

## Investigation report

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Date: 22.11.2018

### Investigation report No. 18-E-580

Order description: Colour fastness to rubbing DIN EN ISO 105-X12 (2016-11)  
Colour fastness to artificial light: Xenon arc fading lamp  
DIN EN ISO 105-B02 (2014-11)

Test samples: Fanello 2423

Sampling: by orderer

Orderer: see address

Date of order: 16.10.2018

Date of delivery: 18.10.2018

Date of testing: 16.11.2018

Number of pages: 6

#### Remark:

The results are valid only for the tested object. The accreditation applies for the methods listed in the annex to the certificate D-PL-17323-01-00. Accredited test methods are underlined. The valuations and Interpretations in the investigation report are not subject to accreditation. Tests conducted through co-operation partners are marked with °. The content of this investigation report will not be passed to third persons without written approval of the orderer. The partial publication of the test report, as well as the usage for commercial process, is only allowed with a permission of the DELCOTEX Delius Techtex GmbH & Co. KG. Remnants of test material will be destroyed after 3 months. Previously stated specifications / data sheets / certificates are only characters and no warranties. Also no warranty in case of durability will be overtaken. Finally our general delivery and payment conditions are valid (please see [www.textillabor.eu](http://www.textillabor.eu)).

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### Instructions for performing

**1. Method:** **Colour fastness to artificial light: Xenon arc fading lamp**  
**DIN EN ISO 105-B02 (2014-11)**

**2. Measuring conditions:**

Tester: Atlas Xenotest alpha LM  
 Light: Xenon arc beam  
 Filtering system: Typ 7  
 Pick and placement cycling: 170 h – until Mark 6

### Test results

Sample / Colour	Mark*
Fanello, 2423-01, 81% PES 81%CV/17%LI/2%PA	6
Fanello, 2423-02, 81% PES 81%CV/17%LI/2%PA	6
Fanello, 2423-03, 81% PES 81%CV/17%LI/2%PA	6
Fanello, 2423-04, 81% PES 81%CV/17%LI/2%PA	6
Fanello, 2423-05, 81% PES 81%CV/17%LI/2%PA	5-6
Fanello, 2423-06, 81% PES 81%CV/17%LI/2%PA	6
Fanello, 2423-07, 81% PES 81%CV/17%LI/2%PA	6
Fanello, 2423-08, 81% PES 81%CV/17%LI/2%PA	5-6
Fanello, 2423-09, 81% PES 81%CV/17%LI/2%PA	6
Fanello, 2423-10, 81% PES 81%CV/17%LI/2%PA	5-6
Fanello, 2423-11, 81% PES 81%CV/17%LI/2%PA	5-6
Fanello, 2423-12, 81% PES 81%CV/17%LI/2%PA	5-6
Fanello, 2423-13, 81% PES 81%CV/17%LI/2%PA	6
Fanello, 2423-14, 81% PES 81%CV/17%LI/2%PA	5-6
Fanello, 2423-15, 81% PES 81%CV/17%LI/2%PA	6
Fanello, 2423-16, 81% PES 81%CV/17%LI/2%PA	5-6
Fanello, 2423-17, 81% PES 81%CV/17%LI/2%PA	5-6
Fanello, 2423-18, 81% PES 81%CV/17%LI/2%PA	6

\* The results based on using the blue scale.  
 Note 1 = intense colour change  
 Note 8 = no colour change

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### Instructions for performing

**3. Methode:** Colour fastness to rubbing DIN EN ISO 105-X12 (2016-11)

**4. Measuring conditions**

tester:	Crockmeter
pin:	Ø (16+/-0,1) mm (cylinder)
abrasive:	cotton fabric
strength:	9 +/- 0,2 N
room temperature:	20 +/- 2 °C
humidity:	65 +/- 4 %
conditioned:	>4 h
water absorption:	95,32% - 100,00%

### Test results

**Article:** Fanello, 2423, 81% PES 81%CV/17%LI/2%PA

Fanello, 2423-01	Warp	Weft
Dry-Mark *	4-5	4-5
Wet-Mark *	4	4

Fanello, 2423-02	Warp	Weft
Dry-Mark *	4-5	4-5
Wet-Mark *	4	4

Fanello, 2423-03	Warp	Weft
Dry-Mark *	4-5	4-5
Wet-Mark *	4-5	4-5

Fanello, 2423-04	Warp	Weft
Dry-Mark *	4-5	4-5
Wet-Mark *	4-5	4-5

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## Test results

<b>Fanello, 2423-05</b>	<b>Warp</b>	<b>Weft</b>
<b>Dry-Mark *</b>	<b>4-5</b>	<b>4-5</b>
<b>Wet-Mark *</b>	<b>4-5</b>	<b>4-5</b>

