

## Investigation report

**SAHCO GmbH**

Fr. Sarah Kemmerer  
Kreuzburger Str 17-19

90471 Nürnberg

DELCOTEX  
Delius Techtex GmbH & Co. KG  
Vilsendorfer Str. 50  
33739 Bielefeld  
Germany

Homepage: [www.textillabor.eu](http://www.textillabor.eu)

Contact: Detlef von Seyfried  
Division: Laboratory/Manager  
Phone: +49 (0) 52 06 / 91 07 - 52  
Fax: +49 (0) 52 06 / 91 07 - 34

Date: 13.03.2019

### Investigation report No. 19/259

order description:	<u>Colour fastness to artificial light: Xenon arc fading lamp</u> <u>DIN EN ISO 105-B02 (2014-11)</u> in accordance to DIN EN 14465 (2006-09) Specification Upholstery fabric Pilling test according to DIN EN ISO 12945-2 (2000-11) in accordance to DIN EN 14465 (2006-09) Specification Upholstery fabric <u>Colour fastness to rubbing DIN EN ISO 105-X12 (2016-11)</u> in accordance to DIN EN 14465 (2006-09) Specification Upholstery fabric <u>Seam slippage resistance DIN EN ISO 13936-2 (2004-07)</u> in accordance to DIN EN 14465 (2006-09) Specification Upholstery fabric Abrasion resistance DIN EN ISO 12947-2 (2017-03) according to Martindale method (specimen breakdown)
sample:	600657 Safire loose 001 to 600657 Safire loose 017
sampling:	by orderer
orderer:	see address
date of order:	21.01.2019
date of delivery:	17.01.2019
date of testing:	12.03.2019
number of pages:	7

**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) in accordance  
to DIN EN 14465 (2006-09) Specification Upholstery fabric
- 2. Measuring conditions:**

Tester: Atlas Xenotest alpha LM  
 Light: Xenon arc beam  
 Filtering sytem: Typ 7  
 Pick and placement cycling: 240h – until Mark 6

## Test results

Sample / Colour	Mark*	Category
600657 Safire loose 001	>6	A
600657 Safire loose 002	>6	A
600657 Safire loose 003	>6	A
600657 Safire loose 004	6	A
600657 Safire loose 005	5	B
600657 Safire loose 006	6	A
600657 Safire loose 007	6	A
600657 Safire loose 008	6	A
600657 Safire loose 009	6	A
600657 Safire loose 010	6	A
600657 Safire loose 011	5-6	B
600657 Safire loose 012	6	A
600657 Safire loose 013	6	A
600657 Safire loose 014	5-6	B
600657 Safire loose 015	6	A
600657 Safire loose 016	6	A
600657 Safire loose 017	6	A

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

**Remark:** According to DIN EN 14465 (2006-09), the article is classified in the above-mentioned category with regard to light fastness in furniture fabrics.

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## Instructions for performing

**3. Method:** Colour fastness to rubbing DIN EN ISO 105-X12 (2016-11) in accordance to DIN EN 14465 (2006-09) Specification Upholstery fabric

### 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:	warp: 99,1-100,0%, weft: 99,27-100,0%

## Test results

**Article: 600657 Safire loose 001**

	Warp	Weft	Category
Dry-Mark *	4-5	4-5	A
Wet-Mark *	4	4	A

**Article: 600657 Safire loose 002**

	Warp	Weft	Category
Dry-Mark *	4-5	4-5	A
Wet-Mark *	4	4	A

**Article: 600657 Safire loose 003**

	Warp	Weft	Category
Dry-Mark *	4-5	4-5	A
Wet-Mark *	4	3-4	A

**Article: 600657 Safire loose 004**

	Warp	Weft	Category
Dry-Mark *	4-5	4-5	A
Wet-Mark *	4-5	4-5	A

**Article: 600657 Safire loose 005**

	Warp	Weft	Category
Dry-Mark *	4-5	4-5	A
Wet-Mark *	4	4	A



Article: 600657 Safire loose 006

	Warp	Weft	Category
Dry-Mark *	4-5	4-5	A
Wet-Mark *	4-5	4-5	A

Article: 600657 Safire loose 007

	Warp	Weft	Category
Dry-Mark *	4-5	4-5	A
Wet-Mark *	4-5	4-5	A

Article: 600657 Safire loose 008

	Warp	Weft	Category
Dry-Mark *	4-5	4-5	A
Wet-Mark *	4-5	4-5	A

Article: 600657 Safire loose 009

	Warp	Weft	Category
Dry-Mark *	4-5	4-5	A
Wet-Mark *	4	4	A

Article: 600657 Safire loose 010

	Warp	Weft	Category
Dry-Mark *	4-5	4-5	A
Wet-Mark *	4	4	A

Article: 600657 Safire loose 011

	Warp	Weft	Category
Dry-Mark *	4-5	4-5	A
Wet-Mark *	4	4	A

Article: 600657 Safire loose 012

	Warp	Weft	Category
Dry-Mark *	4-5	4-5	A
Wet-Mark *	4-5	4-5	A

Article: 600657 Safire loose 013

	Warp	Weft	Category
Dry-Mark *	4-5	4-5	A
Wet-Mark *	4	4	A

**Article: 600657 Safire loose 014**

	<b>Warp</b>	<b>Weft</b>	<b>Category</b>
<b>Dry-Mark *</b>	4-5	4-5	A
<b>Wet-Mark *</b>	4-5	4-5	A

**Article: 600657 Safire loose 015**

	<b>Warp</b>	<b>Weft</b>	<b>Category</b>
<b>Dry-Mark *</b>	4-5	4-5	A
<b>Wet-Mark *</b>	4-5	4-5	A

**Article: 600657 Safire loose 016**

	<b>Warp</b>	<b>Weft</b>	<b>Category</b>
<b>Dry-Mark *</b>	4-5	4-5	A
<b>Wet-Mark *</b>	4-5	4-5	A

**Article: 600657 Safire loose 017**

	<b>Warp</b>	<b>Weft</b>	<b>Category</b>
<b>Dry-Mark *</b>	4-5	4-5	A
<b>Wet-Mark *</b>	4-5	4-5	A

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

**Remark:** According to DIN EN 14465 (2006-09), the article is classified in the above-mentioned category with regard to fastness to rubbing in furniture fabrics.

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### Instructions for performing

**5. Method: Seam slippage resistance DIN EN ISO 13936-2 (2004-07) in accordance to DIN EN 14465 (2006-09) Specification Upholstery fabric**

#### **6. Measuring conditions**

Type: furnishing fabric  
Tensile force: 180 N

### Test results

**Article: 600657 Safire loose 002**

	<b>Seam opening [mm]</b>
Warp direction (seamline weft direction)	<b>4,4</b> (4,0-5,0)
Weft direction (seamline warp direction)	<b>3,2</b> (3,0-3,5)

**Remark:** According to DIN EN 14465 (2006-09) the article, in reference to seam slippage resistance in furnishing fabrics, the article is ranked within category **B**.

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## Instructions for performing

**7. Method:**            **Abrasion resistance DIN EN ISO 12947-2 (2017-03) according to Martindale method (specimen breakdown) in accordance to DIN EN 14465 (2006-09) Specification Upholstery fabric**

**8. Measuring conditions**

tester:	Martindale – abrasion tester
abrasive:	wool fabric
nominal pressure:	12 kPa
scrubbing:	795 +/- 7 g
room temperature:	20 +/- 2 °C
humidity:	65 +/- 4 %
number of observers:	2
observation technology:	8-magnification

## Test results

**Article:**            **600657 Safire loose 002**

weight:	764g/m <sup>2</sup>
sample condition:	new
foam:	no
pretreatment:	no

	<b>Number of cycles</b>	<b>Mark*</b>
	<b>up to the 2nd thread break</b>	
	<b>Change of colour after 3000 cycles</b>	<b>/</b>
Sample 1	35.000	
Sample 2	35.000	
Sample 3	40.000	
Sample 4	40.000	
<b>result</b>	<b>35.000</b>	

\* Final grading refers to change of colour under use of greyscale according to ISO 105-A02.  
 Mark 10 strong change of colour, Mark 5 = no change of colour.

