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SE EN ISO 9001:2015
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192003e, Global, 2023

ARCHROMA
LIFE ENHANCED

AVITERA® SE / For true innovation that meets economical and environmental sustainability.

AVITERA® SE
SUSTAINABILITY REDEFINED
Color a better tomorrow

AVITERA® SE Dyes			Brilliant Yellow SE	Yellow SE	Gold SE	Brilliant Orange SE	Orange SE	Cardinal SE	Brilliant Red SE
Bleached Cotton Knit									
Suitability	Warm exhaust dyeing		■	■	■	■	■	■	■
	PES/CEL exhaust, AVITERA® FAST		■	■	■	■	■	■	■
1/1 SD % dyestuff (CO knit bleached)			2.68	1.68	1.61	2.06	1.2	1.53	3.6
1/1 SD g/kg dyestuff (CO merc. / PB / C1)			18.4	11.6	-	15.4	10.7	11.9	29.1
Light Fastness (Xenon arc) ISO 105-B02	1/12 SD	Ch	4-5	5	6-7	3-4	3-4	4	4
	1/1 SD	Ch	5-6	6	7	5	4	5	5
AATCC 16E -1987 (grey scale 1-5) 1/1 SD	20 AFU	Ch	4-5	4-5	5	5	4-5	5	5
	40 AFU	Ch	4	4-5	5	4-5	4-5	4-5	4-5
Fastness to washing 60°C ISO 105-C06 C1S		Ch	4	4-5	5	4-5	5	4	4-5
		CO	5	5	5	5	5	4-5	4-5
		CV	5	4-5	5	4-5	5	5	5
Fastness to multiple washing 60°C ISO 105-C06 C1S X 5		Ch	4	5	5	4-5	5	4	4-5
		CO	5	5	5	5	5	5	4-5
		CV	5	4-5	4-5	4-5	5	5	5
Fastness to peroxide washing 95°C ISO 105-C06 E2S		Ch	4	4-5	4-5	4-5	4	3-4	5
		CO	5	5	5	5	5	4-5	4-5
		CV	5	4-5	4-5	4-5	4-5	5	5
Fastness to water ISO 105-E01		Ch	4-5	5	5	4-5	4-5	4-5	4-5
		CO	5	5	5	5	4-5	4-5	5
		WO	5	5	5	5	4-5	4-5	5
Fastness to perspiration alkaline / acid ISO 105-E04		Ch	4-5 / 4-5	4-5 / 4-5	5 / 5	4-5 / 4-5	3-4 / 4	4 / 4	4-5 / 4-5
		CO	5 / 5	5 / 5	4-5 / 4-5	5 / 5	4-5 / 5	4-5 / 4-5	5 / 4-5
		WO	5 / 5	5 / 5	4-5 / 4-5	5 / 5	4-5 / 5	4-5 / 4-5	5 / 5
Fastness to chlorinated water ISO 105-E03, 20 mg/l		Ch	4-5	4	4-5	4-5	3-4	3	4-5
Fastness to oxidative bleach damage M&S C10A		Ch	4-5	5	5	4-5	4	4	4-5
Nitrogen oxides	1 cycle	Ch	5	5	4-5	5	4-5	4-5	5
ISO 105-G01	3 cycles	Ch	5	5	4-5	5	4-5	4-5	4-5

Light Red SE	Red SE	Rose SE	Magenta SE	Bordeaux SE	Light Blue SE	Blue SE	Sky SE	Blue Horizon SE	Deep Blue SE	Navy SE	Deep Sea SE	Night Storm SE	Black SE	Black Pearl SE
■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2.56	2.3	2.24	1.70	1.2	2.8	2.4	1.75	1.8	1.81	3.4 NL	2.6 NL	3.2 NL	3.3 BK	3.7 BK
20.8	17.1	15.7	13.2	10.5	22.2	19.0	12.8	11.8	14.2	29 NL	20 NL	22 NL	30 BK	31 BK
4-5	4	3-4	3-4	3-4	5-6	4	3-4	3-4	3-4	-	-	-	-	-
5-6	4-5	5	4-5	4-5	6-7	5	5	5	4-5	5 NL	5 NL	4-5 NL	5 BK	4-5 BK
4-5	4-5	5	4 - 5	4-5	5	5	5	5	4-5	4-5 NL	5 NL	4-5 NL	5 BK	4-5 BK
4-5	4	5	4	4	4-5	4-5	4-5	4-5	3-4	4-5 NL	4-5 NL	4-5 NL	4-5 BK	4-5 BK
4-5	4-5	4-5	4-5	4-5	5	5	4-5	4-5	4-5	5	4-5	4-5	4-5	4-5
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4-5	5	5	4 - 5	4-5	4-5	5	5	5	5	5	4-5	5	5	5
4-5	4-5	5	4 - 5	4-5	4	4	4-5	4-5	5	4-5	4-5	5	4-5	5

Key	Performance	Suitability	Sensitivity
■	Very Good	Highly recommended	Not sensitive
◨	Good	Recommended	Slightly sensitive

Key	Performance	Suitability	Sensitivity
□	Moderate	Limited	Moderately sensitive
_	Poor	Not Recommended	Highly sensitive

AVITERA® SE

A range of award-winning dyes with sustainability results that exceed conventional dyes, a true innovation that reduces water and energy consumption, while increasing productivity through shorter production time.

/ OVERVIEW

Range	Dye
AVITERA® SE	AVITERA® Brilliant Yellow SE
	AVITERA® Yellow SE
	AVITERA® Gold SE
	AVITERA® Brilliant Orange SE
	AVITERA® Orange SE
	AVITERA® Cardinal SE
	AVITERA® Brilliant Red SE
	AVITERA® Light Red SE
	AVITERA® Red SE
	AVITERA® Rose SE
	AVITERA® Magenta SE
	AVITERA® Bordeaux SE
	AVITERA® Light Blue SE
	AVITERA® Blue SE
	AVITERA® Sky SE
	AVITERA® Blue Horizon SE
	AVITERA® Deep Blue SE
	AVITERA® Navy SE
	AVITERA® Deep Sea SE
	AVITERA® Night Storm SE
	AVITERA® Black SE
	AVITERA® Black Pearl SE

/ DESCRIPTION / RECOMMENDATIONS

AVITERA® SE dyes for highest utilities and water savings: Quality and sustainability.

AVITERA® SE represents a quantum leap in dyeing of cellulosic fibers by establishing a completely new dyeing process that offers sustainable savings to the mills and protects the environment.

- Water, energy and time saving (up to 50%)
- Exceptional washing off at reduced temperature (60°C)
- Superior level of wet fastness properties

/ CONTENTS

EMPOWERING A BETTER TOMORROW WITH

SUPER SYSTEMS+

LEADING THE CHANGE | **EMPOWERING TRANSFORMATION** | **MEASURABLE IMPACT**

Based on our **PLANET CONSCIOUS+** approach, **SUPER SYSTEMS+** are our end-use focused, fiber specific solutions that deliver process efficiency and intelligent effects, empowering mills and brands to make the right choices, achieve their sustainability targets and meet consumer demands.

Scan the QR code to learn more about our products

/ KEY CHALLENGES FACING THE INDUSTRY TODAY

WATER CONSUMPTION

The textile industry is known to have significant water consumption. It is in the industry's collective interest to address this issue by adopting various water management strategies to reduce consumption, mitigate pollution, and contribute to a more sustainable and responsible industry.

GREENHOUSE GASES

Carbon intensity of textiles and garments varies across the supply chain, but emissions occur along the value chain, with the wet processing, yarn & fabric production and consumer use phases being the most significant contributor to GHG emissions.

EMBRACING CIRCULARITY

A circular economy moves away from the traditional "take, make and dispose" model to one that is regenerative by design. The goal is to retain as much value as possible from resources & products to create a system that allows for longer life, optimal reuse, recycling and remanufacturing.

COMPLEXITY OF CHEMICAL MANAGEMENT

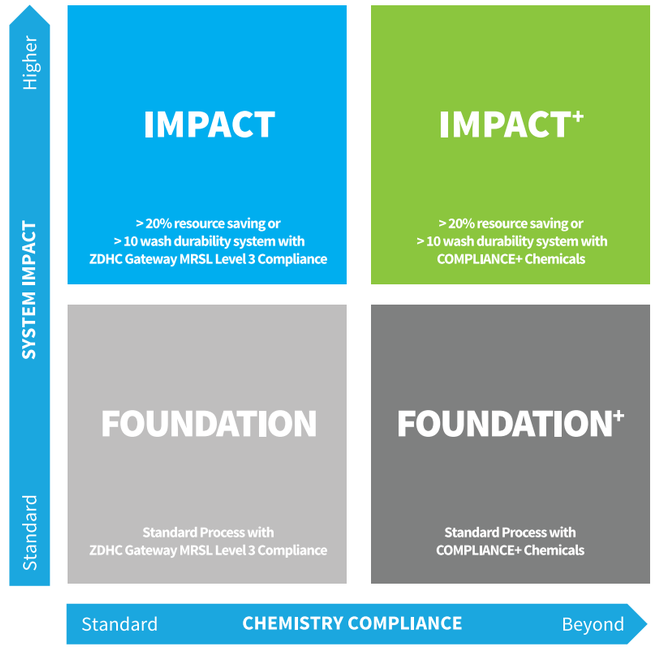
Chemical management is a critical issue due to the potential environmental and health impacts associated with the manufacture, use and disposal of chemicals. Reducing environmental and health risks and keeping up with evolving regulations can be a very complex task for brands and mills.

/ ALIGN YOUR SUSTAINABILITY GOALS WITH A CHOICE OF SUPER SYSTEMS+

We believe that we can reduce the environmental impact for the planet and people by improving resource savings in manufacturing and consumer use, adopting cleaner chemistries and enhancing durability of the finishing effects and colors.

