INSTITUTE FOR TESTING AND CERTIFICATION
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EVALUATION REPORT

Ref. No.: 723302247/2022

Customer: **GoodPRO, s.r.o.**
Dukelská 1247
334 01 Přeštice
Czech Republic

Product: **Protective clothing for firefighters**
Type: FR2 FireSnake / HV / M / M HV

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NOTIFIED BODY 1023 INSTITUTE FOR TESTING AND CERTIFICATION 1

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Representative of Notified Body No.1023

Introduction

This Evaluation Report was issued on the basis of Application No. 723302247 for the assessment of conformity of personal protective equipment (PPE) with the basic requirements of Regulation (EU) 2016/425 of the European Parliament and of the Council of 9 March 2016 on personal protective equipment and repealing Council Directive 89/686/EEC.

This assessment should prove the fulfilment of EU legislation requirements for the purpose of the access of the assessed products to the EU market.

1. Identification of assessed personal protective equipment

A detailed description of the design and structure, including the drawing documentation and specifications of materials used, is given in the file of technical documentation of the product called Protective clothing for firefighters, type: FR2 FireSnake / HV / M / M HV.

The submitted documentation covers the following models and alternatives of the product:
Protective clothing for firefighters, type: FR2 FireSnake / HV / M / M HV
(sample No. 723302247/A)

Design: coat + trousers, overalls

FR2 FireSnake

Basic material:	Fabric **art. 46109230** composition: 50 % aramide / 49 % Lenzing FR, 1 % antistat mass per unit area: 230 g/m^2 colour: navy (alternatively: red, gold) producer: Theodolf Fritsche GmbH

FR2 FireSnake HV

Basic material (Upper material):	Fabric **art. 46109230** composition: 50 % aramide / 49 % Lenzing FR, 1 % antistat mass per unit area: 230 g/m^2 colour: navy (alternatively: red, gold) producer: Theodolf Fritsche GmbH
Background fluorescent material:	art. 8937 – Vulcan composition: 64 % Lenzing FR, 35 % aramide, 1 % antistat mass per unit area: 230 g/m^2 colour: yellow HV producer: Textil Santaderina

FR2 FireSnake M

Basic material (Upper material):	Fabric **art. 46109230** composition: 50 % aramide / 49 % Lenzing FR, 1 % antistat mass per unit area: 230 g/m^2 colour: navy (alternatively: red, gold) producer: Theodolf Fritsche GmbH

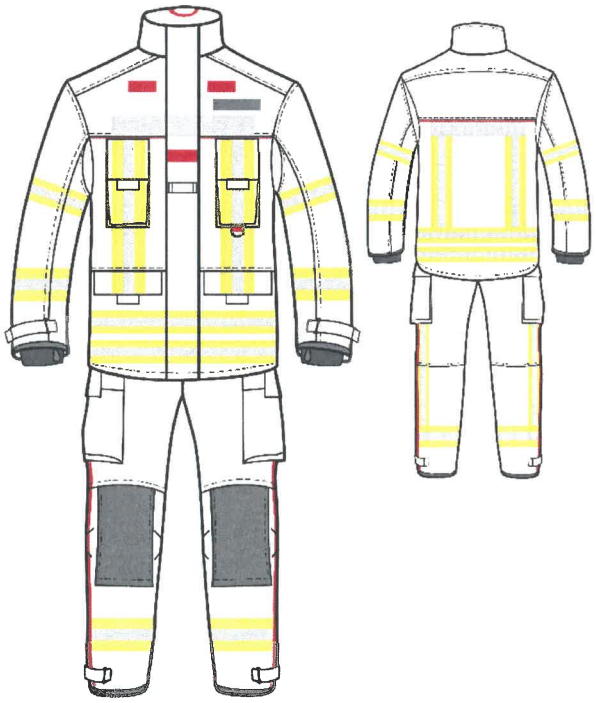
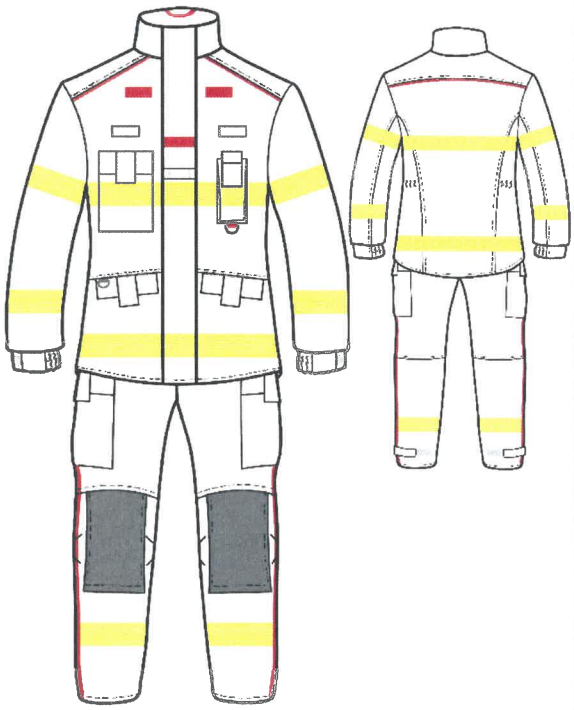
Moisture barrier with lining:	art. H974 composition: 50 % aramide / 50 % Lenzing FR, TOPAZ PUFR membrane mass per unit area: 165 g/m^2 producer: Trans Textil, GmbH

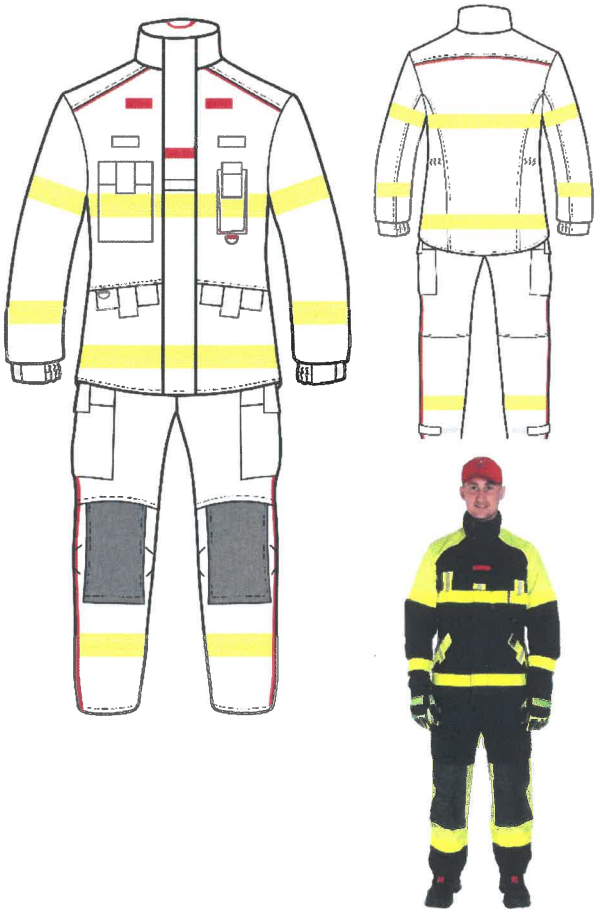
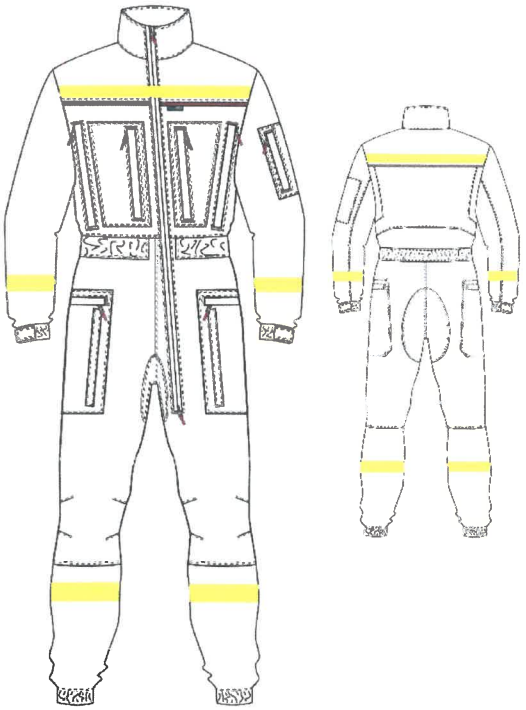
FR2 FireSnake M HV