<b>Fanello, 2423-06</b>	<b>Warp</b>	<b>Weft</b>
<b>Dry-Mark *</b>	<b>4-5</b>	<b>4-5</b>
<b>Wet-Mark *</b>	<b>4-5</b>	<b>4-5</b>

<b>Fanello, 2423-07</b>	<b>Warp</b>	<b>Weft</b>
<b>Dry-Mark *</b>	<b>4-5</b>	<b>4-5</b>
<b>Wet-Mark *</b>	<b>4-5</b>	<b>4-5</b>

<b>Fanello, 2423-08</b>	<b>Warp</b>	<b>Weft</b>
<b>Dry-Mark *</b>	<b>4-5</b>	<b>4-5</b>
<b>Wet-Mark *</b>	<b>3</b>	<b>3</b>

<b>Fanello, 2423-09</b>	<b>Warp</b>	<b>Weft</b>
<b>Dry-Mark *</b>	<b>4-5</b>	<b>4-5</b>
<b>Wet-Mark *</b>	<b>4</b>	<b>4</b>

<b>Fanello, 2423-10</b>	<b>Warp</b>	<b>Weft</b>
<b>Dry-Mark *</b>	<b>4-5</b>	<b>4-5</b>
<b>Wet-Mark *</b>	<b>3-4</b>	<b>3</b>

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## Test results

<b>Fanello, 2423-11</b>	<b>Warp</b>	<b>Weft</b>
<b>Dry-Mark *</b>	<b>4-5</b>	<b>4-5</b>
<b>Wet-Mark *</b>	<b>3</b>	<b>3</b>

<b>Fanello, 2423-12</b>	<b>Warp</b>	<b>Weft</b>
<b>Dry-Mark *</b>	<b>4-5</b>	<b>4-5</b>
<b>Wet-Mark *</b>	<b>3</b>	<b>3</b>

<b>Fanello, 2423-13</b>	<b>Warp</b>	<b>Weft</b>
<b>Dry-Mark *</b>	<b>4-5</b>	<b>4-5</b>
<b>Wet-Mark *</b>	<b>2-3</b>	<b>2-3</b>

<b>Fanello, 2423-14</b>	<b>Warp</b>	<b>Weft</b>
<b>Dry-Mark *</b>	<b>4-5</b>	<b>4-5</b>
<b>Wet-Mark *</b>	<b>4-5</b>	<b>4-5</b>

<b>Fanello, 2423-15</b>	<b>Warp</b>	<b>Weft</b>
<b>Dry-Mark *</b>	<b>4-5</b>	<b>4-5</b>
<b>Wet-Mark *</b>	<b>3-4</b>	<b>4</b>

<b>Fanello, 2423-16</b>	<b>Warp</b>	<b>Weft</b>
<b>Dry-Mark *</b>	<b>4-5</b>	<b>4-5</b>
<b>Wet-Mark *</b>	<b>3-4</b>	<b>4</b>

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## Test results

Fanello, 2423-17	Warp	Weft
Dry-Mark *	4-5	4-5
Wet-Mark *	4	4

Fanello, 2423-18	Warp	Weft
Dry-Mark *	4-5	4-5
Wet-Mark *	4-5	4

\* The results based on using the grey scale – ISO 105-A03.  
 Note 1 = intense colour change  
 Note 5 = no colour change



i. A. Erik Radl  
 Laboratory  
 DELCOTEX Delius Techtex GmbH & Co. KG  
 Als verbindlich gelten nur die Angaben im unterzeichneten Prüfbericht

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### Appendix

**Method:**

**Colour fastness to artificial light: Xenon arc fading lamp**  
**DIN EN ISO 105-B02 (2014-11) method 2**



**Sample 1: 2423 – 01: 6**

**Sample 2: 2423 – 02: 6**

**Sample 3: 2423 – 03: 6**

**Sample 4: 2423 – 04: 6**

**Sample 5: 2423 – 05: 5-6**

**Sample 6: 2423 – 06: 6**

**Sample 7: 2423 – 07: 6**

**Sample 8: 2423 – 08: 5-6**

**Sample 9: 2423 – 09: 6**

**Sample 10: 2423 – 10: 5-6**

**Sample 11: 2423 – 11: 5-6**

**Sample 12: 2423 – 12: 5-6**

**Sample 13: 2423-13: 6**

**Sample 14: 2423-14: 5-6**

**Sample 15: 2423-15: 6**

**Sample 16: 2423-16: 5-6**

**Sample 17: 2423-17: 5-6**

**Sample 18: 2423-18: 6**

\*The end mark refers to the change of colour using the blue scale.