Organized into four quadrants - **Foundation**, **Foundation+**, **Impact** and **Impact+**, the Impact Matrix addresses the key challenges facing the textile industry and guides you in making informed decisions about using cleaner chemistries, resource saving solutions in processing, improved durability in consumer use or a combination of all.

Our Super Systems+ is a comprehensive tool that guides you to achieve your sustainability goals **without compromise**.



/ AVITERA IS A PART OF THE FOLLOWING SUPER SYSTEMS+

TYPE	FIBER	END-USE	FOUNDATION	FOUNDATION+	IMPACT	IMPACT+
KNITS	COTTON	CASUAL WEAR	●		●	●
KNITS	POLY/ COTTON	CASUAL WEAR/ ATHLEISURE	●		●	●
TOWEL / EXH.	COTTON	HOME TEXTILES	●		●	●
TOWEL / CON.	COTTON	HOME TEXTILES	●		●	●
BOTTOM WEIGHTS	COTTON	CASUAL WEAR	●		●	●
BOTTOM WEIGHTS	POLY/ COTTON	CASUAL WEAR	●		●	●
SHIRTING / YARN	COTTON	CASUAL WEAR	●		●	●
SHIRTING / SOLID	COTTON	CASUAL WEAR	●		●	●
SHIRTING / SOLID	POLY/ COTTON	CASUAL WEAR	●		●	●

/ SAVINGS ON BLACK COTTON T-SHIRT *(330 GRAMS)*

Total Cost = Pretreatment Cost + Dyestuff Cost + DA and Wash Off Cost+ Utility Cost + Fix Cost
Utility Cost Considered : Electricity Cost 0.0875 USD/kWh, Water Cost 1.0 USD/KL, Steam Cost 0.0219 USD/Kg, Fix Cost 0.0375 USD/Kg/hour
Operational Excellence: Cost of Non-Conformance considered in foundation due to reduced Right First Time levels

/ GENERAL

STORING THE DYES

Powder dyes are stable for storage for more than two years and liquid dyes for more than 1 year in closed containers at 20–30°C/68–86°F.

PRE-TREATMENT

The goods should have a neutral pH and high absorbency. Impurities, sizes and lubricants must be carefully removed. Any peroxide residues from bleaching must be removed or destroyed in order to prevent losses of yield and/or unlevelness (especially important with pale shades).

WATER HARDNESS

AVITERA® SE dyes are not affected by hard water. To prevent precipitation of calcium salts under alkaline conditions, soft (<4°Dh, <5°Clark) or demineralized water however should be used. Sequestering agents are used to soften water and bond free heavy metal ions. Sequestering agents that do not remove the metals from reactive metal complex dyes should be used. Otherwise the shade can change and fastness properties be impaired. EDTA products are therefore not suitable. If hard water is used, or the substrate itself contains hardness ions, ALBATEX® DBS or ALBATEX® E3-DCC dyeing auxiliaries should be added to the dyeing bath.

DISSOLVING POWDER DYES

The dyes are best dissolved by:

Strewing 10 times their weight of hot water (not higher than 80°C/176°F) and high-speed stirring or pasting with cold water and pouring on hot water.

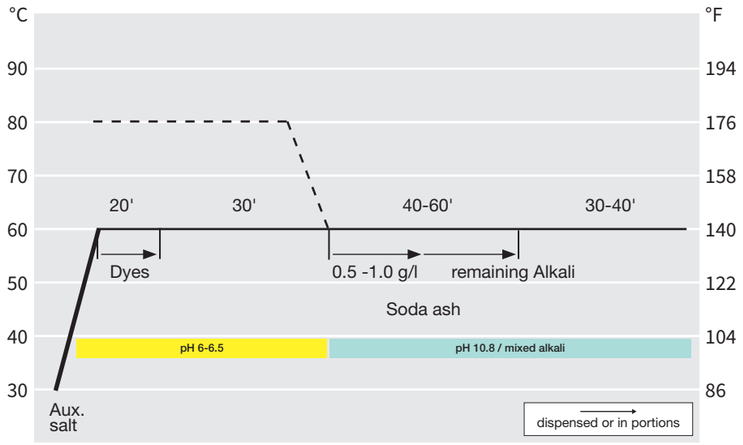
It is advisable to use soft or softened water.

To avoid loss of yield through hydrolysis, the pH of the water should be slightly acidic to neutral.

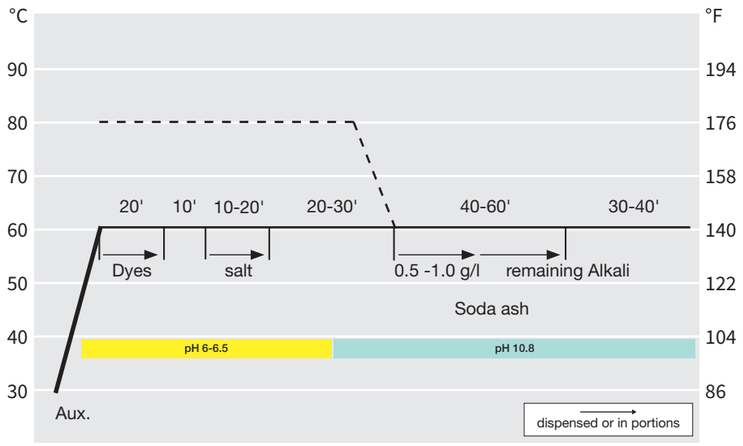
/ EXHAUST DYEING APPLICATIONS

DYEING METHODS FOR 100% CEL

60°C/140°F method for deep shades (AVITERA® SE)



60°C/140°F method for pale to medium shades (AVITERA® SE)



Auxiliaries: 0.5-1.0 g/l ALBAFLOW® UNI-01 or ALBAFLOW® FFC-01

0.5-2.0 g/l IMACOL® CD or IMACOL® X-JET LIQ

1.0-3.0 g/l ALBATEX® AD (AD-E, AD-G) or DEKOL® 1097 N LIQ or

0.5-1.0 g/l ALBATEX® AB-55

ALKALI ADDITION RECOMMENDATIONS

SODA ASH

1. portion, add 0.5-1.0 g/l of soda ash, linearly dispensed over 20-30 min
2. portion, add remaining quantity, progressively dispensed over 20-30 min

MIXED ALKALI, SODA ASH/NAOH

1. portion, add 0.5-1.0 g/l of soda ash, linearly dispensed over 20-30 min
2. portion, add remaining quantity of soad ash and caustic soda, progressively dispensed over 20-30 min

SODIUM BICARBONATE / SODA ASH (FOR CV AND CO MERC. FABRICS ONLY)

1. portion, add 1.0 g/l sodium bicarbonate, linear dispensed over 10-15 mins
2. portion, add 1-2 g/l soda ash, linear or progressive dispensed over 20-30 mins
3. portion, add remaining soda ash, progressive dispensed over 20-30 mins

This method shows the best leveling performance on CV and CO merc. fabrics

The recommended dyeing procedure is the 80°C/60°C migration method

SALT AND ALKALI RECOMMENDATIONS AT DIFFERENT LIQUOR RATIOS : SODA ASH METHOD

Liquor ratio at 6:1								
AVITERA® SE	%	< 0.5	0.5	1	2	3	4	≥ 5
Auxiliaries				See page 7				
Salt	g/l	10	20	30	40	50	60	70
Soda ash	g/l	14	16	18	20	20	20	20

Liquor ratio at 7:1								
AVITERA® SE	%	< 0.5	0.5	1	2	3	4	≥ 5
Auxiliaries				See page 5				
Salt	g/l	20	30	40	50	60	70	80
Soda ash	g/l	10	12	14	16	18	20	20

Liquor ratio at and above 8:1								
AVITERA® SE	%	< 0.5	0.5	1	2	3	4	≥ 5
Auxiliaries				See page 7				
Salt	g/l	30	40	50	60	80	90	100
Soda ash	g/l	8	10	12	14	16	18	18

For LR 5:1, the amount of salt can be reduced by 10%
For LR 4:1, the amount of salt can be reduced by 20%

SALT AND ALKALI RECOMMENDATIONS AT DIFFERENT LIQUOR RATIOS : MIXED ALKALI METHOD

Liquor ratio at 6:1								
AVITERA® SE	%	< 0.5	0.5	1	2	3	4	≥ 5
Auxiliaries				See page 7				
Salt	g/l	10	20	30	40	50	60	70
Soda ash	g/l	10	10	5	5	5	5	5
NaOH 36°Bé/66°Tw	ml/l	0.5	1	2	2.5	3	3.5	4

Liquor ratio at 7:1								
AVITERA® SE	%	< 0.5	0.5	1	2	3	4	≥ 5
Auxiliaries				See page 7				
Salt	g/l	20	30	40	50	60	70	80
Soda ash	g/l	10	5	5	5	5	5	5
NaOH 36°Bé/66°Tw	ml/l	-	0.75	1.25	1.5	2	2.5	3

Liquor ratio at and above 8:1								
AVITERA® SE	%	< 0.5	0.5	1	2	3	4	≥ 5
Auxiliaries				See page 7				
Salt	g/l	30	40	50	60	80	90	100
Soda ash	g/l	8	5	5	5	5	5	5
NaOH 36°Bé/66°Tw	ml/l	-	0.5	1.0	1.25	1.5	2.0	2.5

For LR 5:1, the amount of 36°Bé/66°Tw can be increased by 20%
For LR 4:1, the amount of 36°Bé/66°Tw can be increased by 30%

Notes

- For CV and CO merc. the amount of salt can be reduced by 20–30%.

