Printex
Your Printing Partners

evolve

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November 2018
Issue 70

Contentment is natural wealth, luxury is artificial poverty.

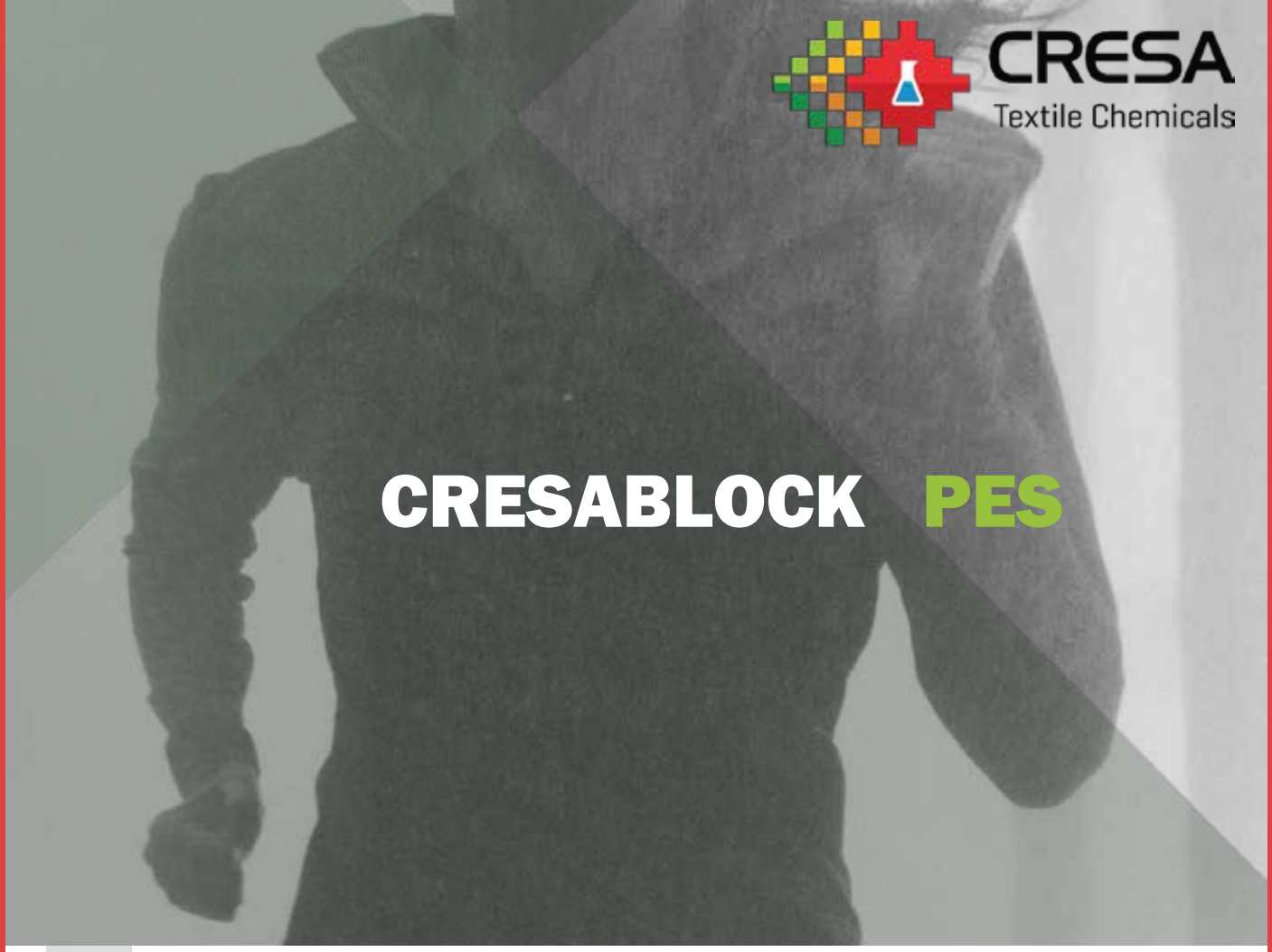
~ Socrates

The scariest moment is always just before you start.