Note 1 = very low colour fastness / strong change in colour

Note 8 = very high colour fastness / no change in colour

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### Appendix

**Methode:** Colour fastness to rubbing DIN EN ISO 105-X12 (2016-11)

**Article:** Fanello, 2423-01, 81% PES 81%CV/17%LI/2%PA

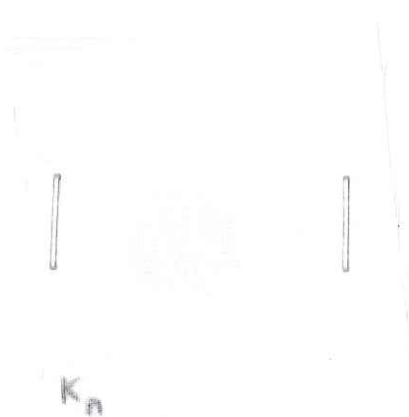
**warp**

**dry**



Mark\* 4-5

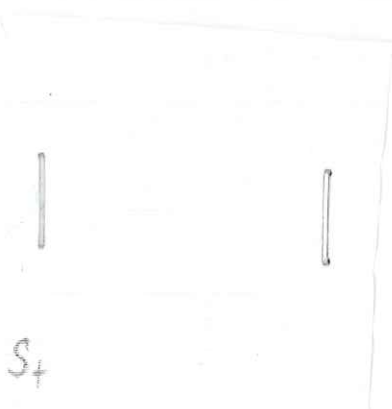
**wet**



Mark\* 4

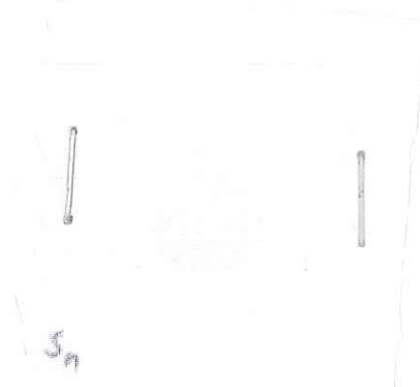
**weft**

**dry**



Mark\* 4-5

**wet**



Mark\* 4

\* The results based on using the gray scale.  
Note 1 = intense colour change  
Note 5 = no colour change



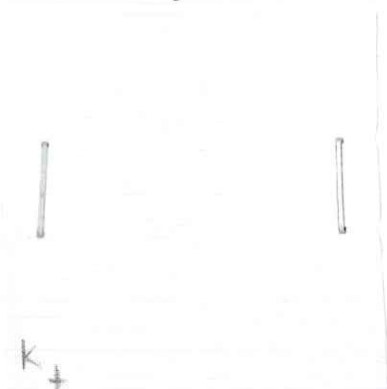
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**Methode:** Colour fastness to rubbing DIN EN ISO 105-X12 (2016-11)

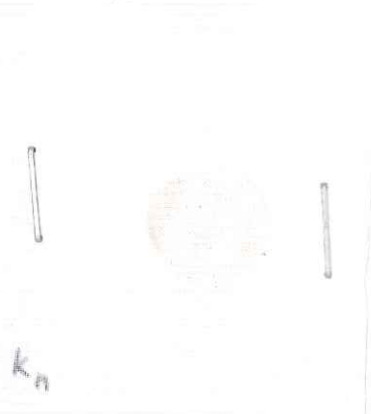
**Article:** Fanello, 2423-02, 81% PES 81%CV/17%LI/2%PA  
**warp**

dry



Mark\* 4-5

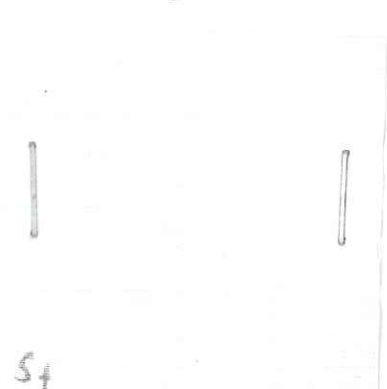
wet



Mark\* 4

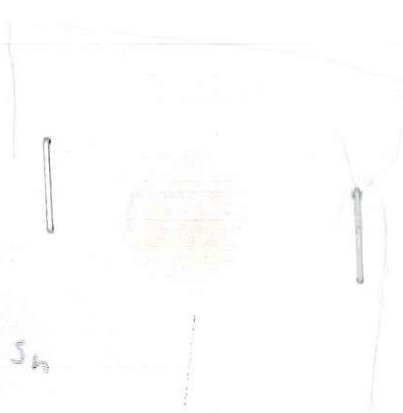
**weft**

dry



Mark\* 4-5

wet



Mark\* 4

\* The results based on using the gray scale.  
Note 1 = intense colour change  
Note 5 = no colour change

