



Flame Retardant fabric for FR-clothing

MADEIRA-320

100% COTTON

320 GSM / TWILL 3/1



Fabric name	Madeira-320
Fabric weight	320 ± 10 gsm
Composition	100% Cotton
Full width	152 ± 2 cm
Weave	Twil 3/1
Finishes	Flame Retardant
Application	FR jackets, trousers and coveralls
Washing instruction	

FR & SPECIAL PROPERTIES

Flame retardant	EN ISO 11612 A1 & A2, B1, C1, E3, F1	50×75°C ISO 15797
	EN ISO 11611 Class 1	50×75°C ISO 15797
Industrial Wash	EN ISO 11612 A1 & A2	100×75°C ISO 15797

PHYSICAL PROPERTIES

		warp	weft
Tensile strength, N	ISO 13934-1:1999	1600	1000
Tearing strength, N	ISO 13937-2:2000	22	17
Dimensional Stability To Washing, max	ISO 5077	3%	
Abrasion Resistance	ISO 12947-2:1999	26,500 rubs	
Pilling Resistance	ISO 12945-2:2001	3-4	

COLOUR FASTNESS

			Light	Mid	Dark	Special
			Orange, Yellow, Red	Green, Grey, Royal Blue	Dark Navy, Navy, Royal Blue	Black
Wash Fastness Method E2S (95°C)	ISO 105-C06	Colour Change	4-5	4-5	4-5	4
		Stain on Polyester	4-5	4-5	4	4
		Stain on Cotton	4	4	4	3-4
Rub Fastness	ISO 105-X12	Wet	3	3	2-3	2
		Dry	4	4	4	4
Light Fastness	ISO 105-B02		3	4	4	4

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CERTIFICATE OF TEST

Certificate of test n°

23EP0116

AITEX declares that the articles:

Given by the company:

"Fabric MADEIRA-320"

According to information supplied by the customer:
Fabric reference: MADEIRA-320
Composition and percentage: 100% Cotton
Weight: 320 gsm
Colour: Dark Navy
Others: FR-Twill 3/1

Shanghai XM Group LTD

Room 2403, 88 Guangxin Road
CN-200063
SHANGHAI

Complies with the requirements of the standard/s:

EN ISO 11612:2015. Protective clothing. Clothing to protect against heat and flame.

	TEST	RESULTS		REQUIREMENTS	REPORT No.
Clause 6.2.1	Heat resistance (180)°C after 50 washing cycles	Warp: -0,4 %	Weft: -0,4 %	No ignite, no melt and no shrink by more than 5%	2019CN0658
Clause 6.3	Limited flame spread as received and after 50 washing cycles (Procedure B)	A2		No specimen must ignite toward the top or toward the edges No specimen shall give flaming or molten debris The afterflame time is ≤ 2 s The afterglow time is ≤ 2 s	2019CN0658
Clause 6.4	Dimensional change after 5 washing cycles	Warp: -2,0 %	Weft: -2,0 %	≤ ± 3%	2019CN0658
Clause 6.5.1	Tensile strength after 50 washing cycles	Warp: 1500 N	Weft: 970 N	≥ 300 N	2019CN0658
Clause 6.5.2	Tear strength after 50 washing cycles	Warp: 21 N	Weft: 17 N	≥ 10 N	2019CN0658
Clause 7.2	Convective heat after 50 washing cycles	Level B1 HTI ^a 24: 5,6 s		Level B1 4 ≤ RHTI ^a 24 < 10	2019CN0658
Clause 7.3	Radiant heat after 50 washing cycles	Level C1 RHTI ^a 24: 12,2 s		Level C1 7 ≤ RHTI ^a 24 < 20	2019CN0658
Clause 7.6	Contact heat after 50 washing cycles	Level F1 t _c : 7,7 s		Level F1 5 ≤ t _c < 10	2019CN0658

Remark: Washing instructions according to Standard EN ISO 15797:2018, table 4, procedure 2 (75°C) and A type drying (tumble drying).

The test results above indicated are shown in the testing report:

2019CN0658

Issued by AITEX on: 19/09/2019.

This document is of application for the tested sample, according to the tests that have been done in the previously mentioned dates in the reports above shown. This does not implies any monitoring or control activity on this product done by AITEX. This document is a test summary and does not imply a product certification.

Signed by: Raquel Muñoz González
Manager Innovation Area



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por ISABEL LLOPIS
LUMBRERAS
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CERTIFICATE OF TEST

Certificate of test n°

23EP0116

AITEX declares that the articles:

Given by the company:

"Fabric MADEIRA-320"

According to information supplied by the customer:
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Composition and percentage: 100% Cotton
Weight: 320 gsm
Colour: Dark Navy
Others: FR-Twill 3/1

Shanghai XM Group LTD

Room 2403, 88 Guangxin Road
CN-200063
SHANGHAI

Complies with the requirements of the standard/s:

EN ISO 11611:2015. Protective clothing. Clothing to protect against heat and flame.

