TEST REPORT

2021CN0771

DATE OF RECEPTION
23/08/2021

DATE TESTS
Starting: 24/08/2021
Ending: 04/10/2021

APPLICANT

KUNSHAN SUNSHINETEX NEW MATERIAL CO. LTD.
No. 417 Sanxiang Road
CN-215300 Kunshan
JIANGSU

IDENTIFICATION AND DESCRIPTION OF SAMPLES

REFERENCES
FABRIC REF.- POBFC3DY

According to information supplied by the customer:

Fabric reference: POBFC3DY
Composition and percentaje: 98% Polyester and 2% Carbon
Color: Nav y/ Fluo Yellow / Fluo Orange

TESTS CARRIED OUT

- PHOTOGRAPHY.
- PRE-TREATMENT FOR DOMESTIC WASHING AND DRYING PROCEDURES FOR TEXTILE TESTING.
- DETERMINATION OF COORDINATES (X,Y,Y).
- COLOUR FASTNESS TO RUBBING.
- COLOUR FASTNESS TO PERSPIRATION.
- COLOUR FASTNESS TO DOMESTIC AND COMMERCIAL LAUNDERING.
- DETERMINATION OF DIMENSIONAL CHANGE IN DOMESTIC WASHING AND DRYING.
- DETERMINATION OF BREAKING STRENGTH AND ELONGATION.
- DETERMINATION OF TEAR RESISTANCE.
- MEANING OF COLOUR FASTNESS APPRAISAL EVALUATED WITH GREY SCALE.

AITEX - Plaza Emilio Sala, 1 - E-03801 ALCOY (Alicante) SPAIN Tel.:+34 96 554 22 00 www.aitex.es info@aitex.es

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

ENAC ENSAYOS Nº12/LE025 Nº12/LE427

Asociación de Investigación de la Industria Textil – C.I.F.: G03182870

RESULTS

PHOTOGRAPHY



Reference

FABRIC Ref.- POBFC3DY

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RESULTS

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

Standard
ISO 6330:2012

Standard deviation

Reference
Sample1 FABRIC Ref.- POBFC3DY

Units 1
Equipment Wascator 13471E05
Dryer machine JAMES HEAL 13473E05

Washing procedure 4N **Washing cycles** 5

Drying procedure
F (tumble dryer)

Washing powder
ECE detergent 98 + sodium perborate + TAED

Units	Dry mass of the samples	Counterweight mass	Equipment
1	0,94 Kg	1,00 Kg of Polyester	Wascator 13471E05

Start and finish date
30/08/2021 - 31/08/2021

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RESULTS

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

Standard
ISO 6330:2012

Standard deviation

Reference
Sample1 FABRIC Ref.- POBFC3DY

Units 1
Equipment Wascator 13471E05
Dryer machine JAMES HEAL 13473E05

Washing procedure 4N **Washing cycles** 5

Drying procedure
F (tumble dryer)

Washing powder
ECE detergent 98 + sodium perborate + TAED

Units	Dry mass of the samples	Counterweight mass	Equipment
1	0,41 Kg	1,59 Kg of Polyester	Wascator 13471E05

Start and finish date
30/08/2021 - 31/08/2021

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RESULTS

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

Standard
ISO 6330:2012

Standard deviation

Reference
Sample1 FABRIC Ref.- POBFC3DY

Units 1
Equipment Wascator 13470E05
Dryer machine JAMES HEAL 13472E05

Washing procedure 4N **Washing cycles** 5

Drying procedure
F (tumble dryer)

Washing powder
ECE detergent 98 + sodium perborate + TAED

Units	Dry mass of the samples	Counterweight mass	Equipment
1	0,46 Kg	1,54 Kg of Polyester	Wascator 13470E05

Start and finish date
27/08/2021 - 30/08/2021

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RESULTS

DETERMINATION OF COORDINATES (x,y,Y)

Standard
EN ISO 105 J01:1999
Publication CIE 15

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

Illuminant
D_{65}

Observant
2º

Measuring geometry
45/0

Specular component and UV filter
Excluded

Observation area
Small

Conditioning of samples

Initiation date	25/08/2021	**End date**	06/09/2021
Temperature	(20 ± 2) ºC	**Humidity**	(65 ± 5) %

