

TEST REPORT

2020CN0216

DATE OF RECEPTION

30/04/2020

DATE TESTS

Starting: 06/05/2020

Ending: 02/06/2020

APPLICANT

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

IDENTIFICATION AND DESCRIPTION OF SAMPLES

REFERENCES

FABRIC POBFD3XY

According to information supplied by the customer:

Fabric reference: POBFD3XY

Composition and percentage: 56% Modacrylic, 43% Polyester and 1% Antistatic

Color: Fluo yellow, Fluo orange, Navy

Others: FR softshell

TESTS CARRIED OUT

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

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



RESULTS

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

Standard

ISO 6330:2012

Standard deviation

Reference

Sample1 Fabric POBFD3XY

Units

1

Equipment

Wascator 13470E05

Dryer machineJAMES 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	0,093 Kg	1,900 Kg of Polyester	Wascator 13470E05

Start and finish date

27/05/2020 - 28/05/2020

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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 POBFD3XY

Units

1

Equipment

Wascator 13370E12

Dryer machineELECTROLUX
13426E12**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	0,014 Kg	1,900 Kg of Polyester	Wascator 13370E12

Start and finish date

06/05/2020 - 07/05/2020

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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 POBFD3XY

Units

1

2

Equipment

Wascator 13337E12 Wascator 13369E12

Dryer machine

ELECTROLUX ELECTROLUX
13427E12 13429E12

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	2.00 Kg	---	Wascator 13337E12
2	2.10 Kg	---	Wascator 13369E12

Start and finish date

07/05/2020 - 08/05/2020

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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 06/05/2020 Ending test date 28/05/2020

Washing procedure

4N ($T^a = 40 \pm 3^\circ\text{C}$; 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 (13337E12)

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(13427E12)
Uncertainty of test (% of the measured value)

$\pm 15 \%$

Tested material

Fluorescent orange woven fabric with grey fleece fabric on back side

Reference	Specimen	Direction	Dimensional change (%)
Fabric POBFD3XY	1	Warp	-1,5
		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 $\pm 3\%$, both in width warp and in length weft.

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

D₆₅

Observant

2°

Measuring geometry

45/0

Specular component and UV filter

Excluded

Observation area

Small

Conditioning of samples

Initiation date	06/05/2020	End date	28/05/2020
Temperature	(20 ± 2) °C	Humidity	(65 ± 5) %

Test date

Initiation date	28/05/2020	End date	28/05/2020
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Number of measurements

5

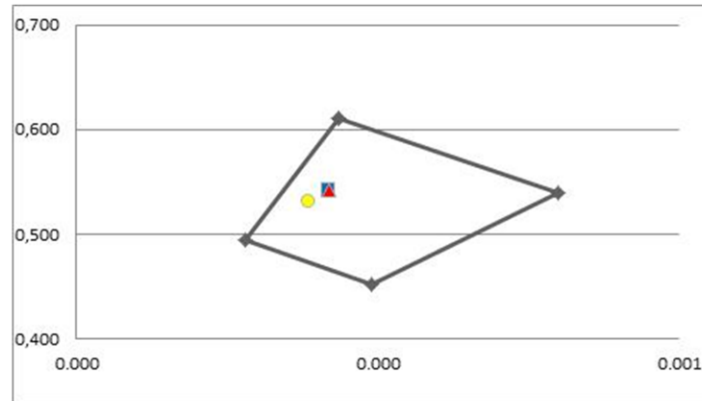
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RESULTS

Reference

Fabric POBFD3XY (YELLOW)



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 POBFD3XY (Original)	0,384	0,542	1,08
● Fabric POBFD3XY (After exposure to Xenon light)	0,377	0,532	1,05
▲ Fabric POBFD3XY (After 5 washing cycles + 4N)	0,384	0,542	1,09
Uncertainly	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

D₆₅

Observant

2°

Measuring geometry

45/0

Specular component and UV filter

Excluded

Observation area

Small

Conditioning of samples

Initiation date	06/05/2020	End date	28/05/2020
Temperature	(20 ± 2) °C	Humidity	(65 ± 5) %

Test date

Initiation date	28/05/2020	End date	28/05/2020
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Number of measurements

5

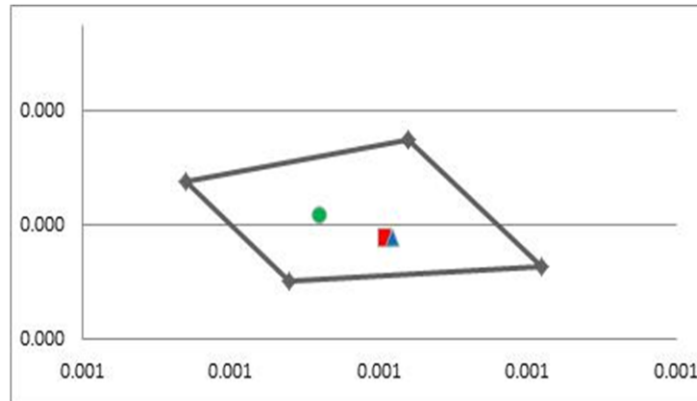
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RESULTS