WASHING OFF 100% CEL

Washing-off, pale / medium shades		LR 1:6 and below
Rinse for 10 min at 60°C/140°F		
Rinse for 10 min at 60°C/140°F	1.0-2.0 g/l ERIOPON® E3-WOC	
Rinse for 10 min at 60°C/140°F	Neutralization at pH 6 – 7	
Soften as usual or aftertreat		

Washing-off, dark / deep shades		LR 1:6 and below
Rinse for 10 min at 60°C/140°F		
Rinse for 10 min at 60°C/140°F		
Rinse for 10 min at 60°C/140°F	1.0-2.0 g/l ERIOPON® E3-WOC	
Rinse for 10 min at 60°C/140°F	Neutralization at pH 6 – 7	
Soften as usual or aftertreat		

Notes on washing-off

No pH adjustment is necessary, pH around 10 is to be expected after the first rinse.
All wet fastness properties are met, even though the last rinsing bath remains colored.
Depending on fabric quality, machinery equipment and liquor ratio a further reduction of rinsing baths is possible. For very deep shades, an additional bath/s may be required.

DYEING METHOD FOR POLYESTER/CELLULOSE BLENDS

YARN AND PIECE GOODS

A two-bath process using TERASIL® WW / W / W-EL dyes and AVITERA ®SE dyes is recommended for high wash-fastness (at 60°C/140°F) requirements.

FIRST, DYE THE POLYESTER COMPONENT BY

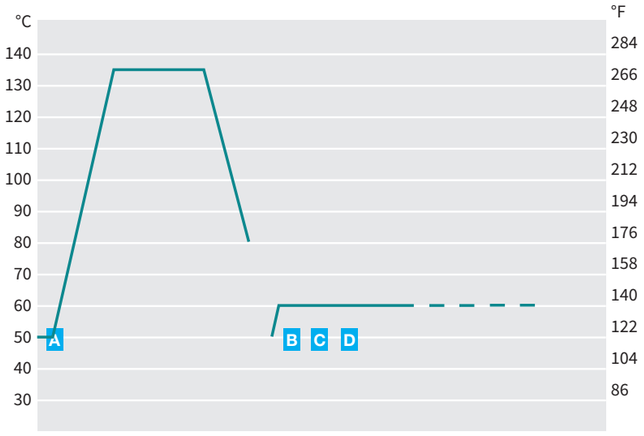
HT dyeing with TERASIL® WW / W / W-EL dyes

NEXT, DYE THE CELLULOSE COMPONENT...

using one of the AVITERA® SE methods described.
Wash off as described.

TWO-BATH PROCESS / FAST CONCEPT

- Highest wash-fastness performance ever achieved with disperse/ reactive dyes
- For articles where the wash-fastness is challenging
- Use of state-of-the-art TERASIL® WW / W / W-EL disperse dyes in conjunction with state-of-the-art AVITERA® SE reactive dyes
- More process time, and water and energy consumption needed due to the two-bath technique
- No intermediate reduction clearing necessary



A	B	C	D
TERASIL® WW/W-EL	AVITERA® SE	Common salt and/ or Glauber's salt	Soda Ash Casustic soda

Auxiliaries:

3.0-4.0 g/l ALBATEX® AB-45
0.5-1.0 g/l ALBAFLOW® UNI-01
2.0-4.0 g/l REVATOL® RI
1.0-2.0 g/l UNIVADINE® FULL FLEX

SE-FAST: the preferred choice for high wash-fastness and excellent reproducibility.

DYEING METHOD FOR POLYAMIDE/CELLULOSE BLENDS

GENERAL

CEL/PA blends require special attention by the dyer. The main challenge, besides fulfilling the demands for high fastness, lies in solid dyeing and achieving the same shade on both fibers.

These requirements can be achieved by applying a two-bath procedure with AVITERA® SE dyes for the CEL portion and LANASET® or ERIONYL® A dyes for the PA portion.

For dyeing of CEL, AVITERA® SE dyes offer various advantages:

- Bi-reactive dyes with high fixation in warm dyeing procedures
- Good reservation of the PA portion
- Excellent wash-off properties
- Therefore good reproducibility of shades and dependability of results
- Wide shade range

For dyeing of PA, LANASET® and ERIONYL® dyes cover the whole shade spectrum systematically.

Their wet fastness properties on PA are of similarly high levels to those of AVITERA® SE warm dyes on CEL.

PROCESSING ROUTE

- Dye CEL with AVITERA® SE dyes
- Wash off (see washing-off of AVITERA® SE dyes)
- Dye PA with LANASET® or ERIONYL® dyes

For very deep shades, the goods can be after-treated with fastness improvers.

WASHING-OFF OF AVITERA® SE DYES

AVITERA® SE dyes ensures excellent reproducibility and easy shade matching with good PA reservation during CEL dyeing .

For the best results, we recommend maintaining a weak alkaline pH throughout the washing off and to perform a final neutralization of the residual alkali after the wash-off.

(For special effects, like white reservation of PA and good reproducibility, ERIONAL® FRN must be used as a blocking agent).

DYEING METHOD FOR WOOL/CELLULOSE BLENDS

GENERAL

For highest fastness for medium to deep shades, wool/cellulose blends can be dyed by a two-bath method with AVITERA® SE and LANASET® dyes.

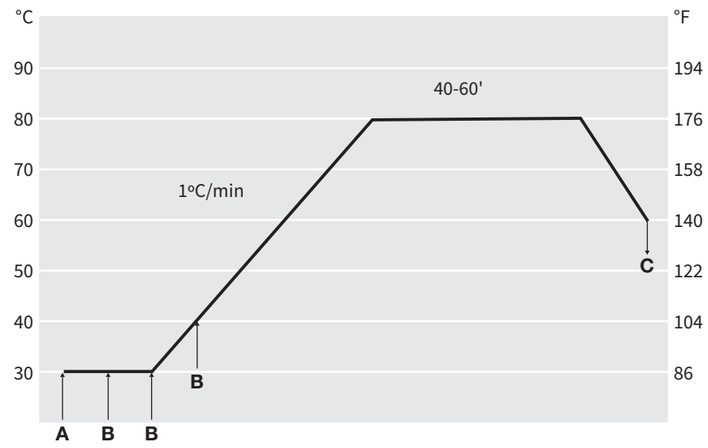
AVITERA® SE dyes stain the wool to a greater or lesser extent depending on the shade. This staining cannot be avoided by using a blocking agent but can only be minimized with a good selection of AVITERA® SE dyes. With LANASET dyes, there is practically no staining of the cellulose portion.

The cellulose is first dyed at 60°C with AVITERA® SE dyes and at most 7 g/l soda ash to avoid damaging the wool. Follow with rinsing, neutralizing and soaping.

The wool portion is next dyed in a second bath by the standard recommended LANASET® procedure. Adjust the LANASET® recipe according to the staining of the wool by the AVITERA® SE dyes.

DYEING METHOD FOR SILK

GENERAL



A	1–2	g/l	IMACOL® CD or IMACOL® X-JET LIQ
	1–2	g/l	ALBATEX® AD(AD-E, AD-G) or DEKOL® 1097N LIQ
	1	g/l	LYOPRINT® RG GR or REVATOL® S GR
	x	%	AVITERA® SE dyes
	pH 7.0–7.5		
B	y	g/l	Glauber's salt in portions (see table)
C	soaping in a fresh bath for 15 min at 85°C/185°F with		
	2	g/l	ERIOPON® R LIQ or LADIPUR® RSK LIQ (pH 5.5-6)

% dye	< 0.5	0.5–1.0	1.0–3.0	3.0–4.0	> 4.0
g/l Glauber's salt	10–20	20–30	30–60	60–80	80–90

/ PAD BATCH AND CONTINUOUS DYEING APPLICATIONS

PAD-BATCH (PB) METHODS FOR 100% CELLULOSE

PADDING

Padding is best performed at room temperature. To ensure rapid liquor exchange, pad troughs with low liquor content should be used. The best immersion times are 1–2 seconds for cotton and 2–4 seconds for viscose rayon. A pad mangle with a small volume trough is recommended, especially when dyeing lightweight fabrics, to ensure rapid liquor replenishment.

PAD-BATCH METHODS (PB)

Three dyeing methods are recommended, depending on local conditions. A mixing pump is required for methods C1 and C4 where the dye and alkali liquors are prepared in separate tanks. The respective amounts of dye and alkali given (see pages 8–10) refer to the total volume of pad liquor. The ratio of dye to alkali is 4:1. The dye and any auxiliaries are dissolved in 80% of the total liquor and the alkali in the remaining 20%.

The padding temperature should be at 20–30°C. Higher temperatures impair bath stability while lower temperatures impair the rate of fixation during batching. In regions with a hot climate, the C3 method can be used as a tropical option when padding at high temperatures (35–40°C). A dosing pump is recommended.

THE CHOICE OF METHOD DEPENDS LARGELY ON THE...