Basic material (Upper material):	Fabric **art. 46109230** composition: 50 % aramide / 49 % Lenzing FR, 1 % antistat mass per unit area: 230 g/m^2 colour: navy (alternatively: red, gold) producer: Theodolf Fritsche GmbH
Background fluorescent material:	art. 8937 – Vulcan composition: 64 % Lenzing FR, 35 % aramide, 1 % antistat mass per unit area: 230 g/m^2 colour: yellow HV producer: Textil Santaderina
Moisture barrier with lining:	art. H974 composition: 50% aramide/50% Lenzing FR, TOPAZ PUFR membrane mass per unit area: 165 g/m^2 producer: Trans Textil, GmbH
Reinforcing material:	art. 44205400000803 composition: 100 % para-aramid, antistatic coating silicon/carbon mass per unit area: 390 g/m^2 producer: Theodolf Fritsche GmbH & Co. KG
Sewing threads:	N-Tech 70, meta-aramide fiber, various colours producer: AMANN
Visible materials:	**art. 301** – width 25, 50 mm, silver producer: PREALUX S.r.l alternatively **art. 205HFR/CUT** – width 25 a 50 mm, silver, segmented producer: PREALUX S.r.l alternatively **art. 202HFR/CUT** – width 75 a 50 mm, yellow-silver-yellow, segmented producer: PREALUX S.r.l alternatively **art. 310CP** – width 25, 50 mm, yellow, perforated producer: PREALUX S.r.l alternatively **art. 306** – width 50 mm, yellow-silver-yellow, perforated producer: PREALUX S.r.l alternatively **art. Scotchlite 8987** – width 25, 50 mm, yellow producer: 3M

Hardware:	**Velcro** art. Coats Connect FR (producer: Coats Thread Germany GmgH) **metal zipper**
External knee protector:	art. LEV250, foamed silicone mass per unit area: 250 g/m^3 producer: EBK ERET BERNARD, s.r.o.

Design:

Coat and trousers – design HuPF	Coat and trousers
	

Coat and trousers - HV	Overalls
	

Knee reinforcement to insert an external knee pad


Intended use of the personal protective equipment

Protective clothing – outer clothing to be worn with underwear – protects the wearer's body except hands and feet from heat and/or flame (performance levels according to EN ISO 11612: **A1** – limited flame spread, **B1** – convective heat, **C1** – radiant heat, **F2** – contact heat).

It is also electrostatic dissipative clothing, used as a part of a total earthed system, to avoid incendiary discharges.

Protective clothing (**type 6**, for limited repeated use) protects before potential exposure by light spraying, liquid aerosol or low pressure, low spraying volume of by small amount of diluted chemicals (acids, bases).

The clothing design **FR2 FireSnake** and **FR2 FireSnake HV** is intended to protect fire-fighter's body (except for their head, hands and feet) during the extinguishing of fires in open terrain and associated activities.

The clothing design **FR2 FireSnake M** and **FR2 FireSnake M HV** protects against bad weather (for example rain, snow), fog and soil humidity (Performance levels according ČSN EN 343: resistance to water penetration – **Class 4**, resistance to water vapour penetration – **Class 4**).

Classification of the Personal Protective Equipment

Protective clothing for firefighters, type: FR2 FireSnake / HV / M / M HV was classified as PPE Category III by the manufacturer.

2. Technical documentation

Technical documentation was submitted in the Czech language to assess the conformity of the Protective clothing for firefighters, type: FR2 FireSnake / HV / M / M HV on 2021-05-27 (final version on 2022-05-20). The file of technical documentation contains the items according to Annex III of the Regulation (EU) 2016/425 of the European Parliament and of the Council.

3. Regulation (EU) 2016/425 of the European Parliament and of the Council of 9 March 2016 on personal protective equipment

3.1 Basic requirements for the product and its specification in technical specifications

Basic requirements are set by Regulation (EU) 2016/425 of the European Parliament and of the Council of 9 March 2016 on personal protective equipment.

Tables No. 1 through 3 state the analysis of applicability of basic requirements according to Annex II of Regulation (EU) 2016/425 in the right column, supplemented in case of applicable requirements by articles of harmonised standards stated in their harmonisation annex ZA or other technical specifications used for proving the conformity with respective partial requirement. "A" letter in the third column of the tables means that these requirements has been used for the given PPE, the "N/A" abbreviation (not applicable) means the requirement does not apply to the given PPE because it is irrelevant for the given intended use and/or the material used.

Column 4 of Tables No. 1 – 3 states the articles of harmonised standards which are linked, by means of cross links in the harmonisation annex ZA, to the respective basic requirement of Regulation (EU) 2016/425. Meeting these articles of the harmonised standard proves the conformity of the product with the given basic requirement stated in the right column.

The fifth column of Tables No. 1 – 3 states the articles of non-harmonised technical specifications by which the manufacturer proves the conformity with the respective basic requirement which is not included in harmonisation. These can be articles of non-harmonised national or international standards as well as articles of harmonised standards which are not connected with the given requirement by a link in the harmonisation annex ZA. In extraordinary cases, the respective basic requirement can be set quite specifically by the Regulation so the conformity can be assessed directly with this article of the Regulation without any necessity to specify the required by means of a harmonised standard or other technical specification.

In case of applicable requirements, the last column of Tables No. 1– 3 states the assessment of the given requirement, whether PPE passes or does not pass. "P" letter means PPE passes the given requirement, "N/P" means it does not pass it.

Table No. 1: Overview of basic requirements and technical specifications used in the PPE design. General requirements applicable to all PPE

Requirement number in Annex II	Requirement description	Application A – N/A	Article of the harmonised/non-harmonised standard specifying the requirement (according to Annex ZA)	other technical specification or the manner of proving the compliance with the requirement	Assessment P – N/P
1.1	Design principles	A		EN ISO 13688/A1, art. 4.3 EN ISO 11612, art. 4 + Annex C EN 1149-5, art. 4.2.2 EN 13034+A1, art. 5 EN 16689, art. 4 EN ISO 15384/A1, art. 4	P
1.1.1	Ergonomics	A		EN ISO 13688/A1, art. 4.4.1, Annex C.3 EN 13034+A1, art. 5.2 EN 16689, Annex D EN ISO 15384/A1, art. 8	P
1.1.2	Levels and classes of protection	A		See requirements 1.1.2.1. and 1.1.2.2 below	P
1.1.2.1	Optimum level of protection	A		See requirements 1.1.2.2 below	P
1.1.2.2	Classes of protection appropriate to different levels of risks	A		EN 1149-5, art. 4.2 EN ISO 11612, art. 6.3.2, 6.3.3, 7.2, 7.3, 7.6 EN 13034+A1, art. 4.1 EN 343, art. 4.2, 4.3	P
1.2	Innocuousness of PPE	A		See requirements 1.2.1, 1.2.1.1, 1.2.1.2 and 1.2.1.3 below	P
1.2.1	Absence of risks and other inherent nuisance factors	A	EN ISO 13688/A1, art. 5.3 EN ISO 11612, art. 4.2.2, 4.2.3, 4.3, 4.4, 4.5, 6.2, 6.4 EN 13034+A1, art. 4.1 EN 343, art. 4.1.1, 4.2, 4.3, 4.7 EN 16689, art. 4.1, 4.4, 4.5, 4.6, 4.7, 4.8, 4.9, 7.6	EN ISO 15384/A1, art. 4, 6.3, 8.1, 9.1	P

Requirement number in Annex II	Requirement description	Application A – N/A	Article of the harmonised/non-harmonised standard specifying the requirement (according to Annex ZA)	other technical specification or the manner of proving the compliance with the requirement	Assessment P – N/P
1.2.1.1	Suitable constituent materials	A	EN ISO 13688/A1, art. 4.2 EN 343, art. 4.1.2		P
1.2.1.2	Satisfactory surface condition of all PPE parts in contact with the user	A	EN ISO 13688/A1, art. 4.4 EN 13034+A1, art. 4.1 EN 343, art. 4.1.1		P
1.2.1.3	Maximum permissible user impediment	A	EN 13034+A1, art. 5.1, art. 5.2	See requirements 1.1.1 above See requirements 1.3.1, 1.3.2, 1.3.3 below	P
1.3	Comfort and effectiveness	A		See requirements 1.3.1, 1.3.2, 1.3.3 below	P
1.3.1	Adaptation of PPE to user morphology	A	EN ISO 11612, art. 4.2.2	See requirements 1.1.1 above EN ISO 11612, art. 4.2	P
1.3.2	Lightness and design strength	A	EN ISO 11612, art. 6.5 EN 13034+A1, art. 4.1, 4.2.2 EN 343, art. 4.4, 4.5, 4.8, 5.3, 5.4, 5.5 EN 16689, art. 7.1, 7.2, 7.3	EN ISO 15384/A1, art. 7.1, 7.2, 7.3	P
1.3.3	Compatibility of different classes or types of PPE designed for simultaneous use	A	EN 13034+A1, art. 7	EN ISO 13688/A1, art. 4.3.1	P
1.3.4	Protective clothing containing removable protectors	A		Direct assessment of conformity with art. 1.3.4, of Annex II Regulation PPE	P
1.4	Manufacturer's instructions and information	A	EN ISO 13688/A1, art. 8 EN ISO 11612, art. 5.2 EN 1149-5, art. 4.1, 6 EN 343, art. 5.2, 9 EN 16689, art. 5.2.1, 9	EN ISO 11612, art. 11 EN 13034+A1, art. 7 EN ISO 15384/A1, art. 11	P

