

# Textile Printers



## Glossary Terms



Photo on front cover and this page: Dr. Nicholas Hellmuth inspecting the DigiFab StampaJet printer at SGIA 2010 trade show.

## Please Note

This report has not been licensed to any printer manufacturer, distributor, dealer, sales rep, RIP company, media or ink company to distribute. So if you obtained this from any company, you have a pirated copy.

Also, since this report is frequently updated, if you got your version from somewhere else, it may be an obsolete edition. FLAAR reports are being updated all year long, and our comment on that product may have been revised positively or negatively as we learned more about the product from end users.

To obtain a legitimate copy, which you know is the complete report with nothing erased or changed, and hence a report with all the original description of pros and cons, please obtain your original and full report straight from [www.large-format-printers.org](http://www.large-format-printers.org).

Your only assurance that you have a complete and authentic evaluation which describes all aspects of the product under consideration, benefits as well as deficiencies, is to obtain these reports directly from FLAAR, via [www.wide-format-printers.NET](http://www.wide-format-printers.NET).

Copyright 2011

## Contents

|                                       |   |
|---------------------------------------|---|
| A                                     | 1 |
| B                                     | 1 |
| C                                     | 2 |
| D                                     | 3 |
| F                                     | 3 |
| G                                     | 4 |
| H                                     | 4 |
| I                                     | 4 |
| J                                     | 4 |
| K                                     | 5 |
| L                                     | 5 |
| M                                     | 5 |
| N                                     | 5 |
| O                                     | 6 |
| R                                     | 6 |
| S                                     | 6 |
| T                                     | 8 |
| U                                     | 8 |
| V                                     | 8 |
| W                                     | 9 |
| Helpful information is available from | 9 |
| Sources and Resources on the Internet | 9 |

Illustrations by María Renée Ayau, Graphic Designer as well as Technical Writer on wide-format inkjet textile printing at FLAAR Reports

A

**Acid dye textile ink**, one of several special inks for inkjet textiles. Acid dye inks are for synthetic materials such as lycra, nylon, spandex, as well as natural silk, wool, and leather. See also disperse inks and reactive inks.

**Askewed or bias**, fabric defect where filling yarns are not square with warp yarns on woven fabrics or where courses are not square with wale lines on knits.

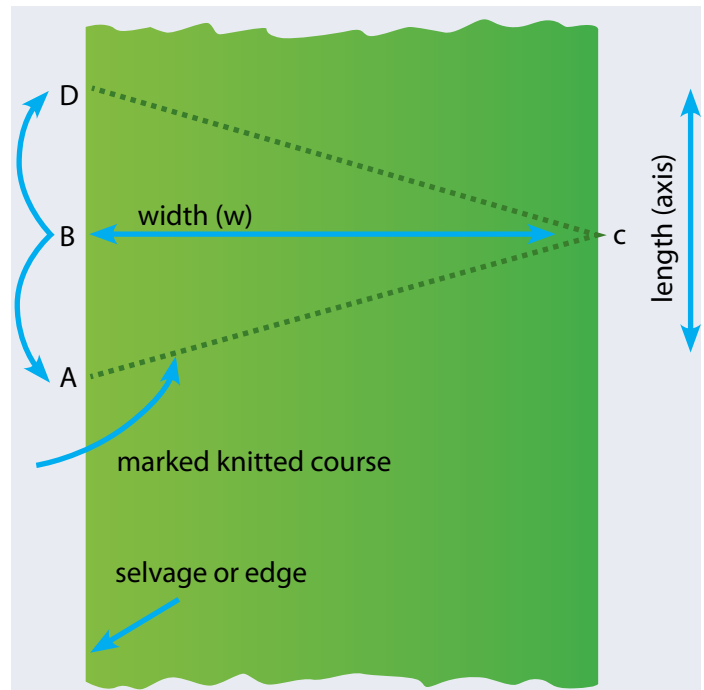
B

**Back fabric seam impression**, backing fabric is often used to cushion fabric being printed. Fabric defect caused if there is a joining seam in the backing fabric, an impression will result on printed fabric.