- availability of a dosing pump
- type and state of preparation of the substrate
- required fixation time
- processing temperature
- environmental regulations

METHOD C1 (SODIUM SILICATE/CAUSTIC SODA)

- Dosing pump required
- Short fixation time
- Good bath stability
- Atmospheric carbon dioxide has almost no effect during storage

Method C3 (sodium silicate/reduced amount of caustic soda)

- No dosing pump required (maximum bath stability 3 hours)
- Prolonged fixation time
- Very good bath stability
- Atmospheric carbonation has a minimal effect during storage

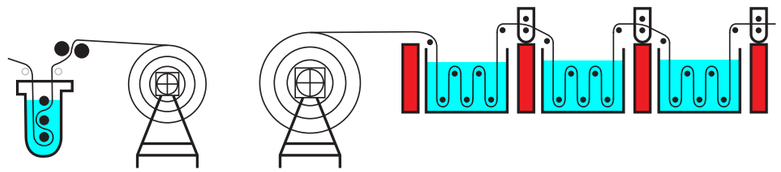
METHOD C4 (CAUSTIC SODA/SODA ASH) OR (ALBAFIX® BSA-02)

- Alternative where environmental or fabric handle problems are encountered with sodium silicate
- Dosing pump required
- Short fixation time
- Caustic soda and soda ash must be of satisfactory quality
- Risk of carbonation

FIXATION

The goods are batched onto an 'A' frame without selvedge overlap and covered with plastic film so that the roll is airtight. This protects the goods from cooling, heating or drying out and prevents partial neutralization (carbonation) of the fixation alkali by the carbon dioxide present in air. The recommended fixation temperature is 25°C. The fixation time depends on the temperature, fiber type (i.e. cotton, viscose, linen) and pad-batch method adopted. If the fixation temperature is lower than that recommended, the minimum fixation time must be increased. Batching for longer than the recommended fixation time has no effect on yield.

PAD-BATCH (PB) METHOD C1



Padding	**X**	**g/l**	**AVITERA® SE dye**
	1–2	**g/l**	**ALBAFLOW® E3-MAX or ALBAFLOW® EHC LIQ C**
	2	**g/l**	**ALBATEX® AD (AD-E, AD-G) or DEKOL® 1097N LIQ**
	70	**ml/l**	**sodium silicate 37–40°Bé (69–77°Tw)**
	15–33	**ml/l**	**caustic soda 36°Bé (66°Tw)**
Padding temperature	**20–30°C**		
Liquor pick up	**60–80%**		
Fixation	**8–12 hours at 25°C**		

Required amount of alkali								
AVITERA® SE dye	g/l	< 10	20	30	40	50	60	> 70
Sodium Silicate 37–40°Bé (69–77°Tw)	ml/l	70	70	70	70	70	70	70
Caustic Soda 36°Bé (66°Tw)	ml/l	15	18	21	24	27	30	33
Sodium Silicate 40–43°Bé (77–85°Tw)	ml/l	60	60	60	60	60	60	60
Caustic Soda 36°Bé (66°Tw)	ml/l	16	19	22	25	28	31	34
Sodium Silicate 48–50°Bé (100–106°Tw)	ml/l	50	50	50	50	50	50	50
Caustic Soda 36°Bé (66°Tw)	ml/l	9	12	15	18	21	24	27

Notes

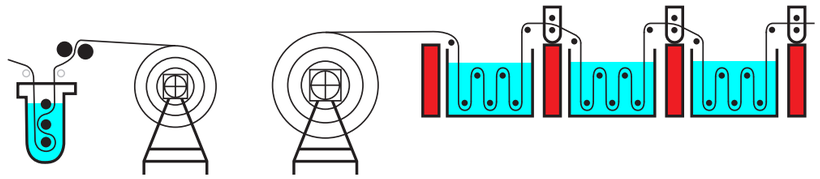
In addition to the traditional C1&C3 method using 70 ml/l sodium silicate 37-40'Bé (69-77*TW) a low silicate method using 50 ml/l sodium silicate 37-40'Bé (69-77*TW) is available.

This is a low-silicate method for dyeing AVITERA® SE dyes at liquor temperatures of 20 - 30 °C.

The method ensures reliable processing and short to medium fixation times with reduced amounts of sodium silicate. Thus easier washing-off is achieved.

A mixing pump is required.

PAD-BATCH (PB) METHOD C3



Padding	**X**	**g/l**	**AVITERA® SE dye**
	1–2	**g/l**	**ALBAFLOW® E3-MAX or ALBAFLOW® EHC LIQ C**
	2	**g/l**	**ALBATEX® AD (AD-E, AD-G) or DEKOL® 1097N LIQ**
	70	**ml/l**	**sodium silicate 37–40°Bé (69–77°Tw)**
	15–33	**ml/l**	**caustic soda 36°Bé (66°Tw)**
Padding temperature	**20–30°C**		
Liquor pick up	**60–80%**		
Fixation	**12–24 hours at 25°C**		

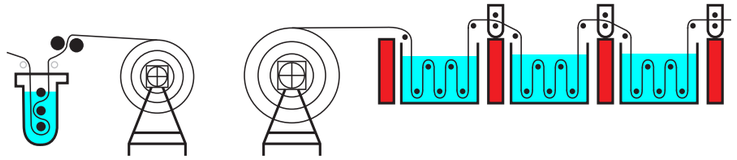
Required amount of alkali								
AVITERA® SE dye	g/l	< 10	20	30	40	50	60	> 70
Sodium Silicate 37–40°Bé (69–77°Tw)	ml/l	70	70	70	70	70	70	70
Caustic Soda 36°Bé (66°Tw)	ml/l	4	6	8	10	12	14	16
Sodium Silicate 40–43°Bé (77–85°Tw)	ml/l	60	60	60	60	60	60	60
Caustic Soda 36°Bé (66°Tw)	ml/l	5	7	9	11	13	15	17
Sodium Silicate 48–50°Bé (100–106°Tw)	ml/l	50	50	50	50	50	50	50
Caustic Soda 36°Bé (66°Tw)	ml/l	-	0.5	2	4	6	8	10

Notes

The C3 method can be used in regions with a hot climate (when padding is at 35–40°C). A dosing pump is recommended.

The C3 method is recommended for dyeing lyocell or viscose. The amount of caustic soda should be increased by 50%.

PAD-BATCH (PB) METHOD C4 (SILICATE-FREE METHOD)



Padding	**X**	**g/l**	**AVITERA® SE dye**
	1–2	**g/l**	**ALBAFLOW® E3-MAX or ALBAFLOW® EHC LIQ C**
	2	**g/l**	**ALBATEX® AD (AD-E, AD-G) or DEKOL® 1097N LIQ**
	70	**g/l**	**soda ash**
	15–33	**ml/l**	**caustic soda 36°Bé (66°Tw)**
Padding temperature	**20–30°C**		
Liquor pick up	**60–80%**		
Fixation	**12–24 hours at 25°C**		

Required amount of alkali								
AVITERA® SE dye	g/l	up to 10	20	30	40	50	60	> 70
Soda Ash	g/l	10	20	20	20	20	20	20
Caustic Soda 36°Bé (66°Tw)	ml/l	4	6	8	10	12	14	16
AVITERA® SE dye	g/l	up to 10	20	30	40	50	60	> 70
ALBATEX® BSA-02	ml/l	16	32	34	36	38	40	42

Notes

When dyeing terry toweling or corduroy fabrics by the C4 method, the amount of caustic soda should be increased by 50%.

RAPID SAMPLING METHODS FOR THE PAD-BATCH PROCESS

RAPID SAMPLING IS A VALUABLE AID...

- for speeding up shade matching in the laboratory
- for quickly checking made-up pad liquors

To ensure good laboratory-to-bulk reproducibility, padding conditions, such as temperature, immersion time and liquor pick up, should be matched to those in production as far as possible. The same fabric should also be used.

PAD-ROLL QUICK FIXATION METHOD

Immediately after padding, the fabric sample is placed flat inside a plastic bag. The bags are gently rolled to expel the enclosed air, then sealed to prevent evaporation. The sample is first batched for 15–30 minutes at room temperature, and then treated in a temperature-controlled circulating water bath at 50°C for 45 minutes.

MICROWAVE QUICK FIXATION METHOD

Fixation can be performed quickly (3–5 minutes) in a microwave oven. The dyeing is suspended inside a special plastic box containing a predetermined amount of water. The box is closed and placed in the microwave oven. The amount of water, power output and fixation time are determined in preliminary trials. Batching for 15–30 minutes at room temperature before fixation in a microwave can improve results.

DRY HEAT QUICK FIXATION METHOD

Immediately after padding, the fabric sample is placed flat inside a plastic bag. All air is removed, then the bag sealed to prevent evaporation. It is then placed inside a drying cabinet preheated to 60°C and left there for 30 minutes.

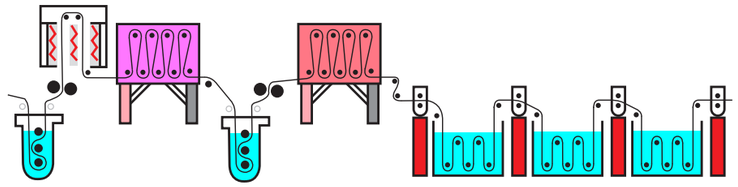
/ CONTINUOUS DYEING METHODS FOR 100% CELLULOSE

AVITERA® SE dyes are recommended for the following processes:

- Pad-dry-pad-steam (PDPSt)
- Pad-thermofix (PTh)
- Pad-steam (PSt)

Padding speed depends on the performance of the drier or the steaming time. If the drier and steamer allow, the padding speed should be set to give the best immersion times.

PAD-DRY-PAD-STEAM PROCESS (PDPST)



Padding the dyes	1–2	g/l	ALBAFLOW® E3-MAX or ALBAFLOW® EHC LIQ
	2	g/l	ALBATEX® AD(AD-E, AD-G) or DEKOL® 1097N LIQ
	1–3	g/l	LYOPRINT® RG GR or REVATOL® S GR
	5–10	g/l	THERMACOL® MP or SOLIDOKOLL® V LIQ
Padding temperature	20–30°C		
Liquor pick up	60–80%		
IR pre drying	To a residual moisture content of 30–35%		
Drying	Dry at 120–140°C. Cool the fabric		
Padding the chemicals	15	ml/l	caustic soda 36°Bé (66°Tw)
	20	g/l	soda ash
	200–250	g/l	common salt
Padding temperature	20–30°C		
Liquor pick up	70–80%		
Steaming	30–60 seconds with saturated steam		

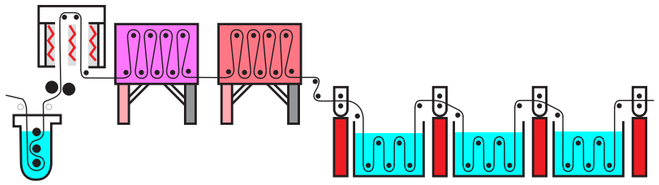
Notes

For AVITERA® Sky SE, Deep Sea SE and Black SE, please use 20 g/l soda ash as fixing alkali.

