



WE LOOKING SHARP

A TANATEX WHITE PAPER

PRINT IT, DESIGN IT

GETTING STARTED WITH INKJET PRINTING

ADDING PASSION
TO TEXTILES.

TANATEX[®]
CHEMICALS 

Table of contents

1. MORE SPEED PLEASE! 3

2. FROM TRADITIONAL TO DIGITAL 4

3. INKJET STARTING KIT 7

4. TESTING 8

5. ABOUT TANATEX 9



1. MORE SPEED PLEASE!

These are exciting times in the textile industry. The market is picking up, sales have increased, and new technologies keep on finetuning machinery and production processes. But most important of all: digital printing has found its way into the textile mill. And this is good news for everyone.

Although it still only covers a small part of the global textile printing market, more and more textile manufacturers use inkjet (digital) printing methods to try to gain a competitive advantage. And with right: inkjet printing brings more speed, more freedom of design, and more flexibility.

And manufacturers need it, as customers are more demanding than ever. Especially in the high-end segment, "OK" is no longer good enough. Fashion brands demand more product personalisation, more speed, and new and different prints that cannot be produced with traditional printing methods. This means that textile mills need to be both adaptable and terrifically fast. Inkjet printing may be the answer to these -and many other- challenges.

"Can traditional and digital printing methods live together in peace?"

But how do you make it work? Is inkjet printing just a matter of pressing the "print" button, or do you need more than that? How do you get to the best inkjet results? And should you throw away all of your traditional machinery? Or can traditional and digital printing methods live together in peace?

In this white paper, we tell you how to get the most out of inkjet printing. We tell you about the differences between traditional and digital textile printing, inkjet applications, and best practices. Thereafter, we get slightly scientific and share some textile preparation methods that get your products from "OK" to "absolutely brilliant".

Let's add some colour, and let's speed it up!

Team Tanatex

2. FROM TRADITIONAL TO DIGITAL

Textile printing is nothing new. People have been adding colour to textiles for ages, through several printing methods. High quality inkjet printing is quite revolutionary, though. What is new about inkjet and it what way does it differ from traditional printing?

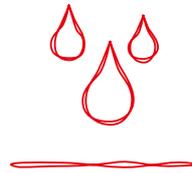
“When it comes to textiles, is inkjet printing always better than traditional printing? Yes and no”

The process



Traditional printing

Traditional printing methods such as rotary screen printing, flat bed printing, and Rouleaux printing involve applying print paste on a printing surface. Each colour is applied separately, until the end result is achieved. This method requires many different colour pastes (one for each colour, to be exact) and many different ink screens, as you need one screen for each individual colour. This means a lot of ink waste, as you cannot re-use the ink after it has been applied to the screens. Furthermore, due to the many screens that need to be produced, installed, and adjusted, traditional printing methods have a long starting-up process. Lastly, as printing screens come in a certain size, your designs are limited to the dimensions of your machinery.



Inkjet printing

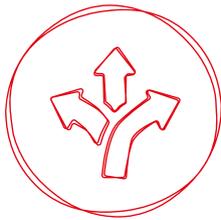
With inkjet printing, a pump directs ink from a reservoir to one or several nozzles that eject a continuous stream of drops onto the fabric. This way, colours are mixed “on the spot”, meaning they do not require different screens or colour pastes. As opposed to traditional printing, inkjet printing uses only four main colours and some additional ones to get to the final shades. You simply apply a combination of cyan, magenta, yellow, and black directly to your textiles. As you do not need any colour pastes, you do not lose time on preparing them, meaning you can have your inkjet printer up and running in no time. The absence of screens gives you more freedom to create your own designs, and as you do not waste any ink, you also reduce ecological impact. Hence, more flexibility and lower costs.

“Inkjet printing gives you more freedom to create your own designs, and as you do not waste any ink, you also reduce ecological impact”

2. FROM TRADITIONAL TO DIGITAL

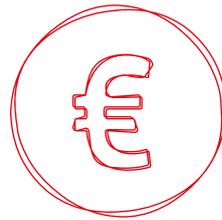
Which one to choose?

