

TEST REPORT

2019EP0925

DATE OF RECEPTION

28/03/2019

DATE TESTS

Starting: 04/04/2019

Ending: 16/05/2019

APPLICANT

JGM INTERNATIONAL
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Norfolk

Att. Mikayla Crow

IDENTIFICATION AND DESCRIPTION OF SAMPLES

REFERENCES

Flece jacket X12

TESTS CARRIED OUT

- ERGONOMICS.
- REFERENCE TEST METHOD FOR RELEASE OF NICKEL FROM OBJECTS INSERTED INTO PERFORATED PARTS OF THE BODY AND PRODUCTS INTENDED TO COME INTO DIRECT AND PROLONGED CONTACT WITH THE SKIN.
- SPECIFIC DESIGN REQUIREMENTS.
- PRE-TREATMENT FOR DOMESTIC WASHING AND DRYING PROCEDURES FOR TEXTILE TESTING.
- DETERMINATION OF THE FABRIC DIMENSIONAL CHANGES AFTER DOMESTIC WASHING AND DRYING
- BURSTING RESISTANCE.
- AIR PERMEABILITY.
- THERMAL RESISTANCE.

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



RESULTS

ERGONOMICS

Standard

EN ISO 13688:2013

Reference

Flece jacket X12

Test date

04/04/2019

Remark

The ergonomics verification has been performed by physical dimensions commensurate with the size found.

According to the inspection of the garment, this fulfills ergonomics requirement.

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RESULTS

REFERENCE TEST METHOD FOR RELEASE OF NICKEL FROM OBJECTS INSERTED INTO PERFORATED PARTS OF THE BODY AND PRODUCTS INTENDED TO COME INTO DIRECT AND PROLONGED CONTACT WITH THE SKIN

Standard

UNE-EN 1811:2011+A1:2016

Start date test

11/04/2019 End date test 18/04/2019

Slider Test surface 6.25 cm² Test volume 25 ml

Method L.C.

5 ppb

Reference	Nickel liberation (µg/cm ² /week)			Compliance	Uncertainty experimental
Flece jacket X12	Reply 1	Reply 2	Reply 3	PASS	± 0,26
	< 0,1	< 0,1	< 0,1		

According to the norm and due to the combined uncertainty of measurement of 46%, the samples analyzed, with a migration limit of 0.5 µg/cm²/week, do not meet the standard when the nickel release is greater than or equal to 0,88 µg/cm²/week. Articles whose result is inferior must be accepted. In the case of a migration limit of 0.2 µg/cm²/week, the result should be greater than or equal to 0.35 µg/cm²/week

Remark

According to European Parliament and Council Regulation (CE) No 1907/2006 (REACH), the rate of nickel release shall not be greater than 0,5 µg/cm²/week

According to UNE-EN 12472:2006+A1:2010, the reference underwent accelerated wear and corrosion tests for the detection of nickel release from coated items.

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RESULTS

SPECIFIC DESIGN REQUIREMENTS

REFERENCE

Flece jacket X12

STANDARD

EN ISO 13688:2013

DESIGN REQUIREMENTS

The protection clothing design makes easy its correct placement and wearing staying with no movement during the use period intended.	PASS
The design of the protective clothing applies elements from other protective or equipment clothing, which are used to create a comprehensive protective outfit.	PASS
The clothing has no rough, sharp or hard surfaces or edges that could damage or irritate the user.	PASS
The clothing is not enough narrow for causing flow blood restriction.	PASS
The clothing is not enough loose and heavy for interfering the user's movement.	PASS

Remark

N/A: Not applicable

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RESULTS

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

Standard

ISO 6330:2012

Standard deviation

Reference

Sample1 Flecce jacket X12

Units

1

Equipment Wascator 13096E12

Dryer machine ACCUDRY
13372E12

Washing procedure 4N **Washing cycles** 20

Drying procedure

F (tumble dryer)

Washing powder

ECE detergent 98 + sodium perborate + TAED

Units	Dry mass of the samples	Counterweight mass	Equipment
1	0,990 Kg	1,000 Kg of Polyester	Wascator 13096E12

Start and finish data test

10/04/2019 - 02/05/2019

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RESULTS

DETERMINATION OF THE FABRIC DIMENSIONAL CHANGES AFTER 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** 09/04/2019 **Ending test date** 18/04/2019**Washing procedure**4N ($T^a = 40 \pm 3^\circ\text{C}$; Total dry load test samples and the counterweight 2 ± 0.1 Kg)**Used apparatus**

Wascator type A-Horizontal drum, front loading (13096E12)