Test date

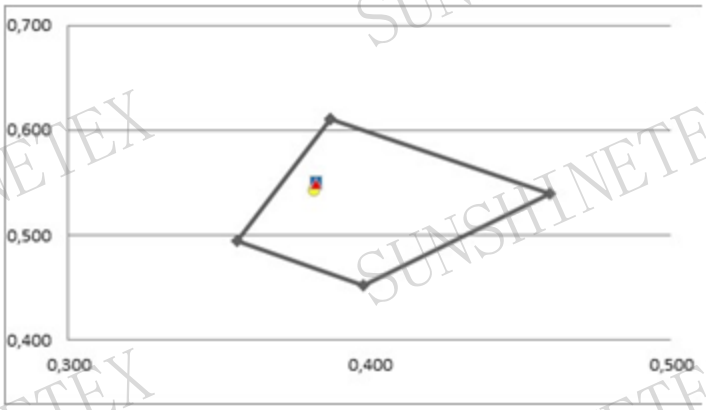
Initiation date	26/08/2021	**End date**	06/09/2021

Number of measurements
5

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RESULTS

Reference
FABRIC Ref.- POBFC3DY
(FLUOR YELLOW FABRIC)



Reference	X	y	Y minimum
♦ Coordinate 1	0,387	0,610	0,70
♦ Coordinate 2	0,356	0,494	
♦ Coordinate 3	0,398	0,452	
♦ Coordinate 4	0,460	0,540	
■ FABRIC Ref.- POBFC3DY (FLUOR YELLOW FABRIC) (Original)	0,383	0,549	1,01
● FABRIC Ref.- POBFC3DY (FLUOR YELLOW FABRIC) (After exposure to Xenon light)	0,382	0,542	1,00
▲ FABRIC Ref.- POBFC3DY (FLUOR YELLOW FABRIC) (After 5 washing cycles 4N + F)	0,382	0,549	1,01
Uncertainty	0.4 %	0.5 %	1 %

REQUISITE

The chromatic coordinates must be situated within the area defined by the coordinates specified in the Standard EN ISO 20471:2013/A1:2016 and the luminance factor shall exceed 0,70 specified in the Standard EN ISO 20471:2013/A1:2016.

PASS

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RESULTS

DETERMINATION OF COORDINATES (x,y,Y)

Standard
EN ISO 105 J01:1999
Publication CIE 15

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

Illuminant
D_{65}

Observant
2º

Measuring geometry
45/0

Specular component and UV filter
Excluded

Observation area
Small

Conditioning of samples

Initiation date	26/08/2021	**End date**	06/09/2021
Temperature	(20 ± 2) ºC	**Humidity**	(65 ± 5) %

Test date

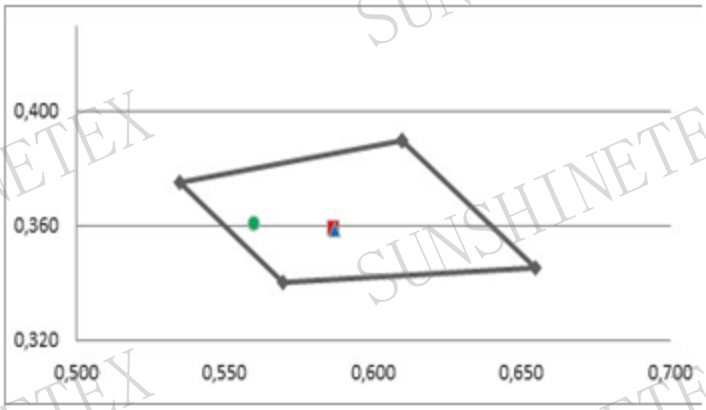
Initiation date	02/09/2021	**End date**	06/09/2021

Number of measurements
5

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RESULTS

Reference
FABRIC Ref.- POBFC3DY
(FLUOR ORANGE FABRIC)



Reference	x	y	Y minimum
♦ Coordinate 1	0,610	0,390	0,40
♦ Coordinate 2	0,535	0,375	
♦ Coordinate 3	0,570	0,340	
♦ Coordinate 4	0,655	0,345	
■ FABRIC Ref.- POBFC3DY (FLUOR ORANGE FABRIC) (Original)	0,587	0,359	0,46
● FABRIC Ref.- POBFC3DY (FLUOR ORANGE FABRIC) (After exposure to Xenon light)	0,560	0,360	0,49
▲ FABRIC Ref.- POBFC3DY (FLUOR ORANGE FABRIC) (After 5 washing cycles 4N + F)	0,587	0,358	0,47
Uncertainty	0.4 %	0.5 %	1 %

REQUISITE

The chromatic coordinates must be situated within the area defined by the coordinates specified in the Standard EN ISO 20471:2013/A1:2016 and the luminance factor shall exceed 0,40 specified in the Standard EN ISO 20471:2013/A1:2016.

