TEST REPORT

2021CN0697

DATE OF RECEPTION
28/07/2021

DATE TESTS
Starting: 28/07/2021
Ending: 21/09/2021

APPLICANT

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

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

IDENTIFICATION AND DESCRIPTION OF SAMPLES

REFERENCES
FABRIC POBFC3DY-1

According to information supplied by the customer:

Fabric reference: POBFC3DY-1
Composition and percentage: 98% Polyester and 2% Carbon and 60% Protex and 40% Cotton
Color: Fluo Yellow / Fluo Orange

TESTS CARRIED OUT

- PHOTOGRAPHY.
- PRE-TREATMENT FOR DOMESTIC WASHING AND DRYING PROCEDURES FOR TEXTILE TESTING.
- DETERMINATION OF BREAKING STRENGTH AND ELONGATION.
- DETERMINATION OF TEAR RESISTANCE.
- PUNCTURE RESISTANCE.
- RESISTANCE OF MATERIALS TO PENETRATION BY LIQUID.
- DETERMINATION OF THE ABRASION RESISTANCE OF FABRICS.

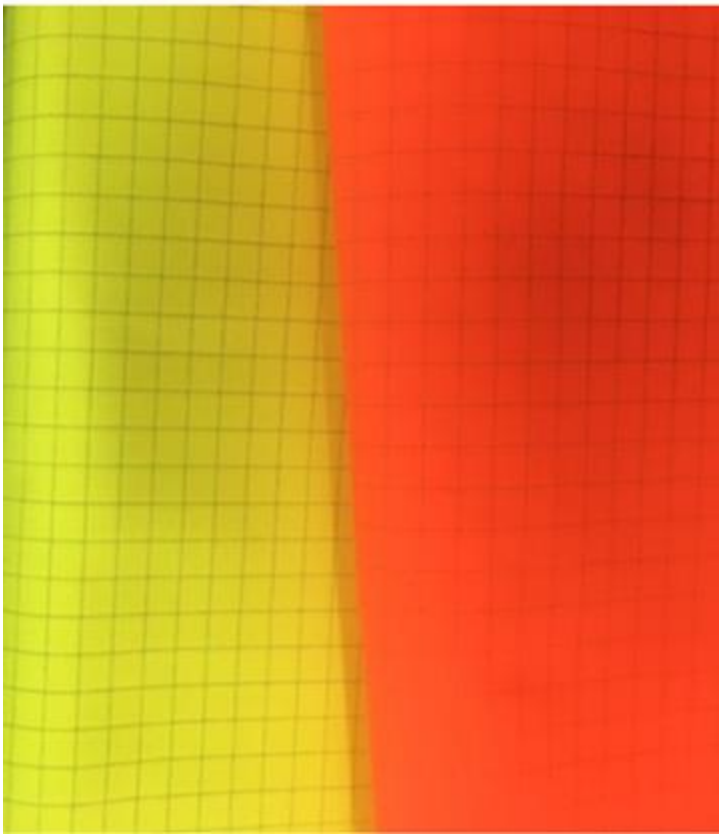
AITEX - Plaza Emilio Sala, 1 - E-03801 ALCOY (Alicante) SPAIN Tel.:+34 96 554 22 00 www.aitex.es info@aitex.es

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

ENAC ENSAYOS Nº12 / LE025 Nº12 / LE427

RESULTS

PHOTOGRAPHY



Reference

Fabric POBFC3DY-1

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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 POBFC3DY-1

Units	1	2
Equipment	Wascator 13474E05	Wascator 13151E12
Dryer machine	JAMES HEAL 13475E05	ELECTROLUX 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	0,950 Kg	1,000 Polyester	Wascator 13474E05
2	1,911 Kg		Wascator 13151E12

Start and finish date
11/08/2021 - 12/08/2021

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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 POBFC3DY-1

Units 1
Equipment Wascator 13370E12
Dryer machine ELECTROLUX 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	0,020 Kg		1,900 Kg of Polyester	Wascator 13370E12

Start and finish date
11/08/2021 - 12/08/2021

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RESULTS

DETERMINATION OF BREAKING STRENGTH AND ELONGATION

Standard
EN ISO 13934-1:2013

Apparatus
INSTRON Dynamometer

Conditioning date 12/08/2021 **Test date** 17/09/2021

Atmosphere for conditioning testing
Temperature (20±2) ºC **Relative humidity** (65±4) %

Gauge length
Warp 200 mm. **Weft** 200 mm.