Table No. 2: Overview of basic requirements and technical specifications used in the PPE designing. Additional requirements common to several classes or types of PPE

Requirement number in Annex II	Requirement description	Application A – N/A	Article of the harmonised/non-harmonised standard specifying the requirement (according to Annex ZA)	Other technical specification or the manner of proving the compliance with the requirement	Assessment P – N/P
2.1	PPE incorporating adjustment systems	N/A			
2.2	PPE enclosing the parts of the body to be protected	A	EN 16689, art. 7.7	Direct assessment of conformity with art. 2.2, Annex II of PPE Regulation EN ISO 15384/A1, art. 8.2	P
2.3	PPE for the face, eyes and respiratory system	N/A			
2.4	PPE subject to ageing	A	EN ISO 11612, art. 5.3 EN 13034+A1, art. 5.1, 7 EN 343, art. 6.11 EN 16689, art. 5.2.2	EN ISO 13688, art. 5 EN ISO 15384/A1, art. 5.6	P
2.5	PPE which may be caught up during use	N/A			
2.6	PPE for use in potentially explosive atmospheres	A	EN 1149-5, art. 4.2 EN 16689, art. 7.5		P
2.7	PPE intended for rapid intervention or to be put on or removed rapidly	N/A			
2.8	PPE for intervention in very dangerous situations	A	EN 16689, art. 9		P
2.9	PPE incorporating components which can be adjusted or removed by the user	N/A			
2.10	PPE for connection to complementary equipment external to the PPE	N/A			
2.11	PPE incorporating a fluid circulation system	N/A			
2.12	PPE bearing one or more identification markings or indicators directly or indirectly relating to health and safety	A	EN ISO 13688/A1, art. 6, 7 EN ISO 11612, art. 8 EN 1149-5, art. 5 EN 13034+A1, art. 6, 7 EN 343, at. 8 EN 16689, art. 8	EN ISO 15384/A1, art. 10	P
2.13	PPE capable of signalling the user's presence visually	A	EN 16689, art. 7.9	EN ISO 15384/A1, art. 9.2	P
2.14	'Multi-risk' PPE	A		EN ISO 11612 EN 1149-5 EN 13034+A1 EN 343 EN 16689 EN ISO 15384/A1	P

Table No. 3: Overview of basic requirements and technical specifications used in the PPE designing. Additional requirements specific to particular risks

Requirement number in Annex II	Requirement description	Application A – N/A	Article of the harmonised/non-harmonised standard specifying the requirement (according to Annex ZA)	Other technical specification or the manner of proving the compliance with the requirement	Assessment P – N/P
3.1	Protection against mechanical impact	N/A			
3.1.1	Impact caused by falling or ejected objects and collision of parts of the body with an obstacle	N/A			
3.1.2	Falls	N/A			
3.1.2.1	Prevention of falls due to slipping	N/A			
3.1.2.2	Prevention of falls from a height	N/A			
3.1.3	Mechanical vibration	N/A			
3.2	Protection against static compression of part of the body	N/A			
3.3	Protection against mechanical injuries	N/A			
3.4	Protection in liquids	N/A			
3.4.1	Prevention of drowning	N/A			
3.4.2	Buoyancy aids	N/A			
3.5	Protection against the harmful effects of noise	N/A			
3.6	Protection against heat and/or fire	A		See requirements art. 3.6.1 and 3.6.2 below	P
3.6.1	PPE constituent materials and other components	A	EN ISO 11612, art. 5.2.1, 6.3, 7.2, 7.3, 7.6 EN 16689, art. 6.2	EN ISO 15384/A1, art. 6.1, 6.2, 6.3	P
3.6.2	Complete PPE ready for use	A	EN ISO 11612, art. 7.2, 7.3, 7.6 EN 16689, art. 6.3, 6.4		P
3.7	Protection against cold	N/A			
3.7.1	PPE constituent materials and other components	N/A			
3.7.2	Complete PPE ready for use	N/A			
3.8	Protection against electric shock	N/A			
3.8.1	Insulating equipment	N/A			
3.8.2	Conductive equipment	N/A			
3.9	Radiation protection	N/A			
3.9.1	Non-ionising radiation	N/A			
3.9.2	Ionising radiation	N/A			
3.9.2.1	Protection against external radioactive contamination	N/A			
3.9.2.2	Protection against external irradiation	N/A			
3.10	Protection against substances and mixtures which are hazardous to health and against harmful biological agents	A	EN 13034+A1, art. 4.1, 4.2.1, 5.1, 5.2		P

Requirement number in Annex II	Requirement description	Application A – N/A	Article of the harmonised/non-harmonised standard specifying the requirement (according to Annex ZA)	Other technical specification or the manner of proving the compliance with the requirement	Assessment P – N/P
3.10.1	Respiratory protection	N/A			
3.10.2	Protection against cutaneous and ocular contact	A	EN 13034+A1, art. 4.1, 4.2.1, 5.1, 5.2		P
3.11	Diving equipment	N/A			

When designing the product, the manufacturer applied the following standards harmonised to Regulation (EU) 2016/425

ČSN EN ISO 13688:2014/A1:2022 *(EN ISO 13688:2013/A1:2021)*
Protective clothing – General requirements

ČSN EN 1149-5:2019 *(EN 1149-5:2018)*
Protective clothing – Electrostatic properties – Part 5: Material performance and design requirements

ČSN EN 13034+A1:2009 (EN 13034:2005+A1:2009)
Protective clothing against liquid chemicals - Performance requirements for chemical protective clothing offering limited protective performance against liquid chemicals (Type 6 and Type PB [6] equipment)

ČSN EN 343:2020 *(EN 343:2019)*
Protective clothing – Rain protection

and non-harmonized standards:

ČSN EN ISO 11612:2015 (EN ISO 11612:2015)
Protective clothing – Clothing to protect against heat and flame – Minimum performance requirements

ČSN EN 16689:2020 (EN 16689:2017)
Protective clothing for firefighters – Performance requirements for protective clothing for technical rescue

ČSN EN ISO 15384:2020/A1:2022 *(EN ISO 15384:2020/A1:2021)*
Protective clothing for firefighters - Laboratory test methods and performance requirements for wildland firefighting clothing

3.2 Indicators specifying basic requirements and test methods

Indicators specifying applicable basic requirements (marked with "A" in the third column of Tables No. 1 through 3):

- basic health and ergonomic requirements
    - health safety, design, ergonomic properties
- dimensional changes after washing and drying
- performance requirements – protection against heat and flame

  - heat resistance
  - limited flame spread
  - tensile strength
  - tear strength
  - seam strength
  - convective heat
  - radiant heat
  - contact heat
- performance requirements – protection against rain
  - resistance to water penetration
  - resistance to water vapour penetration
  - tensile strength
  - seam strength
  - tear strength
  - dimensional changes after washing and drying
- protection against liquid chemicals
  - resistance to abrasion
  - tear resistance – trapezium method
  - tensile strength
  - seam strength
  - puncture resistance
  - resistance to penetration by liquid
  - resistance to penetration by liquid in form of light spray (spray test – mist test)
- performance requirements – protection for firefighters
  - dimensional changes after washing and drying
  - limited flame spread
  - heat transfer – radiation
  - contact heat
  - tensile strength
  - tear strength
  - abrasion resistance
  - seam strength
  - heat resistance of sewing thread
  - thermal resistance and resistance to water vapour penetration
  - visibility (retroreflective and/or fluorescent performance)
- performance requirements – protection for firefighters for technical interventions – moisture barrier only
  - viral penetration
- requirements on electrostatic properties – half decay time, shielding factor
- sizes, marking, information for use

