

TECHNICAL REPORT

2019EP2757UE

DATE OF RECEPTION

13/09/2019

APPLICANT

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IDENTIFICATION AND DESCRIPTION OF SAMPLES

REFERENCES

FS Long Tight 11612 Lite + FS Long Shirt 11612 LITE and variant neck tube

TESTS CARRIED OUT

- EU TYPE CERTIFICATION
- DOCUMENT REVISION

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.



OBSERVATIONS

PPE TYPE SET referenced FS Long Tight 11612 Lite + FS Long Shirt 11612 LITE and variant neck tube presented for the "EU" Type certification to comply with the Regulation (EU) 2016/425, based on the standards EN ISO 13688:2013, EN ISO 11612:2015, EN 1149-5:2018 and IEC 61482-2:2018.

The customer has presented the following documentation:

- Technical documentation with:
 1. PPE description and end use.
 2. Risks assessment.
 3. Essential requirements for health and safety.
 4. Pictures or plans.
 5. Identity or signs indications in what refers to health and safety.
 6. Achieved levels on the tests, degrees and protection classes.
 7. Control means.
- Informative leaflet with:
 1. Name and full address of the manufacturer.
 2. Instructions of use, cleaning, storing and maintenance.
 3. Achieved levels on the tests, degrees and protection classes.
 4. Compliance pictograph.
 5. PPE manufacturing or expiration date.
 6. Packaging type.
 7. Protection against risks.
 8. Reference to the Regulation.
 9. Name, address and identification number of the notified body.
 10. Standard (s) used, including the date.
 11. How EU Type declaration of conformity can be accessed.

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OBSERVATIONS

The customer has presented the following samples:

- One (1) complete garment from the PPE FS Long Tight 11612 Lite + FS Long Shirt 11612 LITE and variant neck tube
- One and a half meter (1,5 m) of fabric from the PPE FS Long Tight 11612 Lite + FS Long Shirt 11612 LITE and variant neck tube

With compliance to the Regulation (EU) 2016/425.

The PPE described in the present report has been submitted to EU Type examination and after its fulfillment, the certificate has been issued giving conformity of the model with the standards EN ISO 13688:2013, EN ISO 11612:2015, EN 1149-5:2018 and IEC 61482-2:2018.

The PPE CAT. III. should be used only in relation to one of the conformity assessment procedures according to Module C2 or Module D described in Article 19 letter c) of the Regulation (EU) 2016/425.

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DESCRIPTION OF SAMPLES

FS Long Tight 11612 Lite + FS Long Shirt 11612 LITE and variant neck tube

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 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
S/M	169-178	92-99	79-87
M/L	174-182	98-105	86-94
L/XL	179-185	100-107	88-97
XL/XXL	180-186	106-113	95-104
XXL/XXXL	186-191	108-116	98-108

The PPE can present the following variants:

- The PPE may present the collar variant, consisting of one piece of knitted fabric joined by a vertical seam inside, referenced as Fireshelter Tube.



SUMMARY

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

TEST	RESULTS	REQUISITES	REPORT No.
Determination of chromium (VI)	Not applicable	< 3mg/kg	---
Nikel discharge	Not applicable	< 0,5µg/cm ² for week	---
pH determination	Achieved 7,20	Between 3,5 and 9,5	2015EP1865
Determination of forbidden azoic colorants	Not detected	None detected	2015EP1865
Design	Achieved	Point 4.4 in the standard	2019EP2756
Ergonomics	Achieved	Point 4 in the standard	2016EP1588CE
Dimensional stability after 5 washing cycles 40°C	Shirt Achieved	According to the point 5.3 of the standard EN ISO 13688 ≤ ±3% (woven) or ≤ ±5% (knitted)	2015EP1865
	Tight Achieved		
Sizing	Garment Achieved	Point 6 in the standard	2015EP1865
	Higher collar Achieved		2016EP1588
Marking	Achieved	Clause 7 in the standard	2019EP2757UE



SUMMARY

FS LONG TIGHT 11612 LITE + FS LONG SHIRT 11612 LITE AND VARIANT NECK TUBE IN ACCORDANCE WITH THE STANDARD EN ISO 11612:2015