If you look at the many advantages that come with inkjet printing, it seems that the end of traditional printing is near. But is it really? When it comes to textiles, is inkjet printing always better than traditional printing? Yes and no. It depends on who you are, what you want and how fast you want it. Let us zoom into the differences between traditional and inkjet printing in terms of flexibility, costs, and quality.



Flexibility

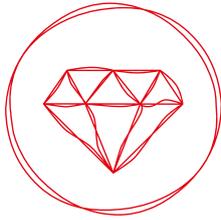
As mentioned before, starting up an inkjet printer takes less time compared to traditional machinery. The start-up process of traditional printers requires you to install the screens, prepare the print pastes of all the colours you need, and get the machines going. When you work with a digital printer, however, you can get your production process started right away. Second, inkjet printing allows you to tailor your output to customer demand, as you can turn your machines on and off whenever you want. It does not matter if you need three or ten different prints: just tell your computer what you want and it will take care of the rest. Third, we see an increase of digital printing houses in Europe, whereas traditional printing is often moved to low wage countries. The closer you are to your customer, the faster your time-to-market, as you can ship extra volume in the blink of an eye. Lastly, as there are no screens involved, inkjet printing is not bound to specific pattern sizes.



Costs

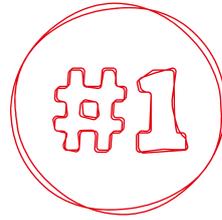
To determine which printing method is more cost-effective, you should look at your revenue model. Imagine you were a start-up that specialises in producing high-end women's and men's wear. You are new to the market and you focus on quality prints and speed. In this scenario, inkjet is your best option, as inkjet machinery is less pricy and provides you with tailored results. This means you can save out on costs, that you probably need to get your business off the ground. Moreover, the fact that you are fast and deliver tailor-made products justifies your higher sales prices. True, inkjet ink is pricy, but if you produce small volumes of personalised textiles, inkjet printing is definitely more cost-effective than traditional printing machines that cannot handle small amounts of different colour patterns. If you are a traditional printing house with high output, however, switching to new machinery and production processes can be expensive. And as traditional printing machines are suited for a continuous production line, you achieve greater output.

2. FROM TRADITIONAL TO DIGITAL



Quality

This is a tricky one. As opposed to what many people think, inkjet printing is not per se better compared to traditional printing methods. On the contrary: if you want to produce bright and long-lasting colours, inkjet printing even requires an extra preparation step. If you add the right chemicals that are adjusted on fibre and product type, though, this preparation step allows you to achieve optimal results (see chapter 3).



And the winner is...

When it comes to specialised newcomers that focus on tailored designs and flexibility, inkjet printing is an absolute favourite. But although we expect inkjet to slowly take over the textile world, we see a lot of traditional printing houses who switch to a combined strategy, that integrates best of both worlds. Manufacturers use inkjet printers for high-end (2) and personalised (1) products, and stick with traditional printers for large volumes with recurrent patterns. This way, they enable themselves to live up to all kinds of customer demands. So, to answer the question we asked ourselves in the introduction: yes, inkjet printing and traditional printing can live together in peace. Inkjet comes with many advantages though, as long as you take care of the preparation process. We will tell you all about it in the next chapter.

"We see a lot of traditional printing houses who switch to a combined strategy, that integrates best of both worlds"

3. INKJET STARTING KIT

"If you want your products to go from 'OK' to 'brilliant', printing them is not enough"

Whether you choose to go with inkjet printing or a combination strategy: preparation is everything. Sure, inkjet printers can do great things, but only if they operate under optimal conditions. And there is more to it than just the right printer and ink. You can have the best machinery and inks in the world; printing results can be affected by a lack of the right treatment methods during your preparation steps. Bleaching, for example, sometimes meddles with ink fixation, resulting in messy colours and lower brilliancy. Furthermore, certain fibres respond to the same ink differently, meaning you need a toolbox of finishes that prepare your textiles for everything they go through during the production process.