3.3 Test methods

Table No. 4: Overview of test methods used for evaluating the materials

Properties – materials	Test method
Health safety - pH of water extract - azodyes	 EN ISO 3071 EN 14362-1 (Method HPLC)
Limited flame spread	EN ISO 15025, method A, B *basic material with seam after pre-treatment – 5 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F* *basic material with seam – the test was carried out on new samples (as received)* *basic material with seam after pre-treatment – 5 cycles of maintenance according to EN ISO 6330, procedure 6M, drying procedure F at a lower drying temperature* *background fluorescent material - the test was carried out on new samples (as received)* *background fluorescent material after pre-treatment – 50 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F* *background fluorescent material with seam - the test was carried out on new samples (as received)* *background fluorescent material with seam after pre-treatment - 5 cycles of maintenance according to EN ISO 6330, procedure 6M, drying procedure F at a lower drying temperature* *moisture barrier with lining - the test was carried out on new samples (as received)* *moisture barrier with lining after pre-treatment - 5 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F* *reinforcing material - the test was carried out on new samples (as received)* *reinforcing material after pre-treatment - 5 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F* *Note: The pre-treatment procedures for visible materials and hardware are specified in the individual Test Reports (listed under Table 6)*
Contact heat	ISO 12127-1, temperature 250 °C *basic material after pre-treatment – 5 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F* *background fluorescent material after pre-treatment – 50 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F*
Heat transfer – flame	EN 367/ISO 9151 *basic material after pre-treatment – 5 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F* *background fluorescent material after pre-treatment – 50 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F*
Heat transfer – radiation	EN ISO 6942 heat flux 20 kW/m^2 *basic material – the test was carried out on new samples (as received)* *basic material after pre-treatment – 5 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F* *background fluorescent material after pre-treatment – 50 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F*

Heat transfer – radiation	*background fluorescent material – the test was carried out on new samples (as received)*
Heat resistance	ISO 17493, 180 °C, 260 °C / 5 minutes *basic material after pre-treatment – 5 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F* *background fluorescent material after pre-treatment – 50 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F* *moisture barrier with lining - the test was carried out on new samples (as received)* *moisture barrier with lining after pre-treatment - 5 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F* *visible material art. 306 - 5 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F* *visible material art. 310CP - 30 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F* *reinforcing material - the test was carried out on new samples (as received)* *Note: The pre-treatment procedures for visible materials and hardware are specified in the individual Test Reports (listed under Table 6)*
Heat resistance of the sewing thread	EN ISO 3146, method B *sewing threads – the test was carried out on new samples (as received)*
Tensile strength	EN ISO 13934-1 *basic material after pre-treatment – 5 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F* *background fluorescent material after pre-treatment – 50 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F* *background fluorescent material after pre-treatment – 5 cycles of industrial washing according to EN ISO 15797, temperature 75°C, drying 70°C*
Seam strength	EN ISO 13935-2 *basic material with seam after pre-treatment – 5 cycles of maintenance according to EN ISO 6330, procedure 6M, drying procedure F at a lower drying temperature* *background fluorescent material after pre-treatment - 5 cycles of maintenance according to EN ISO 6330, procedure 6M, drying procedure F at a lower drying temperature*
Tear strength	EN ISO 13937-2 *basic material after pre-treatment – 5 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F* *background fluorescent material after pre-treatment – 50 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F*
Tear strength by trapezoidal method	EN ISO 9073-4 *basic material after pre-treatment – 5 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F* *background fluorescent material after pre-treatment – 5 cycles of industrial washing according to EN ISO 15797, temperature 75°C, drying 70°C*
Abrasion resistance	EN 530, Method 2 *basic material after pre-treatment – 5 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure* *background fluorescent material after pre-treatment – 5 cycles of industrial washing according to EN ISO 15797, temperature 75°C, drying 70°C*

Abrasion resistance	EN ISO 12947-2 *basic material - the test was carried out on new samples (as received)* *background fluorescent material after pre-treatment – 50 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F*
Puncture resistance	EN 863 *basic material after pre-treatment – 5 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F* *background fluorescent material after pre-treatment – 5 cycles of industrial washing according to EN ISO 15797, temperature 75°C, drying 70°C*
Dimensional changes after pre-treatment	EN ISO 5077, EN ISO 6330 *basic material after pre-treatment – 5 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F* *background fluorescent material after pre-treatment – 5 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F* *moisture barrier with lining after pre-treatment - 5 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F* *reinforcing material after pre-treatment - 5 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F*
Resistance to water vapour penetration	EN ISO 11092 *basic material - the test was carried out on new samples (as received)* *background fluorescent material after pre-treatment - 50 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F* *basic material, background fluorescent material / moisture barrier with lining after pre-treatment – 5 cycles of maintenance according to EN ISO 6330, procedure 6M, drying procedure F at a lower drying temperature*
Resistance to water penetration	EN ISO 811, rate of increase in water column pressure (6 000) Pa/min *basic material + moisture barrier with lining with seam after pre-treatment - 5 cycles of maintenance according to EN ISO 6330, procedure 6M, drying procedure F at a lower drying temperature* *background fluorescent material + moisture barrier with lining with seam after pre-treatment - 5 cycles of maintenance according to EN ISO 6330, procedure 6M, drying procedure F at a lower drying temperature*
Resistance to penetration by liquid chemicals 30% H_2SO_4, 10% NaOH, o-xylene, butan-1-ol	EN ISO 6530 *basic material after pre-treatment – 5 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F* *background fluorescent material after pre-treatment – 5 cycles of industrial washing according to EN ISO 15797, temperature 75°C, drying 70°C*
Viral penetration (moisture barrier only)	ISO 16604 (ASTM F-1671), Phi-X174 Bacteriophage, E.coli C
Visibility	EN ISO 20471 (art. 7.2, 7.3)
Half decay time $t_{1/2}$, shielding factor S	EN 1149-3, method 2 *basic material after pre-treatment– 5 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F* *background fluorescent material – the test was carried out on new samples (as received)*
Surface resistance	EN ISO 1149-1 *reinforcing material after pre-treatment– 5 cycles of maintenance according to EN ISO 6330, procedure 6N, drying procedure F*

Table No. 5: Overview of test methods used for evaluating the product

Property – garment	Test method
Design of clothing, sizes	visual assessment, wearing test
Ergonomics, comfort	assessment acc. art. 4.4 and Annex C.3 EN ISO 13688/A1
Marking, information supplied by the manufacturer	visual assessment
Resistance to penetration by liquids in a form of light spraying (mist test)	EN ISO 17491-4 in following the art 5.1 EN 13034+A1 *two-piece clothing design HV after pre-treatment – 5 cycles of maintenance according to EN ISO 6330, procedure 6M, drying procedure F at a lower drying temperature*

3.4 Place and scope of sampling

Samples of the assessed product were delivered by the customer on 2022-02-23 in compliance with instructions of the designated worker of the Notified Body NB 1023 at the quantity of 7 pieces of assessed model, 3 m^2 basic material with seam, 3 m^2 background fluorescent material with seam, 3 m^2 material assembly with seam with basic material and 3 m^2 material assembly with seam with background fluorescent material. With regard to the fact that this is the EU type examination by a notified body, the Customer asking for assessing the conformity is responsible for selecting a sample (or prototype). The test examination does not include inspection activity focused on the conformity of properties of all products introduced to the market with the assessed (proto)type.

3.5 Place of performing the tests and assessment

Tests were performed in the following accredited testing laboratories: Institute for testing and certification, Zlín, Czech Republic; STFI e.V., Chemnitz, Germany; Aitex, Alcoy, Spain; HOHENSTEIN, Bönnigheim, Germany; Centro Tessile Cotoniero e Abbigliamento S.p.A., Busto Arsizio, Italy; Shieley Technologies Limited, Manchester, United Kingdom; Sintex, a.s., Česká Třebová, Czech Republic; HygCen Germany GmbH, Germany.

The documentation was examined and visual inspection and product type assessment were performed in Institute for testing and certification.

3.6 Results of tests and assessment

Results of the personal protective equipment evaluation are summarised in Table No. 6. Test methods stated in respective part of Tables No. 4 and 5 were used.

