperature.
- Before going into production, allow a printed shirt to rest overnight and wash it to ensure that you have consistent coverage, good adhesion and no signs of dye migration.



# Screen Printing

Screen printing (also known as silk screening) is a printing technique that uses stencils and ink to create designs on fabric. Although it requires significantly more set-up time than digital printing or heat transfer, screen printing remains popular because it is the most economical method for producing large quantities.

## SCREEN PRINTING PROCESS

Screen printing has a steep learning curve that requires knowledge of everything from making screens and press set-up to actual printing.



### IMAGE DESIGN:

Create a customized graphic using professional graphics software. The graphic must be separated by color, with each color printed on its own clear film positive. Fewer colors mean a simpler set-up, resulting in lower costs.



### SCREEN MAKING:

Following a process that requires the use of a darkroom and photographic chemicals, a stencil, known as a screen, is made for each color in the graphic image.



### PRINTING:

Each screen must be inserted and carefully aligned in the printing press to ensure that adjacent colors in the image are correctly aligned. The printing press applies ink to each screen, then uses pressure to squeeze the ink through the screen's open mesh areas and onto the shirt. There are three common types of screen printing presses: flat-bed; cylinder; and rotary, which is the most widely used.



### DRYING:

After all colors are printed, the shirt is placed in a drying chamber at around 350°F for about 40 seconds to cure the screen print ink. Once cooled, the shirt is ready to wear.