TEST	RESULTS	UNCERTAINTY	REQUISITES	REPORT No.
Design	Achieved	---	Point 4 in the standard EN ISO 11612	2019EP2756
Heat resistance principal fabric at 180°C after 5 washing cycles at 40°C	Achieved Warp: -0,7% Weft : -1,4%	± 0,6 %	No ignite No melt No shrink by more than 5 %	2015EP1865
Heat resistance hardware at 180°C after 5 washing cycles to 40°C	Not applicable	---	No ignite No melt Closure system opening	---
Heat resistance principal fabric at 260°C after 5 washing cycles at 40°C	Not tested	± 0,6 %	No ignite No melt No shrink by more than 10 %	---
Limited flame spread at the principal fabric (Procedure A)	Achieved Afterflame time: 0s	± 0,29 %	No flames reach the edges No flaming or molten debris After flame time ≤ 2 s Afterglow time ≤ 2 s	2019EP2756
Limited flame spread after 5 washing cycles at 60°C at principal fabric (Procedure A)	Afterglow time.: 0s A1			
Limited flame spread at the principal fabric (Procedure B)	Achieved Afterflame time: 0s	± 0,29 %	No flames reach the edges No flaming or molten debris After flame time ≤ 2 s Afterglow time ≤ 2 s	2015EP1865
Limited flame spread after 5 washing cycles at 40°C at principal fabric (Procedure B)	Afterglow time.: 0s A2			
Limited flame spread after 5 washing cycles at 40°C at seams (Procedure A)	Achieved Afterflame time: 0s Afterglow time.: 0s A1	± 0,29 %	No flames reach the edges No flaming or molten debris After flame time ≤ 2 s Afterglow time ≤ 2 s Seams do not separate	2015EP1865



SUMMARY

FS LONG TIGHT 11612 LITE + FS LONG SHIRT 11612 LITE AND VARIANT NECK TUBE IN ACCORDANCE WITH THE STANDARD EN ISO 11612:2015

TEST	RESULTS	UNCERT AINTY	REQUISITES	REPORT No.
Limited flame spread after 5 washing cycles at 40°C at seams (Procedure B)	Achieved Afterflame time: 0s Afterglow time.: 0s A2	± 0,29 %	No flames reach the edges No flaming or molten debris After flame time ≤ 2 s Afterglow time ≤ 2 s Seams do not separate	2015EP1865
Limited flame spread after 5 washing cycles at 40°C at hardware (Procedure A)	Achieved Afterflame time: 0s Afterglow time.: 0s A1	± 0,29 %	No flames reach the edges No flaming or molten debris After flame time ≤ 2 s Afterglow time ≤ 2 s Closures open	2015EP1865
Dimensional stability after 5 washing cycles at 40°C	Shirt Achieved	---	≤ ±3% (Woven, non-woven, aluminized fabric) or ≤ ±5% (Knitted)	2015EP1865
	Tight Achieved			
Tensile strength after 5 washing cycles to 40°C	Not applicable	± 2,0%	≥ 300N (woven) ≥ 60N (leather)	---
Tear strength after 5 washing cycles to 40°C	Not applicable	± 3,9%	≥ 10N (woven or leather)	---
Burst resistance after 5 washing cycles to 40°C	245,6 KPa	± 8,0%	≥ 200 kPa (7,3cm ²)	2015EP1865
Burst resistance after 5 washing cycles to 40°C of the fabric of the seams	325,4 kPa	± 8,0%	≥ 100 kPa (50cm ²) ≥ 200 kPa (7,3cm ²)	2016EP0018
Seams resistance after 5 washing cycles to 40°C	Not applicable	± 6,1%	≥ 225N	---
Fat content of leather	Not applicable	---	≤ 15%	---
Convective heat after 5 washing cycles to 40°C	Level B1 HTI ^a 24: 5,6s	± 0,14%	Level B1 4 ≤ HTI ^a 24 < 10	2015EP1865
Radiant heat after 5 washing cycles to 40°C	Level C1 RHTI ^a 24: 12,7s	± 0,34%	Level C1 7 ≤ RHTI ^a 24 < 20	2015EP1865
Splashes of molten aluminum after 5 washing cycles to 60°C	Not tested	---	Point 7.4 in the standard	---
Splashes of molten iron after 5 washing cycles to 60°C	Not tested	---	Point 7.5 in the standard	---
Contact heat after 5 washing cycles to 40°C	Level F1 T _t = 7,4 s	± 0,13%	Level F1 5 ≤ T _t < 10	2015EP1865
Marking	Achieved	---	Clause 10 in the standard	2019EP2757UE



SUMMARY

FS LONG TIGHT 11612 LITE + FS LONG SHIRT 11612 LITE AND VARIANT NECK TUBE IN ACCORDANCE WITH THE STANDARD EN 1149-5:2018

TEST	RESULTS	REQUISITES	REPORT No.
Surface resistivity after 5 washing cycles at 40°C	Not tested	$\leq 2,5 \cdot 10^9 \Omega$	---
Charge decay after 5 washing cycles at 40°C	S = 0,00 $t_{50} = 2,90$ s	$t_{50} < 4$ s. or $S > 0,2$	2015EP1865
Design	Achieved	Point 4.2 in the standard	2019EP2756
Calculation of capacity by conductive parts	Not applicable	Clause 4.2.2.3 in the standard	---
Marking	Achieved	Clause 5 in the standard	2019EP2757UE



