

ISSUED
06/2023

USER'S INFORMATION



Firefighter protective clothing

RED FOX

Type No: RF-504

3rd category of Personal Protective Clothing

PRODUCER:

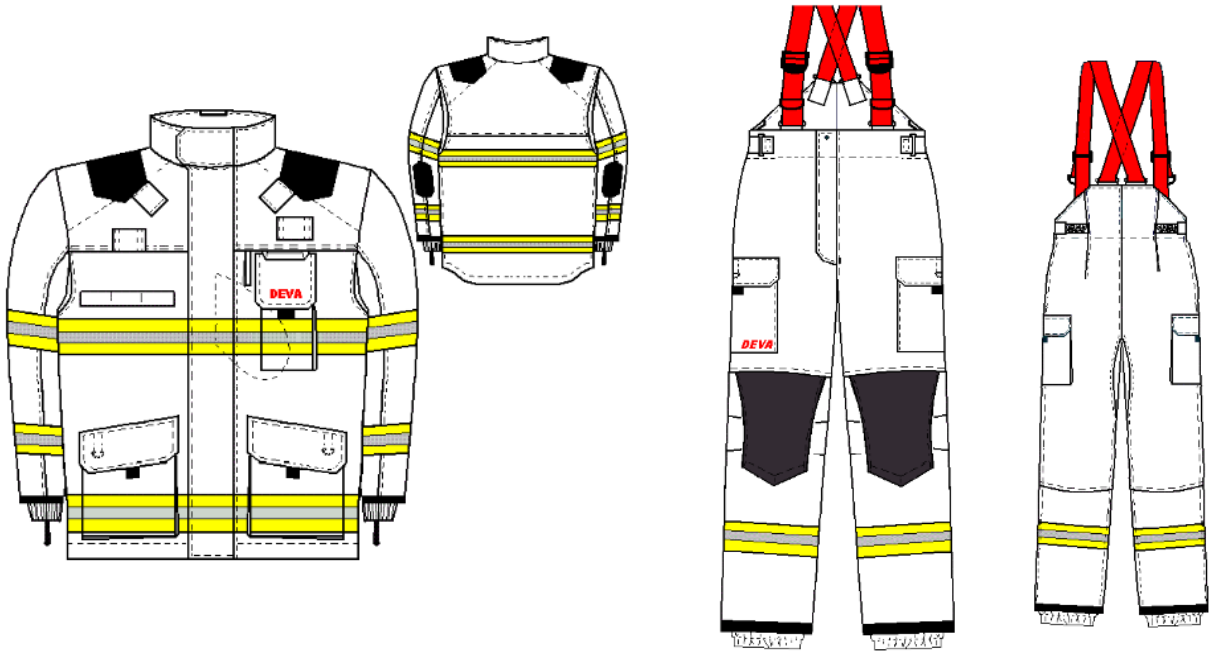


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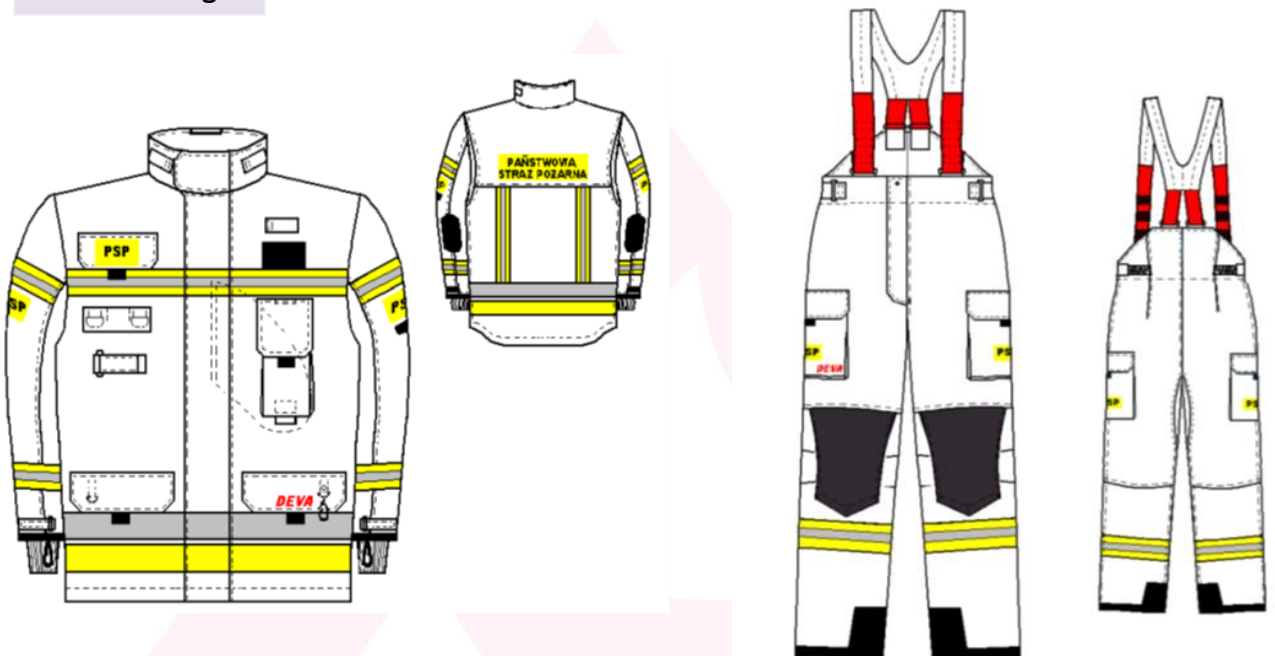