~ Stephen King

When you see something beautiful in someone, tell them. It may take a second to say, but for them it could last a life time.

It doesn't matter how slow you go, as long as you don't stop. ~ Confucius



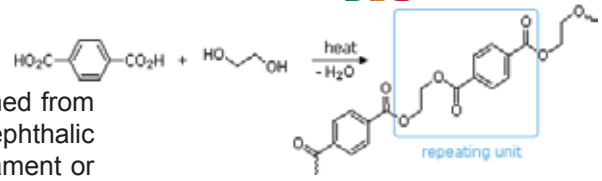
CRESABLOCK PES

Theory

POLYESTER FIBRES

Definition

Polyester is a synthetic and thermoplastic polymer obtained from the polycondensation reaction of ethylene glycol and terephthalic acid. In the textile industry, it is usually converted into filament or staple fibers and employed alone or blended with others synthetic and/or natural fibers.

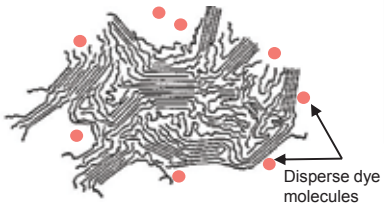


Polycondensation reaction of poly(ethyleneterephthalate)

Room temperature

Properties

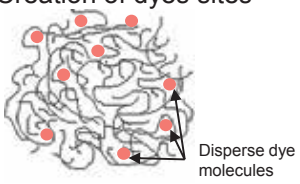
- Hydrophobic
- Close-packed structure
- Compact polymeric chains
- Absence of dyes sites



From 100ºC

Properties

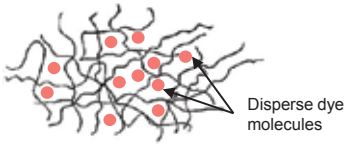
- Fibers starts swelling (effect increased with carriers)
- More amorphous regions in the polymer structure
- Mobility of polymeric chains
- Creation of dyes sites



At 130ºC

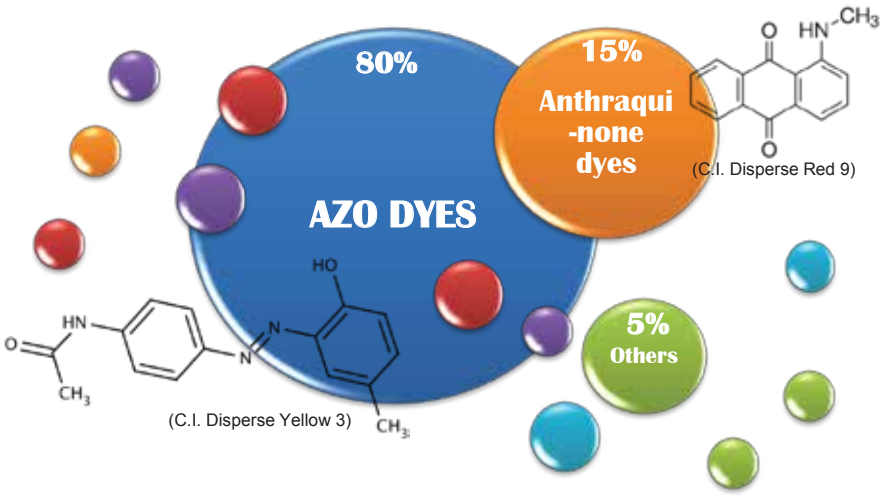
Properties

- Fibers' swelling
- Much more amorphous regions in the polymer structure
- More mobility of polymeric chains
- Greater number of dyes sites



Theory

DISPERSE DYES



Types

Around 1150 disperse dyes in 1992 listed in the Colour Index.