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**Methode:** Colour fastness to rubbing DIN EN ISO 105-X12 (2016-11)

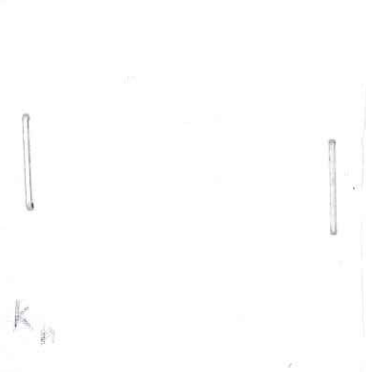
**Article:** Fanello, 2423-03, 81% PES 81%CV/17%LI/2%PA  
**warp**

dry



Mark\* 4-5

wet



Mark\* 4-5

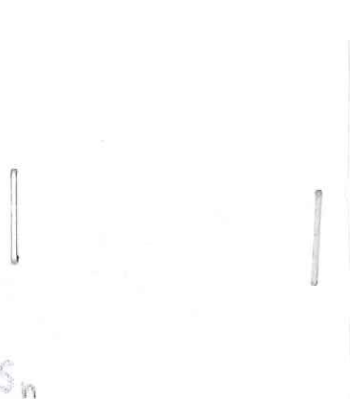
**weft**

dry



Mark\* 4-5

wet



Mark\* 4-5

\* The results based on using the gray scale.  
Note 1 = intense colour change  
Note 5 = no colour change

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**Methode:** Colour fastness to rubbing DIN EN ISO 105-X12 (2016-11)

**Article:** Fanello, 2423-04, 81% PES 81%CV/17%LI/2%PA  
**warp**

dry

wet

$K_+$

$K_+$

Mark\* 4.5

Mark\* 4.5

**weft**

dry

wet

$S_+$

$S_+$

Mark\* 4.5

Mark\* 4.5

\* The results based on using the gray scale.  
Note 1 = intense colour change  
Note 5 = no colour change

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**Methode:** Colour fastness to rubbing DIN EN ISO 105-X12 (2016-11)

**Article:** Fanello, 2423-05, 81% PES 81%CV/17%LI/2%PA  
**warp**

**dry**

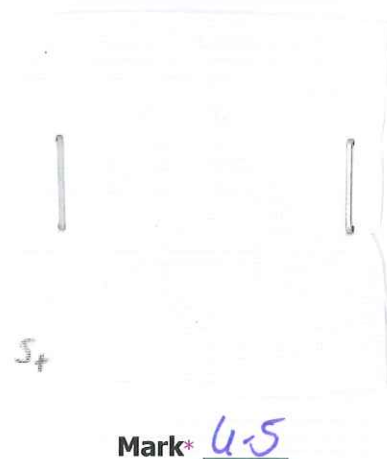


**wet**

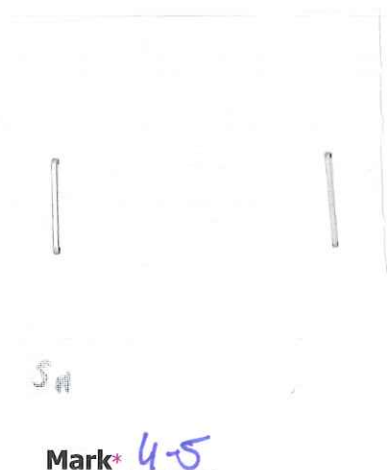


**weft**

**dry**



**wet**



\* The results based on using the gray scale.  
Note 1 = intense colour change  
Note 5 = no colour change

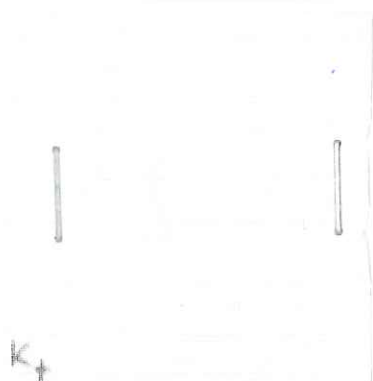
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**Methode:** Colour fastness to rubbing DIN EN ISO 105-X12 (2016-11)

