



Econtrol[®] T-CA

Sustainable technology for dyeing of PES/cellulose and elastane blends with Levafix[®]/Remazol[®] and Dianix[®] dyes



General Information

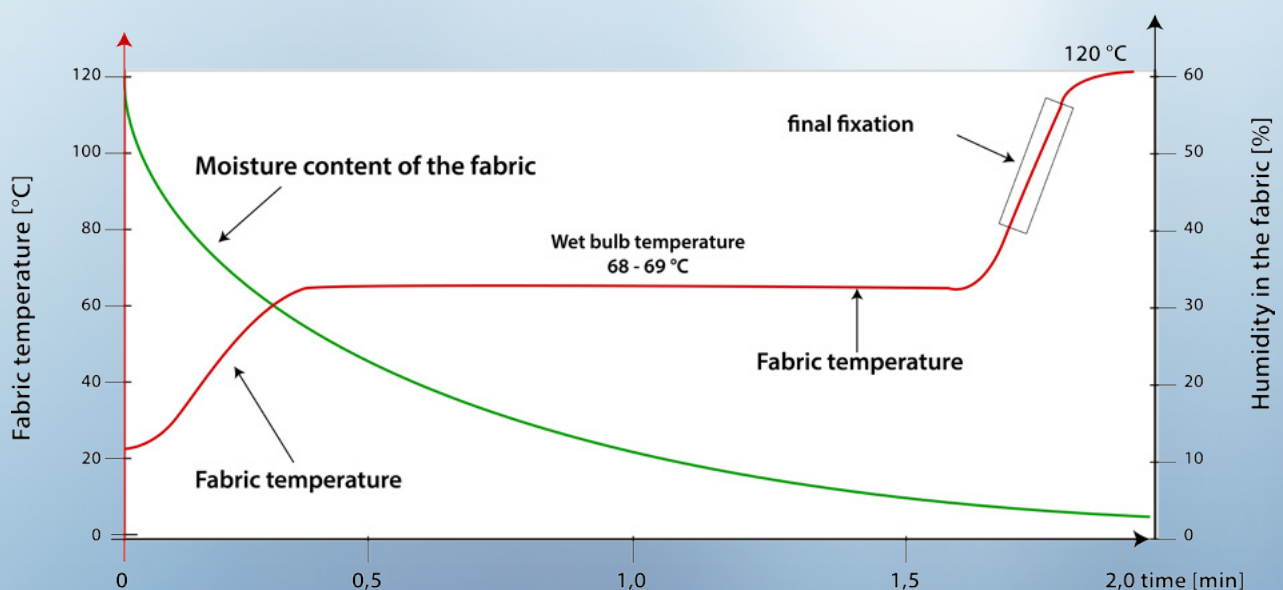
Rising cost pressure remains a major problem in the textile industry. Reasons include the steadily rising cost of energy, water and effluent treatment.

This is especially an issue for PES/cellulose wovens. The established methods of dyeing such blends are extremely time and cost-intensive. They require large amounts of water and chemicals and use a good deal of energy.

This brochure describes the Econtrol® T-CA process for continuous dyeing of polyester/cellulose and blends with elastane e.g. Lycra®.

It is a one-bath process which combines the successfully established Econtrol process for cellulosic fibers with a thermosol dyeing of polyester in alkaline medium. As a single bath dyeing process, it is very interesting from both an ecological and an economic standpoint.

The precondition for a successful Econtrol T-CA dyeing process is a Monforts Thermex® hotflue with Econtrol set-up; Levafix® and Remazol® dyes with excellent robustness, Dianix® dyes suitable for Econtrol T-CA dyeing and Sera® auxiliaries for a perfect process stability.



Fabric temperature and its humidity during the Econtrol- Process

The Econtrol principle: fixation of reactive dyes by drying with defined humidity in a Thermex hotflue