Infrared pre-drying is advisable to control migration. Reduced pick up, lower drying temperatures and reduced air circulation also help control migration during the pre-drying stage. An addition of THERMACOL® MP dyeing auxiliary is advisable to prevent migration problems.

If the goods are stored, after drying but before fixation, they should be wrapped in an opaque material to protect them from daylight.

PAD-THERMOFIX PROCESS (PTH)



Padding	X	g/l	AVITERA® SE dye
	1–2	g/l	ALBAFLOW® E3-MAX or ALBAFLOW® EHC LIQ C
	2	g/l	ALBATEX® AD (AD-E, AD-G) or DEKOL® 1097N LIQ
	1–3	g/l	LYOPRINT® RG GR or REVATOL® S GR
	5–10	g/l	THERMACOL® MP or SOLIDOKOLL® V LIQ
	20–100	g/l	urea
	10–20	g/l	soda ash
Padding temperature	20–30°C		
Liquor pick up	60–80%		

Required amount of urea							
AVITERA® SE dye	g/l	up to 5	10	20	30–40	50	> 50
Urea	g/l	20	50	75	100	100	100
Soda Ash	g/l	10	10	10	10	15	20

IR pre drying	**To a residual moisture content of 30–35%**
Drying	**Dry at 120–140°C**

Fixation			
Time	60–90 s	45–60 s	30–45 s
Temperature	140°C	160°C	180°C

Notes

Mainly recommended for dyeing cotton fabrics.

When dyeing regenerated cellulosic fabrics, dye diffusion is improved by intermediate storage (about ½ hour) before drying.

Soda ash can be replaced by 20 g/l sodium bicarbonate if higher bath stability is required.

If necessary, the amount of urea can be substantially reduced or even completely replaced by up to 25 g/l dicyandiamide.

Coverage of dead cotton is particularly good.

It is an advantage to sky the goods briefly before drying.

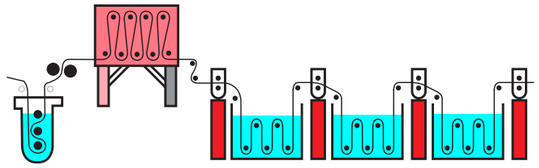
Infrared pre-drying is advisable to control migration. Reduced pick up, lower drying temperatures and reduced air circulation also help control migration during the pre-drying stage. An addition of THERMACOL® MP dyeing auxiliary is advisable to prevent migration problems.

If the goods are stored, after drying but before fixation, they should be wrapped in opaque material to protect them from daylight.

There is a risk of yellowing the cotton fabric, when thermofixation takes place at a too high temperature, affecting the brightness of pastel shades. This can be prevented by adding 5 g/l borax.

Fastness to light and chlorine can be reduced when reactive dyes are applied by the pad-thermofix method.

PAD-STEAM PROCESS, REDUCED SALT (PST)



Padding	X	g/l	AVITERA® SE dye
	1–2	g/l	ALBAFLOW® E3-MAX or ALBAFLOW® EHC LIQ
	2	g/l	ALBATEX® AD(AD-E, AD-G) or DEKOL® 1097N LIQ
	1–3	g/l	LYOPRINT® RG GR or REVATOL® S GR
	10–80	g/l	common salt
	10–30	g/l	soda ash
Padding temperature	20–30°C		
Liquor pick up	60–80%, pile fabrics 100–120%		

Required amount of alkali and salt							
AVITERA® SE dye	g/l	< 5	5	10	20	30	40
Common salt	g/l	10	20	30	50	70	80
Soda ash	g/l	10	10	20	25	30	30

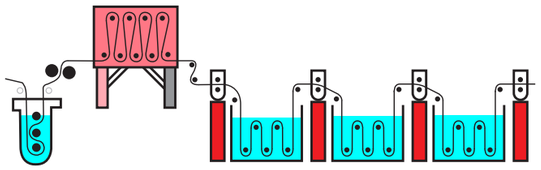
Steaming	**60–90 seconds with saturated steam**

Notes

The pad-steam method is particularly suitable for continuous dyeing of heavy fabrics with a marked structure, such as cotton corduroy and terry, where intermediate drying is uneconomical and can cause migration problems. The goods should be skied briefly before entering the steamer. For deep shades, slightly more dye is required than in the pad-dry-pad-steam method.

This process is not recommended for dyeing densely constructed or mercerized fabrics.

PAD-HUMIDITY FIX PROCESS (PHU)



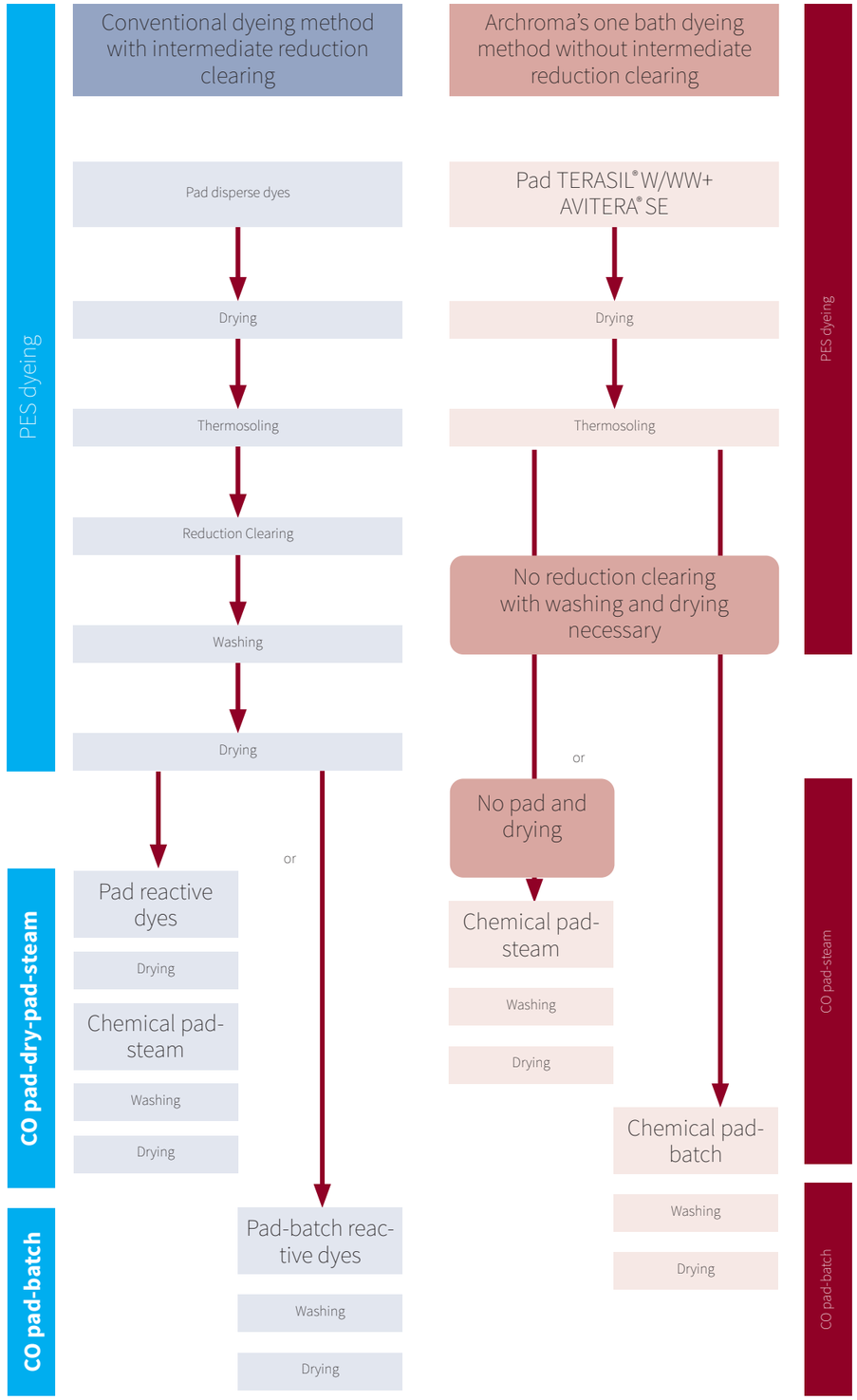
Padding	X	g/l	AVITERA® SE dye
	1–2	g/l	ALBAFLOW® E3-MAX or ALBAFLOW® EHC LIQ
	2	g/l	ALBATEX® AD(AD-E, AD-G) or DEKOL® 1097N LIQ
	1–3	g/l	LYOPRINT® RG GR or REVATOL® S GR
	5–10	g/l	THERMACOL® MP or SOLIDOKOLL® V LIQ
	20	g/l	soda ash
	Y	ml/l	Caustic soda 36°Bé
Padding temperature	20–30°C		
Liquor pick up	60–80%		

Required amount of NaOH 36°Bé						
AVITERA® SE dye	g/l	up to 10	10-20	20-40	40-60	> 60
NaOH 36°Bé	ml/l	–	2.5	5	10	15

Drying/Fixation **2 – 3 min at 120 – 130°C, 25 RH%***

* depending on fabric weight

DYEING METHODS FOR POLYESTER/CELLULOSE BLENDS



WASHING OFF

Hot rinsing improves washing-off efficiency whilst optimizing washing-machine and water usage. Since the dye/fiber linkage has high alkaline stability, AVITERA® SE dyeings can be rinsed warm/hot (overflow) in the first washing-off box of a continuous washing machine. Soft water is required to rinse pad-batch dyeings when hot water is used in the first box (risk of silicate precipitation with hardness salts in water at high temperature).