**Article:** Fanello, 2423-06, 81% PES 81%CV/17%LI/2%PA  
**warp**

**dry**



Mark\* 4-5

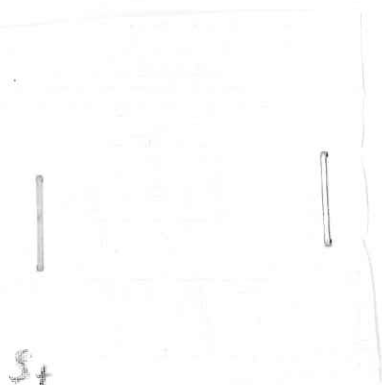
**wet**



Mark\* 4-5

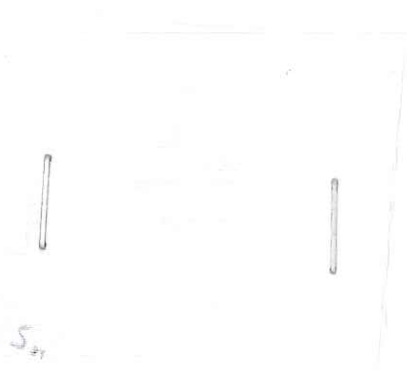
**weft**

**dry**



Mark\* 4-5

**wet**



Mark\* 4-5

\* The results based on using the gray scale.  
Note 1 = intense colour change  
Note 5 = no colour change

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**Methode:** Colour fastness to rubbing DIN EN ISO 105-X12 (2016-11)

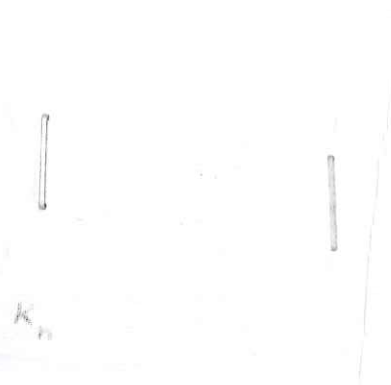
**Article:** Fanello, 2423-07, 81% PES 81%CV/17%LI/2%PA  
**warp**

**dry**



Mark\* 4-5

**wet**



Mark\* 4-5

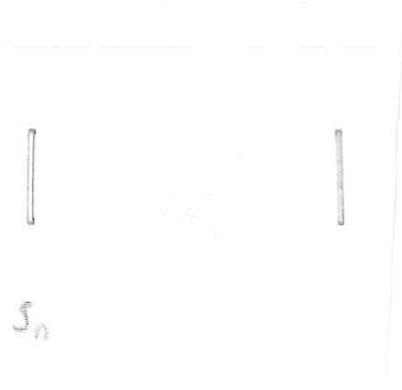
**weft**

**dry**



Mark\* 4-5

**wet**



Mark\* 4-5

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Note 1 = intense colour change  
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**Methode:** Colour fastness to rubbing DIN EN ISO 105-X12 (2016-11)

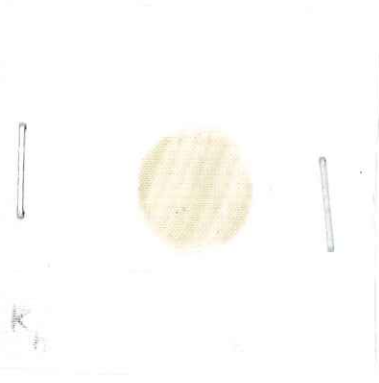
**Article:** Fanello, 2423-08, 81% PES 81%CV/17%LI/2%PA  
**warp**

dry



Mark\* 4-5

wet



Mark\* 3

**weft**

dry



Mark\* 4-5

wet



Mark\* 3

\* The results based on using the gray scale.  
Note 1 = intense colour change  
Note 5 = no colour change

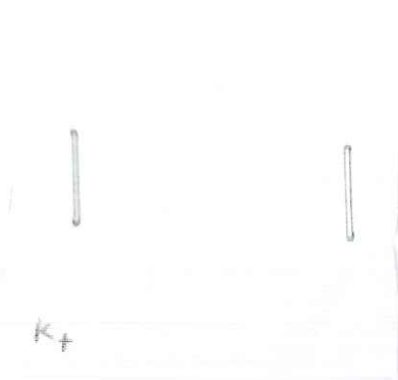
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**Methode:** Colour fastness to rubbing DIN EN ISO 105-X12 (2016-11)

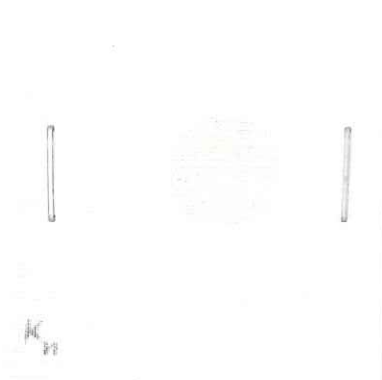
**Article:** Fanello, 2423-09, 81% PES 81%CV/17%LI/2%PA  
**warp**