**Remark:**            no thread destroyed, scrubbed to the ground.



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## Instructions for performing

**9. Method:** Textiles - Determination of fabric propensity to surface fuzzing and to pilling - Part 2: Modified Martindale method (DIN EN ISO 12945-2:2000-11) in accordance to DIN EN 14465 (2006-09) Specification Upholstery fabric

**10. Measuring conditions:**

**tester:** Martindale abrasion tester  
**abrasive:** wool-abrasive  
**pressure weight:** 415g +/- 2 g  
**Test temperature:** 20 +/- 2 °C  
**Test humidity:** 65 +/- 4 %  
**Number of specimen:** 3  
**Number of observers:** 2  
**pretreatment:** no

## Test results

**Art. 600657 Safire**

Number of cycles	Mark*
500	4
1.000	3-4
2.000	3
5.000	3

- \* Description
- 5 No change
  - 4 Slightly fluffy surface and/or immature pills
  - 3 Moderate linting and/or pilling. Pills of different sizes and densities occasionally cover the surface of the sample.
  - 2 Pronounced lint and/or pilling. Pills of different size and density cover a large part of the sample surface.
  - 1 Dense lint and/or strong pilling. Pills of different size and density cover the entire surface of the sample.

**Remark:** According to DIN EN 14465 (2006-09) the article, in reference to seam slippage resistance in furnishing fabrics, the article is ranked within no category.



i. A. Detlef von Seyfried  
 Laboratory/Manager  
 DELCOTEX Delius Techtex GmbH & Co. KG

Only the information contained in the signed test report is binding.



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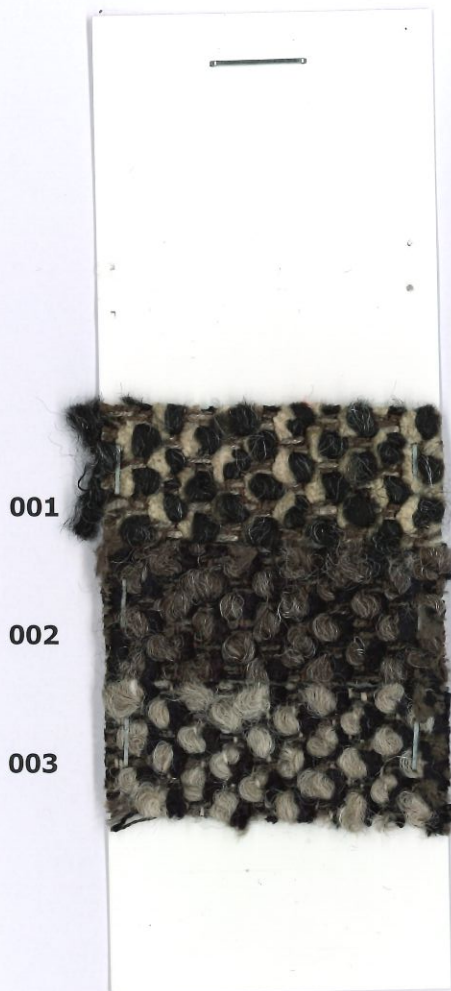
### Appendix

**Article:** 600657 Safire

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

**Note:**

**Note:**



004

005

006

007

008



\*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

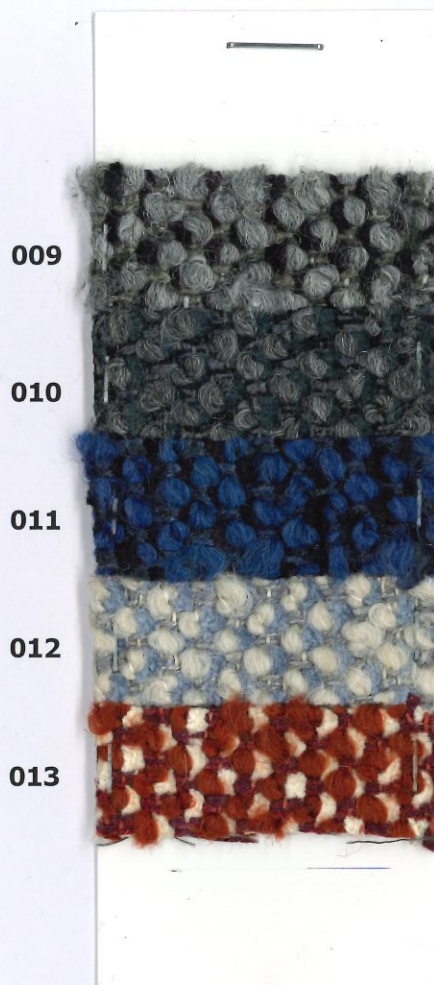
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### Appendix