PASS

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RESULTS

COLOUR FASTNESS TO RUBBING

Standard
ISO 105-X12:2016

Apparatus
Crockmeter

Starting test date
25/08/2021

Ending test date
30/08/2021

Conditioning time
> 4 H

Atmosphere for conditioning and testing

Temperature	(20±2) ºC
Relative Humidity	(65±2) %Hr

Pin
Cylindrical

Applied force
(9 ± 0,2) N

REFERENCE	DIRECTION	DRY STAINING
FABRIC Ref.- POBFC3DY YELLOW HV FABRIC	Warp	4-5
	Weft	4-5
FABRIC Ref.- POBFC3DY ORANGE HV FABRIC	Warp	4-5
	Weft	4-5
FABRIC Ref.- POBFC3DY NAVY HV FABRIC	Warp	4-5
	Weft	4-5

REQUISITE
In accordance with Standard EN ISO 20471:2013/A1:2016, for colour fastness to rubbing, is 4, in dry rubbing.

PASS

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RESULTS

COLOUR FASTNESS TO PERSPIRATION

Standard
EN ISO 105-E04:2013

Apparatus
Perspirometer

ALKALINE SOLUTION
Apparatus Code 02022I04 (sweat basic)

REFERENCE	FABRIC Ref.- POBFC3DY YELLOW HV FABRIC
CHANGE IN COLOUR	**STAINING**
5	**Cotton** 4-5 **Polyester** 4-5
REFERENCE	FABRIC Ref.- POBFC3DY ORANGE HV FABRIC
CHANGE IN COLOUR	**STAINING**
5	**Cotton** 4-5 **Polyester** 4-5

ACID SOLUTION
Apparatus Code 02054I04 (sweat acid)

REFERENCE	FABRIC Ref.- POBFC3DY YELLOW HV FABRIC
CHANGE IN COLOUR	**STAINING**
5	**Cotton** 4-5 **Polyester** 4-5
REFERENCE	FABRIC Ref.- POBFC3DY ORANGE HV FABRIC
CHANGE IN COLOUR	**STAINING**
5	**Cotton** 4-5 **Polyester** 4-5

REQUISITE
In accordance with Standard EN ISO 20471:2013/A1:2016, for testing of colour fastness to perspiration, is 4 for degradation and 4 for staining

PASS

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RESULTS

COLOUR FASTNESS TO PERSPIRATION

Standard
EN ISO 105-E04:2013

Apparatus
Perspirometer

ALKALINE SOLUTION
Apparatus Code 02022I04 (sweat basic)

REFERENCE	FABRIC Ref.- POBFC3DY NAVY FABRIC
CHANGE IN COLOUR	**STAINING**
5	**Cotton Polyester** 4-5 4-5

ACID SOLUTION
Apparatus Code 02054I04 (sweat acid)

REFERENCE	FABRIC Ref.- POBFC3DY NAVY FABRIC
CHANGE IN COLOUR	**STAINING**
5	**Cotton Polyester** 4-5 4-5

REQUISITE
In accordance with Standard EN ISO 20471:2013/A1:2016, for testing of colour fastness to perspiration, is 4 for degradation and 4 for staining

PASS

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RESULTS

COLOUR FASTNESS TO DOMESTIC AND COMMERCIAL LAUNDERING

Standard
EN ISO 105-C06:2010

Apparatus
Gyrowash

Test number
A1M

Temperature
40 ºC

Steel balls
10

Detergent
Standardized ECE soap reference without optical or chemical whitener

Test piece drying in forced-air circulation dryer

REFERENCE	CHANGE IN COLOUR	STAINING	
FABRIC Ref.- POBFC3DY YELLOW HV FABRIC	5	**Cotton** 4-5	**Polyester** 4-5
FABRIC Ref.- POBFC3DY ORANGE HV FABRIC	5	**Cotton** 4-5	**Polyester** 4-5

REQUISITE
The limit set by the Standard EN ISO 20471:2013/A1:2016 for testing of colour fastness to washing is 4-5 for degradation and 4 for staining.

PASS

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RESULTS

COLOUR FASTNESS TO DOMESTIC AND COMMERCIAL LAUNDERING

Standard
EN ISO 105-C06:2010

Apparatus
Gyrowash

Test number
A1M

Temperature
40 ºC

Steel balls
10

Detergent
Standardized ECE soap reference without optical or chemical whitener

Test piece drying in forced-air circulation dryer

REFERENCE	CHANGE IN COLOUR	STAINING	
		Cotton	Polyester
FABRIC Ref.- POBFC3DY NAVY FABRIC	5	4-5	4-5

REQUISITE
The limit set by the Standard EN ISO 20471:2013/A1:2016 for testing of colour fastness to washing is 4 for staining.