**dry**



**Mark\* 4.5**

**wet**



**Mark\* 4**

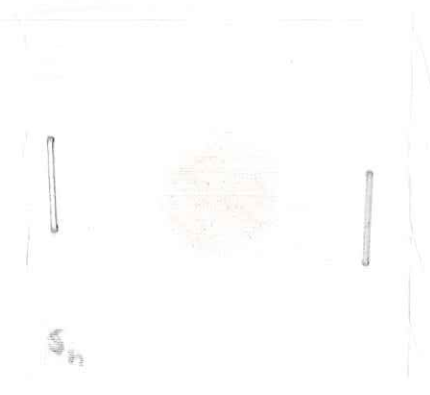
**weft**

**dry**



**Mark\* 4.5**

**wet**



**Mark\* 4**

\* The results based on using the gray scale.  
Note 1 = intense colour change  
Note 5 = no colour change



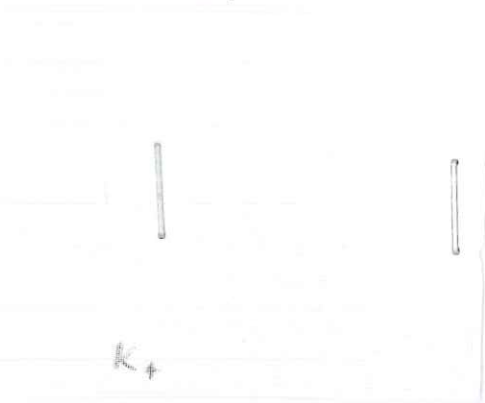
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**Methode:** Colour fastness to rubbing DIN EN ISO 105-X12 (2016-11)

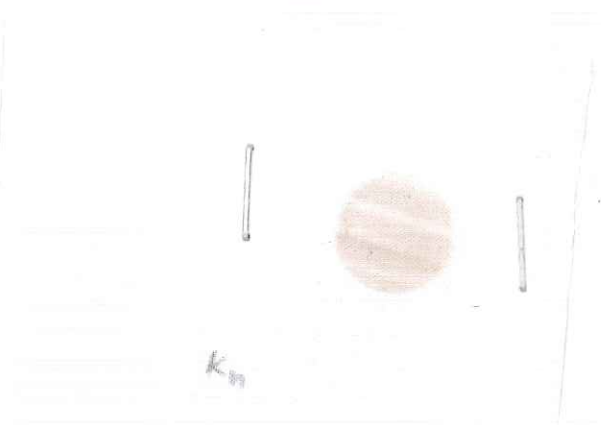
**Article:** Fanello, 2423-10, 81% PES 81%CV/17%LI/2%PA  
**warp**

**dry**



**Mark\* 4-5**

**wet**



**Mark\* 3-4**

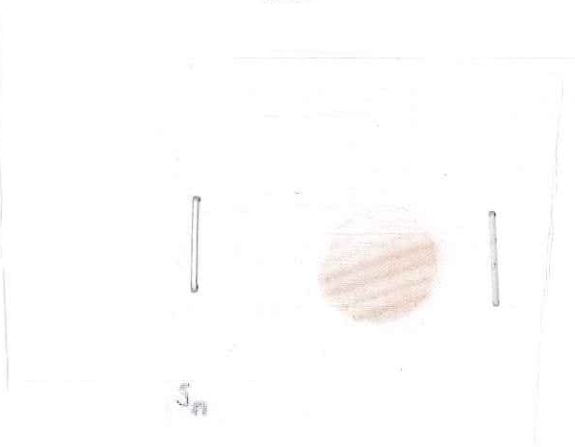
**weft**

**dry**



**Mark\* 4-5**

**wet**



**Mark\* 3**

\* The results based on using the gray scale.  
Note 1 = intense colour change  
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**Methode:** Colour fastness to rubbing DIN EN ISO 105-X12 (2016-11)

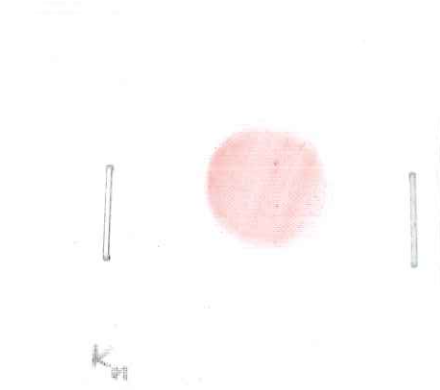
**Article:** Fanello, 2423-11, 81% PES 81%CV/17%LI/2%PA  
**warp**

