TEST REPORT

2020CN0229

DATE OF RECEPTION
06/04/2020

DATE TESTS
Starting: 09/04/2020
Ending: 28/04/2020

APPLICANT

SHANGHAI XM GROUP LTD
Room 2403,88 Guangxin Road
CN-200063
SHANGHAI

IDENTIFICATION AND DESCRIPTION OF SAMPLES

REFERENCES
FABRIC POSEIDON-245

According to information supplied by the customer:

Fabric reference: Poseidon-245
Composition and percentage: 80% Cotton, 19% Polyester and 1% Antistatic, FR-Twill 2
Weight: 245 gsm
Color: Grey
Others: FRL-218

TESTS CARRIED OUT

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

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

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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 POSEIDON-245

Units 1

Equipment Wascator 04123E12

Dryer machine ACCUDRY
13379E12

Washing procedure 6N **Washing cycles** 5

Drying procedure
F (tumble dryer)

Washing powder
ECE detergent 98 + sodium perborate + TAED

Units	Dry mass of the samples	Equipment
1	2,10 Kg	Wascator 04123E12

Start and finish date
09/04/2020 - 14/04/2020

RESULTS

DETERMINATION OF THE ABRASION RESISTANCE OF FABRICS

Standard
EN 530:2010 Method 2

Apparatus
Martindale Abrasion Tester

Conditioning date 14/04/2020 **Test date** 17/04/2020

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

Testing conditions
Rubbing against abradant paper 00

Testing pressure
9kPa

End point
Two thread broken

Technical characteristics of the sample
Not indicated by the client

Previous treatment
5 washing cycles at 60ºC, according to standard EN ISO 6330:2012, method 6N and type F drying (tumble dry)

Reference
FABRIC POSEIDON-245

Specimens	Nº of cycles (n)
1	1500>n<2000
2	n>2000
3	n>2000
4	1500>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 5

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RESULTS

DETERMINATION OF TEAR RESISTANCE

Standard
EN ISO 9073-4:1997

Apparatus
INSTRON Dynamometer

Conditioning date 14/04/2020 **Test date** 20/04/2020

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 60ºC, according to standard EN ISO 6330:2012, method 6N and type F drying (tumble dry)

Reference
FABRIC POSEIDON-245

Tear	Average load (N)		C.V. (%)
Warp	47.51 47.72 45.29 46.64 48.57	**47.15**	2.64
Weft	33.02 32.03 33.08 32.82 32.63	**32.72**	1.30

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

NIVEL ALCANZADO 2

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RESULTS

DETERMINATION OF BREAKING STRENGTH AND ELONGATION

Standard
EN ISO 13934-1:1999

Apparatus
INSTRON Dynamometer

Conditioning date 14/04/2020 **Test date** 15/04/2020

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

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 60ºC, according to standard EN ISO 6330:2012, method 6N and type F drying (tumble dry)

Reference
FABRIC POSEIDON-245

Direction	Maximum average load (N)	C.V. (%)	Average elongation (%)	C.V. (%)
Warp	1300 1300 1300 1300 1300 1300	1.0	11.0 11.0 11.5 11.0 11.0 10.5	2.0
Weft	590 600 610 610 620 650	4.0	15.0 15.0 14.5 15.0 14.5 15.0	2.2

Remark
The edition of the standard used, does not correspond to the latest version released.
The relative expanded uncertainty of Tensile strength resistance is ±5% assay value of the measured, for a probability of coverage of 95%.

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RESULTS

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

PERFORMANCE LEVEL 5

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RESULTS

PUNCTURE RESISTANCE

Standard

EN 863:1995

Apparatus

INSTRON Dynamometer

Conditioning date 14/04/2020 **Test date** 28/04/2020

Atmosphere for conditioning testing

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

Type of fabric

Woven fabric

Previous treatment

5 washing cycles at 60ºC, according to standard EN ISO 6330:2012, method 6N and type F drying (tumble dry)

Reference	Maximum force (N)	Average resistance (N)
FABRIC POSEIDON-245	51,17 50,10 51,54 49,94 52,31	51,01

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

245 g/m² according to the customer

Pre-treatment

5 washing cycles at 60ºC, according to standard ISO 6330:2012, method 6N; and F drying

Reference

FABRIC POSEIDON-245

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

Woven fabric, dark grey colour

Test date

20/04/2020

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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		98.1		1.9	
	2	0.0	0.0	98.4	98.1	1.6	1.9
	3	0.0		98.6		1.4	
Weft	1	0.0		98.2		1.8	
	2	0.0	0.0	98.7	98.2	1.3	1.8
	3	0.0		98.7		1.3	

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		98.8		1.2	
	2	0.0	0.0	99.0	98.8	1.0	1.2
	3	0.0		99.0		1.0	
Weft	1	0.0		98.6		1.4	
	2	0.0	0.0	98.6	98.6	1.4	1.4
	3	0.0		98.8		1.2	

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	5.5		91.2		3.3	
	2	5.7	5.7	90.4	90.4	4.0	4.0
	3	5.4		90.8		3.8	
Weft	1	5.7		90.6		3.8	
	2	6.6	6.6	91.0	90.6	2.4	3.8
	3	6.6		91.0		2.4	

CLASSIFICATION ACCORDING TO EN 14325:2004
Class according to repellency index: **2**
Class according to penetration index: **1**

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	1.3		95.5		3.3	
	2	1.7	1.7	95.0	95.0	3.2	3.3
	3	1.6		95.6		2.8	
Weft	1	2.3		95.1		2.6	
	2	1.6	2.3	94.8	94.4	3.6	3.9
	3	1.7		94.4		3.9	

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

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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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Lucia Martinez
Head of PPE and Ballistics department

Digitally signed by ISABEL LLOPIS LUMBRERAS - NIF:21678551Q
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