TECHNICAL REPORT

Nº 2015EP1865CE

DATE OF RECEPTION	29/07/2015
DATE TEST	Starting: 06/08/2015 Ending: 15/09/2015

APPLICANT

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Att. THOMAS ESSERS

DESCRIPTION AND IDENTIFICATION OF SAMPLES

SAMPLES REFERENCED:

-"FS LONG SHIRT 11612 LITE".

TESTS CARRIED OUT

- EC TYPE CERTIFICATION.
- DOCUMENT REVISION*.
- ERGONOMICS
- SPECIFIC DESIGN REQUIREMENTS

ENAC is a signatory to the Multilateral Agreement (MLA), (MRA Mutual Recognition Agreement) of the European Cooperation for Accreditation (EA) and the International Laboratory Accreditation Cooperation (ILAC), in testing.

ATTACHED --- SAMPLE(S) SEALED

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COMMENTS

The PPE FS LONG SHIRT 11612 LITE presented for the EC Type certification to comply with the directive 89/686/EEC, transposed in the Royal Decree 1407/1992, based on the standards UNE-EN 340:2004, EN ISO 13688:2013, UNE-EN ISO 11612:2010 and UNE-EN 1149-5:2008.

The customer has presented the following documentation:

- Technical documentation with:
    1. Pictures
    2. Essential requirements for security and sanitation
- Control means
- Informative leaflet with:
    1. Name and full address of the manufacturer.
    2. Instructions of use, cleaning, storing and maintenance
- Achieved levels on the tests, degrees and protection classes.
- Compliance pictograph.
- PPE manufacturing or expiration date.
- Packaging type
- Identity or signs indications in what refers to health and hygiene.

The customer has presented the following samples:

- Four (4) shirts of the PPE FS LONG SHIRT 11612 LITE.
- Two (2) tight of the variant of the PPE FS LONG SHIRT 11612 LITE.

With compliance to the PPE's Community Directive 89/686/EEC, transposed in the Royal Decree 1407/1992.

The PPE described in the present report has been submitted to EC Type examination and after its fulfillment, the certificate has been issued giving conformity of the model with the standards UNE-EN 340:2004, EN ISO 13688:2013, UNE-EN ISO 11612:2010 and UNE-EN 1149-5:2008.

DESCRIPTION OF SAMPLES

FS LONG SHIRT 11612 LITE

Dark grey knitted garment, which covers the wearer's upper torso and upper extremities, with the exception of the hands and head. It consists of body, sleeves and collar.

The body is a single piece joined to the sleeves at the armholes and to the collar by stitching from the base of the collar. The sides of the waist and on the shoulders have a different stitch.

The sleeves are made of one piece with stitching on the inside from the armhole to the cuff giving the sleeve shape. The cuff is made with an inward-turned hem.

The collar is round, 1,5 cm wide and made from double knit.

The lower edge of the garment is hemmed towards the inside with double stitching.

The PPE is made in the following materials according to technical documentation supplied by the customer:

- Dark grey knitted fabric, composition 68% Viscose, 16% Meta-aramid, 13% Modacrylic, 2% Elastane and 1% Carbon, with an approximate weight of 170 g/m².

The PPE is sold in the following sizes:

SIZE	Total user height (cm)	User chest girth (cm)	User waist girth (cm)
XS/S	168-176	90-97	78-85
M/L	174-182	98-105	86-94
XL/XXL	180-186	106-113	95-104

The PPE can present the following variants:

- The PPE may present the leggings variant, consisting of two fronts and two backs made from one piece of knitted fabric joined together by vertical inside seams. The crotch has a oval-shaped piece of knitted fabric, joined to the crotch with stitching. The upper edge of the leggings and the bottom edges of the legs are hemmed inwards. On the inside of the seat area is the logo identifying the garment. The fly area and sides have a different stitch.

RESULTS

ERGONOMICS

Standard

EN ISO 13688:2013, UNE-EN 340:2004

Reference

FS LONG SHIRT 11612 LITE

Remark

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

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

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RESULTS

ERGONOMICS

Standard

EN ISO 13688:2013, UNE-EN 340:2004

Reference

FS LONG SHIRT 11612 LITE (tight)

Remark

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

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

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RESULTS

SPECIFIC DESIGN REQUIREMENTS

REFERENCE

FS LONG SHIRT 11612 LITE (t-shirt)

STANDARD

UNE-EN 340:2004 and 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**

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RESULTS

SPECIFIC DESIGN REQUIREMENTS

REFERENCE

FS LONG SHIRT 11612 LITE (t-shirt)

STANDARD

UNE-EN ISO 11612:2010

DESIGN REQUIREMENTS

The garment sizing is in accordance with the requisites of the ISO 13688 guideline.	**PASS**
The garment (t-shirt) is designed to protect specific parts of the body and to be used alongside other protective suits that completely cover neck, arms and legs.	**PASS**

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RESULTS

SPECIFIC DESIGN REQUIREMENTS

REFERENCE

FS LONG SHIRT 11612 LITE (t-shirt)