**Banding**, bands of discrete color or tone that appear when a laser printer cannot reproduce a smooth graduation from one color to another. Instead there are noticeable jumps between one value and the next. Banding on inkjet is more complex; several kinds of banding may occur in wide format output. It is generally stated that most (but not all) banding results from clogged nozzles, especially on piezo printheads and notably on some Roland printers. Banding is most noticeable in areas of cyan or blue (such as the sky) or across dark solid colors. Banding may be worst in human environments and on certain media. Dr Ray Work indicates another source of banding in piezo printheads is air bubbles inside the printhead. He notes that any open ink system can allow nitrogen to get into the ink. Considering that he is the developer of DuPont chemical company's inkjet ink program, he definitely knows printhead technology inside out. For more information on which printers are most prone to banding defects, see the FLAAR Report entitled: "Piezo vs Thermal."

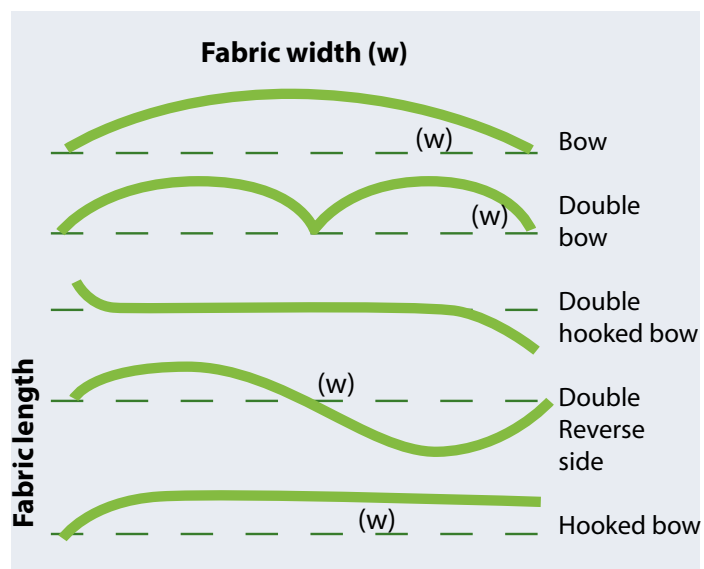
**Bias**, a line diagonal to the grain of a fabric. A line at a 45 degree angle to the selvage often utilized in the cutting of garments for smoother fit

**Birdseye**, fabric defect caused by unintentional tucking from malfunctioning needle. Usually two small distorted stitches, side by side.



Typical skewness (bias) in a fabric

**Bowing**, fabric defect usually caused by finishing. Woven filling yarns lie in an arc across fabric width: in knits the course lines lie in an arc across width of goods. Critical on stripes or patterns and not as critical on solid color fabrics.



Different types of bowing

**Broadcloth**, fabric with plain weave. Closely woven with smooth finish.

**Bulk ink system**, usually means one liter or more of ink per color. For years printshop owners were stuck with the impractical Epson ink system of 220 ml cartridges. Epson required that Mimaki, Mutoh, and Roland use these same cartridges. Epson further required that Mimaki, Mutoh, and Roland buy all their ink through Epson (Epson did not make the ink, they just collected profit on the ink). All this was because Epson was the supplier of the printheads for most printers in the years 2001-2005. If the other printer manufacturers did not want to use those cartridges or pay Epson for the ink, then Epson would tend not to allow them to use Epson printheads. Today a printer manufacturer can get printheads elsewhere, and even Epson itself has abandoned those terribly wasteful cartridges (Epson was sued for the amount of ink waste these cartridges caused). So many companies, to get around the Epson cartridge system, made bulk-ink systems to save money (and to save ink waste).



*Bulk ink.*

## C

**Calendering unit or calendaring machine**, a machine that is used in the process of passing cloths between one or more rollers; usually under carefully controlled heat and pressure, to produce a variety of surface effects or textures in a fabric like smoothness or luster.

**Charmeuse**, a **luxurious**, supple, silky fabric with an extremely shiny face and a dull back, similar to satin but lighter in weight. Usually made from rayon or cotton, but premium varieties are made from silk.

**Chiffon**, made from tightly twisted crepe fibers, chiffon is lightweight, extremely sheer, almost transparent fabric that has a slightly bumpy texture.