Table No. 6: Results of evaluation of the Protective clothing for firefighters, type: FR2 FireSnake / HV / M / M HV

Essential property	Measuring unit	Requirement	Assessment / Document No.
Basic health and ergonomic requirements			
- health safety	–	art. 4.2 EN ISO 13688/A1	**passes / D1, D3, D14**
- design	–	art. 4.3 EN ISO 13688/A1 art. 4 ČSN EN ISO 11612 art. 4.2.2 EN 1149-5 art. 5 ČSN EN 13034+A1 art. 4, 9.2 ČSN EN 16689 art. 4 ČSN EN ISO 15384/A1	**passes / D2**
- comfort, ergonomics	–	art. 4.4, Annex C EN ISO 13688/A1 art. 5 ČSN EN 13034+A1 Annex D ČSN EN 16689 art. 4.1.1 EN 343	**passes / D2**
Sizes	–	art. 6 EN ISO 13688/A1 art. 7 EN 343	**passes / D2**
Marking	–	art. 7 EN ISO 13688/A1 art. 10 ČSN EN ISO 11612 art. 5 EN 1149-5 art. 6 ČSN EN 13034+A1 art. 8 EN 343 art. 8 ČSN EN 16689 art. 10 ČSN EN ISO 15384/A1	**passes / D2, D5**
Durability and legibility of the label after washing		The label shall be legible	
Durability and legibility of the label after heat resistance		The label shall be legible	
Durability and legibility of the label after abrasion		The label shall be legible	
Information supplied by the manufacturer	–	art. 8 EN ISO 13688/A1 art. 11 ČSN EN ISO 11612 art. 6 EN 1149-5 art. 7 ČSN EN 13034+A1 art. 9 EN 343 art. 9 ČSN EN 16689 art. 11 ČSN EN ISO 15384/A1	**passes / D2**

Table No. 6 – Continuation from page 17: Results of evaluation of the Protective clothing for firefighters, type: FR2 FireSnake / HV / M / M HV

Essential property	Measuring unit	Requirement	Assessment / Document No.
Dimensional changes after washing and drying *basic material* *background fluorescent material* *moisture barrier with lining* *reinforcing material*	%	art. 5.3 EN ISO 13688/A1 art. 6.4 ČSN EN ISO 11612 art. 4.1 EN 1149-5 art. 7.6 ČSN EN 16689 art. 9 ČSN EN ISO 15384/A1 woven material: ≤ ±3 knitted material: ≤ ±5	**passes / D4, D19, D20, D35** lengthwise / crosswise -3,0 / -1,0 -2,0 / -1,0 -1,7 / -1,7 -1,8 / -1,2
Requirements of EN 1149-5			
Electrostatic properties *basic material / background fluorescent material / visible material art. 306, art.205HFR / CUT / art. 301 / art. 202HFR / CUT*		art. 4.2.1 EN 1149-5	**passes / D4, D21, D27, D28, D31, D37**
- half decay time $t_{1/2}$	s	< 4	< 0,01 / < 0,01 / < 0,01 / < 0,01 / < 0,01 / < 0,01
- shielding factor S	-	> 0,2	0,87 / 0,63 / 0,89 / 0,50 / 0,78 / 0,81
Surface resistance R *Reinforcing material* (coated side / uncoated side)	Ω	art. 4.2.1 EN 1149-5 ≤ $2,5 \times 10^9$ (at least one side)	**passes / D35** $3,4 \times 10^4$ / $4,7 \times 10^{12}$
Requirements of EN ISO 11612			
Heat resistance (180 °C) *basic material (260 °C) / background fluorescent material / moisture barrier with lining / visible material / hardware / seam thread / reinforcing material*	–	art. 6.2.1 ČSN EN ISO 11612 art. 4.3.1 EN 61482-2	**passes / D4, D12, D13, D20, D21, D24, D26, D30, D31, D32, D33, D34, D35, D36, D37, D38**
- behaviour during test	–	- the materials shall not ignite or melt - the hardware shall be 5 minutes after testing at least once opened	- the materials or hardware did not ignite or melt - the hardware remained functional after testing
- shrinkage lengthwise / crosswise *basic material* *background fluorescent material* *moisture barrier with lining* *reinforcing material*	%	lengthwise / crosswise: max. 5	lengthwise / crosswise -0,8 / -1,0 -1,5 / -1,3 -1,1 / -1,1 0 / 0

Table No. 6 – Continuation from page 18: Results of evaluation of the Protective clothing for firefighters, type: FR2 FireSnake / HV / M / M HV

Essential property	Measuring unit	Requirement	Assessment / Document No.
Requirements of EN ISO 11612			
Limited flame spread – method A *as received and after washing:* *basic material / basic material with seam / background fluorescent material / background fluorescent material with seam / moisture barrier with lining* *after washing: visible materials / hardware / reinforcing material*		art. 6.3.2 ČSN EN ISO 11612 **code A1**	**passes / D4, D5, D12, D13, D15, D16, D17, D20, D21, D25, D29, D31, D32, D33, D34, D35, D36, D37, D38**
- burning behaviour	–	- no sample shall burn to the upper or other edge - no specimen shall melt or give flaming or molten debris - no holes bigger than 5 mm shall be burnt through in any sample - seams must stay unaffected, seams shall not separate - hardware must not release flame or melt particles, hardware must be 5 minutes after testing at least once open - visible material and printmaking must show same burning characteristic as the basic material	- the material does not burn, no holes were burnt through, no molten particles were released - seams stayed unaffected without separation - hardware does not release flame or melt particles, stayed functional after testing - visible material and printmaking have same burning characteristic as the basic material
- spontaneous flaming time	s	max. 2	0
- afterglow time	s	max. 2	0
Tensile strength	N	art. 6.5.1.1 ČSN EN ISO 11612 min. 300	**passes / D4, D21, D35** lengthwise / crosswise
basic material *background fluorescent material* *reinforcing material*			849 / 743 830 / 730 2918 / 2110
Tear strength	N	art. 6.5.2.1 ČSN EN ISO 11612 min. 10	**passes / D4, D21, D35** lengthwise / crosswise
basic material *background fluorescent material* *reinforcing material*			37 / 29 100 / 82 207 / 200
Seam strength	N	art. 6.5.4 ČSN EN ISO 11612 min. 225	**passes / D5**
basic material *background fluorescent material*			446 493
Convective heat (HTI24)	s	art. 7.2 ČSN EN ISO 11612 performance level B1 min. 4,0 ≤ HTI24 < 10,0	**passes / D4, D6**
basic material *background fluorescent material*			5,0 5,6
Radiant heat (RHTI24)	s	art. 7.3 ČSN EN ISO 11612 performance level C1 7,0 ≤ RHTI24 < 20,0	**passes / D4, D21**
basic material *background fluorescent material*			11,5 14,9

Table No. 6 – Continuation from page 19: Results of evaluation of the Protective clothing for firefighters, type: FR2 FireSnake / HV / M / M HV

Essential property	Measuring unit	Requirement	Assessment / Document No.
Requirements of EN ISO 11612			
Contact heat (tt)	s	art. 7.6 ČSN EN ISO 11612 performance level F2 10,0 ≤ tt < 15,0 performance level F3 tt >15	**passes / D4, D21**
basic material *background fluorescent material*			12,7 19,4
Requirements of EN 13034+A1			
Resistance to abrasion	number of rubs to breakdown	art. 4.1 ČSN EN 13034+A1 (min. Class 1) **Class 5**: >1000 ≤ 1500 **Class 6**: > 2000	**passes / D11, D22**
basic material *background fluorescent material*			> 1500 > 2000
Tear strength by trapezoidal method	N	art. 4.1 ČSN EN 13034+A1 (min. Class 1) **Class 4**: > 60 / ≤ 100 **Class 3**: > 40 / ≤ 60	**passes / D4, D22** lengthwise / crosswise
basic material *background fluorescent material*			103 / 63 58 / 47
Tensile strength	N	art. 4.1 ČSN EN 13034+A1 (min. Class 1) **Class 6:** > 1000 **Class 5:** > 500 / ≤ 1000	**passes / D4, D22** lengthwise / crosswise
basic material *background fluorescent material*			849 / 743 940 / 720
Puncture resistance	N	art. 4.1 ČSN EN 13034+A1 (min. Class 1) **Class 2**: > 10 / ≤ 50	**passes / D4, D22**
basic material *background fluorescent material*			37,7 48,6
Repellence index *basic material*	%	art. 4.1 ČSN EN 13034+A1 min. class 3 for at least one chemical from table 9 EN 14325:2004 Class 3: > 95	**passes / D4**
- *30% H_2SO_4*			Class 3: 98,11
- *10% NaOH*			Class 3: 99,01
- *o-xylene*			Class 3: 96,02
- *butan-1-ol*			Class 3: 97,28
Penetration index *basic material*	%	art. 4.1 ČSN EN 13034+A1 min. class 3 for at least one chemical from table 9 EN 14325:2004 Class 3: < 1	**passes / D4**
- *30% H2SO4*			Class 3: 0,0
- *10% NaOH*			Class 3: 0,0
- *o-xylene*			Class 3: 0,68
- *butan-1-ol*			Class 3: 0,49
Repellence index *background fluorescent material*	%	art. 4.1 ČSN EN 13034+A1 min. class 3 for at least one chemical from table 9 EN 14325:2004 Class 3: > 95 Class 2: > 90 / ≤ 95 Class 1: > 80 / ≤ 90	**passes / D22**
- *30% H_2SO_4*			Class 3: 98,6
- *10% NaOH*			Class 3: 98,2
- *o-xylene*			53,5
- *butan-1-ol*			Class 2: 94,2
Penetration index *background fluorescent material*	%	art. 4.1 ČSN EN 13034+A1 min. class 3 for at least one chemical from table 9 EN 14325:2004 Class 3: < 1 Class 2: ≤ 5 / > 1 Class 1: < 10	**passes / D22**
- *30% H2SO4*			Class 3: 0,4
- *10% NaOH*			Class 3: 0,0
- *o-xylene*			20,4
- *butan-1-ol*			Class 2: 4,2