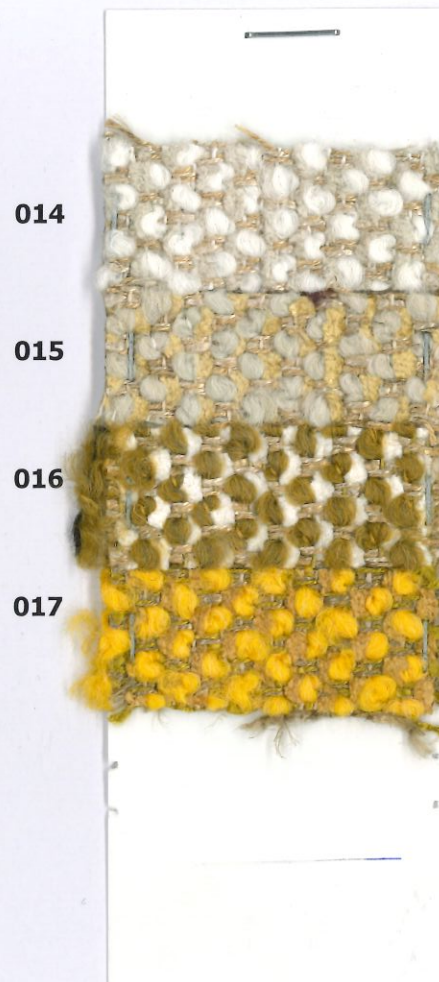
**Article:** 600657 Safire

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

**Note:**



**Note:**



\*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



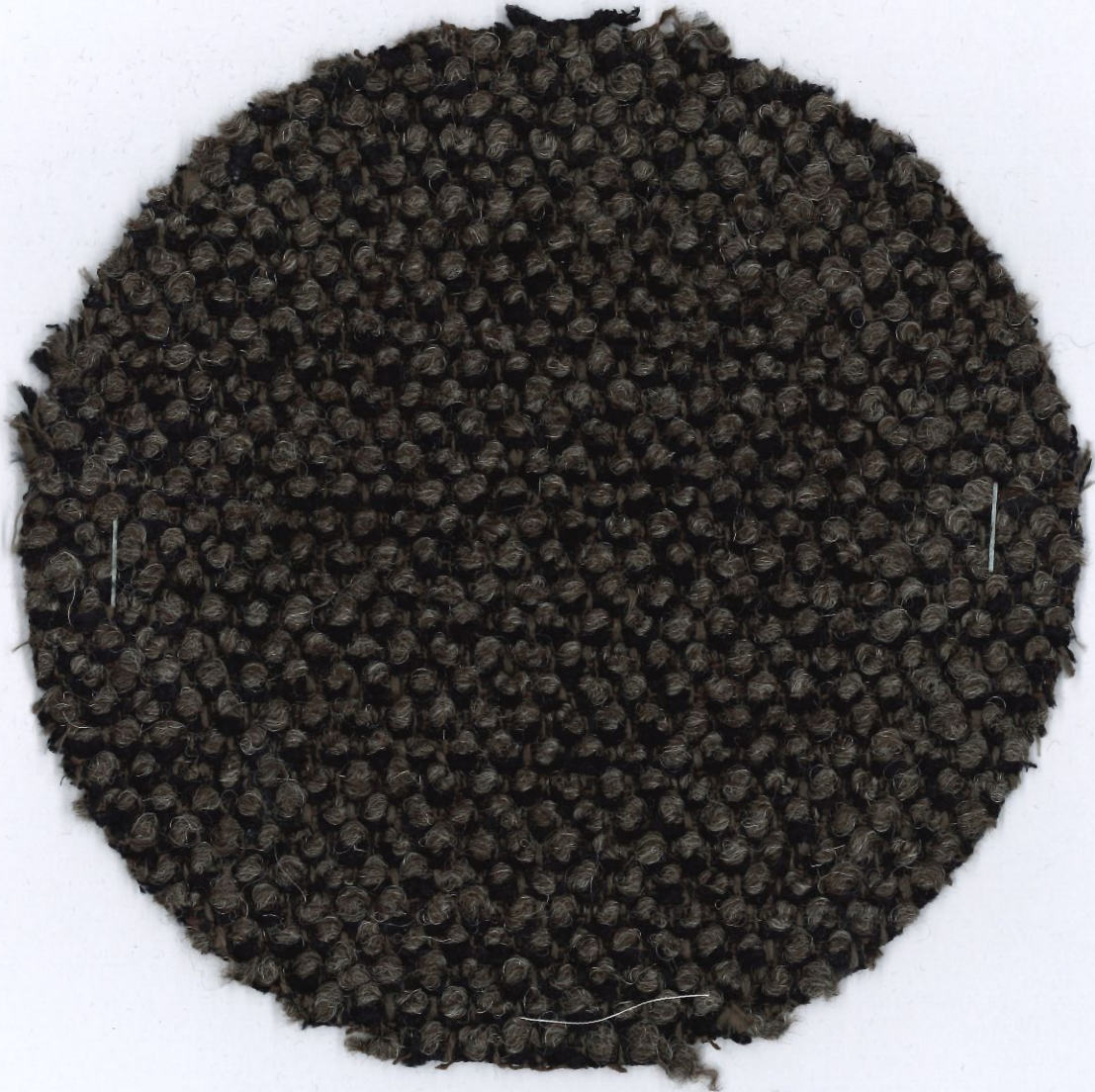
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### Appendix

**Article:** 600657 Safire loose 002

**Method:** Pilling test according to DIN EN ISO 12945-2 (2000-11)



Number of cycles	Mark*
500	4
1.000	3-4
2.000	3
5.000	3



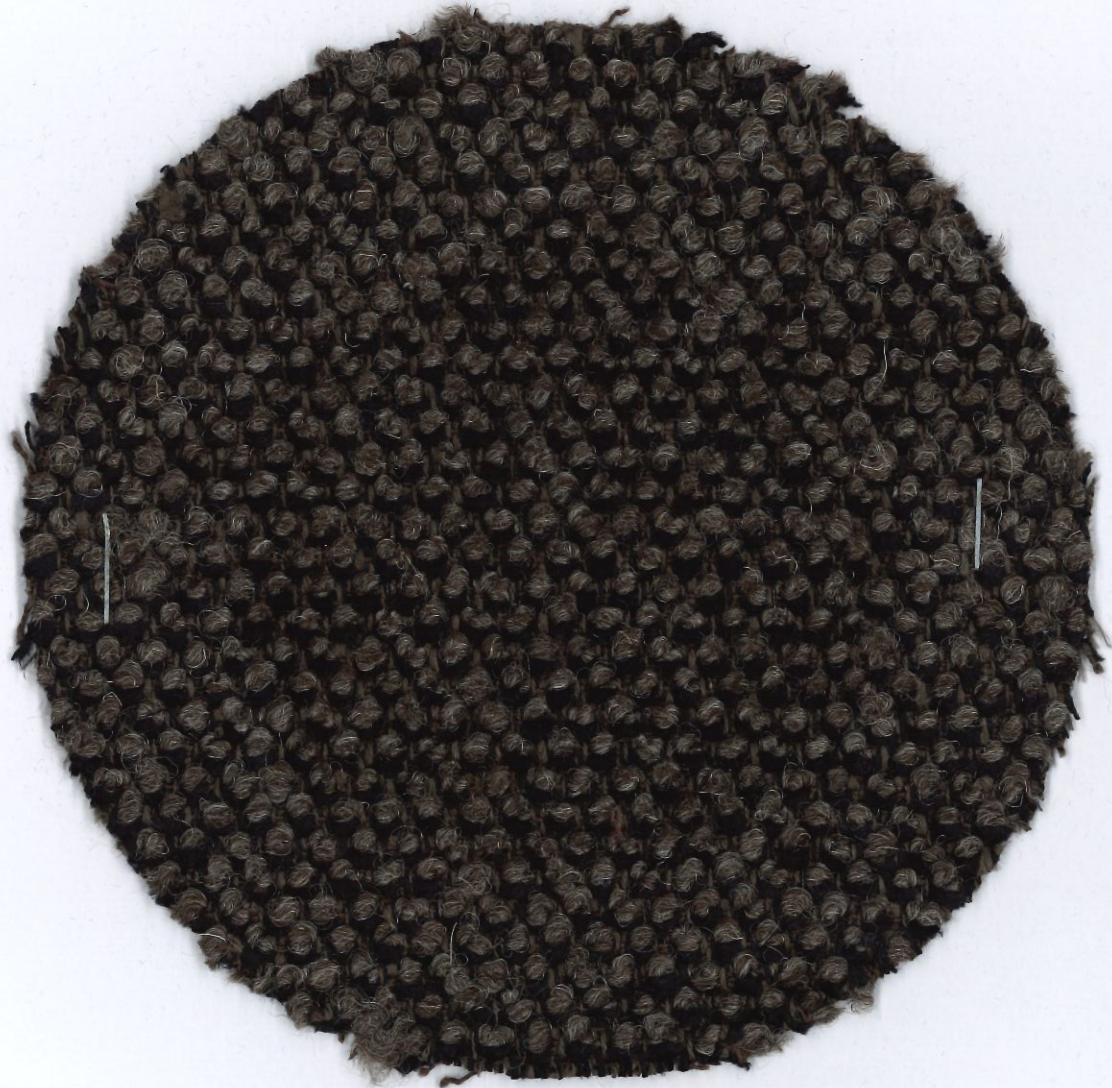
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Appendix

**Article:** 600657 Safire loose 002

**Method:** Pilling test according to DIN EN ISO 12945-2 (2000-11)



Number of cycles	Mark*
500	4
1.000	3-4
2.000	3
5.000	3



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Appendix

**Article:** 600657 Safire loose 002

**Method:** Pilling test according to DIN EN ISO 12945-2 (2000-11)



Number of cycles	Mark*
500	4
1.000	3-4
2.000	3
5.000	3

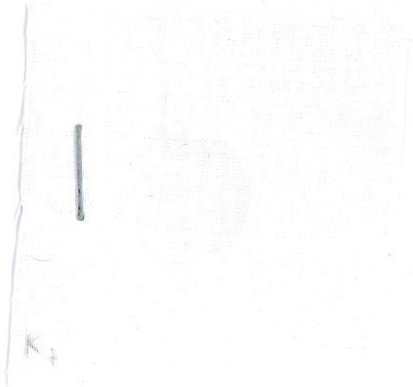
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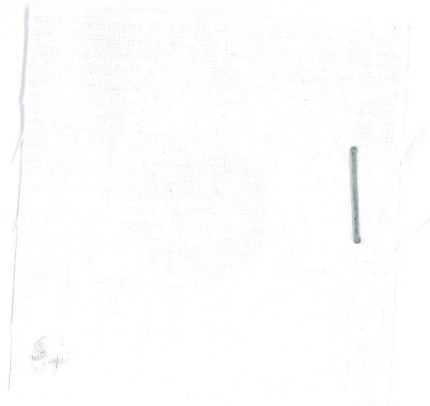
**article:** 600657 Safire loose 001