CONTINUOUS WASHING-OFF PROCEDURE FOR 100% CELLULOSE

Box 1	rinse at 70°C
Box 2	rinse at 90–95°C
Box 3	rinse at 90–95°C
Box 4	rinse at 90–95°C + 2 g/l CYCLANON® X-CW NEW LIQ
Box 5	rinse at 90–95°C
Box 6	rinse at 50–60°C. Neutralize to pH 6–7

CONTINUOUS WASHING-OFF PROCEDURE FOR POLYESTER/CELLULOSE BLENDS

Box 1	rinse at 70°C
Box 2	rinse at 90–95°C
Box 3	rinse at 90–95°C
Box 4	rinse at 90–95°C + 2 g/l EKALIN® F LIQ or ERIOPON® OS
Box 5	rinse at 90–95°C
Box 6	rinse at 50–60°C. Neutralize to pH 6–7

Wash off can be done at 60 C also depending on the shade and substrate

DYEING METHODS FOR POLYAMIDE/CELLULOSE BLENDS

AVITERA® SE dyes can be used in conjunction with LANASET® dyes for dyeing cellulose/ polyamide, allowing maximum wet fastness properties to be achieved. AVITERA® SE dyes achieve excellent reservation of the polyamide fiber.

The polyamide component can also be dyed with TECTILON® or ERIONYL® A dyes, depending on fastness requirements.

DYEING THE CELLULOSIC COMPONENT FIRST

DYE THE CELLULOSIC COMPONENT...

by one of the AVITERA® SE methods described.

WASH OFF...

as described.

DYE THE POLYAMIDE COMPONENT...

by exhaust methods with LANASET®, TECTILON® or ERIONYL® A dyes

Rinse and neutralize if necessary.

CORRECTION OF FAULTY DYEINGS

The good dyeing properties (excellent reproducibility and compatibility) and the quality consistency of AVITERA® SE dyes reduce the number of faulty dyeings to a minimum. If, however, correction is necessary, dyeings produced with AVITERA® SE can be partially or radically stripped. Frequently, partial stripping is sufficient to enable the goods to be redyed to the same shade.

CONTINUOUS PARTIAL STRIPPING/SHADE LIGHTENING METHOD:

Pale to dark shades		
Pad	50 ml/l	caustic soda 36°Bé (66°Tw)
Pick up	60–80%	
Steam	1–2 min with saturated steam	
Rinse	cold	
Rinse	96°C	
Rinse	neutralize to pH 6–7	
Rinse	cold	

CONTINUOUS STRIPPING METHOD:

Pale to medium shades		
Pad	50 ml/l 30 g/l	caustic soda 36°Bé (66°Tw) sodium hydrosulfite conc.

Dark shades		
Pad	80 ml/l 60 g/l	caustic soda 36°Bé (66°Tw) sodium hydrosulfite conc.
Pick up	60–80%	
Steam	1–2 min with saturated steam	
Rinse	cold	
Rinse	10 ml/l H_2O_2 35%	
Rinse	96°C	
Rinse	neutralize to pH 6-7	
Rinse	cold	

Notes

When stripping with hydrosulfite, it is important to ensure that the steamer is air free (saturated steam) and to rinse the goods thoroughly (cold and hot) after steaming. After the peroxide treatment, a prolonged rinse at the boil is recommended to remove the peroxide. It is essential to remove all traces of peroxide before redyeing and the goods should have a neutral pH.

BATCHWISE STRIPPING METHOD:

The following batchwise stripping methods are alternatives to the continuous process.
They can be performed separately or in combination. Preliminary trials are always advisable.

Reduction stripping	5 g/l hydrosulfite conc. 15 ml/l caustic soda 36°Bé (66°Tw) 50°C, raise over 15 min to 90°C and treat for a further 15 min. Rinse hot and cold.
Hypochlorite bleach	3 g/l available chlorine pH 10–11 with caustic soda treat for 60 min at 20–30°C, antichlor with sodium thiosulfate or sodium bisulfite. Rinse hot and cold.

Notes

After stripping with hydrosulfite, a prolonged rinse at the boil is recommended to remove any residual hydrosulfite. If the goods are bleached with hypochlorite, care must be taken to ensure that all traces of chlorine are removed. The goods should have a neutral pH before redyeing.

/ DYEING AUXILIARIES

Penetration / Wetting / De-aerating / De-foaming

A dispersion of silicone-oil in water can be stable or unstable depending on the emulsifier which is used in the formulation. Most of the products based on this chemistry can't be used under critical conditions such as high temperature and high speed machines

ALBAFLOW® E3-MAX

CHEMICAL NATURE : Preparation of surfactants in water solution, anionic

FIBER TYPES : CO | CV | PES | PA | WO | PAN | Blends

TYPICAL APPLICATION : Pad 1.0 - 3.0 g/l

PRODUCT BENEFITS :

- Accelerant with high wetting and de-aerating power especially for continuous dyeing
- Can be used for exhaustion dyeing in package machines
- Promotes fiber and surface levelness
- Improved liquor pick-up, faster running speed, no retarding effect on different dye classes used
- Extremely high stability to liquors containing high amounts of alkali, electrolytes and water hardness
- Phosphorus free

ALBAFLOW® FFC-01

CHEMICAL NATURE : Ethoxylated fatty alcohols and derivatives with alcanol and modified methylpolysiloxanes, anionic

FIBER TYPES : CO | CV | PES | PA | WO | PAN | Blends

TYPICAL APPLICATION : Exh. 0.5 - 1.0 g/l

PRODUCT BENEFITS :

- De-foaming agent with de-aerating effect and penetration action
- Very stable to high alkali and electrolyte concentrations
- High stability to shear even in HT exhaustion
- Suitable for machines with short liquor technology, high fabric speed and vigourous liquor flow

ALBAFLOW® UNI-01

CHEMICAL NATURE : Mixture of surfactants, nonionic

FIBER TYPES : CO | CV | PES | PA | WO | PAN | Blends

TYPICAL APPLICATION : Exh. 0.5 - 2.0 g/l

PRODUCT BENEFITS :

- Penetration accelerant with combined effect of wetting deaeration and foam suppression
- High wetting action
- Promotes penetration of treatment liquor into the textile material
- Immediate total air removal
- Permanent foam prevention
- Stable in acid and alkaline treatment baths
- High effectiveness throughout processing
- High effectiveness throughout processing
- No silicone or mineral oil, good biodegradability

ALBAFLOW® EHC LIQ C (previously known as LEONIL® EHC LIQ C)

CHEMICAL NATURE : Aliphatic ester, anionic

FIBER TYPES : CO | CV | PA | WO | Blends

TYPICAL APPLICATION : Pad 1.0 - 3.0 g/l

PRODUCT BENEFITS :

- Accelerant with high wetting power especially for continuous and discontinuous dyeing
- Promotes fiber and surface levelness
- Improved liquor pick-up, faster running speed, no retarding effect on different dye-classes used
- Non foaming under all pH conditions

Lubricants

Reduction of friction: textile to textile

For reduced creasing, cracks and abrasion marks with no retarding effects. Reduces friction of fabric against fabric and fabric against fabric machine parts caused by structural viscosity. No adverse effect on color yield. Can be completely rinsed out of the fabric.

IMACOL® C, CD, X-JET (previously known as ALBAFLUID® C, CD)

CHEMICAL NATURE : Acrylic copolymer, nonionic

FIBER TYPES : CO | CV | PES | PA | WO | PAN | Blends

TYPICAL APPLICATION : Exh. 1.0 - 2.0 g/l

PRODUCT BENEFITS :

- Reduces creasing in piece dyeing
- Lowers textile-to-textile friction
- Reduces textile-to-metal friction
- Prevents cracks and abrasion marks
- No adverse effect on the stability of the dyebath
- No retarding effect

Dyebath Conditioners

High complexing and dispersing properties

Due to its excellent sequestering / dispersing properties it prevents agglomeration and precipitation (deposit on equipment and fabrics) assuring a trouble free process.

