

# DIRECT PRINTING NYLON JACKETS



*The Basics*

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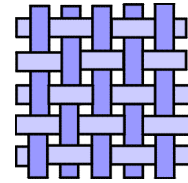
# The Nylon Jacket

## *Types of Nylon*

There are three basic weaves that are commonly used to manufacture nylon jackets or outerwear. These are Taffeta, Satin and Oxford.

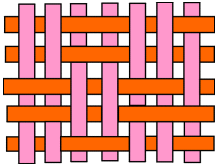
### **Taffeta**

A plain weave type of fabric. This is the basic form of weaving. The yarns alternately pass over and under each other. This type of woven fabric is very stable because of the many inter-weavings. Taffeta nylon, because of its finer weave, imparts an excellent balance of surface and smoothness. This provides for good ink adhesion and edge definition.



Some of the products manufactured from this type of fabric include windbreaker jackets, lined jackets, umbrellas, windsocks, light weight tote bags, etc.

### **Oxford**



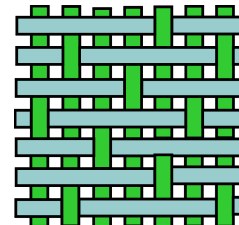
“Oxford” nylon is actually a name given to the basket weave of two threads over and two threads under. A larger diameter thread than the thread for taffeta is used. A harsher hand and rough surface are the result of this type of weave (often found in men’s dress shirts).

The rougher surface requires a thicker film of ink. The surface of the fabric may also cause a sawtooth edge to the print.

A partial list of products manufactured from this fabric are athletic jackets, banners, flags, tote bags and brief cases.

### **Satin**

The satin weave produces a very lustrous fabric. This is the fabric used for Nylon Satin Jackets. For the screen printer, satin fabric provides a very smooth surface on which to print. Opacity and edge definition is easily achieved on this fabric.



It seems as though the majority of use for this fabric is for jackets, but it is also occasionally used for banners and other nylon products.

## *Jacket Linings*

Jackets come in four basic linings. These are shell, kasha, fleece and quilt.

### **Shell**

The term shell means that the jacket is one layer of nylon (no lining). This is the lightweight style of jacket sometimes called a windbreaker.

### **Kasha**

Kasha lining is also called flannel. Kasha is a type of flannel made out of polyester.

### **Fleece**

Fleece is a man made sheering or lambswool type of lining.

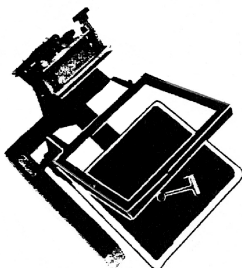
### **Quilt**

Quilt is a two layered fabric consisting of polyester batting (or fluff) with a nylon or polyester acetate layer. It is stitched in an assorted variety of patterns (i.e. squares or diamonds).

## *Required Printing Equipment*

Using the correct equipment is fundamental for achieving the best printing results. The “best” print requires using the correct equipment, the correct ink and the best available nylon jacket.

### **Hold-Down**



The jacket hold-down is a very important piece of equipment, as it must hold the nylon fabric securely. Because most jackets printed are multiple layer garments (lined), just putting adhesive on the platen will not hold the top layer of the garment in place.

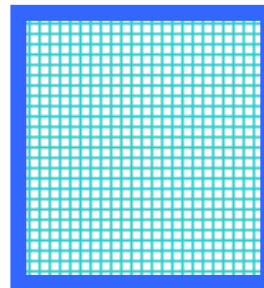
The hold-down must keep the nylon in place when flashing and printing the nylon fabric. Preferably, the hold-down should be made of steel with rubber cushioning around the inside edges to grip the nylon fabric. It is also advisable to have a rubber pad on the printing platen. The rubber pad will reduce the amount of

heat retained by the platen. Since aluminum and wood expand when heated, they do not make the best hold-downs

## Frames and Mesh

Retensionable metal screen frames are highly recommended. Second best would be extruded metal frames that are newly stretched (mechanically, not by hand) and glued.

Screen mesh should be monofilament polyester. For one-color prints, a range of 125 to 230 monofilament mesh is recommended. Metallic colors should be printed through 86 to 160 monofilament. Process colors require 200 to 355 monofilament. Multi-color spot printing should be printed through 160 to 205 monofilament.



## Squeegee

Nylon fabric is a hard, relatively smooth surface. Squeegees **must** have a sharp, straight and level edge. Use 70 to 80 durometer or 60-90-60 to 70-90-70 triple durometer squeegees.

## Ink Mixing

International Coatings 900 Series Direct Print Nylon Ink must be mixed with International Coatings 900LF Catalyst prior to use.

### Catalyst to Ink Ratios:

By Volume = 16 parts of ink color to 1 part of 900 Catalyst.

By Weight = 20 parts of ink color to 1 part of 900 Catalyst.

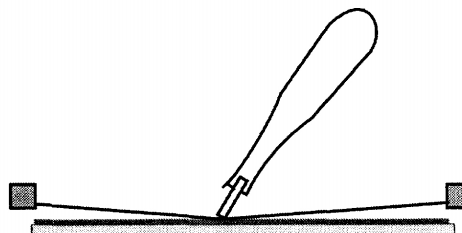
- **MIXING BY WEIGHT IS HIGHLY RECOMMENDED**
- **USE INK IMMEDIATELY AFTER MIXING**
- **DO NO UNDER CATALYZE THE MIXED INK**
- **POT LIFE OF MIXED INK IS 4 TO 8 HOURS**
- **OVER CATALYZATION OF INK WILL SHORTEN POT LIFE OF INK**

## Printing Tips and Techniques

### Set up

Off contact is the key factor in successful nylon printing. The off-contact distance should be 1/16" to 1/8" from the highest point of the nylon fabric. Excessive off contact will cause heavy ink deposit at the outer edges of the print. Double imaging or "slurring" of the image by too much off-contact is caused by the nylon fabric sliding or slipping off the back of the stencil.

Off contact is particularly important when printing nylon that is lined with either quilt or fleece. Jackets that are lined with these fabrics should have approximately 1/16" off contact. Excessive off contact requires extra squeegee pressure causing the same slurring or double imaging. The thickness of these linings will cause the garment to retain heat longer than thinner lined or unlined garments.



## Pre-Heating

Because nylon fabric changes size when heated (as in flashing), pre-heating the fabric or jacket before printing is highly recommended. Pre-heating also helps to remove wrinkles from the fabric. Wrinkles or creases can often show up in the printed images, causing misprints. The fabric or jacket should be sent through the dryer or pre-heated with the flash cure unit for approximately 2 to 5 seconds, reaching a temperature of 150°F to 200°F. The flash cure unit should be set between medium and medium high heat. Flash cure units with one heat setting will need to be adjusted and tested for correct height and dwell time. Flash cure units that swing in and away automatically, at a set time, are highly recommended.

*All flash cure units should be adjusted for dwell time and temperature before production begins.*

## Single Color Printing

The Nylon fabric must be held securely in place, even on a single color print. Correct amount of off contact and clean screen break immediately after the squeegee passes is extremely important in eliminating slurring or double imaging.

## Multi-Color Printing

Both spot color and process multi-color printing success is dependent on ink film thickness. Flashing time will vary according to the ink film thickness. Nylon fabric should be printed while warm. If the fabric is printed while hot the ink may start to gel in the screen. Nylon that is left to cool for too long, generally changes size or shape slightly. The change will cause miss-registration in the print.

## Curing

The heat element distance should be high enough so the fabric does not scorch. The entire ink film (both area and thickness) must reach 300°F to 325°F (149°C to 163°C) to achieve a full cure. The ink film adhesion will become stronger and more abrasion resistant over the next 48 to 72 hours.

## Frequently Asked Questions

Q. -- Why do I have to use a two part ink system?

A. -- Most of the 1-part nylon inks on the market today are solvent based. These inks usually have a strong odor, are very slow flashing and sometimes require 30 seconds or more to flash between colors. Strong solvents are normally required for the clean up of these inks. Unlike some one-part nylon inks, the 900 series inks are fast flashing and are great for multicolor printing. The 900 Series inks are low odor and will clean up with most low V.O.C. plastisol screen washes.

Q. – Why is 900 Series better than a regular plastisol mixed with nylon adhesion promoter?

A. -- The 900 Series inks and 900LF Catalyst were formulated to work together to give the best possible adhesion and durability on most nylon substrates. While the 900LF Catalyst will improve the adhesion of standard plastisol inks to problem fabrics, conventional plastisols generally will produce a less durable ink film when used on nylon.

Q. – What is the recommended reducer or thinner?

A. -- International Coatings recommends mineral spirits or 1110LF reducer.

Q. – Is there a way to test the ink for complete cure?

A. -- Adhesion of the properly catalyzed 900 ink will be at its best 24 to 72 hours after heat curing. Wash testing a printed piece of fabric is the best method of testing for proper adhesion.

Q. – How long have the 900 Series Nylon Inks been on the market?

A. – The 900 Series has been on the market for 15 plus years and is the most widely used direct print nylon ink in screen printing today. The 900 Series System consists of a specifically formulated plastisol, used in conjunction with a special 900LF Catalyst, which when properly mixed with the ink will adhere to most non-waterproof nylon fabrics. Once mixed together, the ink and catalyst will stay usable for 6 to 8 hours. Once the printing is finished, any screens and squeegees used with the inks should be thoroughly cleaned with a low V.O.C. screen wash.

Q. – What is the ratio of 900LF Catalyst to 900 Series Ink?

A. -- By Weight: 20 parts 900 Series Ink to 1 part 900LF Catalyst  
By Volume: 16 parts 900 Series Ink to 1 part 900LF Catalyst

It is highly recommended that a gram scale be used for quick and accurate mixing of catalyst to ink. A scale helps to speed up mixing and prevent waste by allowing smaller portions of ink to be mixed accurately. International Coatings has available an electronic gram scale perfect for nylon ink users. The V-3000 Electronic Scale, \$140.00, can be used to accurately mix ½ pints to quarts of nylon ink. Mixing by volume is easy, but is not as accurate as mixing by weight and this generally leads to using too much catalyst. By volume, when using 2 oz. bottles, use ¼ bottle (½ fluid ounce) for a ½ pint of nylon ink: ½ bottle (1 fluid ounce) for pint of nylon ink and the 2 ounce bottle for a quart of nylon ink.

Q. – What type of squeegee should be used when printing nylon?

A. -- A triple durometer squeegee is recommended. This type of squeegee will allow you to lay down an even, thin ink deposit. This is important because the thinner and more even ink deposit produces a much better print. The other advantage to a thin, more even ink deposit is quicker flash times and faster ink fusion through the dryer. For dark nylon fabric use a 60-90-60-durometer squeegee. For light colored nylon fabric use a 70-90-70-durometer squeegee.

Q. – Is it necessary to catalyze all the inks when printing a multicolor nylon design?

A. -- When printing directly over the top of 900 Series Catalyzed Ink, it is not necessary to catalyze the inks used on top of another catalyzed ink. If the colors are not printed directly over the top of catalyzed ink, then each ink color used must be catalyzed.

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