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ELITE design:

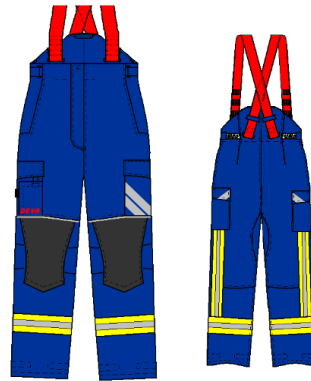
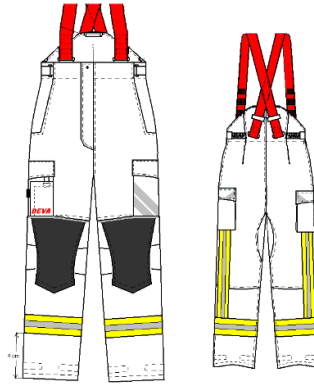
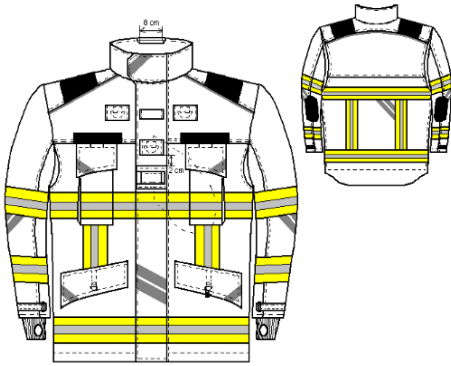


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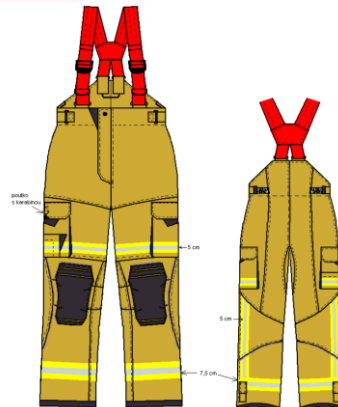




ELITE DE design:

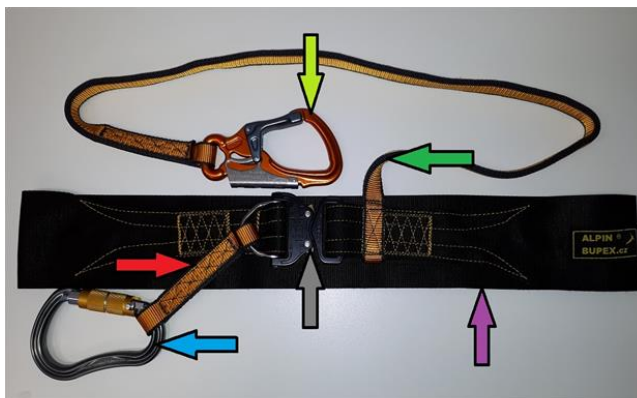
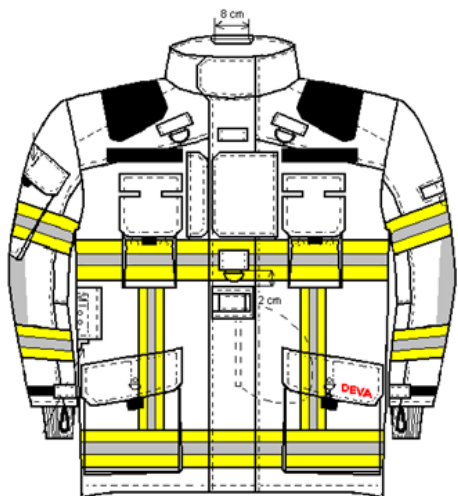


FIT BE design :





PREMIUM design – JACKET WITH RESCUE SLING



- | | | |
|---|---|---|
|  Karabína CT K-ADVANCE |  Pracovní polohovací prostředek SP TANGO 100cm |  Rychlospona COBRA |
|  Karabína MAGNUM 3T |  Pracovní polohovací prostředek SP TANGO 15cm |  Záchraná smyčka ZS AD 2 |





Description of used materials and their technical parameters:

Outer shell:	1826/2825 – FUTURA DIAMOND TECHNOLOGY[®] G001 (93 % meta aramid / 5% para aramid / 2% antistatic fibre) finish: Sofiguard [®] Performance Colour: Black, Blue, Wet sand, Red, Orange, Yellow, Lime green Weight: 210g/m ²
Membrane:	FR FABRIC 84/85 (face: non-woven fabric 100% aramid back: polytetrafluorethylene) Weight: 115g/m ²
Thermal barrier:	1125M11-FIRE ICE 3D (face: 50 % aramid / 50 % viscose FR back: 100 % aramid) Weight: 220g/m ²

Additional material:

• Anti wicking barrier:	FR FABRIC 107/85
• Reinforcement:	F1312 BI-Si - AS 100% Kevlar [®]
• Insulation of exposed parts of clothing:	TEBOX BFN FR 020
• Padding:	mikrop. ADI-CR - neoprene
• Sewing:	N-tech CS 70
• Velcro:	STAP, VELCRO, YKK
• Zipper:	MGOR-106 YKK
• Cuff:	7115/2&2 – Cuffing, alternatively HERO-elastic arm cuff FR , Art. 4132825180024
• Paspul:	Paspul Flame retardant FLR 600
• Heat transfer:	RETROFLE FR-3500F.FR.FY – yellow RETROFLEX MR 3591NCS – silver
• Braces:	red elastic strap, plastic buckles
• Rescue sling ZS AD 2	see picture page 5



Reflective material:

- 3M™ Scotchlite™ 9687 (yellow-silver-yellow), max 75 mm
- Coats Signal C412300 (yellow-silver-yellow), max 75 mm
- Coats Signal C412300 (orange-silver-orange), max 75 mm
- 3M™ Scotchlite™ 5697 segment (yellow-silver-yellow), max 75 mm
- RETROFLEX 3515SG segment yellow-silver-yellow), max 75 mm
- Coats Signal C412500 (silver), max 50 mm
- 3M™ Scotchlite™ 8987 NFPA – yellow, max 50 mm
- Reflexite 1200 Fire Tape (yellow), max 50 mm

Design: jacket + trousers

Clothing impregnation:

- Top material is equipped by a sufficient impregnation **Sofiguard Performance®** that secures protection against water and chemicals. The producer of the material guarantees **min. 30 cycles** before additional re-impregnation when the laundering instructions are followed.
- Impregnation efficiency in real conditions may differ from the measured laboratory results and is influenced by several factors.
- Keep your garment clean.
- **For recovery of the treatment we recommend additional drying in the tumbler at temperature 70 °C for 15 minutes !** Perform the additional drying on closed garment from the face side after each maintenance (washing + drying).