**dry**



**Mark\* 4-5**

**wet**



**Mark\* 3**

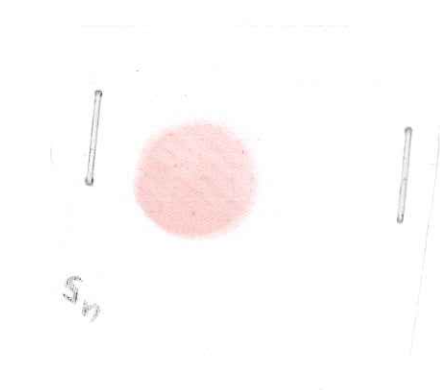
**weft**

**dry**



**Mark\* 4-5**

**wet**



**Mark\* 3**

\* The results based on using the gray scale.  
Note 1 = intense colour change  
Note 5 = no colour change

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**Methode:** Colour fastness to rubbing DIN EN ISO 105-X12 (2016-11)

**Article:** Fanello, 2423-12, 81% PES 81%CV/17%LI/2%PA  
**warp**

**dry**

**wet**

K<sub>4</sub>

Mark\* 4-5

Mark\* 3

**weft**

**dry**

**wet**

S<sub>4</sub>

Mark\* 4-5

S<sub>n</sub>

Mark\* 3

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Note 1 = intense colour change  
Note 5 = no colour change

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**Methode:** Colour fastness to rubbing DIN EN ISO 105-X12 (2016-11)

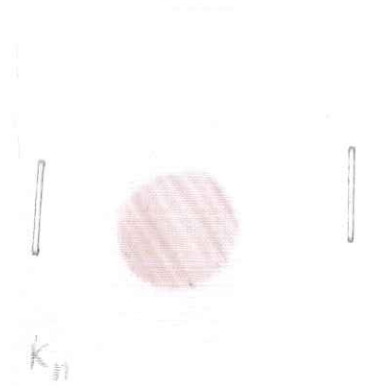
**Article:** Fanello, 2423-13, 81% PES 81%CV/17%LI/2%PA  
**warp**

**dry**



Mark\* 4-5

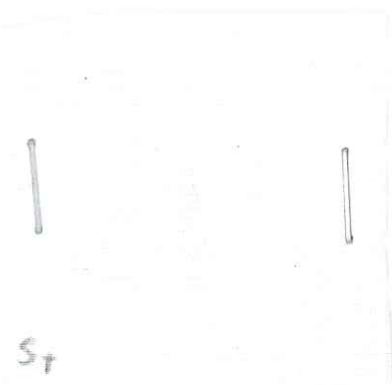
**wet**



Mark\* 2-3

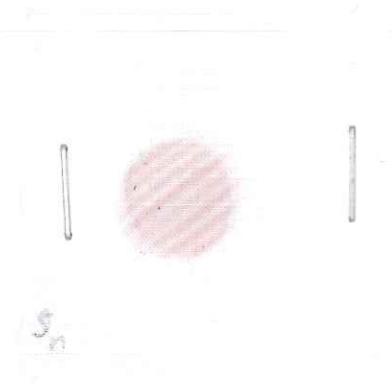
**weft**

**dry**



Mark\* 4-5

**wet**



Mark\* 2-3

\* The results based on using the gray scale.  
Note 1 = intense colour change  
Note 5 = no colour change

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**Methode:** Colour fastness to rubbing DIN EN ISO 105-X12 (2016-11)

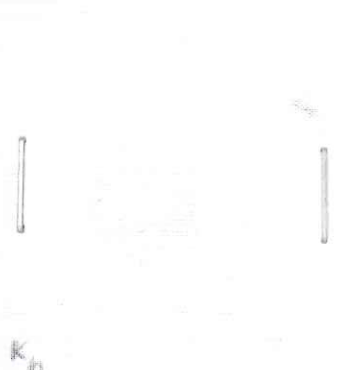
**Article:** Fanello, 2423-14, 81% PES 81%CV/17%LI/2%PA  
**warp**

dry



Mark\* 4.5

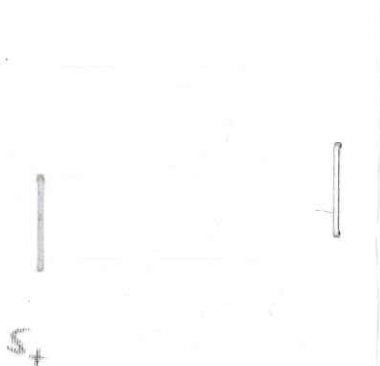
wet



Mark\* 4.5

**weft**

dry



Mark\* 4.5

wet



Mark\* 4.5

\* The results based on using the gray scale.  
Note 1 = intense colour change  
Note 5 = no colour change