*Mutoh Unifixer, calendering machine.*

**Coating**, is a chemical treatment, and is comparable in some regards to an inkjet receptor layer for materials to receive water-based ink. But coatings for fabric need to be different chemistry since each kind of textile ink is a bit different than water-based ink for an Epson or Canon printer. You generally buy the fabric already coated for the specific ink and fixing process that you know in advance you will use it for. The downside of coated fabrics is that they tend to cost more than uncoated materials.

**Color kitchen**, when you use color management and ICC color profiles you can enter a sort of digital color kitchen. Color management and ICC profiles are discussed in a comprehensive FLAAR Series on that subject. This Series includes its own glossary.

**Color smear**, fabric defect as a result of color being smeared during printing.

**Cotton**, is a soft fiber that grows around the seeds of the cotton plant. This fiber can stand high temperatures and takes dyes easily. Cotton is most often spun into thread and used to make a soft, breathable textile.

**Crease mark**, fabric defect that appears where creases are caused by fabric folds in the finishing process. On napped fabric, final pressing may not be able to restore fabric or original condition. Often discoloration is a problem. Differs from crease streak in that streak will probably appear for an entire roll.

**Crease streak**, fabric defect that occurs in tubular knits. Results from creased fabric passing through squeeze rollers in the dyeing process.

**D**

**Décor** see also, interior design, interior decoration

**Dedicated fabric printer**, would be a printer that is designed specifically to handle textile inks or fabrics. Examples would be StampaJet from DigiFab or textile printers from Yuhan-Kimberly. The term dedicated fabric printer is to distinguish these professional units from simple water-based printers which can handle paper-backed textiles, such as the HP Designjet 5000 or 5500.



*DigiFab StampaJet, dedicated fabric printer.*

**Defect (within a long roll of fabrics)**, a fault that, if it were to appear in a prominent position in a garment or manufactured article made from the fabric, would readily be seen and objected to by an ordinary person who might contemplate purchasing such a garment or manufactured article in a retail shop.

**Disperse dye inks**, are for direct dye sublimation onto polyester inkjet textiles. See also acid dye ink and reactive dye inks.

**DPI (dots per inch)**, a measure of the output resolution produced by printers, imagesetters, or monitors. Dpi in the images themselves is actually ppi, pixels per inch since of course there are no dots in an image on a monitor.

**Drop stitches**, fabric defect that results from malfunctioning needle or jack. Will appear as holes or missing stitches.

**Duck**, also known as canvas. A tightly woven, heavy, plain-weave, bottom-weight fabric with a hard, durable finish. The fabric is usually made of cotton.

**Dwell time**, means how long do you keep the fabric inside the steamer or heat press or fixing unit.

**Dye streak in printing**, print defect which results from a damaged doctor blade or a blade not cleaned properly. Usually a long streak until the operator notices the problem.

**Dye sublimation**, can also sublimate onto specially pre-coated ceramic tiles and aluminum. So dye sublimation transfer paper is not only for decorating textiles.

**F**

**Fabric**, a cloth produced especially by knitting, weaving, or felting fibers.

**Finishing**, with a regular inkjet print, finishing means trimming, laminating and/or mounting. With an inkjet textile you may have to heat set (steam), wash out the excess ink. Like any other cloth that was just washed, you might wish to iron it too. But, if you select the newer fabrics, they don't require steaming or washing, hence no ironing. But their longevity may not be as long. Steaming fixes the colors so it can withstand washing and dry cleaning.

**Flax**, a soft, lustrous and flexible fiber. It is stronger than cotton fiber but less elastic. The best grades are used for linen fabrics such as damasks, lace and sheeting. Coarser grades are used for the manufacturing of twine and rope.