ALBATEX® AD (AD-E, AD-G)

CHEMICAL NATURE : Sodium salt of a polyacrylic anionic

FIBER TYPES : CO | CV | PES | Blends

TYPICAL APPLICATION : Exh. 1.0 - 2.0 g/l

PRODUCT BENEFITS :

- Protective colloid with strong dispersing effect on pectin's and cotton linters.
- Keeps sparingly soluble salts (Ca, Mg) and other impurities from not or poorly pretreated blends with cotton in stable dispersion
- No de-metalizing effect on dyestuff and improves penetration and distribution of the dye liquor.
- Eliminates problems due to the re-deposition of calcium silicate and other crystalline impurities on to the yarn or fabric.
- Can be used for the soaping off process for reactive dyes on cotton

ALBATEX® CO / CO-A

CHEMICAL NATURE : Mixture of carboxylic acid and anionic and non-ionic surfactants, anionic

FIBER TYPES : CO | CV | Blends

TYPICAL APPLICATION : Exh. 0.5 - 2.0 g/l

PRODUCT BENEFITS :

- Protective colloide with wetting and dispersing effect and good Ca inactivation
- Keeps sparingly soluble salts (Ca, Mg) and other impurities from not or poorly pretreated blends with cotton in stable dispersion
- Ensures penetration of the dyeing liquor in the textile material and exchange between dyebath and textile goods and hence levelness
- Prevents agglomeration also in chemical pad and reduces soiling of equipment, hence less down time for cleaning
- Prevents precipitation of hardness salts in the process water
- Enhances the brilliance of dyeing turquoise shades

DEKOL® 1097N LIQ

CHEMICAL NATURE : Mixture of polycarboxylate and phosphonate, anionic

FIBER TYPES : CO | CV | PES | Blends

TYPICAL APPLICATION : Exh. 0.5 - 3.0 g/l

PRODUCT BENEFITS :

- Very good sequestering effect even under high alkaline conditions
- Complexing power for Calcium, magnesium, iron, magnesium and manganese ions
- No de-metalizing effect on dyestuff
- Stable with electrolytes, acids and bases with constant efficiency
- Stable to acids and reducing agents
- Excellent synergetic effects with surfactants

DRIMAGEN® E3R LIQ

CHEMICAL NATURE : Aromatic suplphonat, anionic

FIBER TYPES : CO / CV and blends

TYPICAL APPLICATION : Exh. 1.0 – 2.0 g/l

PRODUCT BENEFITS :

- Real leveler for reactive dyes on cellulosic fibers
- Controls the exhaustion and the distribution of reactive dyes during the absorption phase
- Due to influence on dyebath pH, uniform exhaustion of reactive dyes is ensured
- Sequesters alkaline earth salts
- Permits improvement of dyeing reproducibility

HUMECTOL® C LIQ C

CHEMICAL NATURE : Preparation based on oleic acid, anionic

FIBER TYPES : CO / CV and blends

TYPICAL APPLICATION : Exh. 1.0 – 3.0 g/l

PRODUCT BENEFITS :

- Effective wetting and leveling agent for reactive and other dyes used on cellulosic fibers
- Has lubricating effect and prevents creases by improving movement of the goods during dyeing process
- Has softening effect which improves hand feel and sewability of the goods
- Has dispersing and emulsifying properties

UNIVADINE® FULL FLEX

CHEMICAL NATURE : Aromatic carboxylic acid ester and polyalkylenpolyol, anionic

FIBER TYPES : PES and blends

TYPICAL APPLICATION : Exh. 1.0 - 2.0 g/l

PRODUCT BENEFITS :

- Unequaled spectrum of effects like, leveling/migration/dispersing/diffusion
- Excellent dispersing properties
- Very good leveling properties
- Very good migration properties
- Increased dye yield due to acceleration of diffusion inside of PES fibers
- Shows oligomer dispersing effect

Anti-Migration Agents

THERMACOL® MP | SOLIDOKOLL® V LIQ

CHEMICAL NATURE : Derivative of polyacrylic acid, anionic

FIBER TYPES : CO | CV | PES | Blends

TYPICAL APPLICATION : Pad 5 - 15 g/l

PRODUCT BENEFITS :

- Highly effective migration inhibitor even in the absence of an efficient pre-dryer
- Prevents the horizontal migration, thus improving the surface levelness and side to center shaded consistency
- Prevents the vertical migration, thus improving the back to face effect
- Excellent runnability
- Good pad-bath stability
- Easily removed from fabric in subsequent washing processes
- No effect on handle of finished fabric

Process Optimizing Agents

Robust system for process control which allows improved levelness and reproducibility in reactive dyeing on cellulose, viscose and its blends. Promotes one tone buildup of various dyestuff combinations, during exhaustion and fixation phase of reactive dyeing, including short liquor process

ALBATEX® AB-55

CHEMICAL NATURE : Carboxylic acid derivatives

FIBER TYPES : CO/CV/Blends

TYPICAL APPLICATION : 0.5 – 2.0 g/l

PRODUCT BENEFITS :

- Acid buffer and dye-bath conditioner for reactive dyes
- Solves leveling problems caused by bulk water containing NaHCO3 and Glauber's salt containing alkali
- Ensures reproducibility, improves color yield and levelness in critical cases (e.g. turquoise dyeing)
- Ensures Right-First -Time production at varying pH of the dyehouse water
- Can be used for neutralizing after dyeing, soaping and final pH control of finished goods
- Recommended for dyeing PES/CEL Blends
- Can be used for dyeing of any fiber where pH 5.5 is required

ALBATEX® BSA-02

CHEMICAL NATURE : Buffered mixture of alkalis, anionic

FIBER TYPES : CO | CV | Blends

TYPICAL APPLICATION : See recommendation in TDS

PRODUCT BENEFITS :

- Buffered medium encourages a controlled tone-in-tone build up during the exhaust dyeing cycle
- Good leveling effect promotes on-tone build up of various dyestuff combinations, including short-liquor
- Liquid appearance ensures easy handling and dosing
- Eliminates broken bags, dust and clogged pipes, improves house keeping
- Robustness ensures Right-First-Time in production, even on various dyeing machines
- Silicate free means no deposits on fabric hence softer hand
- No deposits on dyeing and washing-off equipment
- No more operating expense for dilution of soda ash
- Time, energy and water savings
- Suitable for exhaust and CPB application

ALBATEX® AB-45

CHEMICAL NATURE : Organic acids and salt

FIBER TYPES : PES / Blends

TYPICAL APPLICATION : Exh. 0.5 - 2.0 g/l

PRODUCT BENEFITS :

- Acid buffer for disperse dyes
- Good buffer capacity
- Robust dyeing system for right first time results and cost savings
- No extra addition of acid required to adjust the pH
- Easy and safe handling
- Better reproducibility and improved color yield
- Can also be used for dyeing of any fiber where pH 4.5 is required

Anti-reducing Agent

Prevents reduction of reactive dyes applied by batchwise and continuous methods to cellulose and regenerated fibers and their blends. Good reproducibility of dye batches with all equipment.

LYOPRINT® RG GR | REVATOL® S GR

CHEMICAL NATURE : Sodium salt of an aromatic nitrosulfonic acid, anionic

FIBER TYPES : CO | CV | Blends

TYPICAL APPLICATION : Pad 1 – 3 g/l

PRODUCT BENEFITS :

- Protects readily reducible or steam sensitive reactive dyes
- No shade change of reduction sensitive reactive dyes
- Excellent dyeing and printing with good reproducibility

Cleansing / Soaping

Highly efficient clearing additives allow full processing at lower temperatures than normal with a smaller number of wash bath but still achieving excellent wet fastness. Based on innovative chemistry, they are highly performing regardless of water hardness or residual salt.

CYCLANON® X-CW NEW LIQ

CHEMICAL NATURE : Vinyl copolymer, modified, mainly nonionic

FIBER TYPES : CO | CV | Blends

TYPICAL APPLICATION : Exh. 1.0 - 4.0 g/l

PRODUCT BENEFITS :

- Afterclearing and soaping agent for reactive dyeings and prints on cellulosic fibers and their blends with fewer wash baths and lower temperature saving water, energy and time.
- Unaffected in presence of salt, water hardness and alkali in soaping baths
- Prevents renewed uptake of unfixed dyestuff, enabling optimum wash fastness properties
- Allows washing-off AVITERA® dyes in 4 baths even at 60°C
- Increased production capacity due to shorter wash-off cycle especially on very deep shades
- No staining of white grounds on prints and colored woven fabrics
- Highest performance in slightly alkaline pH
- Especially recommended in continuous washing off printed and continuously dyed fabric, e.g. following cold-pad-batch method

ERIOPON® R | ERIOPON® R LIQ.

CHEMICAL NATURE : Polyacrylic acid Na-salt, anionic

FIBER TYPES : CO | CV | Blends

TYPICAL APPLICATION : Exh. 1.0 - 3.0 g/l

PRODUCT BENEFITS :

- Washing off agent specially for prints and dyeings on CEL or CEL blends
- Speeds up release and outward diffusion of dye hydrolysates even in hard water
- Prevents renewed uptake of dye hydrolysate
- No electrolytic effect
- No foam

CYCLANON® OS (previously known as ERIOPON®OS)

CHEMICAL NATURE : Ethoxylated fatty acid derivatives, nonionic

FIBER TYPES : PES / Blends

TYPICAL APPLICATION : Exh 1.0 – 4.0 g/l

PRODUCT BENEFITS :

- Afterclearing dyeing and prints with disperse dyes on polyester, acetate and all kinds of blends including elastane
- Improved wet and rub fastness of prints and dyeings
- Soaping off PES dyeings in residual dyebath saves energy, water, time and costs and best washing –of results
- Removes oligomere deposits and cleans the machine at the same time
- Non- foaming
- Suitable for use in jet dyeing machines and washing equipment with vigorous liquor circulation

CYCLANON® E3-SAVE (previously known as ERIOPON® E3-SAVE)

CHEMICAL NATURE : Polymer dispersion, anionic

FIBER TYPES : PES and blends

TYPICAL APPLICATION : Pad 1.0 - 2.0 g/l

PRODUCT BENEFITS :

- Scouring, dyeing and reduction clearing in one bath, shorter process, leading to cost savings through less WATER, ENERGY and TIME consumption!
- After-treatment of dyeing and printing on PES and PES blends
- Removes and emulsifies spinning and knitting oil, grease and wax and prevents their re-deposition.
- Very good spectrum of dyeing effects like leveling, migration, retarding properties

Fixing Agents

Prevention of dye migration during wet storage

To prevent migration after dyeing and protect dyes/fiber linkage of reactive dyes against acid hydrolises and thermocracking

ALBAFIX® ECO | OPTIFIX® EC LIQ

CHEMICAL NATURE : Polyamine, cationic

FIBER TYPES : CO | CV | Blends

TYPICAL APPLICATION : Exh. 1.0 - 3.0 g/l

PRODUCT BENEFITS :

- Wet fastness improver for reactive and direct dyes
- Protects dye/fiber bound of reactive dyes against acid hydrolysis and thermo-cracking
- No adverse effect on handle
- Slight dye-specific shaded changes and impairment of light fastness
- Contains no formaldehyde or zinc

