

## TEST REPORT

**2025EP0657**

### DATE OF RECEPTION

*Date Format: dd/MM/yyyy* 10/02/2025

### DATE OF TESTS

Starting : 11/02/2025

Ending: 04/03/2025

### APPLICANT

XM TEXTILES POLSKA SP. Z O. O.

16 WOLNOŚCIOWA

PL-95-200 Pabianice

Poland

Att Irina Danilova

### REFERENCE OF SAMPLES

Reference by AITEX	Reference by customer	AITEX sample description
2025EP0657-S01	UNITEC-240	Woven fabric

### TESTS CARRIED OUT

- PRE-TREATMENT FOR DOMESTIC WASHING AND DRYING PROCEDURES FOR TEXTILE TESTING
- DETERMINATION OF DIMENSIONAL CHANGE IN WASHING AND DRYING
- DETERMINATION OF COORDINATES (x,y,Y)
- COLOUR FASTNESS TO RUBBING
- COLOUR FASTNESS TO PERSPIRATION
- COLOUR FASTNESS TO DOMESTIC AND COMMERCIAL LAUNDERING
- DETERMINATION OF BREAKING STRENGTH AND ELONGATION
- WATER VAPOUR RESISTANCE

Tests marked with \* are not included within the scope of the accreditation.





## DESCRIPTION OF SAMPLES



**Reference by AITEX:** 2025EP0657-S01

**Reference by customer:**

UNITEC-240

**Information supplied by the customer**

Composition and percentage 65% Polyester/35% Cotton, , Twill 2/1

Weight 240gsm

Color HV Orange

Others (if any) 690

**Composition provided by the customer:**

65% Polyester/35% Cotton,

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AITEX Subsamples	Subsample Description
2025EP0657-S01_P1	FABRIC AFTER WASH 5 CYCLES
2025EP0657-S01_P2	FABRIC AFTER XENON
2025EP0657-S01_P3	FABRIC AFTER WASH 25 CYCLES



## EXECUTIVE SUMMARY

	Reference	Test/Standard	Result
<b>EN ISO 20471:2013 + EN ISO 20471:2013 + AMD1:2016</b>	2025EP0657-S01	DETERMINATION OF COORDINATES (x,y,Y) CIE 15.2:2018	PASS
		COLOUR FASTNESS TO RUBBING EN ISO 105-X12:2016	PASS
		COLOUR FASTNESS TO PERSPIRATION EN ISO 105-E04:2013	PASS
		COLOUR FASTNESS TO DOMESTIC AND COMMERCIAL LAUNDERING EN ISO 105-C06:2010	PASS
		DETERMINATION OF BREAKING STRENGTH AND ELONGATION EN ISO 13934-1:2013	PASS
		WATER VAPOUR RESISTANCE EN ISO 11092:2014	PASS
	2025EP0657-S01_P1	DETERMINATION OF DIMENSIONAL CHANGE IN WASHING AND DRYING EN ISO 5077:2008	PASS
	2025EP0657-S01_P2	DETERMINATION OF COORDINATES (x,y,Y) CIE 15.2:2018	PASS
	2025EP0657-S01_P3	DETERMINATION OF COORDINATES (x,y,Y) CIE 15.2:2018	PASS



## REQUIREMENT SUMMARY

### DETERMINATION OF DIMENSIONAL CHANGE IN WASHING AND DRYING

#### REQUIREMENT ACCORDING EN ISO 20471:2013+EN ISO 20471:2013+AMD1:2016

The dimensional change shall not exceed  $\pm 3\%$ , both in width warp and in length weft.

The dimensional change of knitted fabrics shall not exceed  $\pm 5\%$ , both in width Crosswise and in length Lengthwise.