**method:** Textiles - Tests for colour fastness - Part X12: Colour fastness to rubbing DIN EN ISO 105-X12:2016-11

**warp** 4-5  
**dry**



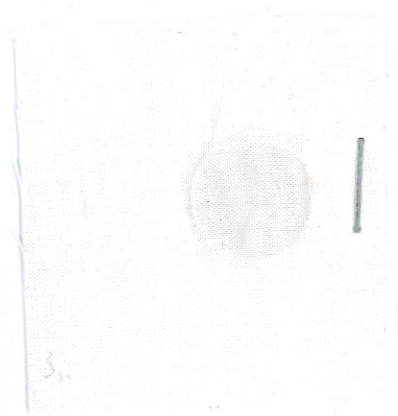
**weft** 4-5  
**dry**



**warp** 4  
**wet**



**weft** 4  
**wet**



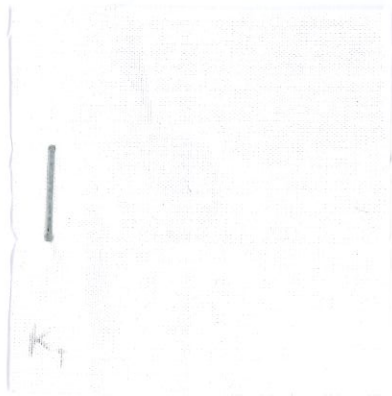
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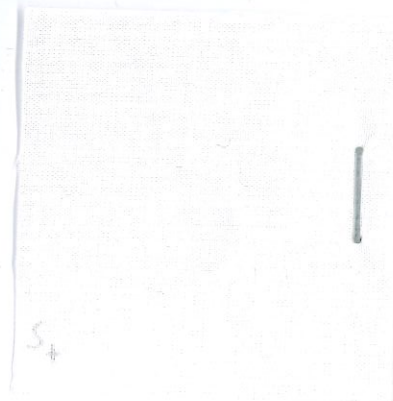
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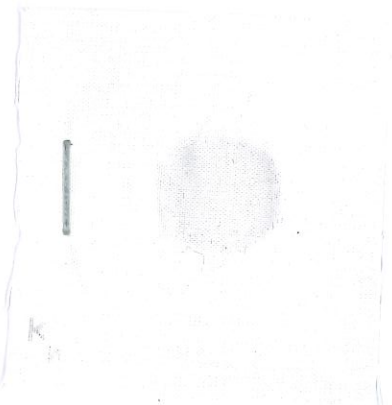
warp  
dry 4-5



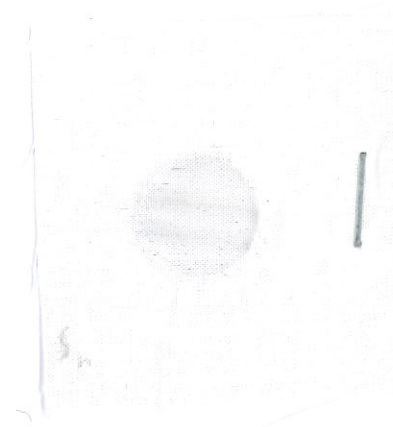
weft  
dry 4-5



warp  
wet 4



weft  
wet 4





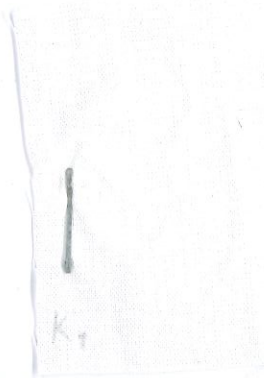
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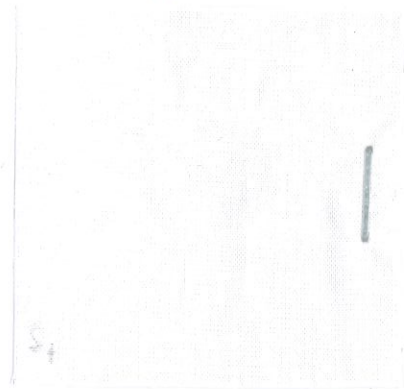
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**method:** Textiles - Tests for colour fastness - Part X12: Colour fastness to rubbing DIN EN ISO 105-X12:2016-11

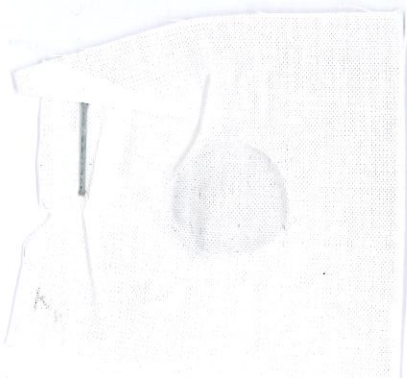
warp 4-5  
dry



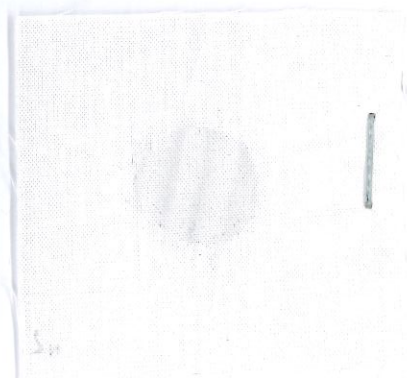
weft 4-5  
dry



warp 4  
wet



weft 3-4  
wet





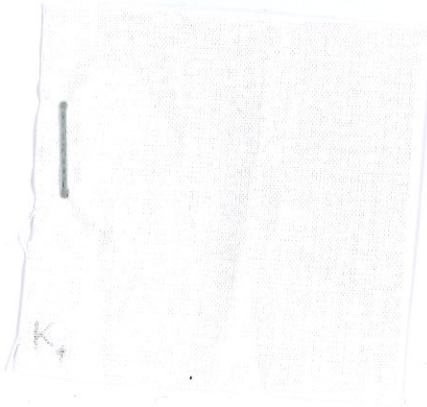
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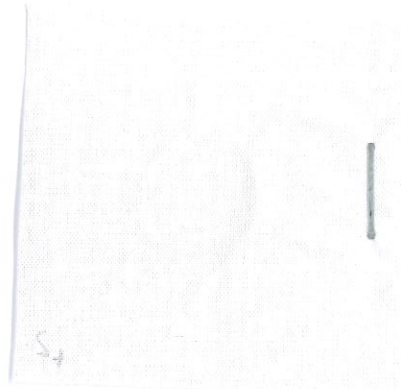
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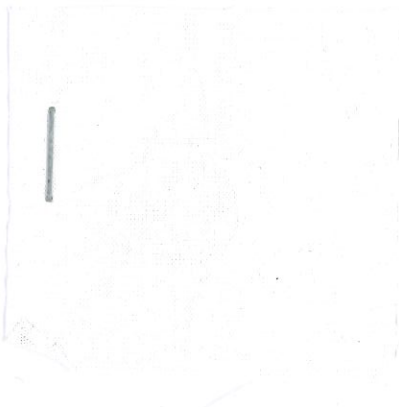
**warp** 4-5  
**dry**