- Azo
- Anthraquinone
- Nitrodiphenylamine
- Methyne
- Amino Ketone
- Xanthene
- Quinoline
- Etc.

Influence of the dye molecular weight

Low molecular weight dyes

- ✓ High fibers' diffusion
- ✓ High dyeing rate
- ✓ Low sublimation fastness
- ✓ High migration propensity

High molecular weight dyes

- ✓ Lower fibers' diffusion
- ✓ Lower dyeing rates
- ✓ High heat and sublimation fastness
- ✓ Low migration propensity

Properties

- Water insoluble or low water solubility
- Does not contain water solubilizing groups
- Non ionic
- Good light fastness

Broadbent, 2001.
Koh, 2011.
Aspland, 1993.

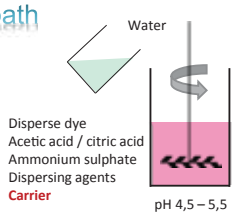
Theory

DYEING PROCESSES

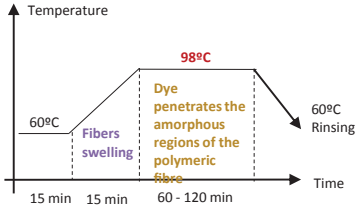
The dyeing process selected will depend on the dye type.

Carrier dyeing method

Dyeing bath

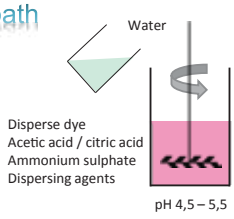


Dyeing process

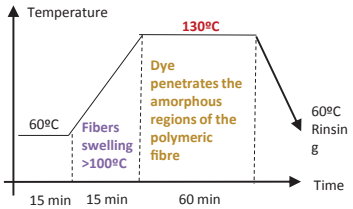


High temperature dyeing method

Dyeing bath

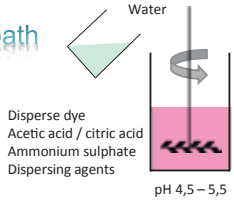


Dyeing process

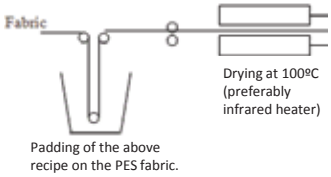


Thermosol dyeing method

Dyeing bath



Padding



Thermasol step

205°C 60-90 seconds in thermofixing unit.

Rinsing

Elimination of unfixed dyes and others chemicals.

Theory

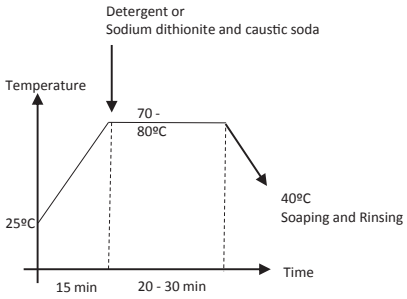
REDUCTION CLEARING PROCESS

CRESA Textile Chemicals

Objective

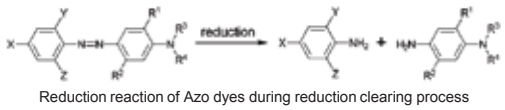
Eliminate superficial dyes which have not been entrapped inside the PES structure during dyeing, by destroying the excess of dye and consequently achieve good color fastness.

Process

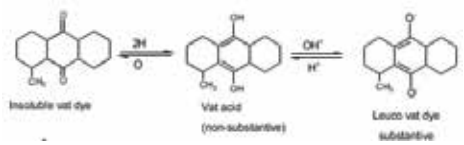


Reduction clearing effectiveness depends on each dye type:

- ❑ Azo dyes: Chemical reduction of the Azo bond.
- ❑ Anthraquinone dyes: Solubilization of the dye to the alkali leuco form (colorless).