TEST		RESULTS		REQUIREMENTS	REPORT No.
Clause 6.2	Tensile strength after 50 washing cycles	Warp: 1500 N	Weft: 970 N	≥ 400 N	2019CN0658
Clause 6.3	Tear strength after 50 washing cycles	Warp: 21 N	Weft: 17 N	≥ 15 N	2019CN0658
Clause 6.7	Limited flame spread as received and after 50 washing cycles (Procedure B)	A2		No specimen must ignite toward the top or toward the edges No specimen shall give flaming or molten debris The afterflame time is ≤ 2 s The afterglow time is ≤ 2 s	2019CN0658
Clause 6.6	Dimensional change after 5 washing cycles	Warp: -2,0 %	Weft: -2,0 %	$\leq \pm 3\%$	2019CN0658
Clause 6.8	Small splashes of molten metal after 50 washing cycles	Class 1 22 drops		Class 1 $15 \leq \text{drops} < 25$	2019CN0658
Clause 6.9	Radiant heat after 50 washing cycles	Class 1 RHTI ^a 24: 12,2 s		Class 1 $7 \leq \text{RHTI}^a 24 < 16$	2019CN0658
Clause 6.10	Electrical insulation after 50 washing cycles	$4,74 \cdot 10^7 \Omega$		$> 10^6 \Omega$	2019CN0658

Remark: Washing instructions according to Standard EN ISO 15797:2018, table 4, procedure 2 (75°C) and A type drying (tumble drying).

The test results above indicated are shown in the testing report:

2019CN0658

Issued by AITEX on: 19/09/2019.

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Manager Innovation Area



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TEST SUMMARY

Test Summary n°

19CN0581

AITEX declares that the articles:

Given by the company:

"FABRIC MADEIRA-320"

Information according to the customer:

Fabric reference: Madeira-320

Composition & percentage: 100% Cotton, FR-Twill 3/1

Weight: 320 gsm

Color: Dark Navy (SG)

Others: FRL-200-JH-LT

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

Complies with the requirements of the standard/s:

EN ISO 11612:2015 PROTECTIVE CLOTHING. CLOTHING TO PROTECT AGAINST HEAT AND FLAME.

6.2 Heat resistance (180)°C – Pass - (x 50 washing cycles, 75 °C, Tumble Dryer A).

6.3.2 Limited flame spread. Method A – A1 – (as received and after 50 washing cycles, 75°C, Tumble Dryer A).

6.3.3 Limited flame spread. Method B – A2 – (as received and after 50 washing cycles, 75°C, Tumble Dryer A).

6.5.1 Tensile strength – Pass - (x 50 washing cycles, 75°C, Tumble Dryer A).

6.5.2 Tear Resistance – Pass - (x 50 washing cycles, 75°C, Tumble Dryer A).

7.2 Convective heat – B1 - (x 50 washing cycles, 75°C, Tumble Dryer A).

7.3 Radiant heat – C1 - (x 50 washing cycles, 75°C, Tumble Dryer A).

7.5 Molten iron splash – E3 - (x 50 washing cycles, 75°C, Tumble Dryer A).

7.6 Contact heat – F1 - (x 50 washing cycles, 75°C, Tumble Dryer A).

EN ISO 11611:2015 PROTECTIVE CLOTHING FOR USE IN WELDING AND ALLIED PROCESSES.

6.2 Tensile strength – Pass - (x 50 washing cycles, 75°C, Tumble Dryer A).

6.7.2 Limited flame spread. Method A – A1 – (as received and after 50 washing cycles, 75°C, Tumble Dryer A).

6.7.3 Limited flame spread. Method B – A2 – (as received and after 50 washing cycles, 75°C, Tumble Dryer A).

6.8 Impact of spatter – Class 2 - (x 50 washing cycles, 75°C, Tumble Dryer A).

6.9 Radiant heat – Class 1 - (x 50 washing cycles, 75°C, Tumble Dryer A).

6.10 Electrical resistance – Pass - (x 50 washing cycles, 75°C, Tumble Dryer A).

Remark: washing instructions according to Standard EN ISO 15797:2018, Table 4 procedure 2 and 50 washing cycles, at 75°C washing temperature and type A drying (tumble dryer).