**Fray**, to become worn away or tattered along the edges or threadbare spot on fabrics.

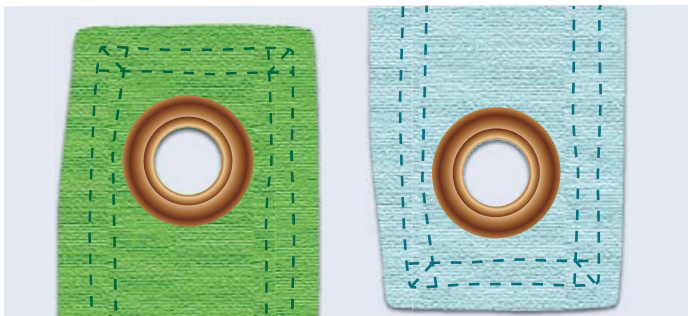
**Fumes issue from a fixation unit**, especially a grand format size (three meters and wider). You need a fume extraction system on all direct-to-fabric grand format dye sublimation printing systems.

**G**

**Gauze**, a thin, sheer fabric with a loose open weave that is usually made from cotton or silk.

**Georgettes**, a woven fabric created from highly twisted yarns creating a pebbly texture. It is thin and semi-sheer and is characterized by its crispness and exceptional strength.

**Grommet(s)**, can you easily put grommets in the fabric? A grommet is a large, metal-edged unit which surrounds a hole in a garment.



*Grommets placed into fabric.*

**H**

**Habotai**, a China Silk, plain weave fabric with a soft sheen. These silks do not add bulk but will add a slight amount of body and weight while remaining soft and fluid.

**Hand**, how the fabric feels to the hand or skin (if worn). You want a soft hand.

**Heat press**, see also calendering unit, fixation unit  
A machine engineered to imprint a design or graphic on a substrate, such as a t-shirt

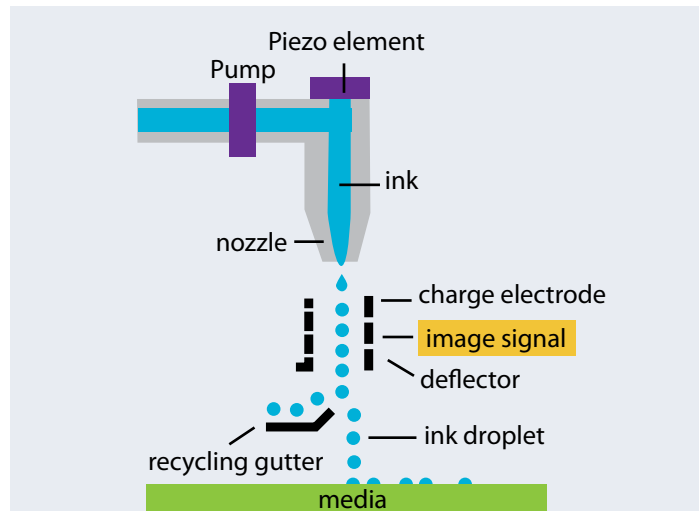
**Heat set**, means in effect pre-shrinking the material so that when it is in the heat press dye sublimation system it won't suddenly shrink. If a material shrinks during sublimation the design may become distorted.

**High energy dye** (disperse inks). High energy disperse dye inks are better in most respects than low energy disperse dye inks, but high energy costs correspondingly more.

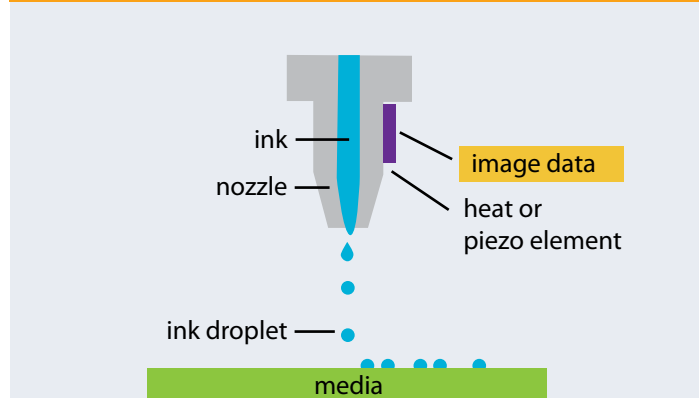
**Hot knife**, can you hot knife the fabric easily, or not.

**I**

**Inkjet**, a printer technology where ink is squirted through nozzles onto the printer paper or other material to form an image or character.



