

This user information relates to Personal Protective Equipment (PPE) designed and manufactured by Elis Design and Supply Chain Centre AB for Elis Group. All Personal Protective Equipment (PPE) defined as a Category II or III encompassed by this user instruction conforms to the PPE regulation (EU) 2016/425. Labels in each garment refer to the relevant harmonised standard and/or technical specifications described hereunder. The PPE clothing provides no protection for the head, hands, eyes or feet. For the protection of these parts of the body, supplementation of your outfit with compatible PPE is required.

This document and all Declarations of Conformity are available on [www.elis.com](http://www.elis.com).



**EN 343:2003+A1:2007 Protection against rain**

EN 343 certified products protect from rain and weather. Water tightness and water vapour transfer are the main properties tested on fabric and parts with seams. The values from tests are translated into a protective class (1–3), where class 3 is the highest. Below is a classification of the restricted wearing time (RET) based on the temperature of the working environment:

Temperature of working environment	25°C	20°C	15°C	10°C	5°C
Wearing time (min)	60	75	100	240	-

The CE label in each garment declares the waterproof rating (X) and the ability to transfer moisture from the body (Y).

X – Resistance to water penetration Y – Water vapour transfer

Protective garments against rain typically form the outermost shell of a garment ensemble. Usage in combination with other garment layers that store moisture offers inferior protection in this regard and shall be avoided.

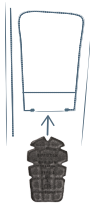


**EN 14404:2004 + A1:2010 Knee protectors for work in the kneeling position**

Knee protection is recommended for all work in a kneeling position. Knee protection distributes forces evenly and prevents small hard objects on the ground causing injuries. No protector can offer full protection against injuries under all circumstances. When the knee pads are removed, the garment no longer offers any protection for the knees. Any contamination or modification of a knee pad can reduce its protective performance.

A knee pad that has perforations, cracks or diminished elasticity shall be replaced with a new one. When choosing a new collection, ensure the knee pocket and the pad inside are in a good position. If this is not the case, choose another size or consider individual sizing. The garment is certified and designed in combination with the knee pad "GEX 240" (Size 245 x 145 mm) from Eurotex. Certification is only achieved by a combination of these specific knee pads and ELIS trousers.

**Classification:** Type 2 (Foam plastic padding material to fit pockets on trouser legs) and Level 1 (Knee protectors suitable for use on flat or non-flat floor surfaces and providing protection against penetration at a force of at least 100 ± 5 N). Always ensure the knee protectors are inserted correctly. See instructions for correct positioning. The smooth side must face outwards, and the patterned side must face the knee.



Before the garment is handed in for laundering, ensure the knee pads are removed and all pockets are empty.



**EN 1149-5:2018 Protective clothing with electrostatic properties**

This edition of the standard replaces EN 1149-5:2008. EN 1149-5 specifies material and design requirements for electrostatic dissipative protective clothing used as part of a total earthed system in which the wearer is connected to earth via a resistance less than 10<sup>8</sup> Ω. The protective clothing is designed to be worn in zones 1, 2, 20, 21 and 22 (as defined in EN 60079-10-1: Classification of areas – Explosive gas atmospheres and EN 60079-10-2 Classification of areas – Explosive dust atmospheres) in which the minimum ignition energy of an explosive atmosphere is not less than 0.016 mJ.

Electrostatic dissipative clothing shall not be used in oxygen-enriched atmospheres or in Zone 0 (as defined in EN 60079-10-2) without prior approval of the responsible safety engineer. The standard's purpose is to avoid unintentional discharges in potentially explosive atmospheres and prevent clothing igniting a fire. Garments certified to EN 1149-5 must consistently cover all non-conforming materials/garments during normal use, including during all movements, in order not to break the earthed system. For the same reason, do not remove electrostatic discharge protective clothing in oxygen-enriched, flammable or explosive environments, or while handling potentially explosive substances.

A hood that has non-dissipative materials which are exposed when it is not worn shall be able to be removed or stowed in the garment. Loop fasteners shall not be opened while working in risk zones. Cleaning procedures shall comply with the manufacturer's instructions and involve standard industrial laundry processes only.