So, if you want your products to go from "OK" to "brilliant", printing them is not enough. As you need to optimally prepare, protect, and post-treat your fibres, you should consider three steps:

- Pre-treatment
- Inkjet printing preparation
- Post-treatment

Pre-treatment

Depending on fibre and article type, textiles need to be pre-treated before they can be dyed or printed. Bleaching, whitening, and desizing are common pre-treatment methods and should be done carefully so they do not influence the printing process. If textiles contain oils, waxes, or paraffin, this should be washed off as well or they will change the output. We therefore recommend to study your materials and determine what kind of pre-treatment they need. If you get this part right, you create a canvas that forms a suitable foundation for your inks, resulting in better printing results. This way, you increase the absorption of the ink by your textiles while protecting them against (e.g.) yellowing.

Printing preparation

As opposed to traditional printing, inkjet printing requires an extra preparation step. Where traditionally all chemicals, dyes, and auxiliaries were put together, digital printing takes on a two-step approach where chemicals are added beforehand. This usually is a cocktail of three ingredients:

1. Thickener or migration inhibitors
2. Alkali, acids, or electrolytes
3. Additional auxiliaries

The thickener is essential, as it makes sure that the applied inks stay in perfect condition and do not "bleed". This is why it is also called a migration inhibitor. Depending on the fibre and the ink you are using, you set a certain pH medium with alkali, different salts, or acids to make sure that the ink gets fixed on the fabric. For polyamide fibres, for example, you need an acid pH medium, whereas for cotton, you need alkali conditions. This is the reason why you should carefully study your materials beforehand, as you need this information to create the perfect preparation cocktail. Sometimes, this cocktail requires a third ingredient to, among other things, keep the different chemicals from reacting and improve shade depth and sharpness.

3. INKJET STARTING KIT

Post-treatment

When your textiles come out of the printer, they must be dried carefully. Then, a fixation of the ink has to take place. Depending on the fabric, textiles should be thermofixated (polyester) or steam fixated (cotton, polyamide, silk, wool). The residuals of the preparation chemicals and non-fixed ink need to be removed and the fabric needs to be neutralised. Post-treatment

methods do just that and make sure that your products are disposed of impurities. It is sometimes recommended to apply a fastness finish, that makes the ink stick to the fabric. In this stage, you can also add functional finishes such as water repellents, extra softeners, scents, and flame resistance products. These finishes are optional, but they do play an important role as they add more value to your end-product.

“Finishes are optional, but they play an important role as they add more value to your end-product”

4. TESTING

There are quite some decisions to make when it comes to textile printing. Will you go with traditional printing, use a combination strategy, or will you focus on inkjet printing only? And if you choose to go digital, which products should you use for pre-treatment, preparation, and post-treatment? And how do you know if your cocktail matches your products?

The keyword here is testing. If you do not test, you gamble on the outcome and you will never know if you get the best out of your products. So, before you do anything else: take your fabrics to the lab, and have experts assemble a toolkit of ingredients that will make

your garments, carpets, banners, or flags both colour vibrant and sustainable to external influences such as production processes and thorough usage.

Is it going to take some time? Yes. Is high quality inkjet preparation more expensive than low quality inkjet preparation? Also, yes. But in the end, working with the right tools is going to pay off. As soon as you have assembled your ultimate preparation cocktail, you can start creating high quality products for your customers, and you will have right to ask a fair price. Good input=good output, meaning investing in inkjet preparation will enable you to print every possible design.

“Before you do anything else: take your fabrics to the lab”

5. ABOUT TANATEX

This white paper was brought to you by Tanatex, a group of enthusiastic science lovers with a passion for textiles and everything that makes them better. As long as we can remember, we have been working on products that not only improve the quality of textile processes, but also provide our customers with a true competitive advantage.

This is why we developed TANAJET, a textile finish that prepares your products for the dyeing process and improves colour quality and sustainability. Thanks to our broad experience in the carpet industry and our expertise in dyeing techniques, we know a great deal about colour behaviour and factors that influence the end-results. In our lab in the Dutch headquarters, we create tailor-made recipes for printing houses, fashion brands, and textile mills.

Do you want to know how TANAJET can help your organisation get the best out of inkjet printing? Feel free to contact us!





Tel.: +31 (0)318 67 09 11 | info@tanatexchemicals.com | TANATEXCHEMICALS.COM