Table No. 6 – Continuation from page 20: Results of evaluation of the Protective clothing for firefighters, type: FR2 FireSnake / HV / M / M HV

Essential property	Measuring unit	Requirement	Assessment / Document No.
Requirements of EN 13034+A1			
Seam strength *basic material* *background fluorescent material*	N	art. 4.2.2 ČSN EN 13034+A1 (min. Class 1) **Class 6**: > 500	**passes / D5** 446 493
Resistance to penetration by liquids in a form of light spraying (mist test) *two-piece clothing from basic material and background fluorescent material*	-	art. 5.2 ČSN EN 13034+A1 No penetration of testing liquid to testing undergarment	**passes / D8** No penetration of testing liquid to testing undergarment.
Requirements of EN 16689 (for design FR2 FireSnake HV and FR2 FireSnake M HV)			
Limited flame spread – method A *as received and after washing:* *basic material / basic material with seam / background fluorescent material / background fluorescent material with seam / moisture barrier with lining* *after washing: visible materials / hardware / reinforcing material*	-	art. 6.2.2 ČSN EN 16689 **index 3**	**passes / D4, D5, D12, D13, D15, D16, D17, D20, D21, D25, D29, D31, D32, D33, D34, D35, D36, D37, D38**
- burning characteristics	-	- no sample shall burn to the upper or other edge - no sample shall release flame or melt particles - no holes size 5 mm or bigger shall be burnt through in any sample - seams must stay unaffected and shall not be opened - no hardware shall release flame or melt particles, should be functional min. 5 minutes after testing - retroreflective materials must show same burning characteristic as the basic material	- the material does not burn, no holes were burnt through, no molten particles were released - seams stayed unaffected and does not open - hardware material does not burn, no molten particles were released, stayed functional after testing - retroreflective materials have same burning characteristic as the upper material
- spontaneous flaming time	s	≤ 2	≤ 2
- afterglow time	s	≤ 2	≤ 2
Heat transmission on exposure to radiation $RHTI_{24}$ *basic material: original / after washing* *background fluorescent material: original / after washing*	s	art. 6.3 ČSN EN 16689 ≥ 7,0	**passes / D4, D11, D21** 11,7 / 11,2 13,9 / 14,9
Contact heat (100°C) *basic material 250°C* *background fluorescent material*	s	art. 6.4 ČSN EN 16689 ≥ 5,0	**passes / D4, D21** 12,7 19,4

Table No. 6 – Continuation from page 21: Results of evaluation of the Protective clothing for firefighters, type: FR2 FireSnake / HV / M / M HV

Essential property	Measuring unit	Requirement	Assessment / Document No.
Requirements of EN 16689 (for design FR2 FireSnake HV and FR2 FireSnake M HV)			
Tensile strength	N	art. 7.1 ČSN EN 16689 longwise / crosswise: ≥ 450	**passes / D4, D21, D35** longwise / crosswise
basic material *background fluorescent material* *reinforcing material*			849 / 743 830 / 730 2918 / 2110
Tear strength	N	art. 7.2 ČSN EN 16689 longwise / crosswise: ≥ 25	**passes / D4, D21, D35** longwise / crosswise
basic material *background fluorescent material* *reinforcing material*			37 / 29 100 / 82 207 / 200
Abrasion resistance	number of cycles	art. 7.3 ČSN EN 16689 min. 20 000	**passes / D4, D21, D35**
basic material *background fluorescent material* *reinforcing material*			45 000 70 000 30 000
Seam strength	N	art. 7.1 ČSN EN 16689 ≥ 225	**passes / D5**
basic material *background fluorescent material*			446 493
Water vapour resistance	m^2Pa/W	art. 7.7 ČSN EN 16689 ≤ 20	**passes / D4, D5, D9, D21**
basic material *background fluorescent material* *basic material + moisture barrier with lining* *background fluorescent material + moisture barrier with lining*			3,77 4,12 8,9 13,5
Colour of new background material *Background material – fluorescent yellow*		art. 5.1.1 ČSN EN ISO 20471/A1 table 2 **fluorescent yellow**	**passes / D19**
- trichromatic coordinates	-	x: 0,387; 0,356; 0,398; 0,460 y: 0,610; 0,494; 0,452; 0,540	x: 0,380 y: 0,517
- luminance factor β	-	min. 0,70	0,82
Colour of background material after exposure to artificial light *Background material – fluorescent yellow*		art. 5.2 ČSN EN ISO 20471/A1 table 2 **fluorescent yellow**	**passes / D19**
- trichromatic coordinates	-	x: 0,387; 0,356; 0,398; 0,460 y: 0,610; 0,494; 0,452; 0,540	x: 0,395 y: 0,498
- luminance factor β	-	art. 5.2 ČSN EN ISO 20471/A1 min. 0,70	0,71

Table No. 6 – Continuation from page 22: Results of evaluation of the Protective clothing for firefighters, type: FR2 FireSnake / HV / M / M HV

Essential property	Measuring unit	Requirement	Assessment / Document No.
Requirements of EN 16689 (for design FR2 FireSnake HV and FR2 FireSnake M HV)			
Colour of background material after washing (after 50 cycles of washing and drying procedure 6N+F) *background material – fluorescent yellow*		art. 5.1.1 ČSN EN ISO 20471/A1 table 2 **fluorescent yellow**	**passes / D19**
- trichromatic coordinates	-	x: 0,387; 0,356; 0,398; 0,460 y: 0,610; 0,494; 0,452; 0,540	x: 0,372 y: 0,482
- luminance factor β	-	min. 0,70	0,77
Visibility (tape art. 310CP)		art. 7.9 ČSN EN 16689	**passes / D2, D26**
-area of visible material with combined performance	m^2	min. 0,2	0,21
- coefficient of retroreflection of new retroreflective material	cd/(lx.m^2)	art. 6.1 ČSN EN ISO 20471 Table 4	combined performance material
Visibility (tape art. 310CP)		art. 7.9 ČSN EN 16689	**passes / D10, D17, D26**
- Coefficient of retroreflection – *– retroreflective material after exposure*	cd/(lx.m^2)	art. 6.2.2 ČSN EN ISO 20471 table 4 material with separate performance min. 100	
- abrasion			71,4
- flexing			82,2
- folding at cold temperatures			81,8
- temperature variation			87,8
- washing (30 cycles, 6N/F)			44,8
- rainfall			44,0
Viral penetration *moisture barrier with lining*	-	art. 7.8.2 EN 16689 no penetration of bacteriophages Phi-X174	**passes / D18** no detection of penetration bacteriophages
Requirements of EN 343 (for design FR2 FireSnake M and FR2 FireSnake M HV)			
Resistance to water penetration W_p *moisture barrier with lining*	Pa	art. 4.2 EN 343 **Class 4:** $W_p \geq 20\,000$	**passes / D5, D20**
- as received			>100 000
- after washing and drying (5 cycles 6N/F)			>100 000
- after washing and drying in seam (5 cycles 6M/F) - *basic material + moisture barrier with lining*			>162 000
- after washing and drying in seam (5 cycles 6M/F) - *background fluorescent material + moisture barrier with lining*			>136 000
- after contamination with fuels			>100 000
- after heat resistance (ISO 17493, 5 minutes, (180 ± 5)°C			>100 000
- after abrasion (1 000 cycles)			>100 000
- after flexing (9 000 cycles)			>100 000