Test velocity
Warp 100 mm/min **Weft** 100 mm/min

Pretension
Warp 5 N **Weft** 5 N

Nº of specimens
Tested 5 for each direction **Rejected** 0
State of the specimens Conditioned

Previous treatment
5 washing cycles at 40ºC, according to standard EN ISO 6330:2012, method 4N and type F drying (tumble dry)

Reference
Fabric POBFC3DY-1

Direction	Maximum average load (N)	C.V. (%)	Average elongation (%)	C.V. (%)
Warp	820 740 810 790 760 820	4.8	21 20 20 20 21 20	4.0
Weft	670 650 600 620 680 480	13.0	20 20 18 19 20 15	11.0

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RESULTADOS / *RESULTS*

Remark

The relative expanded uncertainty of Tensile strength resistance is ±5% 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 13934-1:1999 and EN ISO 13934-1:2013) is the same.

REQUISITE ACCORDING TO STANDARD EN 13034:2005+A1:2009

LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	LEVEL 6
>30N	> 60N	> 100N	> 250N	> 500N	> 1000N

LEVEL 4

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RESULTS

DETERMINATION OF TEAR RESISTANCE

Standard
EN ISO 9073-4:1997

Apparatus
INSTRON Dynamometer

Conditioning date 13/08/2021 **Test date** 06/09/2021

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

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

The calculation of averages has been made
For electronic device

Previous treatment
5 washing cycles at 40ºC, according to standard EN ISO 6330:2012, method 4N and type F drying (tumble dry)

Reference
Fabric POBFC3DY-1

Tear	Average load (N)		C.V. (%)
Lengthwise	41.22 48.96 48.78 49.06 45.36	46.68	7.33
Crosswise	50.34 49.49 49.83 51.37 46.12	49.43	4.01

REQUISITE ACCORDING TO STANDARD EN 13034:2005+A1:2009

LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	LEVEL 6
>10N	> 20N	> 40N	> 60N	> 100N	> 150N

PERFORMANCE LEVEL	3

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RESULTS

PUNCTURE RESISTANCE

Standard
EN 863:1995

Apparatus
INSTRON Dynamometer

Conditioning date	12/08/2021	**Test date**	17/09/2021

Atmosphere for conditioning testing

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

Type of fabric
Woven fabric

Previous treatment
5 washing cycles at 40ºC, according to standard EN ISO 6330:2012, method 4N and type F drying (tumble dry)

Reference	Maximum force (N)	Average resistance (N)
Fabric POBFC3DY-1	54,05 45,29 45,89 38,57 49,43	46,65

Remark
The relative expanded uncertainty of puncture resistance is ±11% assay value of the measured, for a probability of coverage of 95%.

REQUISITE ACCORDING TO STANDARD EN 13034:2005+A1:2009

LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	LEVEL 6
>5N	> 10N	> 50N	> 100N	> 150N	> 250N

PERFORMANCE LEVEL 2

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RESULTS

RESISTANCE OF MATERIALS TO PENETRATION BY LIQUID

Standard

EN ISO 6530:2005, EN 13034:2005+A1:2009

Atmosphere for conditioning and testing

Temperature (20±2) ºC **Relative Humidity (RH)** (65±5) %

Flow

10 ml in 10 s

Mass per unit area approximate of the sample tested

Does not provided by the customer

Pre-treatment

5 washing cycles at 40ºC, according to standard EN ISO 6330:2012, method 4N; and F

Reference

Fabric POBFC3DY-1

Measurement uncertainty

Test liquid	Penetration index (%)[1]	Repellency index (%)[1]
Sulphuric Acid 30%	±0.3	±0.3
Sodium Hydroxide 10%	±1.1	±1.1
O-Xylene	±5.0	±7.8
1-Butanol	±5.8	±5.4

[1] On the measured value

Material tested

Laminated woven fabric, orange colour (inner face of knitted fabric, white colour)

Test date

26/08/2021 – 30/08/2021

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RESULTS

1. Test liquid Sulphuric Acid 30%
Trade name SCHARLAU (Ref: AC20791000)
Boiling point 336.85 ºC
Evaporative losses prevision None

Direction	Specimen	Penetration index (%)		Repellency index (%)		Absorption index (%)	
Warp	1	0.0		99.6		0.4	
	2	0.0	0.0	99.7	99.6	0.3	0.4
	3	0.0		99.7		0.3	
Weft	1	0.0		99.3		0.7	
	2	0.0	0.0	99.4	99.3	0.6	0.7
	3	0.0		99.3		0.7	