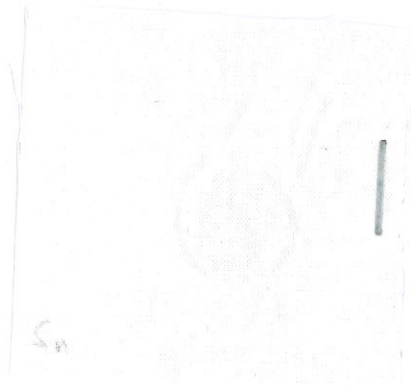
**weft** 4-5  
**dry**



**warp** 4-5  
**wet**



**weft** 4-5  
**wet**



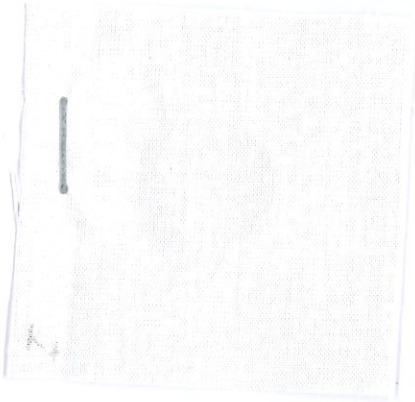
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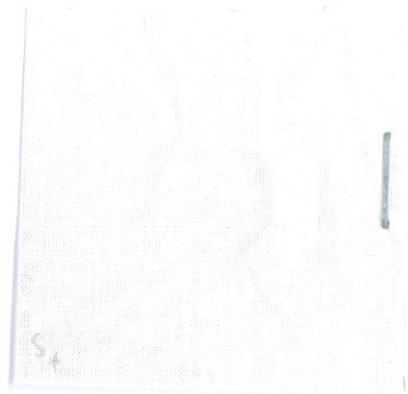
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method: Textiles - Tests for colour fastness - Part X12: Colour fastness to rubbing DIN EN ISO 105-X12:2016-11

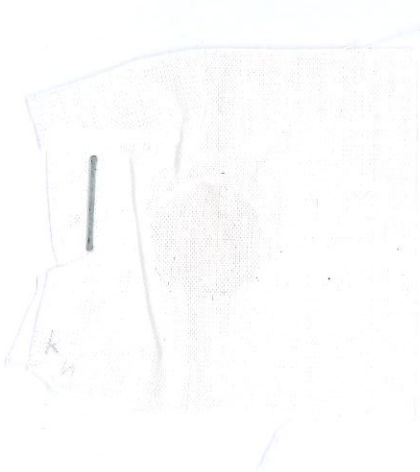
warp  
dry 4-5



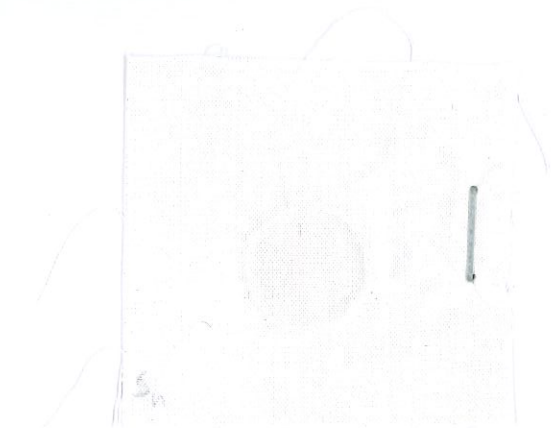
weft  
dry 4-5



warp  
wet 4



weft  
wet 4



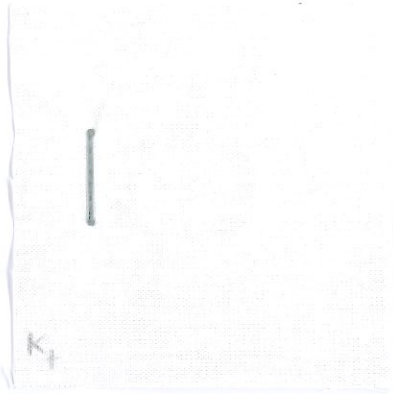
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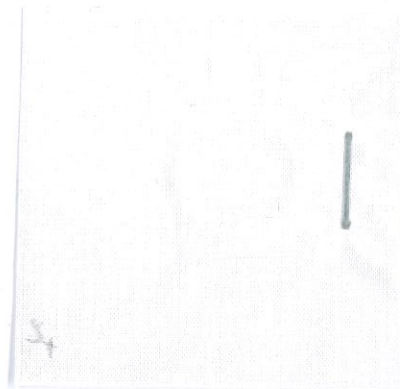
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**method:** Textiles - Tests for colour fastness - Part X12: Colour fastness to rubbing DIN EN ISO 105-X12:2016-11

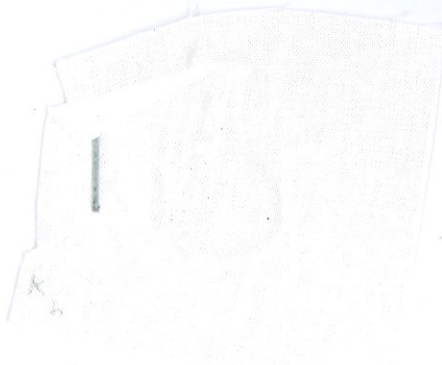
warp  
dry 4-5



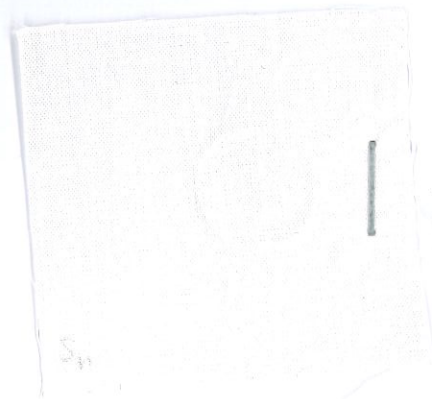
weft  
dry 4-5



warp  
wet 4-5



weft  
wet 4-5



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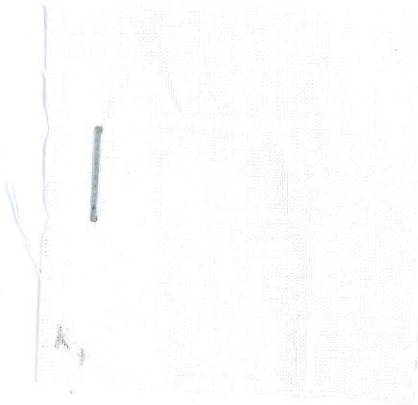
article:

600657 Safire loose 007

method:

Textiles - Tests for colour fastness - Part X12: Colour fastness to rubbing DIN EN ISO 105-X12:2016-11

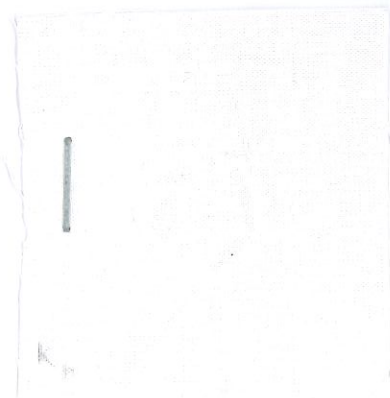
warp  
dry 4-5



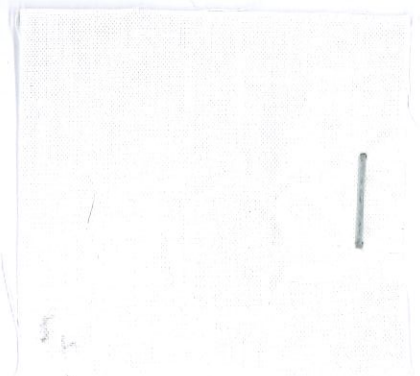
weft  
dry 4-5



warp  
wet 4-5



weft  
wet 4-5



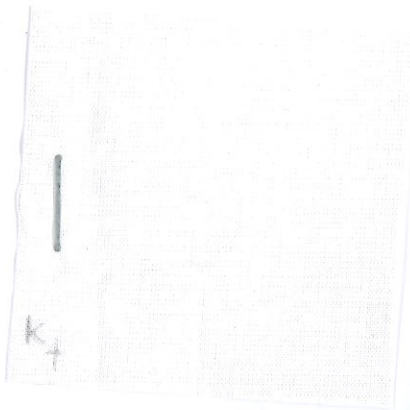


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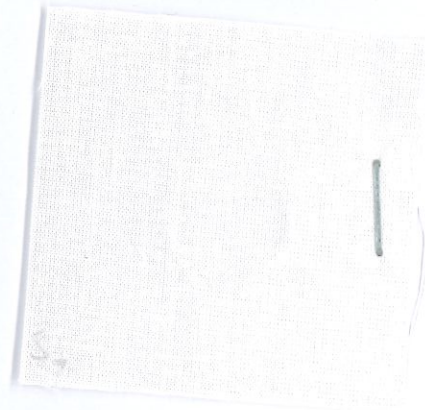
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**article:** 600657 Safire loose 008  
**method:** Textiles - Tests for colour fastness - Part X12: Colour fastness to rubbing DIN EN ISO 105-X12:2016-11