## Investigation report No. 18-E-580

### Appendix

**Methode:** Colour fastness to rubbing DIN EN ISO 105-X12 (2016-11)

**Article:** Fanello, 2423-15, 81% PES 81%CV/17%LI/2%PA  
**warp**

**dry**

**wet**



K<sub>+</sub>

Mark\* 4-5



K<sub>+</sub>

Mark\* 3-4

**weft**

**dry**

**wet**



S<sub>+</sub>

Mark\* 4-5



S<sub>+</sub>

Mark\* 4

\* The results based on using the gray scale.  
Note 1 = intense colour change  
Note 5 = no colour change

## Investigation report No. 18-E-580

### Appendix

**Methode:** Colour fastness to rubbing DIN EN ISO 105-X12 (2016-11)

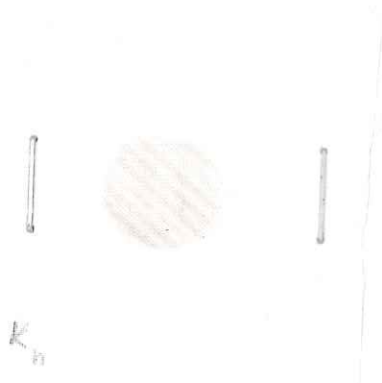
**Article:** Fanello, 2423-16, 81% PES 81%CV/17%LI/2%PA  
**warp**

**dry**



Mark\* 4-5

**wet**



Mark\* 3-4

**weft**

**dry**



Mark\* 4-5

**wet**



Mark\* 4

\* The results based on using the gray scale.  
Note 1 = intense colour change  
Note 5 = no colour change

## Investigation report No. 18-E-580

### Appendix

**Methode:** Colour fastness to rubbing DIN EN ISO 105-X12 (2016-11)

**Article:** Fanello, 2423-17, 81% PES 81%CV/17%LI/2%PA

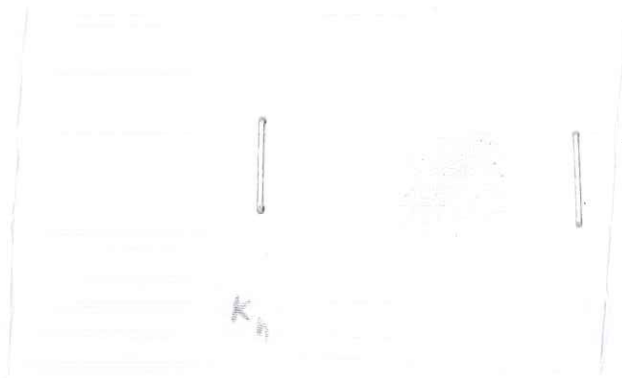
**warp**

dry



Mark\* 4-5

wet



Mark\* 4

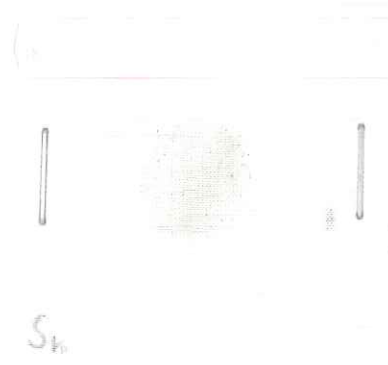
**weft**

dry



Mark\* 4-5

wet



Mark\* 4

\* The results based on using the gray scale.  
Note 1 = intense colour change  
Note 5 = no colour change



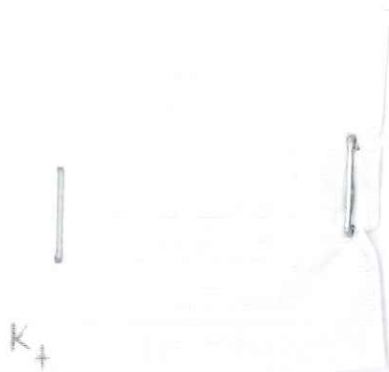
## Investigation report No. 18-E-580

### Appendix

**Methode:** Colour fastness to rubbing DIN EN ISO 105-X12 (2016-11)

**Article:** Fanello, 2423-18, 81% PES 81%CV/17%LI/2%PA  
**warp**

dry



Mark\* 4.5

wet



Mark\* 4.5

**weft**

dry



Mark\* 4.5

wet



Mark\* 4

\* The results based on using the gray scale.  
Note 1 = intense colour change  
Note 5 = no colour change