*Continuous inkjet process*



*Drop-on-demand inkjet process*

**J**

**Jacquard**, a weaving method invented by Joseph Marie Jacquard, which involves a machine attached to a loom that can electronically select and control individual warp threads. The Jacquard loom is used to create intricately woven fabrics, including brocade and damask. Silk, polyester and rayon are commonly used in the Jacquard process.

**Jerk-in**, fabric defect caused by an extra piece of filling yarn being jerked part way into the fabric by the shuttle. The defect will appear at the selvage.

**K**

**Knots**, fabric defect caused by tying spools of yarn together.



*Knots in fabric, caused by two threads tied together.*

**L**

**Linen**, use reactive dye ink. A fabric made from linen fibers obtained from inside the woody stem of the flax plant. Linen fibers are much stronger and more lustrous than cotton. Linen fabrics are very cool and absorbent, but wrinkle very easily, unless blended with manufactured fibers.

**Low energy dye** (disperse inks). See also high energy dye (disperse inks). Low energy dye inks cost less and need less heat to sublimate (Work 2009:33).

**M**

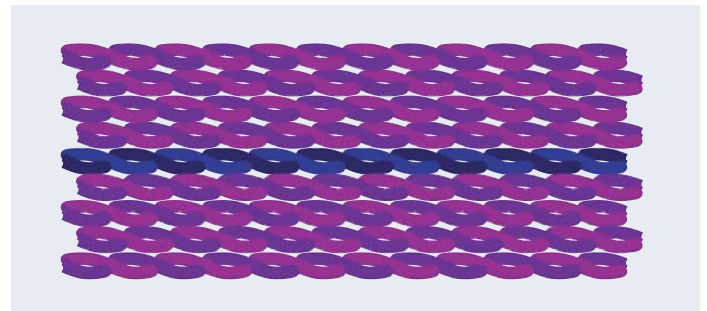
**Media**, actually in this case singular and plural. Means any material coated with inkjet receptor powder. 90% of the material you put through an Encad, Epson, or HP is media. Also see substrate. The word media also has many other meanings in digital imaging.



*Nassenger VII media samples.*

**Missing yarn**, fabric defect which occurs in warp knit. Results from wrong fiber yarn (or wrong size yarn) placed on warp. Fabric could appear as thick end or different color if fibers have different affinity for dye.

**Mixed end (yarn)**, fabric defect that occurs when yarn of a different fiber blend used on the warp frame, resulting in a streak in the fabric.



*Mixed yarn*

**mm** does not necessarily stand for millimeter but for momme.

**Momme**, is a measurement of weight for silk

**Mottled**, Color applied unevenly during printing.

**Muslin**, a sheer, lightweight cotton fabric that is produced mainly in India. This plain-weave material can be used a thin blankets or as a backing for quilts

**N**

**Needle line**, fabric defect that is caused by bent needle forming distorted stitches. Usually a vertical line.

**Needlepoint**, is a form of canvas work created on a mesh canvas. The stitching threads used may be wool, silk, or rarely cotton. Stitches may be plain, covering just one mesh intersection with a single orientation, or fancy, such as Bargello. Plain stitches, known as Tent stitches, may be worked as basketweave or half cross.

**Nylon, polyamide**, which can be made into a synthetic fiber. The first completely synthetic fiber developed in 1938. Known for its high strength and excellent resilience, nylon has superior abrasion resistance and high flexibility, high strength, elasticity, low water absorption and quick-drying.

**O**

**Oil based textile inks**, may be compared and contrasted to water-based textile inks and solvent-based dye sublimation inks.

**Olefin is polyethylene**, strong man-made fiber giving resistance to abrasion and stain resistance. Good resistance to fading when solution dyed, very sensitive to heat.

**On-board heat press**, means the heat press (fixation unit) is physically attached to the inkjet printer. The heat press is generally in front of the printer, at a slightly lower level.



*On-board heat press.*

**Optical brighteners**, are chemicals that attempt to make the material as white as possible.

**Oversaturation**, too much ink deposited onto a printed image which leaves the substrate to buckle.

**R**

**Raster Image Processor (RIP)**, Produces an image defined as a set of dots/pixels in a column-and-row format. Rasterisation is the process of determining values for the dots/pixels in a rendered image. The placing of ink in a random pattern on a print pleasing to the eye.