warp  
dry 4.5



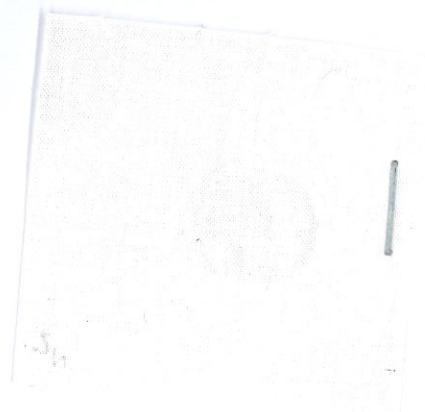
weft  
dry 4.5



warp  
wet 4.5



weft  
wet 4.5

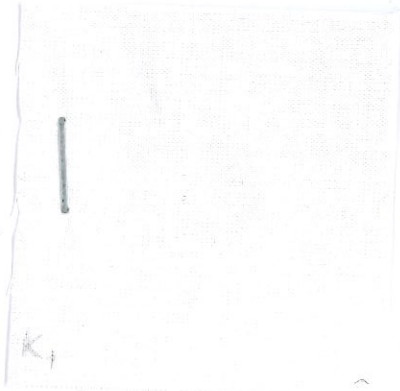


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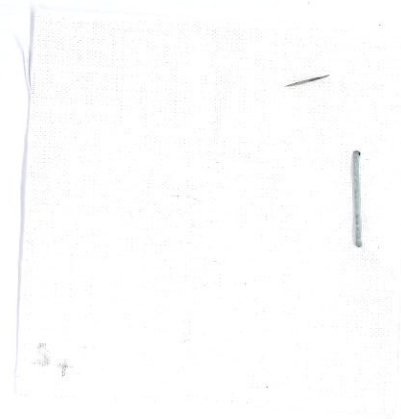
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**method:** Textiles - Tests for colour fastness - Part X12: Colour fastness to rubbing DIN EN ISO 105-X12:2016-11

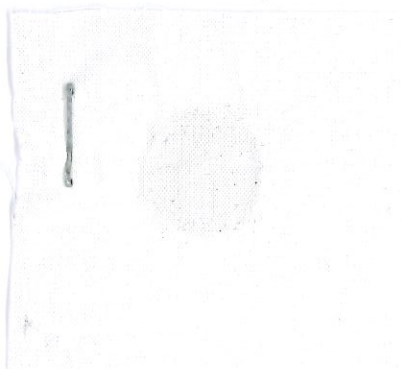
warp dry 4-5



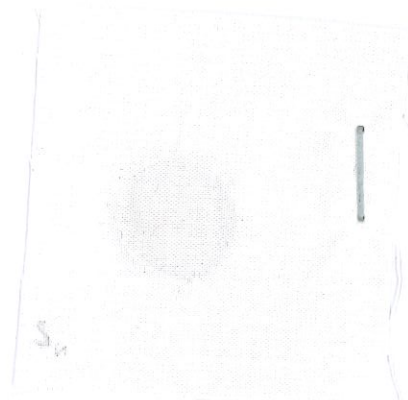
weft dry 4-5



warp wet 4



weft wet 4

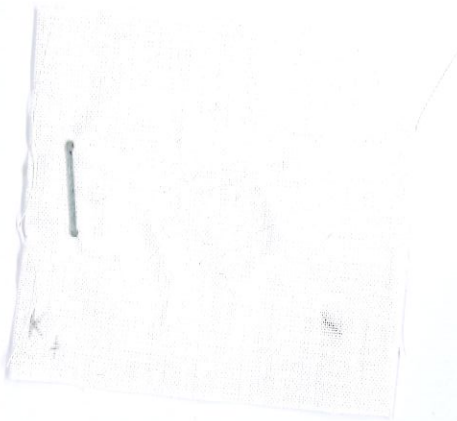


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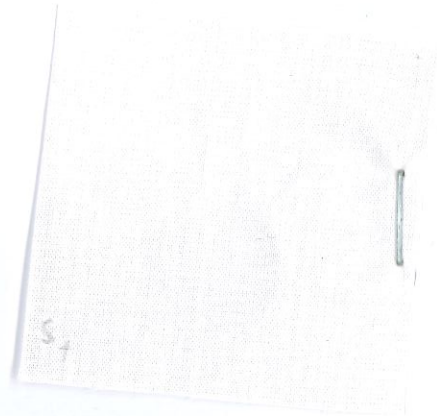
Attachment

**article:** 600657 Safire loose 010  
**method:** Textiles - Tests for colour fastness - Part X12: Colour fastness to rubbing DIN EN ISO 105-X12:2016-11

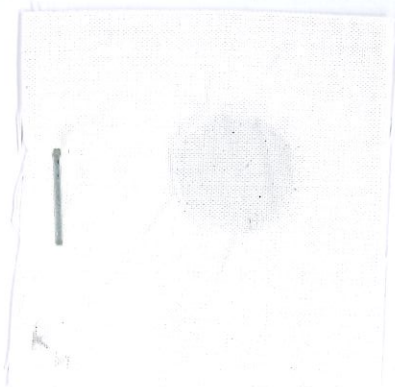
**warp** 4-5  
**dry**



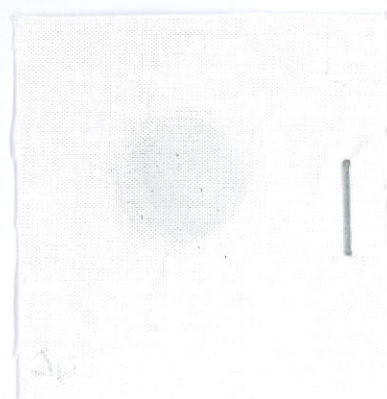
**weft** 4-5  
**dry**



**warp** 4  
**wet**



**weft** 4  
**wet**



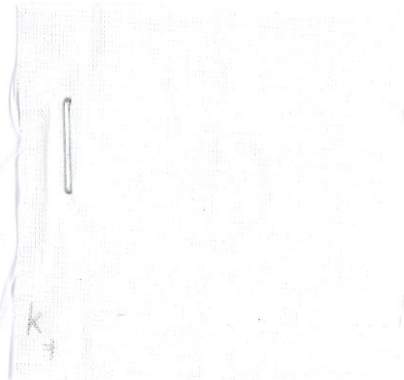
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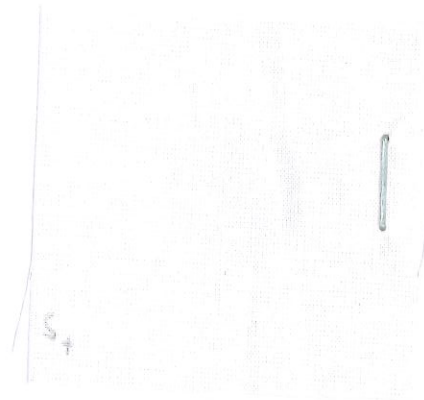
**article:** 600657 Safire loose 011