The test results above indicated are shown in the testing report/s:

2019CN0581

Issued by AITEX on: 29/10/2019

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Signed by: Raquel Muñoz González
Manager Innovation Area

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por RAQUEL MUÑOZ
GONZALEZ

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CERTIFICATE OF TEST

Certificate of test nº

23EP0216

AITEX declares that the articles:

Given by the company:

"MADEIRA-320"

According to information supplied by the customer:
Fabric ref.- MADEIRA-320
Composition and percentage: 100% Cotton, FR-Twill 3/1
Weight: 320 gsm
Colour: Black
Others (if any) 443

XM TEXTILES EUROPE UAB

Darius ir Gireno st. 42A Office 509
LT-02189
Vilnius

Complies with the requirements of the standard/s:

EN ISO 13688:2013 Protective clothing. General requirements.

	TEST	RESULTS	REQUIREMENTS	REPORT No.
Clause 4.2	Determination of pH value	pH=6.50	3.5 < pH < 9.5	2023EP0215

EN ISO 11612:2015. Protective clothing. Clothing to protect against heat and flame.

	TEST	RESULTS	REQUIREMENTS	REPORT No.
Clause 6.3	Limited flame spread as received and after 100 washing cycles (Procedure A)	A1	No specimen must ignite toward the top or toward the edges No specimen shall give hole formation of 5 mm or greater in any direction No specimen shall give flaming or molten debris The afterflame time is ≤ 2 s The afterglow time is ≤ 2 s	2023EP0215
	Limited flame spread as received and after 100 washing cycles (Procedure B)	A2	No specimen must ignite toward the top or toward the edges No specimen shall give flaming or molten debris The afterflame time is ≤ 2 s The afterglow time is ≤ 2 s	2023EP0215

Remark: Washing instructions according to Standard EN ISO 15797:2018, table 4, procedure 2 (75°C) and A type drying (tumble dry).

The test results above indicated are shown in the testing report:

2023EP0215

Issued by AITEX on: 23/02/2023.

This document is of application for the tested sample, according to the tests that have been done in the previously mentioned dates in the reports above shown. This does not imply any monitoring or control activity on this product done by AITEX. This document is a test summary and does not imply a product certification.

Signed by: Raquel Muñoz González
Manager Innovation Area



aitex
textile research institute

TEST SUMMARY

Test Summary nº

19CN0581

AITEX declares that the articles

Given by the company

"FABRIC MADEIRA-320"

Information according to the customer:

Fabric reference: Madeira-320

Composition & percentage: 100% Cotton, FR-Twill 3/1

Weight: 320 gsm

Color: Dark Navy (SG)

Others: FRL-200-JH-LT

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

Complies with the requirements of the standard/s

EN ISO 11612:2016 PROTECTIVE CLOTHING. CLOTHING TO PROTECT AGAINST HEAT AND FLAME.

6.2 Heat resistance (180)°C – Pass - (x 50 washing cycles, 75 °C, Tumble Dryer A).

6.3.2 Limited flame spread. Method A – A1 – (as received and after 50 washing cycles, 75°C, Tumble Dryer A).

6.3.3 Limited flame spread. Method B – A2 – (as received and after 50 washing cycles, 75°C, Tumble Dryer A).

6.5.1 Tensile strength – Pass - (x 50 washing cycles, 75°C, Tumble Dryer A).

6.5.2 Tear Resistance – Pass - (x 50 washing cycles, 75°C, Tumble Dryer A).

7.2 Convective heat – B1 - (x 50 washing cycles, 75°C, Tumble Dryer A).

7.3 Radiant heat – C1 - (x 50 washing cycles, 75°C, Tumble Dryer A).

7.5 Molten iron splash – E3 - (x 50 washing cycles, 75°C, Tumble Dryer A).

7.6 Contact heat – F1 - (x 50 washing cycles, 75°C, Tumble Dryer A).

EN ISO 11611:2016 PROTECTIVE CLOTHING FOR USE IN WELDING AND ALLIED PROCESSES.

6.2 Tensile strength – Pass - (x 50 washing cycles, 75°C, Tumble Dryer A).

6.7.2 Limited flame spread. Method A – A1 – (as received and after 50 washing cycles, 75°C, Tumble Dryer A).

6.7.3 Limited flame spread. Method B – A2 – (as received and after 50 washing cycles, 75°C, Tumble Dryer A).

6.8 Impact of spatter – Class 2 - (x 50 washing cycles, 75°C, Tumble Dryer A).

6.9 Radiant heat – Class 1 - (x 50 washing cycles, 75°C, Tumble Dryer A).

6.10 Electrical resistance – Pass - (x 50 washing cycles, 75°C, Tumble Dryer A).

Remark: washing instructions according to Standard EN ISO 15797:2015, Table 4 procedure 2 and 50 washing cycles, at 75°C washing temperature and type A drying (tumble dryer).

The test results above indicated are shown in the testing report/s:

2019CN0581

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