**Rayon**, use reactive dye ink. A synthetic textile fiber made from cellulose. Rayon is known for its high absorbency, bright or dull luster, pleasant feel or hand, good draping qualities, ability to be dyed in brilliant colors and superior strength.

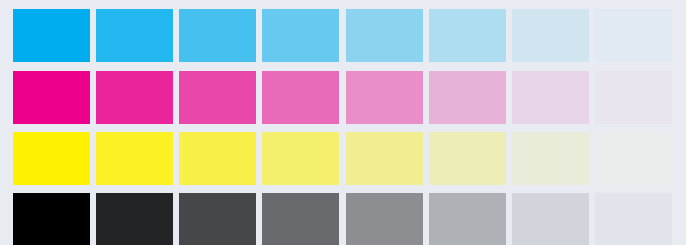
**Reactive dye inks**, are for cotton, silk, rayon, and wool. See also acid dye inks and disperse dye inks for inkjet textiles. Mimaki Tx2-1600 is one of the few wide format inkjet printers which can take all three of these ink types.

**Runner**, fabric defect caused by broken needle. The runner will appear as vertical line. Most machines have a stopping device to stop the machine when a needle breaks.

**S**

**Sailcloth**, a strong canvas of cotton, linen, or nylon in a plain weave, sometimes with a crosswise rib. The weights vary, but most often the count is around 148 x 60. Able to withstand the elements (rain, wind and snow).

**Saturation**, the amount of color in a specific hue.



*Saturation*

**Scud-launcher steamer**, is a vertical steamer. Looks like a launcher for scud missiles.

**Scrimp**, the result of fabric being folded or creased when passing through tender frames.

**Selvage**, the edge on either side of a woven or flat-knitted fabric so finished as to prevent raveling. A narrow border often of different or heavier threads than the fabric and sometimes in a different weave

**Silk noil**, raw silk. This is a slightly nubby fabric with random flecks in a natural, off-white color. It has a somewhat rough texture and a gentle drape.

**Sizing**, a fabric finish that adds weight, stiffness, and firmness. The purpose of this is to make the yarn smoother and stronger to withstand the strain of weaving, to provide an acceptable hand in the woven gray goods, and to increase fabric weight.

**Solvent inks**, use aggressive chemical solvents instead of water. Due to environmental and health concerns, some companies have switched to lite solvents. Lite solvents come in several flavors: one is simply less aggressive the other is evidently an oil-based solvent ink (used by Roland SolJet as an example). FLAAR will be issuing a primer on textile inks shortly.



AT Inks solvent ink bottles.

**Spandex**, use acid dye ink, synthetic fiber made from polyurethane. It is lightweight, highly elastic, strong, durable and non-absorbent to water and oils. It can be repeatedly stretched over 500% without breaking, and will still recover to its original length

**Shrinkage**, as the material is run through a steamer or heat fixation unit.

**Steamer**, many inkjet textiles need to be steamed, preferably under pressure, in order to set and pop the colors. Steamers come in several sizes and shapes:

- stove-top steamer
- scud-launcher steamers (“vertical steamers”)
- moderate pressure steamer
- industrial production steamers

The best intermediate-level moderate pressure inkjet textile steamer is available from Jacquard.

**Steaming paper**, is used to keep the freshly printed fabric from sticking to itself as it is rolled to place it into the steamer. With the vertical 3P steamer a wire mesh is used instead of paper. This means it can be reused as often as needed. Steaming paper is available from Jacquard.

**Sticky belt**, is a transport belt (conveyor-like belt) with a glue-like material so that the weave of the fabric does not get pulled out of shape as it is pulled by the tension rollers through the printing system. In the world of UV-cured flatbed printers any printer with a transport belt would not have glue, but otherwise the transport belt for a UV-curable flatbed printer is similar in drive mechanism of the belt. A transport belt adds anywhere between \$20 and \$30,000 to the cost of a printer (or less if made in China). But a low-cost transport belt may cause the material to feed improperly.