**method:** Textiles - Tests for colour fastness - Part X12: Colour fastness to rubbing DIN EN ISO 105-X12:2016-11

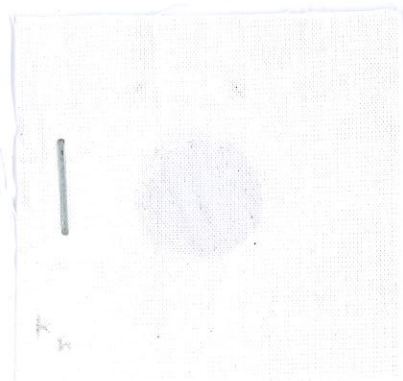
**warp**  
dry 4-5



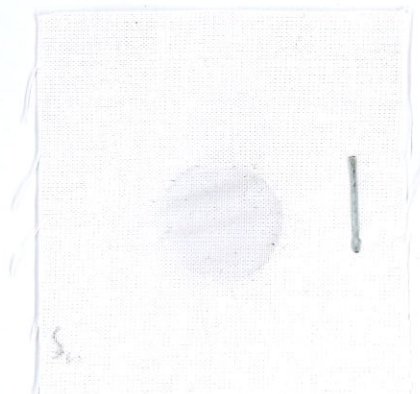
**weft**  
dry 4-5



**warp**  
wet 4



**weft**  
wet 4





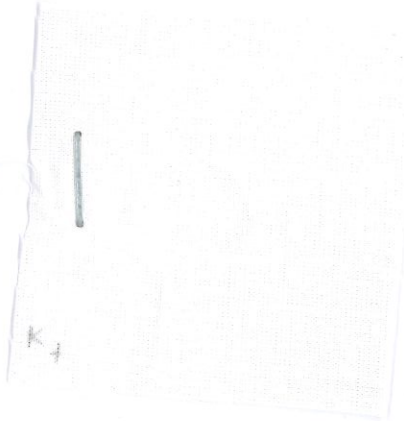
## Investigation report No. 19/259

### Attachment

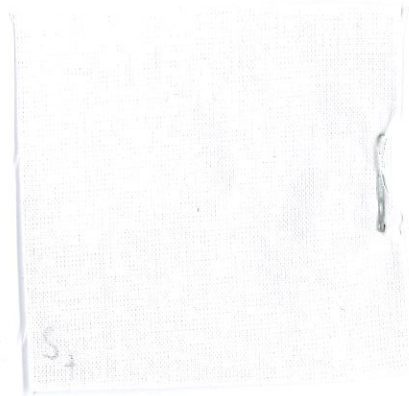
**article:** 600657 Safire loose 012

**method:** Textiles - Tests for colour fastness - Part X12: Colour fastness to rubbing DIN EN ISO 105-X12:2016-11

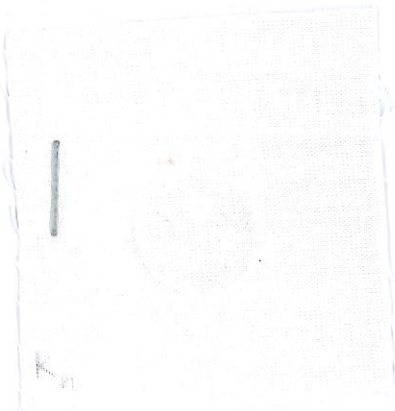
**warp**  
dry 4-5



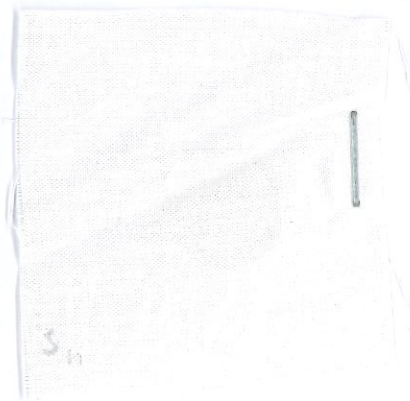
**weft**  
dry 4-5



**warp**  
wet 4-5



**weft**  
wet 4-5



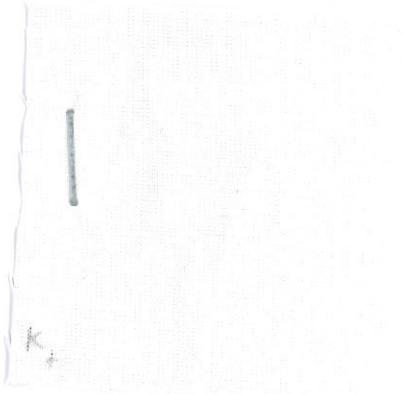
## Investigation report No. 19/259

### Attachment

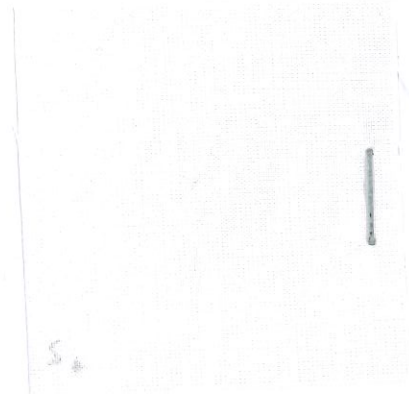
**article:** 600657 Safire loose 013

**method:** Textiles - Tests for colour fastness - Part X12: Colour fastness to rubbing DIN EN ISO 105-X12:2016-11

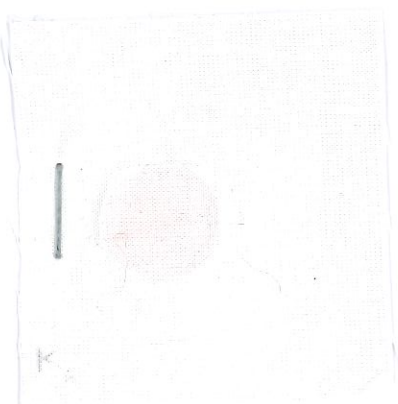
warp  
dry 4.5



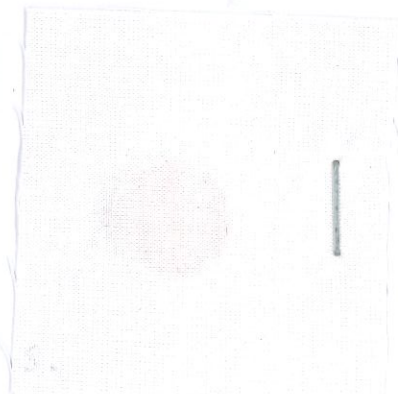
weft  
dry 4.5



warp  
wet 4



weft  
wet 4



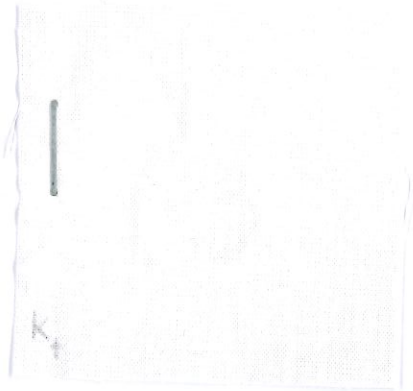
Investigation report No. 19/259

Attachment

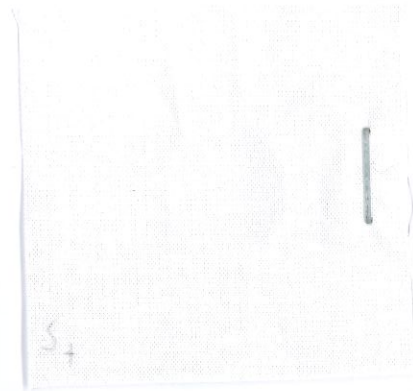
**article:** 600657 Safire loose 014

**method:** Textiles - Tests for colour fastness - Part X12: Colour fastness to rubbing DIN EN ISO 105-X12:2016-11

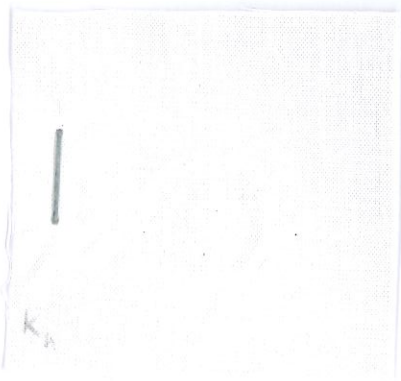
warp  
dry 4-5



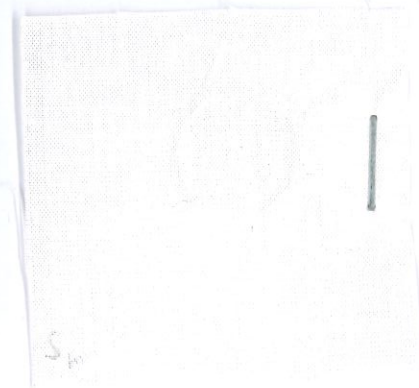
weft  
dry 4-5



warp  
wet 4-5



weft  
wet 4-5

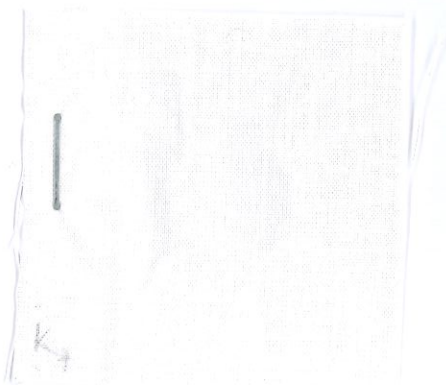