Reduction reaction of Azo dyes during reduction clearing process



Reduction reaction of Anthraquinone dyes during reduction clearing process

Result

Without reduction clearing:

- Low brightness of shade
- Low wash fastness
- Low sublimation fastness
- Low rubbing fastness

With reduction clearing:

- Enhanced brightness of shade
- Enhanced wash fastness
- Enhanced sublimation fastness
- Enhanced rubbing fastness

Printing issues

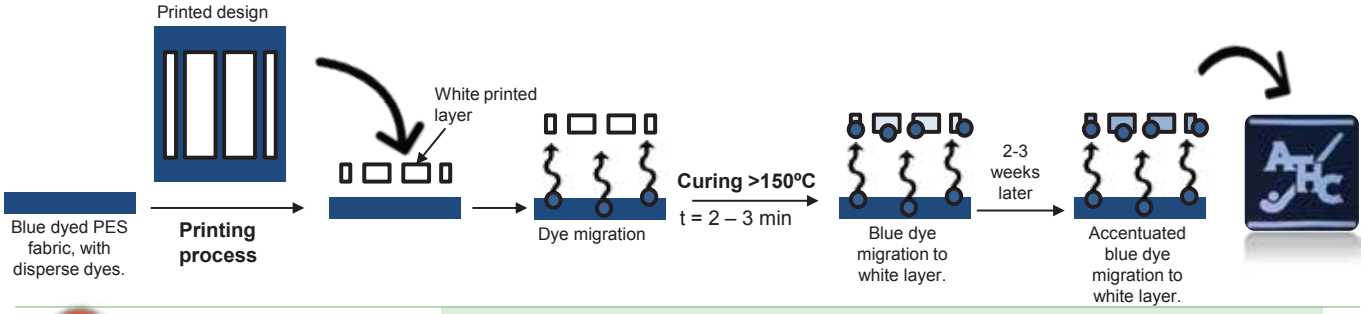
MIGRATION

CRESA Textile Chemicals

Without CRESABLOCK PES

Disperse dye can **migrate** from PES substrate to white printed layer, under **HEAT** (during curing treatment).

Dye migration can appear after a determined period of **TIME**.

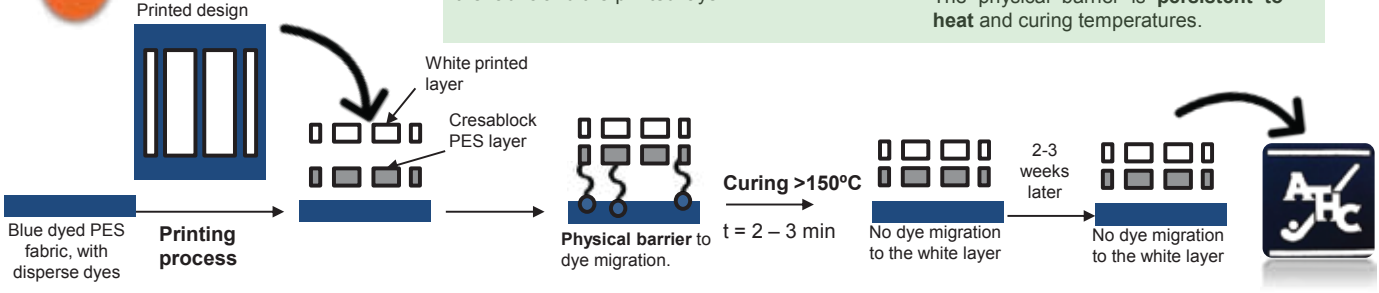


With CRESABLOCK PES

With CRESABLOCK PES a **permanent** and **physical barrier** is created between the fabric and the printed layer.

The physical barrier **prevent the printed layer from dye migration**.

The physical barrier is **persistent to heat** and curing temperatures.