Additional re-impregnation after 30 maintenance cycles:

If additional re-impregnation is applied during maintenance of the garment by a professional laundry or authorized person, the protection against water and chemicals is not subject to the manufacturer's guarantee.



Protective function of the clothing and a list of harmonized norms:

- The clothing serves as a protection of fire fighter's body during fire-fighting and during associated activities with an exception of the actions with a presence of chemicals or gases (it only covers a possibility of accidental sprinkle by chemical or flammable liquids).
- The clothing can be also used as a part of complete grounded system in order to avoid any inflammable discharges (with an exception of environment with atmosphere enriched by oxygen and protection against electric voltage in distribution networks).
- Jacket protects against thermal hazards of an electrical arc class 2 (but not against electric shock hazards)
- The clothing is also used for the protection against unfavourable weather (for example rain, snow), fog and earth water content.
- On a customer's demand the jacket can be equipped with Rescue sling ZS AD 2 and SP Tango, which is designed for work positioning and restraint, self-rescue, rescue and dragging an injured person to safety. Rescue sling meets EN 1498:2007 class A, EN 358:2001 and complies with Regulation (EU) 2016/425 of the European Parliament and of the Council. It was certified for use by the Military Technical Institute, SOE, notified body 2452 - branch office VTÚPV Víta Nejedlého 691, 682 01 Vyškov.

Rescue sling is not suitable to prevent from falls!!!

- The clothing protects upper as well as bottom part of body, including neck, arms up to wrists and legs up to ankles according to the above-described standard. The clothing in combination with other protective measures – safety helmet, gloves, hood, and shoes - provides a complex protection of fire fighter against risks determined in the respective standards:

ČSN EN ISO 13688:2014

(EN ISO 13688:2013)

Protective clothing – General requirements



ČSN EN 1149-5:2019

(EN 1149-5:2018)

Protective clothing – Electrostatic properties



ČSN EN 469:2021

(EN 469:2020)

Protective clothing for firefighters - Requirements and test methods for protective Clothing for firefighters



Level of protection – achieved effectiveness of protective clothing

Heat transfer - flame	level 2
Heat transfer – radiation	level 2
Resistance to water penetration	level 2
Water vapour resistance	level 2

level 1 – lower level of technical use (technical intervention – car accidents and so on)

level 2 – higher level of technical use (fire fighting in closed place)

Prediction of burn injury according to ISO 130506

Test report with results of „ Prediction of burn injury using an instrumented manikin” is on request at producer.



ČSN EN 343:2020

(EN 343:2019)

Protective clothing - Protection against rain



EN 343:2019

Level of protection – achieved effectiveness of protective clothing

Resistance against water penetration	level 4
Water vapour resistance	level 3

ČSN EN 61482-2:2020

(EN 61482-2:2020)

Protective clothing against the thermal hazards of an electric arc



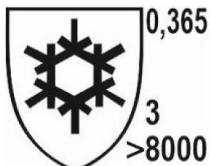
Resistance to thermal hazards of an electric arc – box test:

- Class: 2
- Prospective electric arc current: 7 kA
- Arc duration: 500 ms
- Voltage: 400 V

ČSN EN 342:2018

EN 342:2017

Protective clothing – Ensembles and garments for protection against cold



EN 342:2017

Level of protection – achieved effectiveness of protective clothing

- Effective thermal insulation I_{cl,er}: 0,365 m².K/W
- Air permeability Level: 3
- Resistance to water penetration >8000 Pa