### DETERMINATION OF COORDINATES (x,y,Y)

#### REQUIREMENT ACCORDING EN ISO 20471:2013+EN ISO 20471:2013+AMD1:2016

The chromatic coordinates must be situated within the area defined by the coordinates specified in the Standard EN ISO 20471:2013+EN ISO 20471:2013+AMD1:2016 and the luminance factor shall exceed according to:

Colour	Minimum luminance factor
Yellow	0.70
Orange	0.40
Red	0.25

### COLOUR FASTNESS TO RUBBING

#### REQUIREMENT ACCORDING EN ISO 20471:2013+EN ISO 20471:2013+AMD1:2016

The limit set to Standard for colour fastness to rubbing, is 4, in dry rubbing

### COLOUR FASTNESS TO PERSPIRATION

#### REQUIREMENT ACCORDING EN ISO 20471:2013+EN ISO 20471:2013+AMD1:2016

The limit set to Standard for testing of colour fastness to perspiration, is 4 for degradation and 4 for staining

### COLOUR FASTNESS TO DOMESTIC AND COMMERCIAL LAUNDERING

#### REQUIREMENT ACCORDING EN ISO 20471:2013+EN ISO 20471:2013+AMD1:2016

The limit set to Standard for testing of colour fastness to washing is 4-5 for degradation and 4 for staining.

### DETERMINATION OF BREAKING STRENGTH AND ELONGATION

#### REQUIREMENT ACCORDING EN ISO 20471:2013+EN ISO 20471:2013+AMD1:2016

The external material must resist a breaking load in both directions  $\geq 100$  N.



## WATER VAPOUR RESISTANCE

### REQUIREMENT ACCORDING EN ISO 20471:2013+EN ISO 20471:2013+AMD1:2016

According to requirement of EN ISO 20471:2013+EN ISO 20471:2013+AMD1:2016 standard, water vapour resistance shall not be higher than 5 m<sup>2</sup>·Pa/W.

### MEANING OF COLOUR FASTNESS APPRAISAL EVALUATED WITH GREY SCALE

VALUE	MEANING
5	VERY GOOD - EXCELLENT
4	GOOD
3	FAIR - MODERATE
2	POOR - BEHAVIOUR
1	VERY POOR

According to standards ISO 105-A02 e ISO 105-A03



# RESULTS

## PRE-TREATMENT FOR DOMESTIC WASHING AND DRYING PROCEDURES FOR TEXTILE TESTING

**Standard**

EN ISO 6330:2021

**Test date**

**Start date**

11/02/2025

**End date**

14/02/2025

**Washing procedure**

6N

**Washing temperature**

60°C

**Washing cycles**

25

**Dryer type**

James Heal

**Drying procedure**

F (type A1 tumble drying)

**Drying temperature**

70°C

**Washing powder**

Reference detergent 3

**Reference**

2025EP0657-S01

Units	Dry mass of the samples(Kg)	Counterweight mass(Kg)	Counterweight type
1	0.01	1.8	Type III

**Deviation of the standard**

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Reference	Description
2025EP0657-S01	UNITEC-240



## RESULTS

### DETERMINATION OF DIMENSIONAL CHANGE IN WASHING AND DRYING

**Standard**

EN ISO 5077:2008

**Preparation, marking and measuring of fabric specimens according to EN ISO 3759:2011**

**Start date** 26/02/2025 **End date** 04/03/2025

**Washing cycles**

5

**Deviation of the standard**

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**Uncertainty**

± 0.4 %

**Reference**

2025EP0657-S01\_P1

Specimen	Direction	Dimensional change (%)
1	WARP	-2.5
	WEFT	-1.0

**Note**

Positive dimensional change indicates lengthening. Negative dimensional change indicates shrinkage

Reference	Description
2025EP0657-S01_P1	FABRIC AFTER WASH 5 CYCLES



## RESULTS

### DETERMINATION OF COORDINATES (x,y,Y)

**Standard**

CIE 15.2:2018

**Equipment**

Konica Minolta ((0921E06) 400nm-700nm)

**Test date**

<b>Start date</b>	11/02/2025	<b>End date</b>	17/02/2025
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**Conditioned date**

<b>Start date</b>	11/2/2025	<b>End date</b>	17/2/2025
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**Atmosphere for conditioning**

<b>Temperature</b>	(20 ± 2) °C	<b>Relative Humidity</b>	(65 ± 5) %
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**Illuminant**