RESUMEN / SUMMARY

FS LONG TIGHT 11612 LITE + FS LONG SHIRT 11612 LITE AND VARIANT NECK TUBE IN ACCORDANCE WITH THE STANDARD IEC 61482-2:2018

TEST	RESULTS	REQUISITES	REPORT No.
Electrical arc after 5 washing cycles at 40°C	Fabric APC =1	APC =1 (4kA)	2015EP2747
	Garment APC =1		
Heat resistance principal fabric at 180°C after 5 washing cycles at 40°C	Achieved Warp: -0,7% Weft : -1,4%	No ignite No melt No shrink by more than 5%	2015EP1865
Limited flame spread after 5 washing cycles at 60°C (Procedure A)	Achieved	Afterflame toward the edge ≤ 2s. No specimen shall give flaming. Hot coal must not spread No hole Afterflame ≤ 2s	2019EP2756
Tensile strength after 5 washing cycles to 40°C	Not applicable	≥ 400N	---
Tear strength after 5 washing cycles to 40°C	Not applicable	≥ 15N	---
Burst resistance after 5 washing cycles to 40°C	245,6 KPa	≥ 200 kPa (7,3cm ²)	2015EP1865
Dimensional stability after 5 washing cycles at 40°C	Shirt Achieved	≤ ±3% (<i>woven</i>) or ≤ ±5% (<i>knitted</i>)	2015EP1865
	Tight Achieved		
Determination of melting points by DSC (Differential Scanning Calorimeter)	Achieved	No ignite or melt	2019EP2756
Volume resistance after 5 washing cycles at 40°C	4,54 · 10 ⁵ Ω	> 10 ⁵ Ω	2019EP2756
Design	Achieved	Punto 4.2 de la norma <i>Point 4.2 according to the standard</i>	2019EP2756
Durability of marking	Achieved	Point 5.5.2 according to the standard	2019EP2756
Marking	Achieved	Punto 5.5 de la norma <i>Point 5.5 of the standard</i>	2019EP2757UE



CONCLUSION OF THE CONFORMITY EVALUATION

AITEX, Notified Body N° 0161, concludes that:

The PPE FS Long Tights 11612 Lite + FS Long Shirt 11612 LITE and variant neck tube, complies with all essential Requirements as regards health and safety in compliance with the indications in (EU) 2016/425 in compliance with harmonised standards EN ISO 13688:2013: "Protective Clothing – General Requirements" and EN 1149-5:2018 against risk of accumulated electrostatic charge.

The NB has confirmed that the General Requirements for Health and Safety in Annex II, both for Directive 89/686/EEC and Regulation (EU) 2016/425, points 3.6 respectively "Protection against heat and flame" only differ in point 3.6.1: "Constituent materials and other components of the PPE" with respect to the inclusion as regards thermal protection against electrical arc. As this PPE is designed to provide protection against arc flash, the previously-mentioned difference is applicable.

The NB has taken as reference non-harmonised standard EN ISO 11612: 2015, but since it does not cover all the requirements of the Regulation, it is additionally verified with the application of IEC 61482-2:2018, to verify the new requirement. The levels achieved by the PPE are the following: EN ISO 11612: 2015: "Protective clothing against heat and flame", with the following degrees of thermal protection: Limited flame propagation codes **A1 and A2**; Convective Heat **B1**; Radiant heat **C1**, Heat by contact **F1**, and IEC 61482-2:2018 **APC=1**.

This PPE is not intended for other thermal protection uses not evaluated in this technical report.

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- 11.- The original materials and rests of samples, not subject to test, will be retained in AITEC during the twelve months following the issuance of the report, so that any check or claim which, in his case, wanted to make the applicant, should be exercised within the period indicated.
- 12.- This report may only be sent or delivered by hand to the applicant or to a person duly authorised by the same.
- 13.- The results of the tests and the statement of compliance with the specification in this report refer only to the test sample as it has been analyzed / tested and not the sample / item which has taken the test sample.
- 14.- The client must attend at all times, to the dates of the realization of the tests.
- 15.- According to Resolution EA (33) 31, the test reports must include the unique identification of the sample, and any brand or label of the manufacturer may be added. It is not allowed to re-issue test reports of untested sample names (references), they can only be re-issued for error correction or inclusion of omitted data that were already available at the time of the test. The laboratory can not assume responsibility for declaring that the product with the new trade name / trademark is strictly identical to the one originally tested; This responsibility belongs to the client.