Confidential Report

Our Ref: E-018395/A

ilac-MRA

UKAS TESTING

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Notified Body
for PPE Directive,
Construction Products Regulation
& Marine Equipment Directive
I.D. No. 0338

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Telephone: +44 (0) 161 876 4211
Email: info@bttg.co.uk
Website: www.bttg.co.uk

Date: 29th March 2021

Our Ref: E-018395/A
Your Ref: --

[redacted]

Client: [redacted]

Job Title: Testing of one woven fabric

Client's Order No: --

Date of Receipt: 15th February 2021
Date of Test Start: 25th February 2021

Description of Sample(s): One woven fabric, referenced

CFR220AS, 98% Cotton, 2% Anti-Static Pyrovatex Flame Retardant and Anti-Static Fabric, 220gsm

Work Requested: We were asked to make the following test:
EN ISO 11612: 2015
After 5 wash/dry cycles according to ISO 6330 (60°C with tumble drying)

This is a summary report detailing the results as required by the EN ISO 11612: 2015 performance standard.
All test methods are UKAS accredited.

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Sample:	One woven fabric, referenced: CFR220AS, 98% Cotton, 2% Anti-Static Pyrovatex Flame Retardant and Anti-Static Fabric, 220gsm
Performance Standard:	EN ISO 11612: 2015 (a) Clause 6.2.1 Heat resistance (at 180°C) (b) Clause 6.3.2 Limited flame spread – Face ignition (c) Clause 6.3.3 Limited flame spread – Edge ignition (d) Clause 6.4 Dimensional change due to cleaning (e) Clause 6.5.1 Tensile strength (f) Clause 6.5.2 Tear strength (g) Clause 7.2 Convective heat (h) Clause 7.3 Radiant heat
Cleansing Pretreatment:	Prior to all tests five wash/dry cycles according to ISO 6330: 2012 Procedure 6N (60°C) with tumble drying (Procedure F) (max. 60°C outlet temperature). Tests 6.3.2 and 6.3.3 also carried out in the "as received" condition.
Summary of Results:	See pages 3 and 4.

EN ISO 11612: 2015 states the following:

- "All the individual results of the specimens of a test shall meet the performance requirement"
- "The average result shall be given".
- "The estimate of uncertainty shall be applied when it may affect the rating or classification of a property"

For the purposes of assessing the sample, BTTG™ uses the following parameters:

1. The worst individual test result.
2. The mean result after uncertainty of measurement has been applied.

An estimation of uncertainty of measurement has been taken into account when making a judgement to any pass/fail criteria. Refer to Appendix A for further information.

Note: This report relates only to the samples submitted and as described in the report.

Reported by:..... P M Collinson, Section Leader PPE Laboratory

Countersigned by:..... M T Healey, Principal Technician

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Sample: One woven fabric, referenced:
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Summary of Results:

PROPERTY	TEST METHOD	EN ISO 11612 REQUIREMENTS	RESULTS OBTAINED	PASS/FAIL OR LEVEL
6.2.1 Heat resistance (at 180°C)	ISO 17493: 2016 at 180°C	Shall not ignite or melt or shrink > 5%	Fabric did not ignite or melt. Shrinkage: Length / Width Mean 0.8% 0.7% Worst 1.0% 0.7%	PASS
6.3.2 Limited flame spread – Face ignition (code letter A1)	EN ISO 15025: 2016 Procedure A	No flaming to edge No flaming or molten debris No hole formation Afterglow time ≤ 2s Afterflame time ≤ 2s	As received No flaming to edge No flaming or molten debris No hole formation No afterglow No afterflame Pre-treated No flaming to edge No flaming or molten debris No hole formation No afterglow No afterflame	PASS A1

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Sample: One woven fabric, referenced:
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Summary of Results:

PROPERTY	TEST METHOD	EN ISO 11612 REQUIREMENTS	RESULTS OBTAINED	PASS/FAIL OR LEVEL
6.3.3 Limited flame spread – Edge ignition (code letter A2)	EN ISO 15025: 2016 Procedure B (folded edge)	No flaming to edge No flaming or molten debris Afterglow time ≤ 2s Afterflame time ≤ 2s	As received No flaming to edge No flaming or molten debris No afterglow No afterflame Pre-treated No flaming to edge No flaming or molten debris No afterglow No afterflame	PASS A2
6.4 Dimensional Change	ISO 5077: 2007	Woven: ≤ ± 3%	Warp / Weft Mean 0.0% / -2.0% Worst 0.1% / -2.4%	PASS
6.5.1 Tensile strength	ISO 13934-1: 2013	≥ 300N	Warp / Weft Mean 880N / 450N Worst 820N / 397N	PASS
6.5.2 Tear strength	ISO 13937-2: 2000 Size 200 x 200mm	≥ 10N	Across warp / Across weft Mean 28N / 26N Worst 27N / 25N	PASS
7.2 Convective heat (Code letter B)	ISO 9151: 2016	Level / HTI_{24} B1 ≥ 4.0s B2 ≥ 10.0s B3 ≥ 20.0s	Specimen / HTI_{24} 1 5.0s 2 5.2s 3 4.9s Mean 5.0s	LEVEL B1
7.3 Radiant heat (Code letter C)	EN ISO 6942: 2002 Method B at 20kW/m²	Level / $RHTI_{24}$ C1 ≥ 7.0s C2 ≥ 20.0s C3 ≥ 50.0s C4 ≥ 95.0s	Specimen / $RHTI_{24}$ 1 15.9s 2 15.8s 3 15.4s Mean 15.7s	LEVEL C1

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Appendix A

EN ISO 11612: 2015 Annex E: Uncertainty of Measurement:

EN ISO 11612 Clauses		Test Method	95% Confidence limit
5.2	Pre-treatment	Domestic washing: EN ISO 6330: 2012	Chaotic Processes Not applicable
6.2.1	Heat resistance	ISO 17493: 2016 (180°C)	± 2.8%
6.3.2	Flame spread – Face (A1)	EN ISO 15025: 2016 (A)	± 5.0%
6.3.3	Flame spread – Edge (A2)	EN ISO 15025: 2016 (B)	± 10.8%
6.4	Dimensional change	ISO 5077: 2007	± 3.2%
6.5.1	Tensile strength (woven fabrics)	ISO 13934-1: 2013	Aramid ± 1.7% Wool ± 3.5% Cellulosic ± 4.8%
6.5.2	Tear strength (woven fabrics)	ISO 13937-2: 2000	Aramid ± 2.8% Wool ± 4.4% Cellulosic ± 5.8%
7.2	Convective heat (B)	EN ISO 9151: 2016	HTI_{24} ±11.7% HTI_{24-12} ±2.6%
7.3	Radiant heat (C)	EN ISO 6942: 2002 (20kW/m²)	$RHTI_{24}$ ±4.5% $RHTI_{24-12}$ ±2.5%

* These uncertainty value are based on a standard uncertainty multiplied by a coverage factor k=2, which provides for a confidence level of approximately 95%.

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