Note: This standard is not applicable for protection against high voltages. In such cases, IEC 61482-2 should be considered.



**IEC 61482-2:2009 Protection against the thermal hazard of an electric arc**

This standard specifies requirements and test methods applicable to both fabrics and garments used to protect workers against the hazards of an unintentional electric arc. Performance is evaluated based on general properties, the most important being thermal arc resistance. A certified garment has been tested as a completed garment and each fabric has been tested separately. The protection is calculated based on a predictive model and quantifies the threshold incident energy level that would cause a second-degree burn to the wearer of the garment.

This standard does not apply to protection against electric shock hazards, noise, UV emissions, heat pressure, hot oil, or physical or mental shock caused by toxic agents. The standard does not cover protection of head, hands and feet.

No garments such as shirts, undergarments or underwear made of polyamide, polyester or acrylic fibres (or other synthetic fibres) should be worn under the protective suit as these will melt under arc exposure. Although the garment is designed for flame protection, contamination can reduce the protective function against electrical arc exposure. Garments shall, therefore, be cleaned when soiled. Never use garments that have been damaged by an electric arc during previous use!

Two international test methods are approved. Depending on requirements, the user shall specify at least one test method. The protective clothing shall be assigned class 1 (4 kA) or class 2 (7 kA), where class 2 indicates a higher arc thermal resistance.

The second test method is the "Open arc test". The thermal resistance is given as an Arc Thermal Performance Value (ATPV) or Energy Break-Open Threshold (EBT) value expressed in cal/cm<sup>2</sup>. The higher the ATPV or EBT value, the better the thermal protection.

When the garment consists of several materials, the label in the garment indicates the lowest of the arc ratings.



**EN 13034:2005+A1:2009 Protective clothing against liquid chemicals Type 6 [PB]**

This protective clothing offers limited protective performance against small splashes of liquid chemicals. Type 6 is intended to protect against potential exposures to small quantities of spray, liquid aerosols or low volume splashes. Contamination from sprays after direct contact with large splatter or by pressing the PPE against liquid chemicals falls outside the protective framework of this standard. The protective garment suit shall be used with adequate shoes and/or additional protective equipment.

Features are designed to prevent chemical penetration and enable "rinse off" in the event of contact with chemical liquids. Clothing with [PB] Partial Body Protection "Type 6" may be used separately or in combination with other garments. To achieve the best protection, use clothing that covers the entire body – either a full-body suit or a 2-piece suit, each garment of which is certified to EN 13034. Type

[PB] garments have not been tested as a complete suit. A risk evaluation may be needed to find a suitable selection of protective wear.

**Important:** To ensure that the wearer always has adequate information about the fabric properties of individual garments, the names of chemicals and chemical products including approximate concentrations of components as well as performance levels obtained for liquid repellency and penetration are described in each garment's marking.

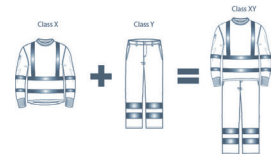
When a collection is implemented, we advise a performance test with exposure to the hazardous substances under real conditions.

For the wearer's safety, the manufacturer's instructions must be followed as regards cleaning procedures and reapplication of treatments. Reapplications shall always be performed by the garment contractor on a clean garment before being delivered to a wearer. In the event of accidental contact with liquid chemicals, the user must immediately leave the workplace and remove the garments to check the damage.



**EN ISO 20471:2013: High visibility clothing – Test methods and requirements**

This standard specifies requirements for high-visibility clothing capable of signalling the user's presence visually in daylight conditions and under illumination of headlights in the dark. There are three classes of high-visibility garment based on the levels of conspicuity they provide, whereby class 3 garments offer the highest level of visibility and class 1 garments the lowest. A higher class can be achieved by combining garments.