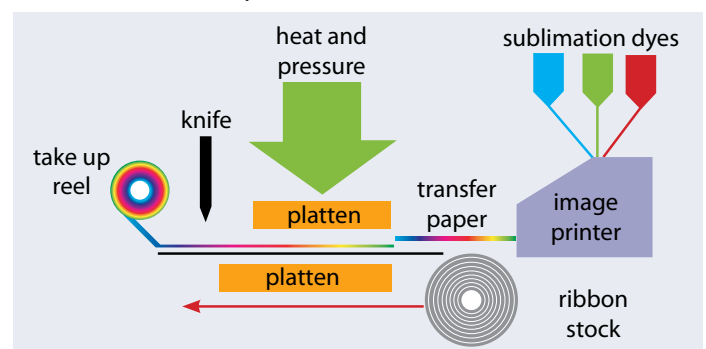
**Stop mark**, fabric defect caused when the loom is stopped, the yarn elongates under tension; when the loom starts again, the slack is woven into the fabric.

**Stove top steamer**, is just as the designation states: a metal cooker that you put on the stove top to heat. It is horizontal. The one from Jacquard can handle fabrics up to 36”

**Straying end**, fabric defect on the warp knit. Caused when an end of yarn breaks and the loose end strays and is knit irregularly into another area.

**Sublime**, to turn from an ink (in theory a “solid”) into a gaseous state.

**Sublimation-dye process.** With wax or thermal ribbons, it is a printing process that uses special media consisting of a printer ribbon, a heated “print head” and laminated printer paper. When the “printer head” passes over the paper, the image is printed by varying the heat and causing color (consisting of cyan, magenta and yellow) dyes to be passed on from the ribbon to the paper. Printers such as Matan and Summa use this, as does the desktop Kodak 8600 series printers.



Dye sublimation process.

Another form of Dye Sublimation involves printing with a regular thermal (Encad) or piezo (Epson) printer on transfer paper. Heat press is subsequently applied to the paper on top of the material to which you wish to sublimate. The ink turns into a gas and penetrates the inkjet receptor later of the material. You end up with an image on ceramic tiles, solid metal, etc.

**Substrate**, see also material, media

**Synthetic fabrics**, fibers elaborated to increase and improve the supply of natural fibers that have been used in making cloth. Few examples of synthetic fibers are rayon, acetate, nylon, modacrylic, olefin, acrylic and polyester.

**T**

**Taffeta**, With a smooth feel, and a crisp hand, taffeta can be made from a variety of fibers including silk and rayon. It has a subtle horizontal ribbing effect and provides lots of body and an ultimate rustle.

**Tensile strength of the textile**, is determined by the size (denier) and strength (tenacity) of the yarns and the number of yarns per linear inch or meter. The larger the yarn and the more yarns per inch, the greater the finished product's tensile strength.

**Thermal transfer**, a printer technology that uses heat to transfer colored dye onto paper. Matan is a wide format printer using this technology. Alps was a desktop sized printer (which went out of business several years ago).

**Transfer paper**, one major brand is Coldenhove; another is Beaver. Some ink chemistries work better on transfer paper than other textile ink chemistries.

**Treated**, see also untreated, a finishing process associated with the application of synthetic chemical compounds to the fabric to provide wrinkle-resistance, wash-and-wear characteristics, or an improved hand.

**Trough**, a kind of drainage that catches the ink which passes through some woven materials. This trough is the entire length of the platen and is directly underneath where the printheads pass over for each pass. To clean the trough, either there is a small drainage tube or you

lay down absorbant paper towels or simply wipe up the ink quickly at the end of the day (before the ink solidifies). May also be called a gutter.

**Tussah silk**, is a plain weave silk fabric from "wild" silk worms. It has irregular thick and thin yarns creating uneven surface and color. Wild silkworms feed on leaves other than mulberry leaves. Tussah silk is similar to shantung, with silk from the wild. Color is often uneven; usually referred to as "raw" silk.

**Twill**, an incredibly versatile fabric distinguishable by diagonal ribs on its face, and a soft, smooth finish. Gabardine, serge, and denim are all examples of twill fabrics.