STANDARD

UNE-EN 1149-5:2008

DESIGN REQUIREMENTS

The garment permanently covers non-standard materials during normal use.	**PASS**
The garment with electrostatic discharge can be adjusted accordingly to the sizes in the UNE-EN 340:2004 guideline, and allows for all body movements when fully fastened in accordance with the manufacturer's instructions.	**PASS**

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RESULTS

SPECIFIC DESIGN REQUIREMENTS

REFERENCE

FS LONG SHIRT 11612 LITE (tight)

STANDARD

UNE-EN 340:2004 and 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**

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RESULTS

SPECIFIC DESIGN REQUIREMENTS

REFERENCE

FS LONG SHIRT 11612 LITE (tight)

STANDARD

UNE-EN ISO 11612:2010

DESIGN REQUIREMENTS

The garment sizing is in accordance with the requisites of the ISO 13688 guideline.	**PASS**
The garment (tight) is designed to protect specific parts of the body and to be used alongside other protective suits that completely cover the upper and lower parts of the torso, neck and arms.	**PASS**

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RESULTS

SPECIFIC DESIGN REQUIREMENTS

REFERENCE

FS LONG SHIRT 11612 LITE (tight)

STANDARD

UNE-EN 1149-5:2008

DESIGN REQUIREMENTS

The garment permanently covers non-standard materials during normal use.	**PASS**
The garment with electrostatic discharge can be adjusted accordingly to the sizes in the UNE-EN 340:2004 guideline, and allows for all body movements when fully fastened in accordance with the manufacturer's instructions.	**PASS**

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SUMMARY

FS LONG SHIRT 11612 LITE AND VARIANT TIGHT IN ACCORDANCE WITH THE STANDARD UNE-EN 340:2004

TEST	RESULTS	REQUISITES	REPORT No. & NOTIFIED BODY
Ergonomics	Achieved	Point 4 in the standard	2015EP1865CE AITEX
Sizing	Achieved	Point 6 in the standard	2015EP1865 AITEX
Determination of chromium (VI)	Not applicable	< 3mg/kg	---
Nikel discharge	Not applicable	< 0.5µg/cm² for week	---
pH determination	Achieved 7.20	Between 3.5 and 9.5	2015EP1865 AITEX
Colour fastness to perspiration	Change in colour 5	Change in colour ≥ 4	2015EP1865 AITEX
Determination of forbidden azoic colorants	Not detected	None detected	2015EP1865 AITEX
Design	Achieved	Point 4.3 in the standard	2015EP1865CE AITEX
Dimensional stability after 5 washing cycles 40ºC	Shirt Achieved	According to the point 5.3 of the standard UNE-EN 340 ≤ ±3%	2015EP1865 AITEX
	Tight Achieved	According to the point 6.4.2 of the standard UNE-EN ISO 11612 ≤ ±5% (Knitted)	

SUMMARY

FS LONG SHIRT 11612 LITE AND VARIANT TIGHT IN ACCORDANCE WITH THE STANDARD EN ISO 13688:2013

TEST	RESULTS	REQUISITES	REPORT No. & NOTIFIED BODY
Determination of chromium (VI)	Not applicable	< 3mg/kg	---
Nikel discharge	Not applicable	< 0.5µg/cm² for week	---
pH determination	Achieved 7.20	Between 3.5 and 9.5	2015EP1865 AITEX
Determination of forbidden azoic colorants	Not detected	None detected	2015EP1865 AITEX
Design	Achieved	Point 4.4 in the standard	2015EP1865CE AITEX
Ergonomics	Achieved	Point 4 in the standard	2015EP1865CE AITEX
Dimensional stability after 5 washing cycles 40ºC	Shirt Achieved	According to the point 5.3 of the standard EN ISO 13688 ≤ ±3% (woven) or ≤ ±5% (knitted)	2015EP1865 AITEX
	Tight Achieved		
Sizing	Achieved	Point 6 in the standard	2015EP1865 AITEX

SUMMARY

FS LONG SHIRT 11612 LITE AND VARIANT TIGHT
IN ACCORDANCE WITH THE STANDARD UNE-EN ISO 11612:2010

TEST	RESULTS	REQUISITES	REPORT No. & NOTIFIED BODY
Design	Achieved	Point 4 in the standard UNE-EN ISO 11612	2015EP1865CE AITEX
Heat resistance principal fabric at 180ºC after 5 washing cycles at 40ºC	Achieved	No ignite No melt No shrink by more than 5 %	2015EP1865 AITEX
Heat resistance hardware at 180ºC after 5 washing cycles to 40ºC	Not applicable	No ignite No melt	---
Heat resistance principal fabric at 260ºC after 5 washing cycles at 40ºC	Not tested	No ignite No melt No shrink by more than 10 %	---
Limited flame spread at the principal fabric (Procedure A) Limited flame spread after 5 washing cycles at 40ºC at principal fabric (Procedure A)	Achieved A1	No melt No hole After flame time ≤ 2 s Afterglow time ≤ 2 s	2015EP1865 AITEX
Limited flame spread at the principal fabric (Procedure B) Limited flame spread after 5 washing cycles at 40ºC at principal fabric (Procedure B)	Achieved A2	No melt After flame time ≤ 2 s Afterglow time ≤ 2 s	2015EP1865 AITEX
Limited flame spread at seams(Procedure A) Limited flame spread after 5 washing cycles at 40ºC at seams (Procedure A)	Achieved A1	No melt No hole After flame time ≤ 2 s Afterglow time ≤ 2 s Seams remain intact	2015EP1865 AITEX
Limited flame spread at seams (Procedure B) Limited flame spread after 5 washing cycles at 40ºC at seams (Procedure B)	Achieved A2	No melt After flame time ≤ 2 s Afterglow time ≤ 2 s Seams remain intact	2015EP1865 AITEX
Limited flame spread at hardware (Procedure A) Limited flame spread after 5 washing cycles at 40ºC at hardware(Procedure A)	Not applicable	No melt No hole After flame time ≤ 2 s Afterglow time ≤ 2 s Remain functional	---