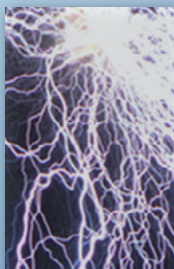
Econtrol® T-CA offers you tangible benefits



up to
85%
less
chemicals



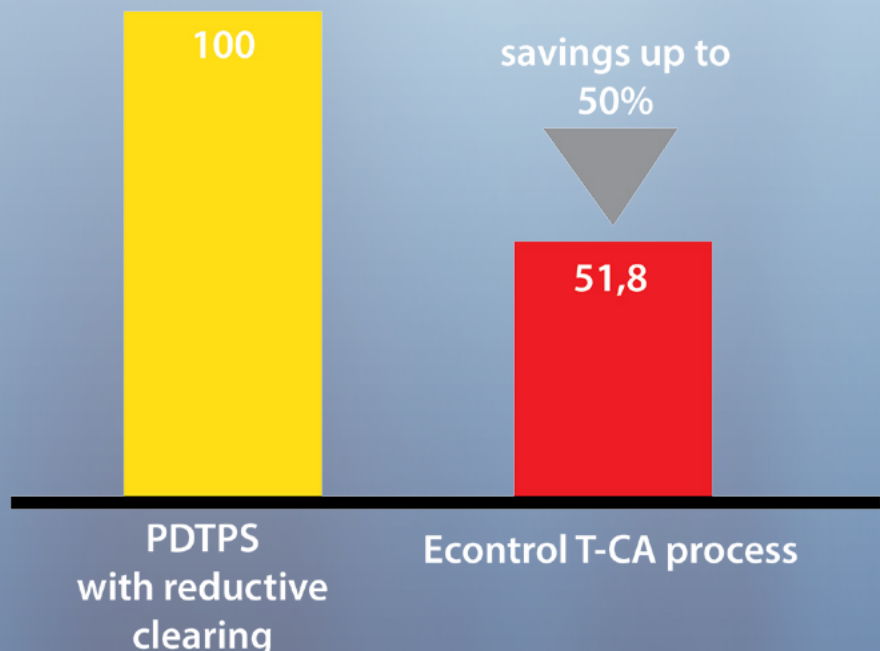
up to
65%
less
water



up to
50%
less
energy

- The Econtrol T-CA process is a single pad continuous dyeing process for polyester/cellulosic blends
- No intermediate reduction clearing necessary
- No steamer required
- Suitable for almost all blend ratios
- Econtrol T-CA is also suitable for woven PES/CO fabric with elastane e.g. Lycra®
- Wide range of shades can be covered with Econtrol T-CA
- The simple lab process enables excellent lab to bulk reproducibility
- Fulfills fashion fastness requirements
- Offers significant cost savings compared to the standard pad-dry-thermosol-pad-steam process