Reference

Fabric POBFD3XY (ORANGE)



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 POBFD3XY (Original)	0,602	0,355	0,44
● Fabric POBFD3XY (After exposure to Xenon light)	0,580	0,363	0,48
▲ Fabric POBFD3XY (After 5 washing cycles + 4N)	0,605	0,355	0,44
Uncertainly	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

06/05/2020

Ending test date

19/05/2020

Conditioning time

> 4 H

Atmosphere for conditioning and testing**Temperature**

(20±2) °C

Relative Humidity

(65±2) %Hr

Pin

Cylindrical

Applied force

(9 ± 0,2) N

REFERENCE	DIRECTION	DRY STAINING
Fabric POBFD3XY YELLOW FABRIC	Warp	4-5
	Weft	4-5
Fabric POBFD3XY ORANGE FABRIC	Warp	4-5
	Weft	4-5
Fabric POBFD3XY NAVY FABRIC	Warp	4-5
	Weft	4-5

REQUISITE

The limit set by the 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 POBFD3XY	
	YELLOW FABRIC	
CHANGE IN COLOUR	STAINING	
5	Polyester	Acrylic
	4-5	4-5
REFERENCE	Fabric POBFD3XY	
	ORANGE FABRIC	
CHANGE IN COLOUR	STAINING	
5	Polyester	Acrylic
	4-5	4-5

ACID SOLUTION

Apparatus Code 02054I04 (sweat basic)

REFERENCE	Fabric POBFD3XY	
	YELLOW FABRIC	
CHANGE IN COLOUR	STAINING	
5	Polyester	Acrylic
	4-5	4-5
REFERENCE	Fabric POBFD3XY	
	ORANGE FABRIC	
CHANGE IN COLOUR	STAINING	
5	Polyester	Acrylic
	4-5	4-5

REQUISITE

The limit set by the 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 POBFD3XY NAVY FABRIC	
CHANGE IN COLOUR	STAINING	
5	Polyester	Acrylic
	4-5	4-5

ACID SOLUTION

Apparatus Code 02054I04 (sweat acid)

REFERENCE	Fabric POBFD3XY NAVY FABRIC	
CHANGE IN COLOUR	STAINING	
5	Polyester	Acrylic
	4-5	4-5

REQUISITE

The limit set by the 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 °C

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 POBFD3XY NAVY FABRIC	5	Cotton Polyester 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

COLOUR FASTNESS TO DOMESTIC AND COMMERCIAL LAUNDERING

Standard

EN ISO 105-C06:2010

Apparatus

Gyrowash

Test number

A1M

Temperature

40 °C

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 POBFD3XY YELLOW FABRIC	5	Cotton Polyester 4-5 4-5
Fabric POBFD3XY ORANGE FABRIC	5	Cotton Polyester 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 4-5 for degradation and 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 06/05/2020 Ending test date 28/05/2020

Washing procedure

4N ($T^a = 40 \pm 3^\circ\text{C}$; 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 (13370E12)

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(13426E12)
Uncertainty of test (% of the measured value)

$\pm 15 \%$

Tested material

Blue woven fabric with grey fleece fabric on back side

Reference	Specimen	Direction	Dimensional change (%)
Fabric POBFD3XY	1	Warp	-1,5
		Weft	-1,0

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 $\pm 3\%$, 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, Method 1

Apparatus

INSTRON Dynamometer

Conditioning date

07/05/2020

Test date

14/05/2020

Atmosphere for conditioning testing

Temperature

(20±2) °C

Relative humidity

65±5

N° of specimens

Tested

5 for each direction

Rejected

0

Gauge length

200 mm

Test velocity

100 mm/min

Mounting Laxo

State of the specimens

Conditioned

Reference

Fabric POBFD3XY

Direction	Maximum average load (N)	C.V. (%)	Average elongation (%)	C.V. (%)
Lengthwise	898	7.0	27	5.0
	909		28	
	815 908		26 28	
	973		29	
	945		29	
Crosswise	770	2.0	35	2.0
	743		35	
	767 768		35 35	
	768		35	
	790		36	

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 tensile strength of woven fabrics must resist a breaking load in both directions ≥ 100 N

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

07/05/2020

Test date

14/05/2020

Atmosphere for conditioning testing
Temperature (20±2) °C

Relative humidity

(65±5) %

N° of specimens
Tested

5 for each direction

Rejected

0

State of the specimens

Conditioned

Reference

Fabric POBFD3XY

Tear	Average load (N)	C.V. (%)
Lengthwise	97	10.0
	100	
	90 90	
	78	
	85	
Crosswise	65	6.8
	58	
	68 62	
	59	
	63	

Remarks

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 STANDARD EN ISO 20471:2013 POINT 5.5.3

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

PASS

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Lucia Martinez
Head of PPE and Ballistics department

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- 13.- The results of the tests and the statement of compliance with the specification in this report refer only to the test sample as it has been analyzed / tested and not the sample / item which has taken the test sample.
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