Discharging Printing Techniques

What is discharging?

Discharging is a chemical reaction that destroys the ability of selected dyes to reflect color. This reaction takes place with Union discharge inks when the print reaches 320 degrees Fahrenheit for a minimum of 90 seconds.

What Shirts Are Dischargeable?

Only reactive dyes used on 100% cotton, natural fibers are dischargeable. In the early stages of discharge printing Fruit of the Loom, Gildan, Anvil and Lee were the only major garment manufactures stating some color of their 100% cotton T-shirts discharged well.

Why Use Plastisol Discharge Mixture over Water base Discharge?

Most textile printers are comfortable with plastisols and are familiar with the techniques of how to use them. Although a 100% water base discharge print yields the ultimate in softness, breath ability and absorbency, prints produced by overprinting Union plastisols wet on wet through fine meshes over a plastisol discharge under base come very close without the problems of drying in the screen and the pot life associated with straight water base discharge inks.

What are the advantages of using a discharge under base versus a plastisol under base?

The discharge process will produce softer feeling prints as well as bright colors on dark garments. The printer will also increase his production output because the absorbency of a discharge under base into the shirt allows the printer to print each subsequent color on top of the discharge under base wet on wet. To eliminate pick-up on screens overprinted onto the discharge under base printers may elect to flash cure the under base print. However, if printers decide to flash cure it negates part of the increased production advantages of this process.

Re-died garments from shirt manufactures will not discharge. Colors purple and royal will not discharge because they are not reactive dies.

Are there special screen-making considerations?

Water-proof (not simply water-resistant) stencils are required for both the under base

screen and each subsequent screen. Contact your emulsion supplier for his best choice to make waterproof screens that will resist breaking down during production when performing this process.

How do printing discharge inks differ from plastisol inks?

Printing discharge inks is directly opposite that of printing regular plastisol inks. Adjust your technique so the ink is driven into the fabric deep enough to destroy the garment color beyond visible depth and to avoid having undischarged sides of individual threads showing when the fabric is stretched. This is usually achieved with extra heavy squeegee pressure and a fast squeegee stroke. If you are using the discharge ink as an under base plastisols may then be printed wet on wet on top of the discharge under base. Printers have successfully flash cured the DSPCH-1003 in order to eliminate picking up of the under base print on subsequent screens.

Curing of Print

A minimum of 90 seconds in a well ventilated oven where the entire ink film temperature reaches 320 degrees Fahrenheit is required to perform the discharge processes. This is ample time to perform not only the discharge process but also if you are using the discharge as an under base for plastisol colors it will also cure the plastisol as well. Caution: This is a critical phase of the discharge process. If your oven does not allow the garment to remain in the heat chamber for at least 90 seconds it could affect the results of the finished print.

Tips for Printing Plasticharge Inks:

Mesh counts 140 up to 200 will work recommended mesh is 160.

Mixing colors 50% Plastisol ink (Union) Padm maxopake series ½ DSPCH-9070 Plasticharge Additive add 6% ZFS Powder mix well and print this will give you 6 to 8 hours. Example: 500 grams PADM 2044 + 500 grams DSPCH-9070 + 60 grams ZFS.

Printing 1003 Bright Discharge White weight of white ink add 6% ZFS. ZFS agent all products must have the addition of ZFS powder to work.

Mixing color red 70% padm bright red, 30% DSPCH-9070 additive 4% ZFS powder. This will give you a bright red color.

Additive DSPCH-9070 weight of additive then add 6% ZFS this will turn shirt back to natural color of cotton.