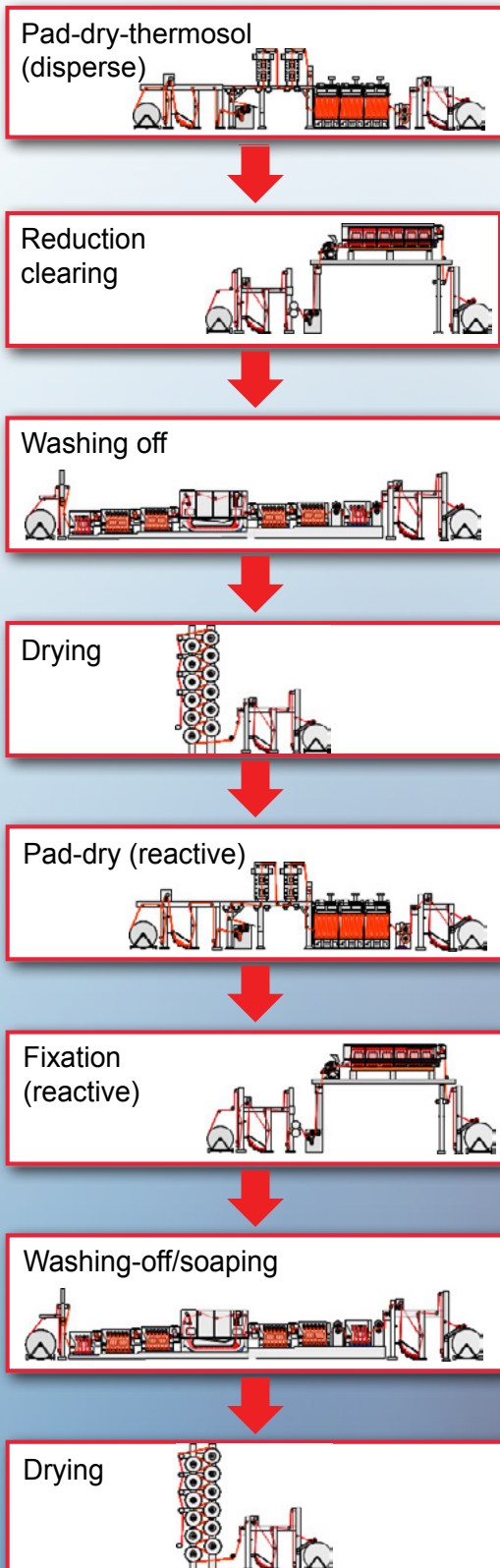
Comparison of total production costs



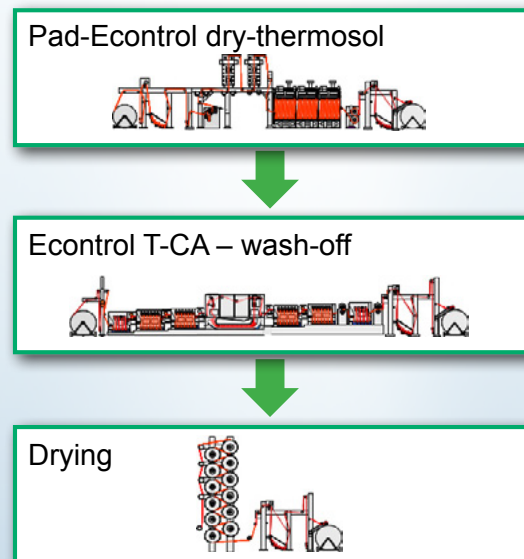
Process comparison

The conventional PDTPS process is a complicated process consisting of many separate process steps. These different steps result in bad reproducibility and high cost.

Conventional Process Route



Econtrol® T-CA



By reducing the amount of chemicals, water and energy, the Econtrol T-CA process has a positive impact on both the environmental footprint and the operating cost.

The consumption data for the Econtrol T-CA process clearly demonstrate its benefits:

Because it does not use separate baths and reduction clearing is not necessary, the process saves large amounts of chemicals, water and energy.

- up to 80% less chemicals
- up to 60% less water
- up to 50% less energy

These data are reflected in production costs. On this basis, the Econtrol T-CA process results in nearly 50% lower cost than standard production processes.

Econtrol® T-CA technical information

Econtrol T-CA is a single pad continuous dyeing process for PES/cellulose blends which offers significant ecological and economic advantages compared to conventional processes.

The following products are particularly suitable for Econtrol T-CA

- **Levafix® and Remazol® reactive dyes**

- Selected dyes ensure full build-up and fastness properties under Econtrol T-CA conditions

- **Dianix® dye selection stable to the T-CA dyeing conditions**

- Full build-up
- Excellent stability and reproducibility
- Excellent fastness for apparels
- No reductive clearing necessary in combination with Sera® Gal P-LP

- **Sera Wet C-UD**

- Provides perfect wetting and penetration of the fabric

- **Sera Gal M-IP**

- Ensures a smooth surface appearance of the dyed material
- Avoids horizontal and vertical migration
- Supports dye penetration into the fiber

- **Sera Gal P-LP**

- Highly effective washing auxiliary for polyester/cellulose blends
- Provides perfect apparel fastness without reduction clearing
- To be used in standard continuous washing equipment without an additional clearing step

Process Steps

Econtrol T-CA is a very short and simple method based on the following process steps

Padding ► Econtrol drying ► Thermosoling ► Wash off

Dye liquor

The dye liquor can be prepared as "All In" liquor without using a mixing pump if Levafix dyes are used. The liquor stability depends on dyes, chemicals and temperature and is roughly between 1 and 3 h at 25°C.

In general and especially when using Remazol dyes, we recommend to prepare the dye and the alkali solution in separate tanks and mix both liquors with a suitable mixing device before feeding to the trough. Both liquors should be stirred constantly with a slow moving stirrer.