SUMMARY

FS LONG SHIRT 11612 LITE AND VARIANT TIGHT IN ACCORDANCE WITH THE STANDARD UNE-EN ISO 11612:2010

TEST	RESULTS	REQUISITES	REPORT No. & NOTIFIED BODY
Dimensional stability after 5 washing cycles 40ºC	Shirt Achieved	According to the point 5.3 of the standard UNE-EN ISO 11612 ≤ ±3% (woven) or ≤ ±5% (knitted)	2015EP1865 AITEX
	Tight Achieved		
Tensile strength after 5 washing cycles to 40ºC	Not applicable	≥ 300N	---
Tear strength after 5 washing cycles to 40ºC	Not applicable	≥ 15N	---
Burst resistance after 5 washing cycles to 40ºC	Area 7,3 cm^2 245.6 KPa	≥ 200 KPa	2015EP1865 AITEX
Seams resistance after 5 washing cycles to 60ºC	Not applicable	≥ 225N	---
Fat content of leather	Not applicable	≤ 15%	---
pH determination	Achieved 7.20	Between 3.5 and 9.5	2015EP1865 AITEX
Chromium (VI) content	Not applicable	Point 6.9.3 in the standard	---
Convective heat after 5 washing cycles to 40ºC	Level B1 HTIª 24: 5,6 s	Level B1 4 ≤ HTIª 24 < 10	2015EP1865 AITEX
Radiant heat after 5 washing cycles to 40ºC	Level C1 RHTIª 24: 12,7 s	Level C1 7 ≤ RHTIª 24 < 20	2015EP1865 AITEX
Splashes of molten aluminium after 5 washing cycles to 40ºC	Not tested	Point 7.4 in the standard	---
Splashes of molten iron after 5 washing cycles to 40ºC	Not tested	Point 7.5 in the standard	---
Contact heat after 5 washing cycles to 40ºC	Level F1 T (s) = 7,4 s	Level F1 5 ≤ T (s) < 10	2015EP1865 AITEX

SUMMARY

FS LONG SHIRT 11612 LITE AND VARIANT TIGHT IN ACCORDANCE WITH THE STANDARD UNE-EN 1149-3:2004 AND UNE-EN 1149-5:2008

TEST	RESULTS	REQUISITES	REPORT No. & NOTIFIED BODY
Charge decay after 5 washing cycles at 40ºC	S = 0,00 t_{50} = 2,90 s	S > 0,2 or t_{50}< 4 s	2015EP1865 AITEX
Design	Achieved	Point 4.2 in the standard	2015EP1865CE AITEX

SUMMARY

THIS PPE FS LONG SHIRT 11612 LITE AND VARIANT TIGHT COMPRISES THE FOLLOWING MATERIALS

The PPE is manufactured, according to documentation supplied by the client in:

- Dark grey knitted fabric, composition 68% viscose, 16% meta-aramid, 13% modacrylic, 2% elastane and 1% carbon fibre, with an approximate weight of 170 g/m².

EQUIVALENCE

Conversion table of the different standards of certification and marked.

EN ISO 13688:2003

UNE-EN ISO 11611:2008 equivalente a EN ISO 11611:2007

UNE-EN ISO 11612:2010 equivalente a EN ISO 11612:2008

UNE-EN 13034:2005+A1:2009 equivalente a EN 13034:2005+A1:2009

UNE-EN ISO 14116:2008 equivalente a EN ISO 14116:2008

UNE-EN 15614:2007 equivalente a EN 15614:2007

UNE-EN 469:2006+A1:2007 equivalente a EN 469:2005+A1:2006

UNE-EN 420:2004+A1:2010 + ERRATUM:2011 equivalente a EN 420:2003+A1:2009

UNE-EN 388:2004 equivalente a EN 388:2003

UNE-EN 12477:2002+A1:2005 equivalente a EN 12477:2001+A1:2005

UNE-EN 407:2005 equivalente a EN 407:2004

UNE-EN 511:2006 equivalente a EN 511:2006

UNE-EN 659:2009+A1:2009 equivalente a EN 659:2003+A1:2008

Lucia Martinez
Head of PPE´s department

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