ALBAFIX® ECO PLUS

CHEMICAL NATURE : Aqueous preparation based on derivative of polyamine, cationic

FIBER TYPES : CO / CV / blends

TYPICAL APPLICATION : Exhaustion 0.5 – 3.0% Pad 10 - 30 g/l

PRODUCT BENEFITS :

- Strongly improves the wash fastness and other wet fastness properties of dyeings with all reactive dyes
- Protects dyeings and prints produced with reactive dyes against acid hydrolysis and thermo-cracking.
- Avoids migration of unfixed or hydrolyzed reactive dyes if fabric is stored wet
- Good stability to steaming or heat setting
- No or minimum dye-specific shade and light fastness changes
- High affinity and exhaustion

Rub Fastness Improver

Prevention of dye migration during wet storage
To prevent migration after dyeing and protect dyes/fiber linkage of reactive dyes against acid hydrolises and thermocracking

ALBAFIX® E3-RUB

CHEMICAL NATURE : Aqueous preparation of polyurethane

FIBER TYPES : CO | CV | Blends

TYPICAL APPLICATION : 30 – 60 g/l by padding or 3-6% by exhaustion

PRODUCT BENEFITS :

- Allows meeting strong wet rubbing fastness requirements on dyed or printed cellulose fabrics
- After dyeing or printing a proper soaping off process is required in order to achieve best results
- Improves slightly the hand feel
- No remarkable impact on Shade, Light Fastness, other fastnesses or on pilling
- Roller build up: no issues
- Preliminary tests are required if to be combined with other products
- Separate application at the end of whole processing gives best results

/ EXPLANATORY NOTES ON PATTERN SECTION

EXPLANATORY NOTES

PATTERNS

The patterns illustrated were dyed to three shade depths on bleached, mercerized cotton woven fabric. The amounts of dye are given for the pad-dry-pad-steam process. The amounts of dye required for each shade depth are given in g per kg goods (g/kg). They can easily be converted to g per liter pad liquor using the formula below:

$$g/l = \frac{g/kg \times 100}{\%\ \text{liquor pick up}}$$

METHOD SUITABILITY

The suitability of the individual dyes for the different methods described in this pattern card is assessed ■ “very good”, ◨ “good” or □ “moderate” (limited suitability) “ – ” means not recommended for this method.

COVERAGE OF IMMATURE COTTON

Coverage of immature and mature cotton is assessed as ■ “very good”, ◨ “good” or □ “moderate” for the individual dyes.

STABILITY TO THERMOSOLING (POLYESTER/CELLULOSE BLENDS)

The stability of the reactive dye to thermosoling during one-bath, two-stage dyeing of polyester/ cellulose is assessed as ■ “very good”, ◨ “good”, □ “moderate”. “ – ” means not recommended. The reactive dye is applied together with the disperse dye by padding, then thermosoled for 60 seconds at 220°C, pH 6.0-6.5.

DISCHARGEABILITY

Dischargeability is tested on woven material, bleached, mercerized, at about 1/3, 1/1 and 2/1 SD.

Neutral discharge	Alkaline discharge
550 g SOLVITOSE C5 10%	450 g SOLVITOSE C5 10%
250 g water	220 g water
150 g RONGALIT C (BASF)	150 g RONGALIT C p
50 g glycerin	130 g potash powder
	50 g glycerin

Dischargeability is assessed by the gray scale.

The dischargeability limit specifies the standard depth at which gray-scale rating 4 is still attained.

Assessment		
■	very good	≥ 2/1 SD
◨	good	≥ 1/1 SD
□	moderate	≥ 1/3 SD
—	not recommended	< 1/3 SD

CORRECTION OF FAULTY DYEINGS

Partial stripping effects through treatment in an alkaline medium are given in the pattern section as percentages (of dye removed) on dyeings at about 1/1 SD, 2/1 SD for navy; black is tested as black.

Radical stripping results and those attainable by a continuous process are given in the pattern section. The assessments denote the following:

■	very good	almost completely stripped
◨	good	shade greatly reduced in depth, material can be redyed to the same shade
□	moderate	largely discolored, but material can only be redyed to deep, full shades

STABILITY TO REDUCTION

Effect — Reducing substances present on the substrate, e.g. viscose or “peroxide killer” residues, may result in loss of yield during steaming and thus cause reproducibility problems.

Prevention — With sensitive dyes, a mild oxidizing agent (LYOPRINT® RG) should be added.

■	very good	not sensitive; * 95% yield, no shade change
◨	good	slightly sensitive; 85–95% yield, no shade change
□	moderate	sensitive; < 85% yield and/or shade change

/ WASHING-OFF PROPERTIES

Dyeings (1/1SD) on bleached mercerized cotton woven fabric are washed off in the prescribed manner, then subjected to a washing test at 60°C (C1S, ISO 105/C06) and a water severe fastness test (ISO 105/E01).

The dyes are assessed as ■ “very good”, ◨ “good” or □ “moderate” in terms of the speed of removal of unfixed dye and intensity of staining of adjacent fabric.

ARTIFICIAL LIGHT

The shade under TL84 and Tungsten lamps is compared with that in daylight and the change assessed.

SOLUBILITY

The amount of dye in grams which is soluble in 1 liter of distilled water at 25°C, without further additives, and in 1 liter of pad liquor under the conditions of each process: pad-batch, pad-dry-pad-steam, pad-thermofix and pad-steam.

BATH STABILITY

Stability in different pad liquors at 30°C containing alkali as specified is given. The figure quoted is the time taken for the dye to lose maximum 5% strength.

DEGREE OF FIXATION

This refers to dyeings on bleached mercerized cotton woven fabric at a concentration of 30 g/l, PB C1, 24 h, 25°C.

Note on all dyeing auxiliaries

Degree of fixation depends heavily on dye concentration, method and substrate.

INFLUENCE OF FIXATION TIME ON YIELD

The change in color strength on non-mercerized (pad-batch, pad-steam) and mercerized (pad-dry-pad-steam, pad-thermofix) cotton woven fabric is assessed in relation to fixation time.

PAD-BATCH METHOD

Pad and store at 25°C, liquor pick up 70% for methods C1, C3, C4.
Batching times: 6, 16, 24, 48 hours. The color strength of the 16-hour dyeing (methods C1 and C4) and the 24-hour dyeing (method C3) are taken as the standard and rated as 100. Color strength about 1/1 SD, 2/1 SD for navy, black is tested as black.

Pad-dry-pad-steam method

Pad at 25°C, liquor pick up 70%, steam at 102°C. Steaming times: 30, 60, 90, 120 seconds. The 60-second dyeing is rated as 100. Color strength about 1/1 SD, 2/1 SD for navy, black is tested as black.

PAD-STEAM METHOD

Pad at 25°C, liquor pick up 70%, steam at 102°C. Steaming times: 60, 75, 90, 120 seconds. The 90-second dyeing is rated as 100. Color strength about 1/1 SD, 2/1 SD for navy, black is tested as black.

PAD-THERMOFIX

Pad at about 25°C, liquor pick up 70%, dry at 120°C, thermofix at 160°C. Fixation times: 30, 45, 60, 90 seconds. The 60-second dyeing is rated as 100. Color strength about 1/1 SD, 2/1 SD for navy, black is tested as black.

FASTNESS PROPERTIES

Light fastness was tested at the given standard depths. Other fastness properties refer to dyeings at about 1/1 standard depth (SD), except navy (at about 2/1 SD) and black (as black), on bleached mercerized cotton woven fabric. Light fastness is measured upwards from 1 to 8, other fastness properties from 1 to 5.

Fastness properties were tested and assessed in accordance with International Standard (IS) ISO 105, issued by the International Organization for Standardization (ISO).

Key to abbreviations

Shade changes

Bl = bluer **Br = brighter**
G = greener **De = deeper**
R = redder **D = duller, flatter**
Y = yellower **W = weaker**

Fastness tables

Ch = shade change **CO = staining of cotton**
CV = staining of viscose **WO = staining of wool**

Light fastness, xenon lamp	
1/25–2/1 SD or light black	Xenon lamp ISO 105 / B02

Washing	
60°C, C1S 1x 60°C, C1S 5x	ISO 105 / C06 Wash test with fresh wash solution, 5 times (without intermediate drying)
95°C, E1S 1x	ISO 105 / C06
Washing with peroxide, 95°C, E2S	ISO 105 / C06
Oxidative bleach damage	M&S C10A
Water	ISO 105 / E01
Sea water	ISO 105 / E02
Chlorinated water, 20 mg/l	ISO 105 / E03
Perspiration, alkaline	ISO 105 / E04
Perspiration, acid	ISO 105 / E04

HOT PRESSING IMMEDIATELY

Effect	Immediately after drying/pressing, a significant shade change can occur with some dyes, but this will rectify itself after a minimum of 4h.
Prevention	Cool down and condition before checking the shade.
Test	ISO 105/X11 – hot pressing – immediate assessment of shade change.

INFLUENCE OF GAS-HEATED DRYERS

Effect	Poor gas quality and badly regulated gas dryers can give rise to gas fumes, which cause shade changes with some dyes.
Prevention	Improve air circulation in the dryer.
Test	AATCC 164 – nitrogen oxides (NOX) – 1/2/3 cycles.
Assessment after 3 cycles	Immediate.

HANDLING REACTIVE DYES

AVITERA® SE dyes present no special risk to health if the usual hygiene and safety rules for handling chemicals are observed in storage, handling and use. Ingestion, inhalation, and skin and eye contact must be avoided. Any application restrictions indicated on the informative labels should also be observed.

For information on toxicology and ecology, please see the relevant Safety Data Sheets.