PASS

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RESULTS

DETERMINATION OF DIMENSIONAL CHANGE IN DOMESTIC WASHING AND DRYING

Standard
EN ISO 5077:2008

Standard deviation

Preparation, marking and measuring of fabric specimens according to EN ISO 3759:2011
Starting test date 26/08/2021 **Ending test date** 06/09/2021

Washing procedure
4N (T^a = 40 ± 3ºC; Total dry load test samples and the counterweight 2 ± 0.1 Kg) according to ISO 6330:2012

Used apparatus
Wascator type A-Horizontal drum, front loading (13471E05)

Detergent
98 ECE reference detergent without optical brightener.

Counterweight
Type III - 100% polyester

Number of washing cycles
5

Dryer type
A3

Procedure F – Tumble dry(13473E05)

Uncertainty of test (% of the measured value)
± 0.5 %

Tested material
Fluorescent orange woven laminated fabric

Reference	Specimen	Direction	Dimensional change (%)
FABRIC Ref.- POBFC3DY	1	Warp	-0,5
		Weft	0,0

REMARK
Negative dimensional change indicates shrinkage
Positive dimensional change indicates lengthening

REQUISITE
In accordance with the Standard EN ISO 20471:2013/A1:2016, the dimensional change shall not exceed ± 3%, both in width warp and in length weft.

PASS

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RESULTS

DETERMINATION OF BREAKING STRENGTH AND ELONGATION

Standard
EN ISO 1421:2016

Apparatus
INSTRON Dynamometer

Conditioning date	26/08/2021	**Test date**	04/10/2021

Atmosphere for conditioning testing

Temperature	(20±2) ºC	**Relative humidity**	65±5

Nº of specimens

Tested	5 for each direction	**Rejected**	0

Gauge length

Lengthwise	200 mm	**Crosswise**	200 mm

Test velocity

100 mm/min	100 mm/min

Mounting Laxo

State of the specimens
Conditioned

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RESULTS

Reference

FABRIC Ref.- POBFC3DY

Direction	Maximum average load (N)	C.V. (%)	Average elongation (%)	C.V. (%)
L	1258,5 1214,9 1259,7 1233,7 1176,6 1258,7	3	26,8 27,2 30,3 28 26,3 29,2	6,1

Direction	Maximum average load (N)	C.V. (%)	Average elongation (%)	C.V. (%)
T	848,9 1039,3 1052,5 996,1 1027,4 1012,2	8,4	28,1 29,6 30,2 30,3 30,5 32,9	5,7

Remark

The test procedure described in the two versions of the Standard (EN ISO 1421:1998 and EN ISO 1421:2016) is the same.

REQUISITE ACCORDING TO STANDARD EN ISO 20471:2013/A1:2016

The material must resist a breaking load in both directions ≥ 100 N.For materials with an elongation of more than 50% this requirement is not applicable.

PASS

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RESULTS

DETERMINATION OF TEAR RESISTANCE

Standard
EN ISO 4674-1:2016

Test procedure
Method A

Apparatus
INSTRON Dynamometer

Conditioning date 26/09/2021 **Test date** 04/10/2021

Atmosphere for conditioning testing
Temperature (20±2) ºC **Relative humidity** (65±5) %

Nº of specimens
Tested 5 for each direction **Rejected** 0

State of the specimens
Conditioned

Reference
FABRIC Ref.- POBFC3DY

Tear	Average load (N)	C.V. (%)
Lengthwise	110 120 110 110 120 110	4.3
Crosswise	110 110 120 120 120 120	5.4

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RESULTS

Remark

The relative expanded uncertainty of Tear resistance is ±7% assay value of the measured, for a probability of coverage of 95%.

The test procedure described in the two versions of the Standard (EN ISO 4674:2003 and EN ISO 4674:2016) is the same.

REQUISITE ACCORDING TO EN ISO 20471:2013/A1:2016

The external material must resist a determination of tear resistance in both directions ≥ 20 N.

For materials with an elongation of more than 50% this requirement is not applicable.

PASS

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RESULTS

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

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SUNSHINETEX

Lucia Martinez
Head of PPE and Ballistics department

Digitally signed by ISABEL LLOPIS LUMBRERAS - NIF:21678551Q
Date: 2021.10.13 12:50:09 +02:00
Reason: Autorizado
Location: Alcoy

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