D65

**Observant**

2°

**Measuring geometry**

45/0

**Specular component and UV filter**

Excluded

**Observation area**

Small

**Number of measurements**

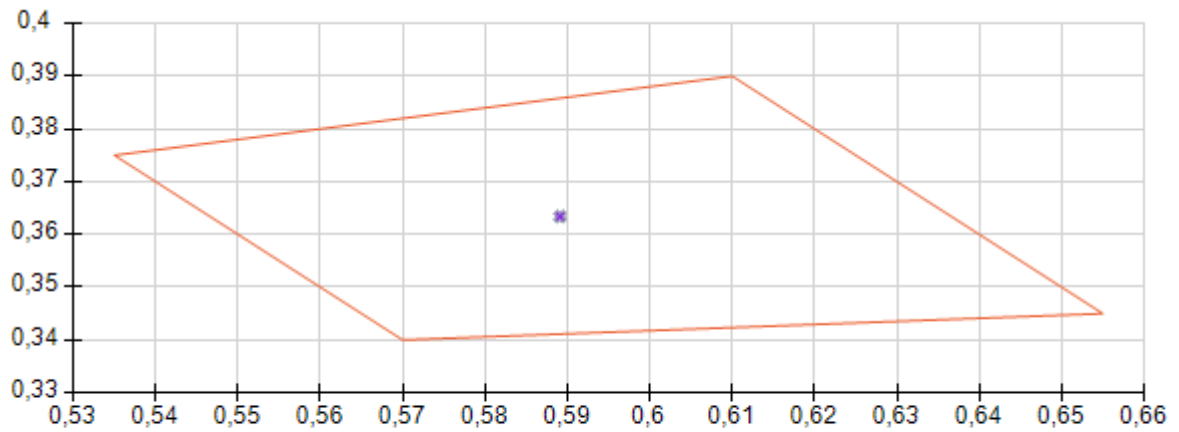
5



**Reference**

2025EP0657-S01

	x	y	Y minimum
◆Coordinate 1	0,61	0,390	0,40
◆Coordinate 2	0,535	0,375	
◆Coordinate 3	0,570	0,340	
◆Coordinate 4	0,655	0,345	
Original	0,589	0,363	0,43
Uncertainty	± 0.4 %	± 0.5 %	± 1 %



\* Original

Reference	Description
2025EP0657-S01	UNITEC-240



## RESULTS

### DETERMINATION OF COORDINATES (x,y,Y)

**Standard**

CIE 15.2:2018

**Equipment**

Konica Minolta ((0921E06) 400nm-700nm)

**Test date**

<b>Start date</b>	14/02/2025	<b>End date</b>	18/02/2025
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**Conditioned date**

<b>Start date</b>	14/2/2025	<b>End date</b>	18/2/2025
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**Atmosphere for conditioning**

<b>Temperature</b>	(20 ± 2) °C	<b>Relative Humidity</b>	(65 ± 5) %
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**Illuminant**