Table No. 6 – Continuation from page 23: Results of evaluation of the Protective clothing for firefighters, type: FR2 FireSnake / HV / M / M HV

Essential property	Measuring unit	Requirement	Assessment / Document No.
Requirements of EN 343 (for design FR2 FireSnake M and FR2 FireSnake M HV)			
Resistance to water vapour penetration R_{et}	$m^2.Pa.W^{-1}$	art. 4.3 EN 343 **Class 4:** $R_{et} \leq 15$	**passes / D5, D9**
- 2 layers of material assembly *(basic material + moisture barrier with lining)* *after pre-treatment*			8,9
- 2 layers of material assembly *(background fluorescent material + moisture barrier with lining)* *after pre-treatment*			13,5
Tensile strength	N	art. 4.4 EN 343 lengthwise / crosswise: min. 450	**passes / D4, D21, D35** lengthwise / crosswise
basic material *background fluorescent material* *reinforcing material*			849 / 743 830 / 730 2918 / 2110
Tear strength	N	art. 4.5 EN 343 lengthwise / crosswise: min. 20	**passes / D4, D21, D35** lengthwise / crosswise
basic material *background fluorescent material* *reinforcing material*			37 / 29 100 / 82 207 / 200
Seam strength *basic material* *background fluorescent material*	N	art. 4.8 EN 343 min. 200	**passes / D5** 446 493
Requirements of EN 15384/A1 (for design FR2 FireSnake and FR2 FireSnake HV)			
Limited flame spread – method A *as received and after washing:* *basic material / basic material with seam / background fluorescent material / background fluorescent material with seam / moisture barrier with lining* *after washing: visible materials / hardware / reinforcing material*		art. 6.1.2 ČSN EN 15384/A1 **code A1**	**passes / D4, D5, D12, D13, D15, D16, D17, D20, D21, D25, D29, D31, D32, D33, D34, D35, D36, D37, D38**
- *burning behaviour*	-	- no sample shall burn to the upper or other edge - no specimen shall melt or give flaming or molten debris - no holes bigger than 5 mm shall be burnt through in any sample - seams must stay unaffected	- the material does not burn - no specimen melts or gives flaming or molten debris - no holes were burnt through - seams stayed unaffected
- *spontaneous flaming time*	s	≤ 2	< 2
- *afterglow time*	s	≤ 2	< 2

Table No. 6 – Continuation from page 24: Results of evaluation of the Protective clothing for firefighters, type: FR2 FireSnake / HV / M / M HV

Essential property	Measuring unit	Requirement	Assessment / Document No.
Requirements of EN 15384/A1 (for design FR2 FireSnake and FR2 FireSnake HV)			
Limited flame spread – method B *as received and after washing:* *basic material with seam / basic material / background fluorescent material /*		art. 6.1.3 ČSN EN 15384/A1 **code A2**	**passes / D4, D21**
- *burning behaviour*	-	- no sample shall burn to the upper or other edge - no specimen shall melt or give flaming or molten debris - no holes bigger than 5 mm shall be burnt through in any sample - seams must stay unaffected	- the material does not burn - no specimen melts or gives flaming or molten debris - no holes were burnt through - seams stayed unaffected
- *spontaneous flaming time*	s	≤ 2	0
- *afterglow time*	s	≤ 2	0
Radiant heat (as received) *basic material / background fluorescent material*		art. 6.2 ČSN EN 15384/A1	**passes / D4, D11, D21**
$RHTI_{24}$	s	≥ 11	11,7 / 13,9
$RHTI_{24} – RHTI_{12}$	s	≥ 4	5,0 / 6,6
Heat transfer coefficient TF	%	≤ 70	65,3 / 49,7
Radiant heat (after washing) *basic material / background fluorescent material*		art. 6.2 ČSN EN 15384/A1	**passes / D4, D11, D21**
$RHTI_{24}$	s	≥ 11	11,2 / 14,9
$RHTI_{24} – RHTI_{12}$	s	≥ 4	4,5 / 6,9
Heat transfer coefficient TF	%	≤ 70	69,1 / 48,5
Heat resistance	-	art. 6.3 ČSN EN 15384/A1	**passes / D4, D12, D13, D20, D21, D24, D26, D30, D31, D32, D33, D34, D35, D36, D37, D38**
- behaviour during test *basic material / background fluorescent material / moisture barrier with lining / visible material / hardware / seam thread, reinforcing material*	-	- no material and hardware shall melt, drip, ignite - hardware shall remain functional	- no material and hardware melt, drips, ignites - hardware remains functional
- shrinkage *basic material* *background fluorescent material* *moisture barrier with lining* *reinforcing material*	%	lengthwise / crosswise: ≤ 10 (260 °C) lengthwise / crosswise ≤ 5 (180 °C)	lengthwise / crosswise -0,8 / -1,0 -1,5 / -1,3 -1,1 / -1,1 0 / 0

Table No. 6 – Continuation from page 25: Results of evaluation of the Protective clothing for firefighters, type: FR2 FireSnake / HV / M / M HV

Essential property	Measuring unit	Requirement	Assessment / Document No.
Requirements of EN 15384/A1 (for design FR2 FireSnake and FR2 FireSnake HV)			
Heat resistance of sewing thread – 260°C *sewing thread*	°C	art. 6.3.1 ČSN EN 15384/A1 ≥ (260 ± 5)	**passes / D7** > 325
Tensile strength *basic material* *background fluorescent material*	N	art. 7.1 ČSN EN 15384/A1 lengthwise / crosswise: ≥ 600	**passes / D4, D21** lengthwise / crosswise 849 / 743 830 / 730
Tear strength *basic material* *background fluorescent material*	N	art. 7.1 ČSN EN 15384/A1 lengthwise / crosswise: ≥ 25	**passes / D4, D21** lengthwise / crosswise 37 / 29 100 / 82
Pevnost švu *basic material* *background fluorescent material*	N	art. 7.3 ČSN EN 15384/A1 ≥ 300	**passes / D5** 446 493
Thermal resistance R_{ct} *basic material* *background fluorescent material*	m^2K/W	art. 8.1 ČSN EN 15384/A1 ≤ 0,055	**passes / D4, D21** 0,010 0,0165
Water vapour resistance R_{et} *basic material* *background fluorescent material*	m^2Pa/W	art. 8.2 ČSN EN 15384/A1 ≤ 10	**passes / D5, D21** 3,77 3,96
Visibility (art. tape 310CP)		art. 9.2 ČSN EN 15384/A1	**passes / D2, D17, D26**
- area of visible material with combined performance	m^2	min. 0,2	0,21
- colour of new combined performance fluorescent material	-	art. 5.1 ČSN EN ISO 20471	fluorescent yellow colour
- k coefficient of retroreflection of new combined performance fluorescent material	$cd/(lx.m^2)$	Table 5 ČSN EN ISO 20471	combined performance material
- coefficient of retroreflection of reflective material after heat resistance test according to article. 6.4 ČSN EN ISO 15384	$cd/(lx.m^2)$	art. 6.2.3 ČSN EN ISO 20471 > 30	47,3
Visibility (art. tape 306)		art. 9.2 ČSN EN 15384/A1	**passes / D2, D24, D25**
-area of visible material with combined performance	m^2	min. 0,2	0,21
- colour of new combined performance fluorescent material	-	art. 5.1 ČSN EN ISO 20471	fluorescent yellow colour
- k coefficient of retroreflection of new combined performance fluorescent material	$cd/(lx.m^2)$	Table 5 ČSN EN ISO 20471	combined performance material
- coefficient of retroreflection of reflective material after heat resistance test according to article. 6.4 ČSN EN ISO 15384	$cd/(lx.m^2)$	art. 6.2.3 ČSN EN ISO 20471 > 30	374,42

The bases for the evaluations stated in Table No. 6, are test results specified in the following test reports:

D1) Declaration about innocuousness issued by GoodPRO, s.r.o. company on 2022-02-15

D2) Record of assessment No. 723302247 issued by Institute for testing and certification, Zlín on 2022-05-17

D3) Oeko-Tex No. S19-3392 issued by HOHENSTEIN Laboratories, Germany on 2021-05-10

D4) Test Report No. 21.1.12.0445/2 issued by HOHENSTEIN Laboratories, Germany on 2021-04-08

D5) Accredited Laboratory Test Report No. 723302247-01 issued by Institute for testing and certification, Zlín on 2022-05-13