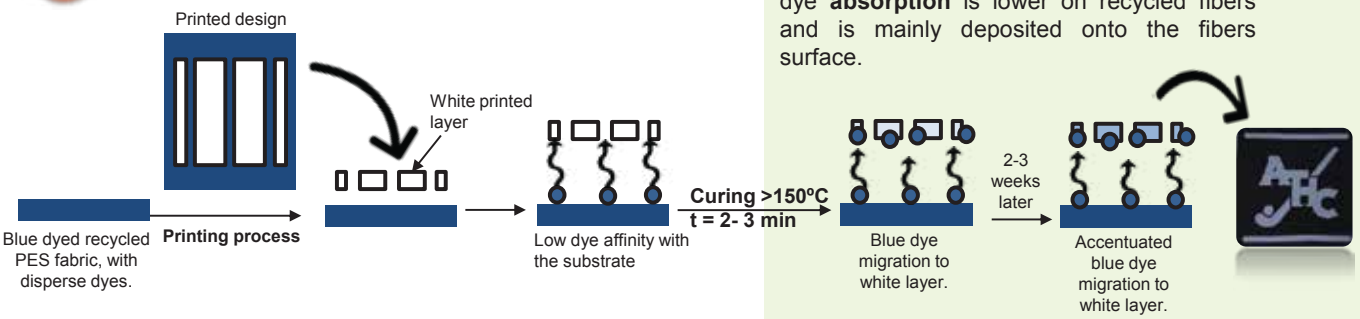


Printing issues
RECYCLED PES

Disperse dye migration is more important on **recycled PES** substrate.

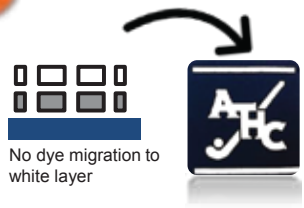
Without CRESABLOCK PES

Dye has lower **affinity** with recycled polymer than with original polymers. Consequently, dye **absorption** is lower on recycled fibers and is mainly deposited onto the fibers surface.



With CRESABLOCK PES

During dyeing processes, dye uptake rapidly reach **saturation** on recycled surfaces and then will remain ton the fabric surface.



Disperse dye **migration** will occur before on recycled fabric due to poor fixation on the substrate.

Printing issues
REDUCTION CLEARING

Without CRESABLOCK PES

Uncomplete reductive bath induce white lacquer contamination with superficial and unfixed disperse dyes.

With CRESABLOCK PES

No dye migration to white layer, even with uncomplete reduction clearing treatment.

Solution

CRESABLOCK PES

Special Binder specially designed for blocking the migration of disperses dyes of the fabric to be printed.

Without CRESABLOCK PES **With CRESABLOCK PES**

PROPERTIES:

- ❑ Does not affect the final **handle.**
- ❑ Very good domestic washing fastness (60ºC).
- ❑ No fabric tacking depending on the printing layers applied.
- ❑ Respond to **ECO PASSPORT** requirements.
- ❑ Suitable for textile materials aiming to be certified under The **STANDARD 100 by OEKO-TEX®.**

Application and Recommendations

CRESABLOCK PES

CRESA Textile Chemicals

Recommended application:

Sport clothes

Recommended screen mesh:

38 –61 threads/cm ^{2}

Recommended machines:

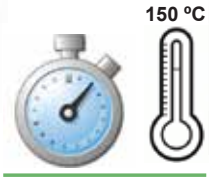
Automatic Screen Printing machines (Carousel).
Oval Screen Printing machines.

Recommended application condition:

Print Off Contact.