CLASSIFICATION ACCORDING TO EN 14325:2004
Class according to repellency index: **3**
Class according to penetration index: **3**

2. Test liquid Sodium Hydroxide 10 %
Trade name MERCK (Ref: 1055881000)
Boiling point 1390 ºC
Evaporative losses prevision None

Direction	Specimen	Penetration index (%)		Repellency index (%)		Absorption index (%)	
Warp	1	0.0		99.9		0.1	
	2	0.0	0.0	99.9	99.9	0.1	0.1
	3	0.0		99.9		0.1	
Weft	1	0.0		99.4		0.6	
	2	0.0	0.0	99.9	99.4	0.1	0.6
	3	0.0		99.8		0.2	

CLASSIFICATION ACCORDING TO EN 14325:2004
Class according to repellency index: **3**
Class according to penetration index: **3**

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RESULTS

3. Test liquid O-Xylene
Trade name SCHARLAU (Ref: XI00252500)
Boiling point 139 ºC
Evaporative losses prevision None

Direction	Specimen	Penetration index (%)		Repellency index (%)		Absorption index (%)	
Warp	1	0.0		92.8		7.2	
	2	0.0	0.0	93.8	92.8	6.2	7.2
	3	0.0		93.5		6.5	
Weft	1	0.0		93.8		6.2	
	2	0.0	0.0	94.4	93.8	5.6	6.2
	3	0.0		94.2		5.8	

CLASSIFICATION ACCORDING TO EN 14325:2004
Class according to repellency index: **2**
Class according to penetration index: **3**

4. Test liquid 1-Butanol
Trade name SCHARLAU (Ref: AL01732500)
Boiling point 117.88 ºC
Evaporative losses prevision None

Direction	Specimen	Penetration index (%)		Repellency index (%)		Absorption index (%)	
Warp	1	0.0		99.3		0.7	
	2	0.0	0.0	99.1	99.1	0.9	0.9
	3	0.0		99.1		0.9	
Weft	1	0.0		99.3		0.8	
	2	0.0	0.0	99.0	99.0	1.0	1.0
	3	0.0		99.4		0.6	

CLASSIFICATION ACCORDING TO EN 14325:2004
Class according to repellency index: **3**
Class according to penetration index: **3**

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RESULTS

Classification of the repellency to the liquids according to standard EN 14325:2004

Class	Repellency index
3	> 95 %
2	> 90 %
1	> 80 %

Classification to the penetration by liquids according to standard EN 14325:2004

Class	Penetration index
3	< 1 %
2	< 5 %
1	< 10 %

ACCORDING TO STANDARD EN 13034:2005+A1:2009	**PASS**

REQUIREMENTS ACCORDING TO STANDARD EN 13034:2005+A1:2009

According to the Standard EN 13034:2005+A1:2009, for liquid repellency a performance level 3 shall be obtained for at least one of the chemicals referred to EN 14325:2004, and for resistance to penetration by liquids a performance level of at least 2 shall be obtained for at least one of the chemicals referred to EN 14325:2004.

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RESULTS

DETERMINATION OF THE ABRASION RESISTANCE OF FABRICS

Standard
EN 530:2010 Method 2

Apparatus
Martindale Abrasion Tester

Conditioning date 12/08/2021 **Test date** 20/09/2021

Atmosphere for conditioning testing
Temperature (20±2) ºC **Relative humidity** (65±4) %

Testing conditions
Rubbing against abradant paper 00

Testing pressure
9kPa

Type of fabric
Woven fabric

End point
Two broken threads

Technical characteristics of the sample
Not indicated by the client

Previous treatment
5 washing cycles at 40ºC, according to standard EN ISO 6330:2012, method 4N and type F drying (line dry)

Reference
Fabric POBFC3DY-1

Specimens	Nº of cycles (n)
1	n > 2000
2	n > 2000
3	n > 2000
4	n > 2000

Remarks
The end test is performed by visual inspection.
The number of cycles corresponding to the rupture of the specimen.
The performance level is among the most unfavorable value of the pieces tested

REQUISITE ACCORDING STANDARD EN 13034:2005+A1:2009

LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	LEVEL 6
> 10 cycles	> 100 cycles	> 500 cycles	> 1000 cycles	> 1500 cycles	> 2000 cycles

PERFORMANCE LEVEL 6

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Lucia Martinez
Head of PPE and Ballistics department

Digitally signed by ISABEL LLOPIS LUMBRERAS - NIF:21678551Q
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