EU – Declaration of conformity: www.deva-fm.cz/ - products-instruction



Maintenance of intervention clothing

- Maintain intervention clothing only in professional laundries or equipment supplied by a professional manufacturer of washing and drying machines in your own departments.
- We strictly discourage washing, drying and other maintenance in domestic conditions using conventional household washing machines.
- Observe recommended maintenance symbols on labels and in producer's manual instructions
- When using the supplied equipment from a professional technical manufacturer, always use installed maintenance programs depending on the sort of soiling of the clothing. We recommend setting different maintenance according to the level of soiling, e.g. heavily soiled, moderately soiled or gentle washing and drying
- In case of maintenance in professional laundry, request the setting of program for firefighting clothing from a professional technician.
- The manufacturer is not liable for any damage caused by a wrong maintenance using your own equipment or in a professional laundry

When an intervention protective garment is contaminated by petroleum oils, paints, and biological substances (proteins, blood etc.), hereinafter only contaminants, decontamination must be carried out. Depending on volume of soil and types of contaminants a maintenance must be carried out according to internal regulations of users, strictly according to supplier of washing equipment.

Decontamination

It is a set of methods, procedures and means for an effective removal of contaminants. It is necessary especially if the level of contamination exceeds the usual level of contamination and when it is not possible the garment safely clean and disinfect.

- Intervention garments with reflective tapes with high visibility are sensitive to stains caused by contamination of tar, oil, blood etc. Decontamination should have high efficiency. High washing temperatures over 65°C and big doses of the most effective washing detergents, which are based on high alkalinity (pH) of the washing bath, are used at standard industrial washing. Reflective tapes and fluorescent materials are very sensitive to high temperatures, alkalinity (pH) of the washing bath and mechanical parameters of the washing drum. Therefore the washing decontamination procedure of the intervention garments must be set so that the washing temperature is below 60°C, washing detergents have pH below 9 and so that the garments are not burdened by high mechanical parameters of the washing machine. Furthermore, except decontamination, emphasis needs to be placed on maintaining fluorescence and retro-reflexivity of the intervention garments.
- Nowadays, **decontamination by liquid CO₂ seems to be very effective and at the same time delicate to the garment.**



An integral part of the overall maintenance of the firefighter clothing is their disinfection. It is a process in which germs and their products – toxins are destroyed.

Disinfection

- Intervention clothing infected by biological material must be treated with hydrogen peroxide and peracetic acid-based concentrates activated during machine washing.
- **Do not use chlorine-based products!**
- Recommended disinfection agents are suitable for white, as well as color textiles, except wool and silk. Their utilization is in accordance with European microbicide standards EN 1650 and EN 14476.
- Disinfection agents are effective at 40 °C and a longer washing cycle of at least 20 minutes.
- The exact dosage will be specified by your chemicals supplier based on the intervention clothing types.





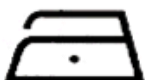
Maintenance:



- Maximum wash temperature set at 60 °C with reduced mechanical action
- We recommend delicate washing at 40 °C. Temperature of 40°C is suitable as well for very dirty clothing.
- All closures (zippers, press buttons, velcros, buttons, carabines) must be properly closed to avoid abrasion
- Before washing and drying is necessary to **remove neoprene knee pads and braces!**
- PH of washing bath must not be higher than 9.
- Do not use detergents with bleaching effects.
- Optimal level of machine loading is 2/3, with maximum possible water level and lower spinning speeds.
- If the garment has removable insert, always wash the outer parts separately from inserts. If inserts are not soiled, remove them and wash just the outer parts to prevent unnecessary wear of moisture and thermal barrier.
- Do not use any softeners!



- Line dry is optimal
- Using a tumbler dryer, dry at higher temperature. We recommend drying in two cycles (face and back sides) 2 x 45 minutes.
- A dryer should be filled at 2/3 of its capacity. (f.e. for drum of 13 kg put dry garments with weight of 10 kg)
- If the garment is damp, we recommend to hang it to dry
- **To recover the treatment we recommend additional drying at 70 °C for 15 minutes!!** Perform the additional drying on closed garment from the face side after each maintenance (washing + drying).