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(13372E12)**Apparel size**

3XL

Uncertainty of test (% of the measured value) $\pm 15 \%$

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RESULTS

Results

Reference	Measurement	
Flece jacket X12	Length of the armhole to the hem of the garment.	+ 4,0 %
	Length of the front, from the junction of the shoulder seam and noneck seam, to the bottom hem.	-1,0 %
	Length center back, from the noneck immediately below the noneck or bending, to the bottom hem.	0,0 %
	Length underarm seam from the underarm to hem sleeve.	-2,0 %
	Width from side to side of the back, between the sleeve seams, measured at an intermediate distance between the center of the back and noneck under the armhole, or yoke width from sleeve seam to sleeve seam.	0,0 %
	Width (ie half the circumference measurement), in at least three locations approximately equidistant points located below the noneck, in the middle of the back.	0,0 %
	Beam width (from lateral coupling thereof with seams) at right angles to the sleeve length.	0,0 %
	Beam width in the low bottom cuff or sleeve.	-1,0 %

REMARK

Negative dimensional change indicates shrinkage
Positive dimensional change indicates lengthening

REQUISITE

In accordance with the Standard EN ISO 13688:2013, the dimensional change of knitted fabrics shall not exceed $\pm 5\%$, both in width Crosswise and in length Lengthwise.

PASS

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RESULTS

BURSTING RESISTANCE

Standard

EN ISO 13938-1:1999

Apparatus

Autoburst SDL-ATLAS M-229

Atmosphere for conditioning and testing

Temperature (20±2) °C Relative humidity (65±4) %

Test conditions

Dry specimen

Test surface 50 cm² Test duration (20±5) seg.

N° of specimens

Tested 5 Rejected 0

Bursting in the proximity of the clamps

0

Observations

Breakage in a direction

Reference	Bursting Distension (mm)	Bursting Strength (kPa)
FLECCE JACKET X12	39.0	605.4
		1. 597.1
		2. 608.7
		3. 606.5
		4. 609.0
		5. 605.8

Remark

The relative expanded uncertainty of Bursting resistance according to standard EN ISO 13938-1:1999 is ±8% assay value of the measured, for a probability of coverage of 95%.

REQUISITE ACCORDING TO STANDARD EN 14058:2017

The minimum bursting resistance has to be ≥100 KPa.

PASS



RESULTS

AIR PERMEABILITY

Standard

EN ISO 9237:1996

Apparatus

Air Permeability Tester

Pressure

100 Pa

Test surface

20 cm²

Number of specimens tested

10

Atmosphere for conditioning and testing

Temperature (20±2) °C

Relative Humidity (65±4) %

Pre-treatment

20 cycles of washing at 40°C, according ISO 6330:2012, method 4N and F drying

Reference	Air permeability (mm/s)	C.V. (%)	Confidence interval (mm/s)
FLECCE JACKET X12	348.25	4.0	9.15

CLASS 1

CLASSIFICATION ACCORDING TO EN 14058:2004 Pt. 4.3 (Table 2)

AP mm/s	Class
100 < AP	1
5 < AP ≤ 100	2
AP ≤ 5	3

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RESULTS

THERMAL RESISTANCE

Standard

EN ISO 11092:2014

Date test

16/5/2019

Uncertainty of the measurement

0.0068 m²K/W

Observation or deviation from the Standard

Apparatus

SKIN MODEL. Sweating guarded hotplate 12010I12

Test atmosphere

Temperature (20.0 ± 0.5) °C

Relative humidity (65 ± 3) %

Conditioning

Temperature (20.0 ± 0.5) °C

Relative humidity (65 ± 3) %

Time 24 hours

Sample description

Navy fleece fabric with brushed inner face.

Disposition test specimens

The inner face is in contact to the measurement surface.

Pre-treatment

20 washing cycles at 40°C, according to standard ISO 6330:2012, method 4N and drying (F).



RESULTS

Test results

Reference	Specimen	Thermal resistance R_{ct} (m^2K/W)
Flece jacket X12	Specimen 1	0,168
	Specimen 2	0,167
	Specimen 3	0,166
	Average	0,167

According requirements of EN 14058:2017 standard, Thermal resistance R_{ct} of all layers of the garment shall be in accordance with the following table:

R_{ct} (m^2K/W)	Class
$0.06 \leq R_{ct} < 0.12$	1
$0.12 \leq R_{ct} < 0.18$	2
$0.18 \leq R_{ct} < 0.25$	3
$0.25 \leq R_{ct}$	4

CLASS 2



Lucia Martinez
Head of PPE and Ballistics department

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