Recommended application:

Step 1. Print CRESABLOCK PES (mesh 38)
Step 2. Flash **(*)**
Step 3. Print CRESABLOCK PES (mesh 38)
Step 4. Flash
Step 5. Print CRESABLANC (mesh 43)
Step 6. Flash
Step 7. Print CRESABLANC (mesh 43)
Step 8. Flash



Recommended curing conditions:

2 - 3 minutes at 150ºC

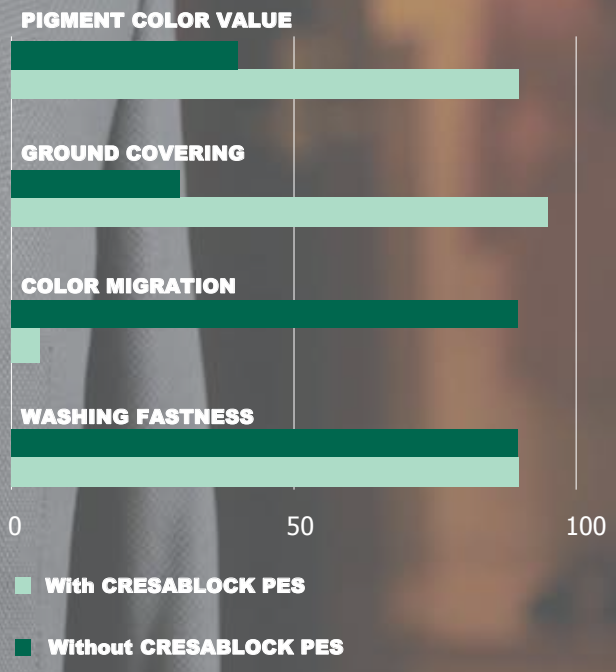
For elastic garments:
CRESABLANC HE SUPER

Recommended application:

Print with CRESABLANC HE SUPER before CRESABLOCK PES.

(*) : For whom dispose of a cooling system, cooling can be done after flash.

Comparative
WITH AND WITHOUT



Results
ILLUSTRATION

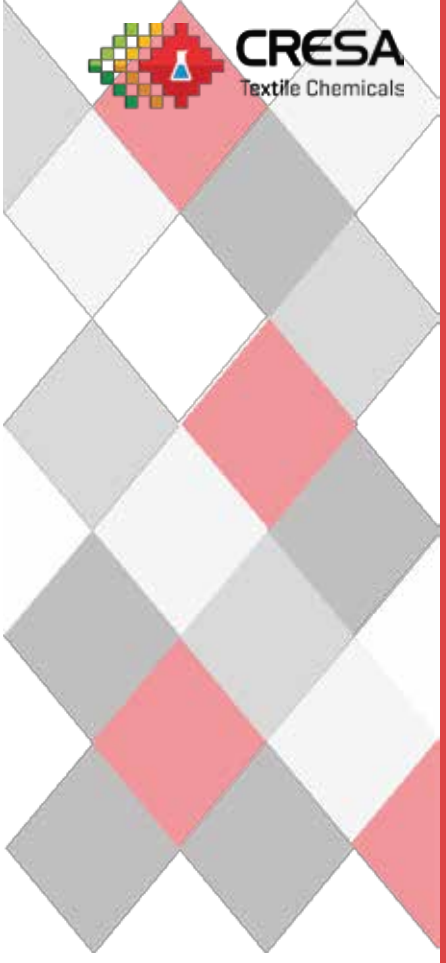
WITHOUT CRESABLOCK PES

WITH CRESABLOCK PES

Example

CRESABLANC HE SUPER

(Base of CRESABLOCK PES)



Contact

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News *from* Printex

Mr. Rui Mechado (Commercial Director – Roq International) & Mr. Vitor Simao (Sales Engineer –Roq International) had successful visit to Pakistan and during their stay they closed the deals of Roq Machines to a couple of Customers. Also they introduced the Installment Plan for the Roq Machines for the small to medium range customers to support them for their unit upgradation.

Mr. Ignasi Gomez (Sales Engineer – Cresa) visited Pakistan and he introduced the Digital Pigment Inks and also visited customers for Paint Industry w.r.t Pigment Dispersions for Paint.

PRINTEX

Towards Innovation

Printex

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