Iron at maximal temperature 110 °C, carefully with steam.



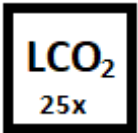
- No bleaching is allowed.



- The clothing may be dry-cleaned using tetrachloroethylene, monofluortrichlormethane, and all solvents specified under the F symbol. The common cleaning procedures have no restriction.



- Professional wet cleaning. Ordinary cleaning procedures.



- Decontamination using liquid CO₂

Finally we would like to draw your attention to a fact that material Art. **1826/2825 - FUTURA** is as other chemical materials with high share of para aramid sensitive to direct daylight.

To eliminate mechanical and visual abrasion of the outer material of the garment it is essential to observe right laundering procedures, eventually timely done re-impregnation. We are absolutely convinced that the most sensitive part at laundering is the time, the temperature and loading of the washing and drying process. We can say that excessive temperature and over drying can result in excessive shrinkage.

We absolutely recommend keeping an evidence list of the clothing service and maintenance (Appendix 1 – see our web pages)



Clothing service life

Duration of the protective clothing using is not fixed.

Wearing off, devaluation, eventually loss of protective features can occur due to several factors:

- wearing off during work activities
- not adhering to manufacturer's maintenance instructions
- irregular maintenance including repair service
- inappropriate storage conditions

Procedures to achieve a maximum lifetime warranty:

- Clean the clothing according to the instructions
- Clothing must be visually inspected after each use – wearing off, damage, aging, discoloration, holes, tear, torn parts, fraying, contamination, damaged or worn reflective material)
- Ensure skilled revision of the clothing by a responsible person (producer, skilled distributor, or skilled person of a particular fire station)
- In case of need repair it (to ensure safety the clothing should be repaired at the PRODUCER or a trained person)
- In case of excessive damage and failure of the protective properties of the clothing when the repair is not worthwhile, we recommend to put out of use

Storage:

- Storage has no specific requirements
- Protect the clothing from direct sunlight and UV radiation

Clothing protective packaging:

- PE bag, cardboard



User notification:

EN 469: 2020

- In compliance with EN 469 requirements, the lower and upper body parts, including a neck, arms to wrists, and legs to ankles are protected and covered by the clothing; however, the other body parts are not protected and other equipment items are necessary to achieve the complete protection.
- In case of accidental stain by a liquid chemical substance or flammable liquid during the wear at a place with a fire and/or heat exposure immediately leave the place, take the clothing off and clean it, possibly do not use anymore and put it out of service.
- Dampness, moisture or wetting inside or outside of the clothing will have an effect on the performance of the garment, which is different from the same garment when in a dry condition
- For your safety, garment shall be inspected regularly for obvious damage
- More information on selection, use, care and maintenance is given in CEN/TR 14560:2018

EN 1149-5: 2018

- A person wearing protective clothing that dissipates static electricity charge must be properly grounded. Resistance between such person and ground must be less than $10^8 \Omega$, by using, for example, proper footwear.
- The clothing must not be unfastened or removed near flammable or explosive environment or when working with flammable or explosive agents.
- The clothing must not be used in the oxygen-enriched atmosphere without a prior approval of a responsible safety technician.
- The clothing's static electricity protection properties could be affected by its wear, tear, washing, and soiling.
- When in use, the static electricity dissipating protection clothing must constantly cover all materials that do not have such properties. All closing elements must be properly closed!
- **Using Rescue sling ZS AD 2 and SP Tango**
When using rescue sling ZS AD 2 and SP Tango during technical intervention, the clothing does not meet the requirements of EN 1149-5:2018 due to a large content of metal parts (carabines, quick-release buckle).