**U**

**Untreated**, see also treated, usually but not always means treated polyester or untreated polyester

**UV cured inks**, pigmented inks which dry instantly upon contact with UV light. More environmentally friendly than solvent inks. UV cured inks are gradually replacing solvent inks in industrial and grand format printers due to new environmental protection laws against solvent inks. Do not confuse these with HP's so-called "UV inks" which are regular water-based pigmented inks. Hewlett-Packard inks from DuPont are not by any means UV cured.



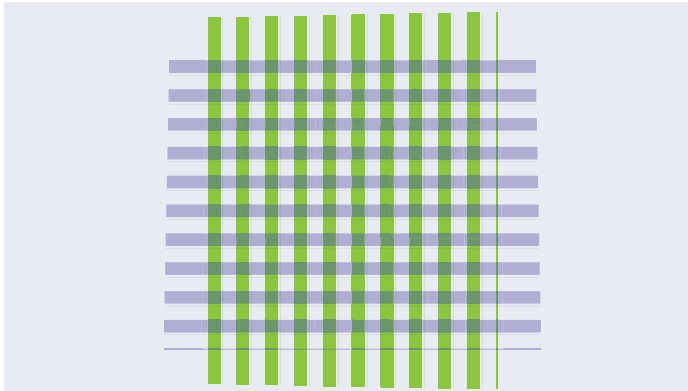
*UV cured ink bottles.*

**V**

**Viscose rayon**, man-made synthetic fiber, typically referred to as rayon. Viscose has a silken, smooth feel and a terrific drape, and is often used for linings and bridal garments.

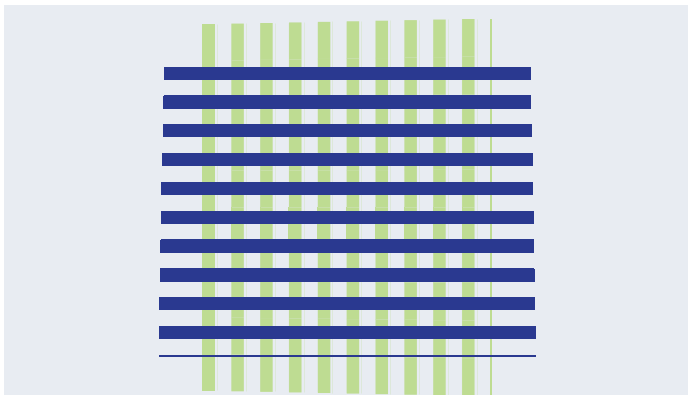
**W**

**Warp**, the vertical threads in a particular fabric or on a loom.



*Fabric warp*

**Weft**, the horizontal threads in a particular fabric or on a loom.



*Fabric weft*

**Wool**, use acid dye ink. This textile is made using the fibers from the hair of animals, such as goats, sheep, camels, or llamas, and it comes in several different forms from crepe, to gabardine, to worsted. Wool is moisture absorbing and known for its warmth, and is also naturally stain and wrinkle resistant.

**Wrinkle resistance**, a fabric that has been treated to resist the formation of wrinkles.

**Helpful information is available from**

If you need technical help ask the folks at DigiFab

DigiFab (NY office)  
1412 Broadway, Suite 2100  
New York, NY 10018

Tel. (212) 944-9882  
Fax. (212) 944-9659

DigiFab, main office and factory  
5015 Pacific Blvd.  
Vernon, CA 90058

Tel. (323) 581-4500  
Fax. (323) 582-4500

**Sources and Resources on the Internet**

[www.clothingsourcing.com/doc/trguide/spanishenglish.pdf](http://www.clothingsourcing.com/doc/trguide/spanishenglish.pdf)

Spanish-English dictionary, but no definitions

[www.dharmatrading.com/glossary/A.html](http://www.dharmatrading.com/glossary/A.html)

An excellent glossary on fabrics.

[kuamadomo.com.ar/blog/download/dic\\_ingles\\_espanol\\_v0.5.pdf](http://kuamadomo.com.ar/blog/download/dic_ingles_espanol_v0.5.pdf)

Spanish-English dictionary, but no definitions

<http://silkery.com/terms.html>

Brief glossary of silk (not inkjet silk, but traditional silk).

Consider looking into "Fabric Glossary," by Mary Humphries, 2nd edition, 1999, Prentice Hall publisher.