Liquor preparation and wash-off

Liquor preparation

Dissolve Levafix®/Remazol® dyes

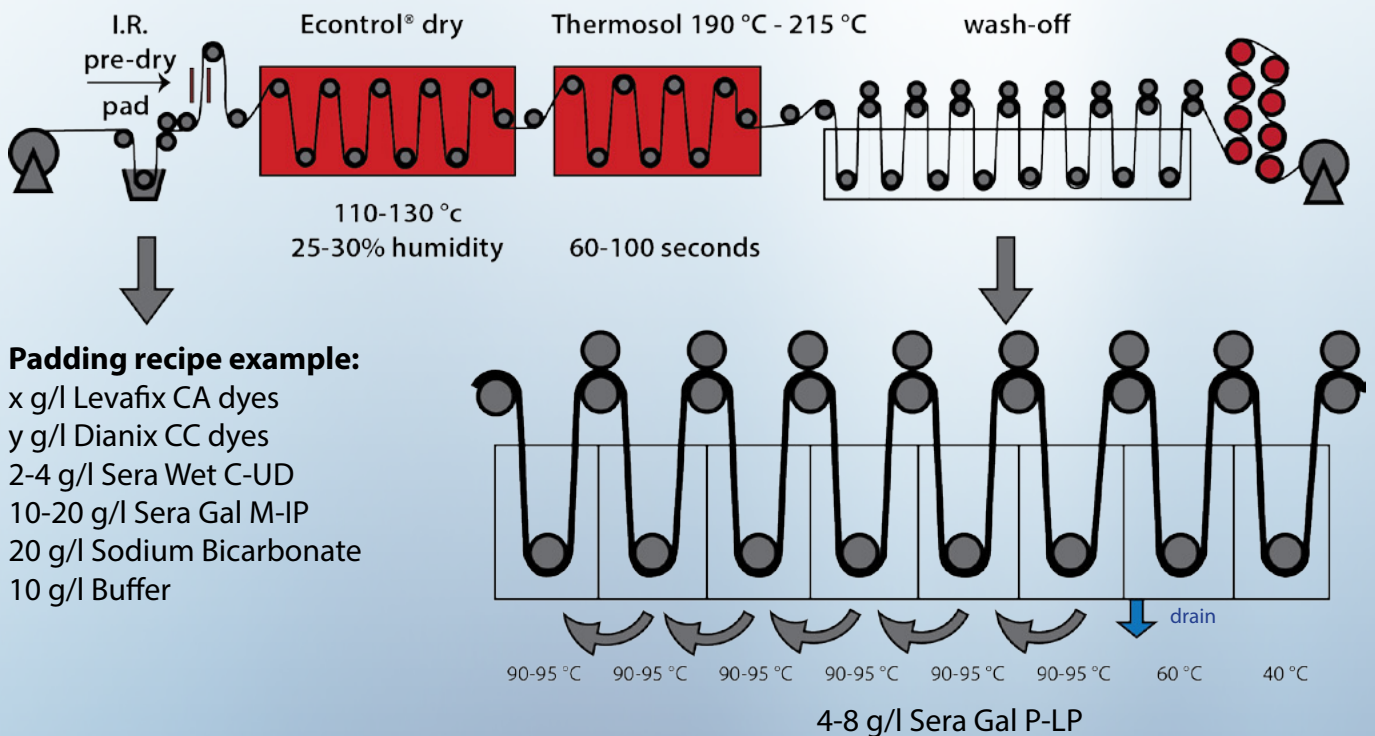
Disperse Dianix® dyes

Dyestuffs have to be added to the liquor through a fine filter

Add Sera® Gal M-IP (pre-diluted)

Add Sera Wet C-UD

Add pre-dissolved Sodium Bicarbonate plus buffer in case of "All-In", or prepare a separate alkali solution for 4:1 alkali dosing, similar to CPB.



Wash-off

The Econol T-CA wash-off is an important process step to ensure reproducibility and the expected fastness properties.

The final adjustment of the washing equipment depends on the individual configuration.

In any case the wash-off process has to be started at 95 °C without any neutralization.

4-8 g/l Sera Gal P-LP will be sufficient to achieve excellent fastness properties without any intermediate reductive clearing.





5-15 l/kg fresh water is required as an average value depending on the efficiency of the washing machine and on the depth of shade.

Example Recipes

Grey

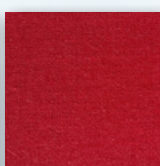
Dianix® Red CC	g/l	0,287
Dianix Blue CC	g/l	0,92
Dianix Black CC-R	g/l	4,2
Remazol® Grey SAM	g/l	10



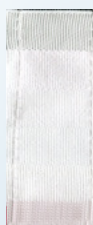



	Washing Fastness 60 °C ISO 105-C03	Washing Fastness 60 °C ISO 105-C06 C2S	Perspiration Fastness - acid ISO 105-E04	Perspiration Fastness - alkaline ISO 105-E04
CTA				
CO				
PA				
PES				
PAN				
CV				