D65

**Observant**

2°

**Measuring geometry**

45/0

**Specular component and UV filter**

Excluded

**Observation area**

Small

**Number of measurements**

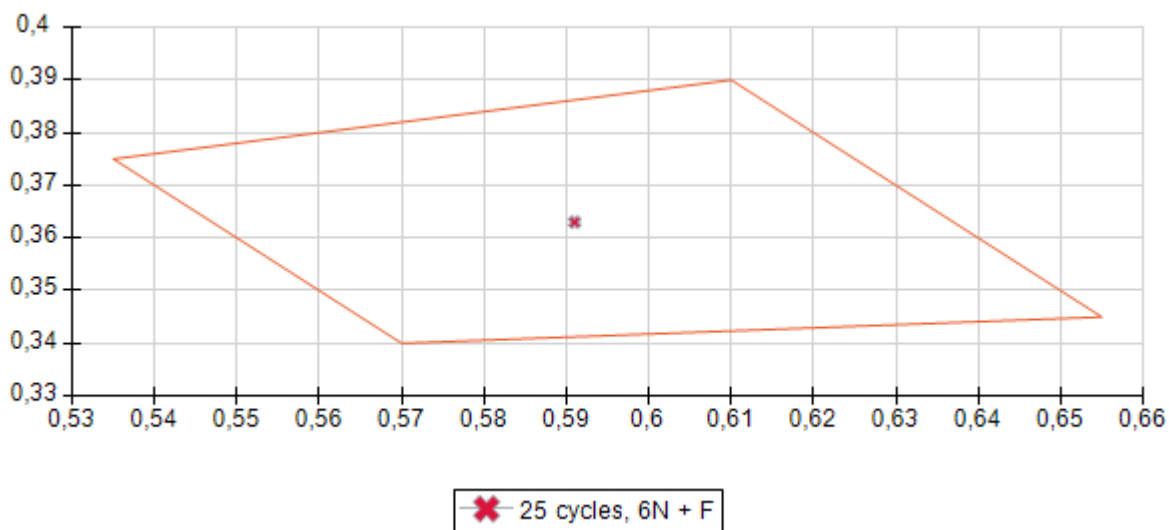
5



Reference

2025EP0657-S01\_P3

	x	y	Y minimum
◆Coordinate 1	0,61	0,390	0,40
◆Coordinate 2	0,535	0,375	
◆Coordinate 3	0,570	0,340	
◆Coordinate 4	0,655	0,345	
After 25 washing cycles 6N + F	0,591	0,363	0,42
Uncertainty	± 0.4 %	± 0.5 %	± 1 %



Reference	Description
2025EP0657-S01_P3	FABRIC AFTER WASH 25 CYCLES



## RESULTS

### DETERMINATION OF COORDINATES (x,y,Y)

**Standard**

CIE 15.2:2018

**Equipment**

Konica Minolta ((0921E06) 400nm-700nm)

**Test date**

<b>Start date</b>	18/02/2025	<b>End date</b>	20/02/2025
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**Conditioned date**

<b>Start date</b>	18/2/2025	<b>End date</b>	20/2/2025
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**Atmosphere for conditioning**

<b>Temperature</b>	(20 ± 2) °C	<b>Relative Humidity</b>	(65 ± 5) %
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**Illuminant**

D65

**Observant**

2°

**Measuring geometry**

45/0

**Specular component and UV filter**

Excluded

**Observation area**

Small

**Number of measurements**

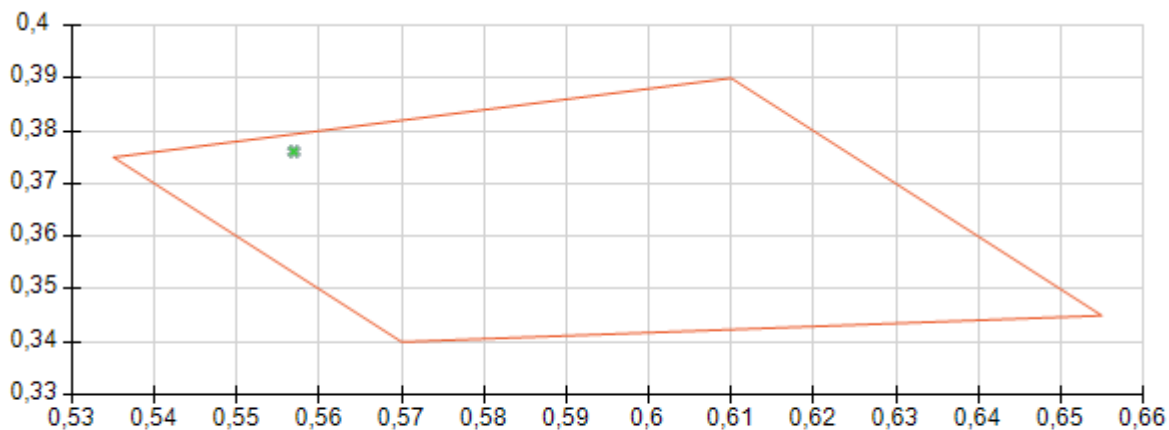
5



Reference

2025EP0657-S01\_P2

	x	y	Y minimum
◆Coordinate 1	0,61	0,390	0,40
◆Coordinate 2	0,535	0,375	
◆Coordinate 3	0,570	0,340	
◆Coordinate 4	0,655	0,345	
After exposure to Xenon light	0,557	0,376	0,49
Uncertainty	± 0.4 %	± 0.5 %	± 1 %



