



COLARIS.VAT

INKJET PRINTING FOR CELLULOSIC FIBERS

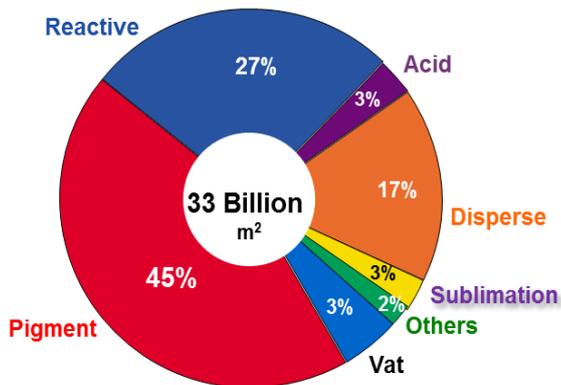
FOR HIGHEST LIGHT-, WASH- AND CROCK FASTNESS



Uniforms
Camouflage
Home Textiles
Technical Textiles

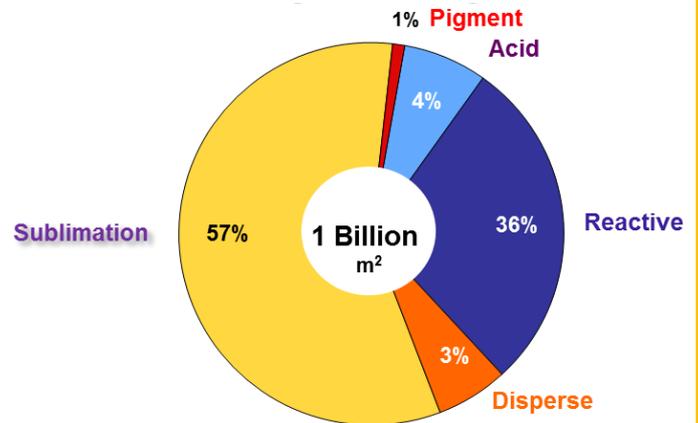
COMPARISON BETWEEN CONVENTIONAL AND DIGITAL PRINTING

97% CONVENTIONAL PRINTING



- Average growth of digital printing is around 25% per year
- Vat prints cover 3% of total printed market today
- Today's digital printed volume is also only 3%

3% DIGITAL PRINTING



On which fibers could VAT dyes be used?

- Cotton, Flax, Jute, Bamboo, Hemp, Modal, Sisal, Rayon, Lyocell, ...
- Certain shades also on Wool, Silk and Nylon

REQUIREMENTS ON VAT INKS

- Best fastness properties
- Improved compatibility and stability
- Improved open time
- Improved stress resistance
- Tighter drop forming performance
- Drop speed, weight, flowability ...
- Higher color strength and brilliancy



REQUIREMENTS ON INKJET PRINTING SYSTEM MANUFACTURER

- Innovative
- High quality materials and manufacturing process
- Good support and service
- Good know-how of complete textile and print process



REQUIREMENTS ON PRINT HEADS

- Circulation system
- Repairable
- Gray-level printing
- Robust
- Heads with different drop sizes for different applications

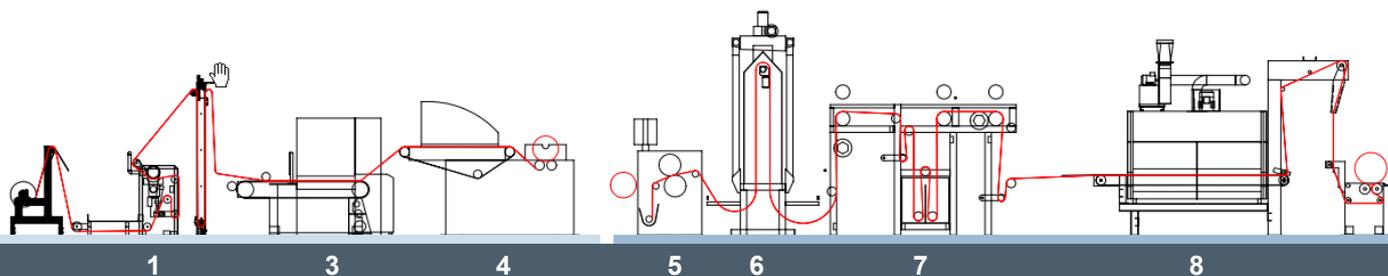


REQUIREMENTS ON INKJET PRINTING SYSTEM

- Reliability and stability
- High resolution of 400 x 800 dpi
- Application driven software
- Easy maintenance



2-PHASE WET-IN-WET PROCESS (SEE COLUMN B)



VAT PRINT AND FIXATION PROCESS COMPARISON						
		A 3-phase process		B 2-phase wet-in-wet process		C 1-phase process
1 Pre-coat	PHASE 1	Padding (with thickener)	PHASE 1	Padding (with thickener) + wetting agent	PHASE 1	Padding (with rongalit or hydro sulphite)
2 Drying		110 - 130°C				
3 VAT Printing	PHASE 2	6 - 10 colors	PHASE 2	6 - 10 colors	PHASE 2	6 - 10 colors
4 Drying		110 - 130°C				
5 Padding	PHASE 3	Padding (with rongalit or hydro sulphite)	PHASE 3	Padding using Rongalit or Hydrosulfite	PHASE 3	
6 Steaming		Steaming at about 100 - 110°C for about 5 - 15 min dependent on substrate		Steaming at about 100 - 110°C for about 5 - 15 min dependent on substrate		Steaming at about 100 - 110°C for about 5 - 15 min dependent on substrate
7 Washing		Rinsing, Oxidizing, Soaping, Rinsing		Rinsing, Oxidizing, Soaping, Rinsing		Rinsing, Oxidizing, Soaping, Rinsing
8 Drying		110 - 130°C		110 - 130°C		110 - 130°C

CHARACTERISTICS OF REACTIVE, VAT AND PIGMENT PRINTS ON CELLULOSIC FIBERS			
	Reactive	VAT	Pigment
Multiple wash fastness (5=best)	3-4	5	2-3
Light fastness (8=best)	5-6	6-8	5-8
Crock fastness (5 = best)	4-5	4-5	2 without - and 3-4 with post-treatment
Chlorine fastness (5=highest)	2	4-5	4-5
Handle and drape (5=softest)	5	5	3
Simplicity of process (5 = very simple)	3	2	5
Depth of black (5 = deepest)	4	5	3
Color gamut (5 = widest)	4	3	5

THE PRINCIPLE OF VAT PRINTING

- The VAT dye is printed in form of a pigment
- During the padding with a reducing liquor and the steaming process the vat dye pigments are transformed into a solubilized so-called leuco form which can enter the cellulosic fibre.
- During the oxidizing step the solubilized vat dyes are transformed back into their insoluble pigment form and thus become immobilized and anchored in the fibre which guarantees highest fastness properties.

TYPICAL AND POSSIBLE APPLICATIONS FOR COLARIS.DIGITAL VAT PRINTING



HOME TEXTILE, UPHOLSTERY AND WINDOW FASHION

Whenever extreme light fastness, excellent crock fastness and a soft handle is need.



TERRY TOWELS AND BATH ROBES

Terry products and other hospitality items with deep colors, highest wash fastness and softest touch.



DENIM FASHION AND JEANS

Indigo blue of the jeans is part of the VAT dye family. So denim could also be printed with the same fastness standards.



WORK WEAR AND UNIFORMS

Custom designed work wear, uniforms and camouflage patterns (that e.g. match a certain reflectance profile at NIR region) with highest wash and light fastness and a soft handle can be digitally printed.



INNOVATION

QUALITY

SERVICE

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