Red

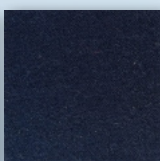
Dianix Yellow Brown CC	g/l	4,34
Dianix Red CC	g/l	25,2
Dianix Blue CC	g/l	0,3
Levafix® Amber CA-N	g/l	7,7
Levafix Red CA-N	g/l	30
Levafix Blue CA	g/l	0,5







	Washing Fastness 60 °C ISO 105-C03	Washing Fastness 60 °C ISO 105-C06 C2S	Perspiration Fastness - acid ISO 105-E04	Perspiration Fastness - alkaline ISO 105-E04
CTA				
CO				
PA				
PES				
PAN				
CV				

Navy

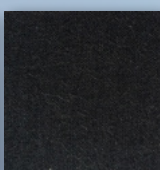
Dianix Yellow Brown CC	g/l	2
Dianix Red CC	g/l	0,3
Dianix Navy CC	g/l	14
Levafix Red CA-N	g/l	2,8
Levafix Navy CA	g/l	21



	Washing Fastness 60 °C ISO 105-C03	Washing Fastness 60 °C ISO 105-C06 C2S	Perspiration Fastness - acid ISO 105-E04	Perspiration Fastness - alkaline ISO 105-E04
CTA				
CO				
PA				
PES				
PAN				
CV				

Black

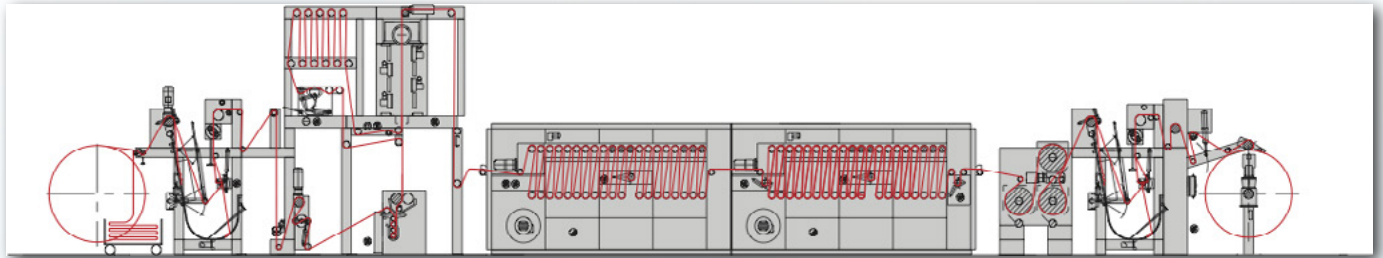
Dianix Black CC-R	g/l	30
Remazol Midnight Black RGB 01	g/l	60



	Washing Fastness 60 °C ISO 105-C03	Washing Fastness 60 °C ISO 105-C06 C2S	Perspiration Fastness - acid ISO 105-E04	Perspiration Fastness - alkaline ISO 105-E04
CTA				
CO				
PA				
PES				
PAN				
CV				

Chemical recipe		Grey	Red	Navy	Black
Sera® Wet C-UD	g/l	2	2	2	2
Sera GAL M-IP	g/l	10	10	10	10
Sodiumbicarbonate	g/l	20	20	20	10
Soda ash	g/l				10
Buffer	g/l	10			

Thermex[®] hotflue for Econtrol[®] dyeing processes



- Profitable for batch length from 300 m
- Suitable for all indirect heating systems
- Chamber climate established with kiss roller technology
- High process reliability and excellent reproducibility
- Customized configuration
- Sustainable unique processes
- Single bath process options for elastane containing fabric
- Market leader because of high reliability and innovative technology



Solution package for Econtrol[®] dyeing processes

Levafix [®] and Remazol [®] reactive dyes for cellulosic fibers			Dianix [®] disperse dyes for Polyester fibers
Levafix	Remazol SAM	Remazol RGB	Dianix

Sera [®] processing auxiliaries	
In bleaching	In dyeing
<p>Sera Fil SBS sequestering effect on iron</p>	<p>Sera Gal P-LP wash-off effect</p> <p>Without P-LP 2 g/l Sera Gal P-LP</p>

Committed to Sustainability.

At DyStar, our products and services help customers worldwide reduce costs, shorten lead times and meet stringent quality and ecological specifications.

DyStar Network Representatives




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DyStar 
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