◆ After exposure to Xenon light

Reference	Description
2025EP0657-S01_P2	FABRIC AFTER XENON



## RESULTS

### COLOUR FASTNESS TO RUBBING

**Standard**

EN ISO 105-X12:2016

**Equipment**

Crockmeter

**Test date****Start date** 14/02/2025 **End date** 25/02/2025**Atmosphere for conditioning****Temperature** (20 ± 2) °C **Relative Humidity** (65 ± 2) %**Conditioning time**

&gt; 4 H

**Pin**

Cylindrical

**Applied force**

(9 ± 0,2) N

Reference	Direction	Dry staining
2025EP0657-S01	Warp	4-5
	Weft	4-5

Reference	Description
2025EP0657-S01	UNITEC-240



# RESULTS

## COLOUR FASTNESS TO PERSPIRATION

### Standard

EN ISO 105-E04:2013

### Equipment

Perspirometer

### Test date

**Start date** 20/02/2025 **End date** 20/02/2025

### Alkaline solution

Reference	Staining ratio		Change in colour
	Cotton	Polyester	
2025EP0657-S01	4-5	4-5	5

### Acid Solution

Reference	Staining ratio		Change in colour
	Cotton	Polyester	
2025EP0657-S01	4-5	4-5	5

Reference	Description
2025EP0657-S01	UNITEC-240



# RESULTS

## COLOUR FASTNESS TO DOMESTIC AND COMMERCIAL LAUNDERING

### Standard

EN ISO 105-C06:2010

### Test date

**Start date** 26/02/2025 **End date** 26/02/2025

### Equipment

Gyrowash

### Test number

C1M

### Temperature

(60 )°C

### Steel balls

50

### Washing powder

Standardized ECE soap reference without optical or chemical whitener

### Reference

2025EP0657-S01

Change in colour	Staining	
	Cotton	Polyester
5	4-5	4-5

Reference	Description
2025EP0657-S01	UNITEC-240



## RESULTS

### DETERMINATION OF BREAKING STRENGTH AND ELONGATION

#### Standard

EN ISO 13934-1:2013

#### Equipment

INSTRON Dynamometer

#### Conditioned date

**Start date** 14/02/2025 **End date** 3/3/2025

#### Test date

**Start date** 14/02/2025 **End date** 03/03/2025

#### Gauge length

#### Pretension

#### Gauge speed

**Warp:** 200 mm

**Warp:** 5 N

**Warp:** 100 mm/min

**Weft:** 200 mm

**Weft:** 5 N

**Weft :** 100 mm/min

#### Atmosphere for conditioning

**Temperature** (20 ± 2) °C **Relative Humidity** (65 ± 4) %

#### Number of test specimens per material to be tested

**Tested** 5 **Rejected** 0

#### State of the specimens

Conditioned

#### Reference

2025EP0657-S01

Direction	Maximum force (N)	Medium strength	C.V.	Elongation to the maximum load(%)	Average elongation	C.V.
Warp	1900	2000	1	26,5	26,5	1,1
	2000			26,5		
	2000			27		
	2000			27		
	2000			26,5		
Weft	1300	1300	1,3	23	22,5	1,9
	1300			22,5		
	1300			22		
	1400			22,5		
	1400			22,5		

#### Uncertainty

± 5% assay value of the measured



Deviation of the standard

Reference	Description
2025EP0657-S01	UNITEC-240



# RESULTS

## WATER VAPOUR RESISTANCE

**Standard**

EN ISO 11092:2014

**Test date**

27/2/2025

**Ambient test conditions**

35.03 °C and 39.8 % RH

**Uncertainty**

± 6% of the result

**Number of test specimens per material to be tested**

Tested 3

**Disposition test specimens**

The inner face is in contact to the measurement surface.

**Results**

Reference	Specimen	Water vapour resistance Ret (m <sup>2</sup> ·Pa/W)
2025EP0657-S01	1	4.55
	2	4.41
	3	4.42
	Average	4.46

**Deviation of the standard**

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Reference	Description
2025EP0657-S01	UNITEC-240



**Lucia Martinez**  
Head of PPE and Ballistics department



Date: 05/03/2025 11:21:21

Digitally Signed by: ISABEL LLOPIS LUMBRERAS -

NIF: 21678551Q

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