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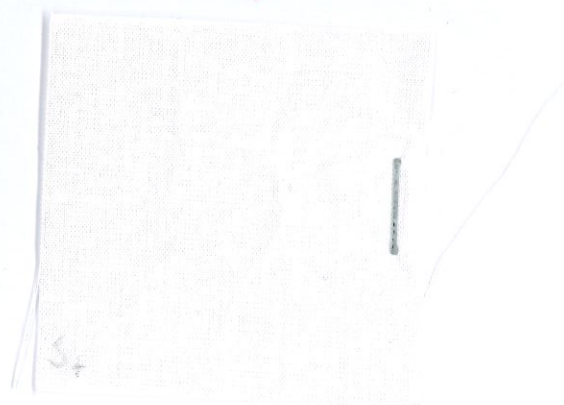
### Attachment

**article:** 600657 Safire loose 015  
**method:** Textiles - Tests for colour fastness - Part X12: Colour fastness to rubbing DIN EN ISO 105-X12:2016-11

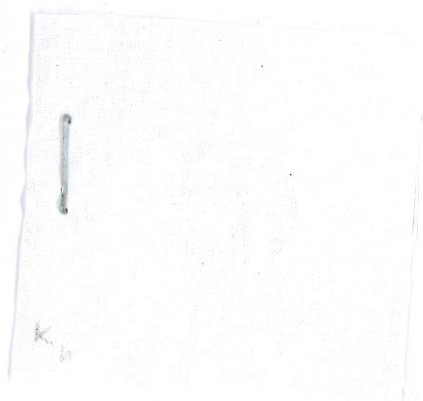
warp  
dry 4-5



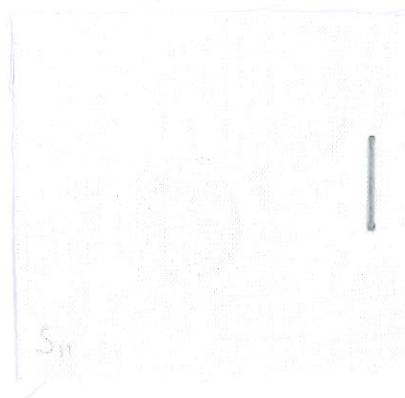
weft  
dry 4-5



warp  
wet 4-5



weft  
wet 4-5



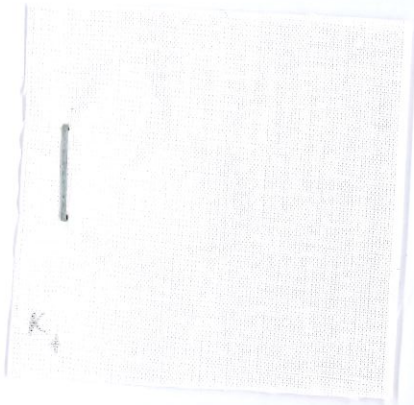


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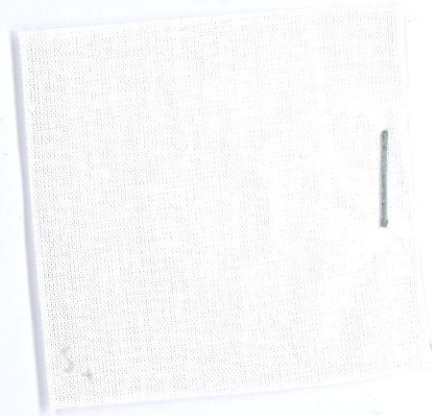
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**article:** 600657 Safire loose 016  
**method:** Textiles - Tests for colour fastness - Part X12: Colour fastness to rubbing DIN EN ISO 105-X12:2016-11

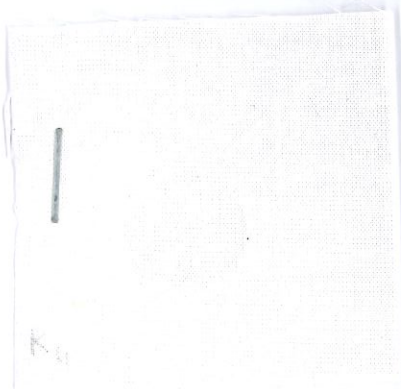
**warp**  
**dry** 4-5



**weft**  
**dry** 4-5



**warp**  
**wet** 4-5



**weft**  
**wet** 4-5



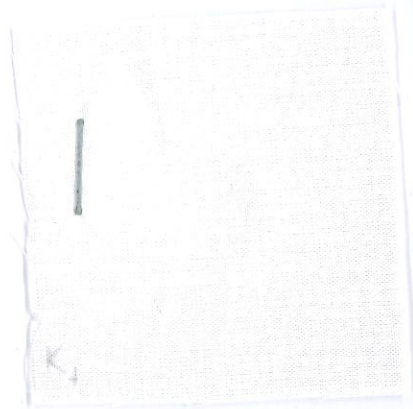
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Attachment

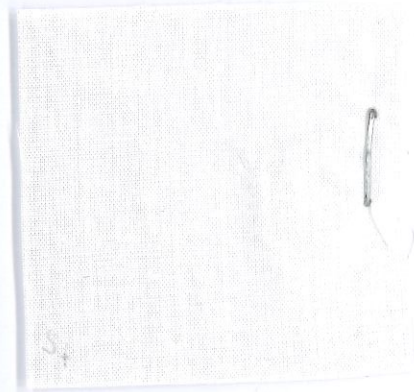
article: 600657 Safire loose 017

method: Textiles - Tests for colour fastness - Part X12: Colour fastness to rubbing. DIN EN ISO 105-X12:2016-11

warp  
dry 4-5



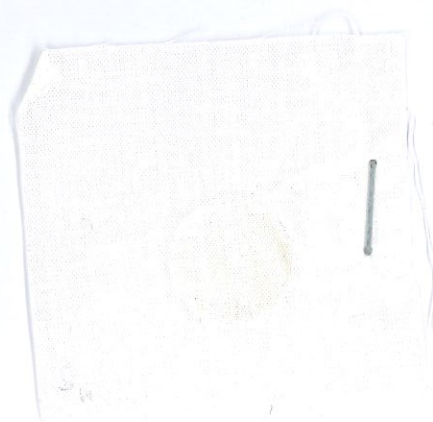
weft  
dry 4-5



warp  
wet 4-5



weft  
wet 4-5



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Attachment

article:

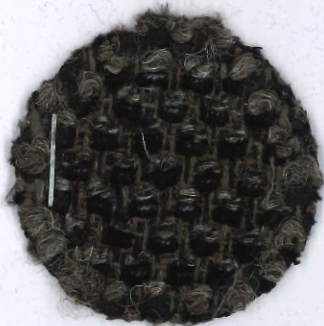
600657 Safire loose 002

method:

T xtiles – Determination of the abrasion resistance of fabrics by the Martindale method – Part 2: Determination of specimen breakdown DIN EN ISO 12947-2:2017-03



35.000 Tausen



35.000 Tausen



40.000 Tausen



40.000 Tausen