The classes are based on a minimum visible surface area (in m<sup>2</sup>) for fluorescent fabric and retro-reflective bands:

	Class 1	Class 2	Class 3
Fluorescent material	0,14 m <sup>2</sup>	0,50 m <sup>2</sup>	0,80 m <sup>2</sup>
Retro-reflective bands	0,10 m <sup>2</sup>	0,13 m <sup>2</sup>	0,20 m <sup>2</sup>

The garment's marking indicates the protection class the garment has and the garment's expected lifetime. Fabrics and retro-reflectives have been laboratory washed to determine the maximum number of cleaning cycles for which the reflective properties can be guaranteed. The laboratory tests do not evaluate wear and tear or factors that will affect the garment's lifetime (usage, work environments, care of the garment, etc.). When garments are soiled, the protective properties are reduced. Regularly changing clothing will prevent dirt impregnating the materials and increase the garment's lifetime.



**ISO 11612:2015 Protective clothing to protect against heat and flame**

A standard applicable for protective clothing with limited flame spread properties and where the user may be exposed to radiant, convective or contact heat and molten metal splashes. This third edition of the standard replaces ISO 11612:2008 and includes a minor revision relating to the clause concerning garment overlap and requirements for the area covered by the protective suit. For complete protection, it will be necessary to add protection for the head, hands and feet.

For some work environments, appropriate respiratory equipment shall be considered. The standard provides minimum performance requirements categorised in four performance levels (1–4), where 1 indicates exposure to low risk and 4 indicates exposure to extreme risk. The marking indicates the level of protection using code letters and numbers. The level of protection provided shall be determined by the outcome of the risk assessment.

Code/ Performance:

- A1/A2 Limited flame spread: Surface ignition (A1) is compulsory/Edge ignition (A2)
- B1-B3 Convective Heat
- C1-C4 Radiant Heat
- D1-D3 Molten aluminium splash
- E1-E3 Molten iron splash
- F1-F3 Contact heat

A garment suit shall completely cover the upper and lower torso, neck, arms to the wrist and legs to the ankle. Trousers shall overlap footwear and overlap shall be maintained during walking and crawling. For a two-piece suit, overlap between jacket and trousers shall be maintained when the wearer fully extends their arms above their head and bends over until their fingers touch the ground. Quick-release fasteners enable easy removal of the garments in event of an emergency.

When gloves are worn, there shall be an overlap between sleeves and gloves. The overlap shall be maintained in all working positions and in such a way that trapping points, entry of flames or molten metal are avoided.

For garments with a hood, it shall be possible to remove the hood or to secure its position in another way when not used.

Additional garments worn, such as aprons and gaiters, shall have equal protective levels and comply with the same requirements as the garments.

Front closures shall always be closed over the entire length during use. Patch pockets shall be made from materials with the same protective characteristics as the garment's main fabric. Extended design requirements are compulsory for protection against molten metal and molten aluminium (D-E). For instance, all pockets and closures shall always be provided with a covering flap.

In the event of an accidental splash of chemical/flamable liquid or molten metal onto the garments, the wearer shall immediately withdraw from the work area and carefully remove the garments. The garments may not eliminate all risks of burns. A second-degree skin burn may occur if the user stays in direct contact with a heat source of 40–50°C for more than 10 seconds.



**ISO 11611:2015 Protective clothing for use in welding and allied processes**

This 2nd edition replaces the version ISO 11611:2007 which has been revised with minor technical changes that affect design of garment overlap, tear strength, requirements for lining, etc. ISO 11611 certified clothing protects the wearer from sparks and short contact with fire and reduces the risk of electric shock

from short accidental contact with electrical conductors (up to approx. 100 V DC, in normal welding conditions). The protective garment suit shall completely cover the body (upper and lower torso, neck, arms to the wrist and legs to the ankle). This can be achieved by selecting a jacket and corresponding trousers, or a coverall. For complete security, it is necessary to supplement protection with suitable protective equipment for the head, face, hands and feet. Flashes in the garment exterior shall be avoided since they can act as trapping points for molten metal and sparks from welding activities. Always ensure the appropriate size is used. A stronger garment suit designed to provide extra protection over specific areas of the body can be considered to ensure adequate protection against exposure to sparks and flames. Additional protective garments are also offered such as sleeve covers, aprons and gaiters. When an apron is used, it shall cover the front of the body at least from side seam to side seam. Additional protective garments must alone meet the requirements of this standard. This standard specifies two classes with performance requirements based on exposure to welding activities, where class one is the lowest level.