D6) Test Report No. 2021CO2739 issued by AITEX, Alcoy, Spain on 2021-07-15

D7) Accredited Laboratory Test Report No. 723302247-02 issued by Institute for testing and certification, Zlín on 2022-03-11

D8) Accredited Laboratory Test Report No. 723302247/03 issued by Institute for testing and certification, Zlín on 2022-05-20

D9) Accredited Laboratory Test Report No. 723302249-01 issued by Institute for testing and certification, Zlín on 2022-03-29

D10) Test Report No. 17RA04485 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2017-04-29

D11) Test Report No. 21.1.12.0445/1 issued by HOHENSTEIN Laboratories, Germany on 2021-04-08

D12) Certificate of Test No. CO 0832190050-00-00 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2019-11-04

D13) Test Report No. 19RA16445 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2019-11-04

D14) Oeko-Tex No. 11-37257 issued by Shirley Technologies Limited, Manchester, Great Britain on 2021-08-20

D15) Test Report No. 2019 1758.1 issued by STFI, Chemnitz, Germany on 2019-10-07

D16) Test Report No. 19RA19076 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2019-12-20

D17) Test Report No. 1400794 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2014-04-16

D18) Test Report No. SN 25023 issued by HygCen Germany GmbH, Germany on 2018-03-24

D19) Test Report No. 2020CO3887 issued by AITEX, Alcoy, Spain on 2021-02-11

D20) Test Report No. 2020 0927 issued by STFI, Chemnitz, Germany on 2020-06-10

D21) Test Report No. 2020CO3255 issued by AITEX, Alcoy, Spain on 2020-10-08

D22) Test Report No. 2021CO3272 issued by AITEX, Alcoy, Spain on 2021-08-25

D23) Test Report No. 19RA05294 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2019-04-02

D24) Certificate of Test No. CO 0832190017-00-00 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2019-04-02

D25) Test Report No. 19RA10453 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2016-11-23

D26) Certificate of Test č. 83217118 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2017-12-05

D27) Test Report No. M-036-21-E issued by Sintex, a.s., Česká Třebová, Czech Republic on 2021-05-25

D28) Test Report No. 20RA02267 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2020-05-08

D29) Test Report č. 18RA16455 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2018-11-30

D30) Test Report No. 18RA16444 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2018-11-30

D31) Test Report č. 19RA16445 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2019-11-04

D32) Certificate of Test No. CO 0832190050-00-00 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2019-11-04

D33) Certificate of Test No. CO 0832190016-00-00 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2019-04-02

D34) Certificate of Test No. CO 0832180112-00-01 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2020-06-02

D35) Test Report č. 2019 1137.1 issued by STFI, Chemnitz, Germany on 2019-06-28

D36) Certificate of Test No. CO 0832190062-00-00 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2019-12-20

D37) Test Report No. 19RA19076 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2019-12-20

D38) Test Report No. 2017EP3288 issued by AITEX, Alcoy, Spain on 2018-05-10

3.7 Assessment of product conformity with technical specifications and basic requirements

The assessed product – Protective clothing for firefighters, type: FR2 FireSnake / HV / M / M HV specified in Item 1 hereof – complies with the requirements set by the following technical standards with regard to its design and submitted documentation:

ČSN EN ISO 13688:2014/A1:2022 *(EN ISO 13688:2013/A1:2021)*
Protective clothing – General requirements

ČSN EN 1149-5:2019 *(EN 1149-5:2018)*
Protective clothing – Electrostatic properties – Part 5: Material performance and design requirements

ČSN EN 13034+A1:2009 (EN 13034:2005+A1:2009)
Protective clothing against liquid chemicals - Performance requirements for chemical protective clothing offering limited protective performance against liquid chemicals (Type 6 and Type PB [6] equipment)

ČSN EN 343:2020 *(EN 343:2019)*
Protective clothing – Rain protection

and non-harmonized standards:

ČSN EN ISO 11612:2015 (EN ISO 11612:2015)
Protective clothing – Clothing to protect against heat and flame – Minimum performance requirements

ČSN EN 16689:2020 (EN 16689:2017)
Protective clothing for firefighters – Performance requirements for protective clothing for technical rescue

ČSN EN ISO 15384:2020/A1:2022 *(EN ISO 15384:2020/A1:2021)*
Protective clothing for firefighters - Laboratory test methods and performance requirements for wildland firefighting clothing

Results of the evaluation of the personal protective equipment stated in Table No. 6 hereof prove the conformity of all indicators specifying general basic requirements of Regulation (EU) 2016/425, additional basic requirements common for more types of PPE and additional basic requirements for special risks applicable to the evaluated type of product.

4. Conclusion

Notified Body NB 1023 performed EU Type-Examination of the personal protective equipment

Protective clothing for firefighters
Type: FR2 FireSnake / HV / M / M HV.

Technical specifications used by the manufacturer are in compliance with basic requirements of Regulation (EU) 2016/425 of the European Parliament and of the Council of 9 March 2016 on personal protective equipment and repealing Council Directive 89/686/EEC.

The sample of the personal protective equipment was produced in compliance with the technical documentation of the manufacturer and can be fully safely used for its intended purpose.

The sample of the personal protective equipment meets all the provisions of the Regulation (EU) 2016/425 of the European Parliament and of the Council of 9 March 2016 on personal protective equipment and repealing Council Directive 89/686/EEC.

Notified Body NB 1023 decided to issue the EU Type-Examination Certificate valid for 5 years.

5. List of documents used for the preparation of the Evaluation Report

- The application of GoodPRO, s.r.o. on 2022-02-15
- Technical documentation of GoodPRO, s.r.o. for Protective clothing for firefighters, type: FR2 FireSnake / HV / M / M HV on 2021-05-27 (final version submitted on 2022-05-20)
- Check list issued by GoodPRO, s.r.o. on 2022-02-15
- Declaration about innocuousness issued by GoodPRO, s.r.o. company on 2022-02-15

- Record of assessment No. 723302247 issued by Institute for testing and certification, Zlín on 2022-05-17
- Oeko-Tex No. S19-3392 issued by HOHENSTEIN Laboratories, Germany on 2021-05-10
- Test Report No. 21.1.12.0445/2 issued by HOHENSTEIN Laboratories, Germany on
- 2021-04-08Accredited Laboratory Test Report No. 723302247-01 issued by Institute for testing and certification, Zlín on 2022-05-13
- Test Report No. 2021CO2739 issued by AITEX, Alcoy, Spain on 2021-07-15
- Accredited Laboratory Test Report No. 723302247-02 issued by Institute for testing and certification, Zlín on 2022-03-11
- Accredited Laboratory Test Report No. 723302247/03 issued by Institute for testing and certification, Zlín on 2022-05-20
- Accredited Laboratory Test Report No. 723302249-01 issued by Institute for testing and certification, Zlín on 2022-03-29
- Test Report No. 17RA04485 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2017-04-29
- Test Report No. 21.1.12.0445/1 issued by HOHENSTEIN Laboratories, Germany on 2021-04-08
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- Test Report No. SN 25023 issued by HygCen Germany GmbH, Germany on 2018-03-24
- Test Report No. 2020CO3887 issued by AITEX, Alcoy, Spain on 2021-02-11
- Test Report No. 2020 0927 issued by STFI, Chemnitz, Germany on 2020-06-10
- Test Report No. 2020CO3255 issued by AITEX, Alcoy, Spain on 2020-10-08
- Test Report No. 2021CO3272 issued by AITEX, Alcoy, Spain on 2021-08-25
- Test Report No. 19RA05294 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2019-04-02
- Certificate of Test No. CO 0832190017-00-00 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2019-04-02
- Test Report No. 19RA10453 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2016-11-23
- Certificate of Test No. 83217118 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2017-12-05

- Test Report No. M-036-21-E issued by Sintex, a.s., Česká Třebová, Czech Republic on 2021-05-25
- Test Report No. 20RA02267 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2020-05-08
- Test Report č. 18RA16455 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2018-11-30
- Test Report No. 18RA16444 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2018-11-30
- Test Report č. 19RA16445 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2019-11-04
- Certificate of Test No. CO 0832190050-00-00 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2019-11-04
- Certificate of Test No. CO 0832190016-00-00 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2019-04-02
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- Test Report č. 2019 1137.1 issued by STFI, Chemnitz, Germany on 2019-06-28
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- Test Report No. 19RA19076 issued by Centro Tessile Cotoniero e Abbigliamento S.p.A, Busto Arsizio, Italy on 2019-12-20
- Test Report No. 2017EP3288 issued by AITEX, Alcoy, Spain on 2018-05-10