User notification:

EN 61482-2: 2020 – class 2

- When using this clothing as a protection against the thermal hazards of an electric arc it is necessary to consider actual working conditions. Differences from parameters specified in IEC 61482-3 can cause serious circumstances.
- The clothing in combination with other protective measures – safety helmet, gloves, hood, and shoes - provides a complex protection of fire fighter against risks.
- **The protective clothing can be ONLY used as upper part on foundation garment. Foundation garment which melts during heat flux of electric arc MUST NOT be used which means foundation garment made of artificial fibres, e.g. polyamide, polyester, acryl. We recommend using underwear made of NOMEX®.**
- The protective properties may be influenced by the conditions and contamination of garment, which may cause reduction of the protective function against effect of electric arc.

Using ZS AD 2 Rescue sling and SP Tango

Correct use of this product is explained in description (annex 1)

User's manual

ZS AD 2 Rescue sling and SP Tango

The user's manual describes a correct use of this product. It mentions only some uses and techniques. Warnings inform you about a possible danger associated with use of this product. However, not all possible cases can be described. Please get acquainted with updates and other information on www.deva-fm.cz. You are responsible for following the warnings and proper use of this product. Any improper use of this product means another source of danger. If you have doubts or something is unclear, contact authorized and specialized DEVA representative.

ČSN EN 342

- Protection against cold is ensured only if the entire set is used
- The garments is designed to protect against water penetration

- Intended areas of use:

Temperature range of Function

Manufacturers may use the data given in Table C.1 and Table C.2 for the information of the user.

The protective value of the resulting effective thermal insulation of a set of clothing shall be converted to a combination of ambient air temperature and activity level (heat production by metabolism) (see Tables C.1 and C.2).

The levels in Table C.1 correspond to a user standing and in Table C.2 to a user performing light or moderate activity. For each level, the minimum temperature at which the body can be maintained in temperature-neutral conditions for an indefinite period of time (8 h) and the minimum temperature at which a one-hour exposure can be survived with an acceptable degree of body cooling are calculated. The values are based on conditions where the air temperature is equal to the average radiant temperature, the relative humidity is approximately 50%, the air velocity is 0.4 m/s and 3 m/s respectively, the permeability is 50 mm/s and the body movement speed is 1 m/s. Higher wind speeds will increase the temperatures in Tables C.1 and C.2 due to wind cooling effects (see EN ISO 11079).

NOTE 1 Adequate level of whole body insulation may not be sufficient to prevent cold to perceived body parts (e.g. hands, feet, face) and the associated risk of frostbite. Hand protection against cold is covered in EN 511.

Table C.1 - Resulting effective thermal insulation of clothing $i_{cl,er}$ and ambient temperature conditions for thermal equilibrium at different exposure times

Insulation $i_{cl,er}$ m ² K/W	Standing user 75 ^{W/m²}			
	Air flow rate			
	0.4 m/s		3 m/s	
	8 h	1 h	8 h	1 h
0.265	13	0	19	7
0.310	10	-4	17	3
0.390	5	-12	13	-3
0.470	0	-20	7	-9
0.540	-5	-26	4	-14
0.620	-10	-32	0	-20

Table C.2 - Resulting effective thermal insulation of the garment $i_{cl,er}$ and ambient temperature conditions for thermal equilibrium at different activity levels and exposure duration

Insulation $i_{cl,er}$ m ² K/W	Moving user activity							
	Light 115W/m ²				Moderate 170W/m ²			
	Air flow rate							
	0.4m/s		3 m/s		0.4m/s		3 m/s	
	8h	1h	8h	1h	8h	1h	8h	1h
0.265	3	-12	9	-3	-12	-28	-2	-16
0.310	-2	-18	6	-8	-18	-36	-7	-22
0.390	-9	-28	0	-16	-29	-49	-16	-33
0.470	-17	-38	-6	-24	-40	-60	-24	-43
0.540	-24	-45	-11	-30	-49	-71	-32	-52
0.620	-31	-55	-17	-38	-60	-84	-40	-61

USER'S INFORMATION



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Identification of the Notified Body that performed the EU type examination:

Notified Body no. 1023, Institut pro testování a certifikaci, a.s., Zlín, Czech Republic

The product meets the REGULATION (EU) 2016/425 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL.