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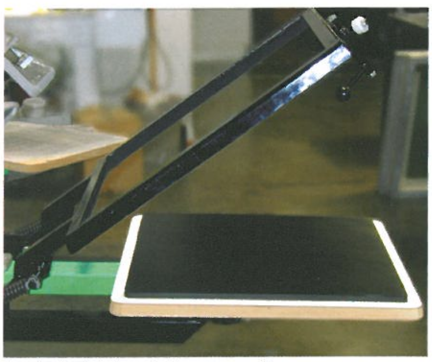
THE BEHAVIOUR OF NYLON

The idiosyncrasies of this material during printing are outlined by Ed Branigan

There are several issues printers will come up against when printing on nylon that will require patience and, in the case of lined jackets especially, a lot of practice. As mentioned previously, regular nylon shrinks when it is heated, a major factor that must be taken into account when printing.

These days most nylon fabrics only require one preshrink after which the fabric stays shrunk. Some others are extremely heat sensitive, in particular those that may have blends of other types of material in there. It is also very important to heat-test a sample of the production fabric to determine the threshold at which it begins to pucker or scorch.



A nylon jacket clamp in the open position

Pre-shrinking of a nylon jacket in the dryer

A nylon jacket being clamped down

This threshold can vary a lot, particularly with blended nylon fabrics. If this heat threshold for the nylon fabric is lower than the level of heat that it takes to cure plastisol then you are in trouble.

LACK OF ABSORPTION CAPABILITIES

Another complicating factor is the nature of the nylon material itself. It is synthetic with little or no absorption capabilities. Add to this the fact that is very tightly woven, so tight in some cases that it is like printing on a drum.

This poses two problems for the printer. One is getting the ink to stay on the material if it can't at least be partially absorbed. The second is the necessity to flash every colour. It is easier to print wet on wet on cotton jersey because the ink soaks into the fabric somewhat.

This helps in two ways. The ink soaking into the shirt fibres gives them what is called a mechanical bond which helps with washfastness after the ink is cured. It also makes wet-on-wet printing easier because the ink is not sitting on top of the garment waiting to be smeared or picked up.

With nylon, the ink cannot get a mechanical bond. It sits on top of the garment, unable to penetrate the fibres. The ink can be cured, but it will scrape off the garment unless given a little help. To do this we add a catalyst or bonding agent. This gives the ink a chemical bond to the surface of the garment and ensures that it stays on there.

Every colour needs to be flashed simply because the ink is sitting on top of instead of penetrating the fabric. There's too much ink there to avoid smearing and pick-up.

The only way to ensure quality is to flash in-between colours.

'PURER' INKS

The inks used for nylon printing differ from regular plastisol only in the sense that nylon inks are 'purer' inks. They typically don't contain any of the fillers or other additives that most plastisols will. They can be printed on other materials besides nylon as well. One example besides cotton, are the reusable bags that most retail stores are carrying. These are usually made from polypropylene, which melt at the higher temperatures required to cure plastisol.

However, we have created an additive that will help the nylon ink fuse at a low enough temperature (275 degrees F/135 degrees C versus 320 degrees F/160

Application of the third colour

The final full-colour nylon jacket

degrees C) that allows you to print the bags. Of course it is important always to test the bag material first to determine whether it can withstand the 275 degrees F/135 degrees C temperatures required for the curing of the ink, but generally the combination of the nylon inks with the low cure additive works quite well.

In conclusion, all of the challenges faced when printing on nylon will come from the material itself. The print application of nylon inks is the same as any other with the exception that the flash after every colour is required, which is due of the nature of the fabric. ■

Ed Branigan is Print Applications Manager at International Coatings

Riley Hopkins is President of Riley Hopkins Screen Printing Machinery

Further information:

International Coatings Company Inc,
Cerritos, California, USA
tel: +1 562 926 1010
email: ebranigan@iccink.com
web: www.iccink.com

Riley Hopkins Screen Printing Machinery,
Gig Harbor, Washington, USA
tel: +1 253 851 9078
email: rileyhopkins5@comcast.net
web: www.rileyhopkins.com