**Class 1** Protection against less hazardous welding techniques and situations that cause lower levels of sparks and heat radiation.

**Class 2** Protection for situations causing higher level/additional risk, where the risk of exposure to sparks and heat radiation is higher and complex. For example, manual welding techniques causing heavy formations of splatters and drops.



**EN 342:2017 Protective clothing against cold**

This standard specifies requirements and test methods for the performance of clothing ensembles for protection against the effects of cold environments equal to or below -5°C. Thermal insulation is the most important property tested, and it is tested to verify the effect of layers, fit, drape, coverage and shape.

The clothing ensemble shall be selected to be optimal rather than to provide maximal insulation. Sweating should be avoided in continuous cold exposure, since moisture absorption will progressively reduce insulation. This is best controlled by selecting flexible, adjustable garments that can be removed and/or have the possibility to balance thermal comfort.

Garments in frequent use can lose insulation capacity due to the effects of laundering and wear. Well-maintained clothing is less affected in this respect. Classification and information can be seen in each garment marking:

- a. Thermal Insulation,  $I_{cler}$  ( $m^2 \cdot K/W$ )  
 Shall have a minimum value of 0,265  $m^2 K/W$ . It shall also be expressed if it is type B (ensemble with underwear), type C (ensemble with specified underwear from manufacturer) or type R (standard ensemble)

$I_{cler}$ $m^2 \cdot K/W$	User moving							
	Light 115 W/m <sup>2</sup>				Moderate 170 W/m <sup>2</sup>			
	Air velocity							
	0,4 m/s		3 m/s		0,4 m/s		3 m/s	
	8 h	1 h	8 h	1 h	8 h	1 h	8 h	1 h
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

- b. Air Permeability, (mm/s); class 3 offers the highest protection  
 $AP > 100$  class 1  
 $5 < AP \leq 100$  class 2  
 $AP < 5$  class 3
- c. Water Penetration (WP)  
 Optional, if it has not been tested it shall be replaced with X on the label.

Where the insulation in the garment is stated with reference to underwear Type C, the underwear article numbers are stated in the commercial documents of each product.  
 Note: In cold conditions as defined by the standard, possible exposure to water is rare and considered to be limited. If the exposure to water is high, EN 343 applies.

**EN 14058:2017 Garments for protection against cool environments**  
 This standard specifies requirements and test methods for the performance of garments used for work in cool temperatures above -5°C and mainly indoor environments, unless otherwise stated by the supplier. This is applicable when there are no demands for watertight or air permeable garments. Footwear, gloves and headwear are excluded. The clothing ensemble shall be selected to be optimal rather than to provide maximal insulation. Continuous sweat or moisture absorption by the inner layer of the garment reduces the insulation properties. Garments in frequent use can lose insulation capacity due to laundering and wear.

Well-maintained clothing is less affected in this respect.  
 Classifications and information required in each garment marking:

- a. Thermal resistance,  $R_{cl}$  ( $m^2 \cdot K/W$ ); Class 4 offers the highest protection  
 $0,06 \leq R_{cl} < 0,12$  class 1  
 $0,12 \leq R_{cl} < 0,18$  class 2  
 $0,18 \leq R_{cl} < 0,25$  class 3  
 $0,25 \leq R_{cl}$  class 4
- b. Air Permeability, AP (mm/s); Class 3 offers the highest protection.  
 This classification is optional.  
 $100 < AP$  class 1  
 $5 < AP \leq 100$  class 2  
 $AP < 5$  class 3
- c. Resistance to Water Penetration, WP  
 Optional – if the garment is indicated as being resistant to water penetration, the material shall have a minimum value of 8000 Pa.
- d. Water vapour resistance,  $R_{ev}$   
 If the garment is indicated as being resistant to water vapour, the garment's resistance shall be less than 55  $m^2 Pa/W$ .
- e. Resultant effective thermal insulation  $I_{cler}$   
 Optional – this measurement is required only when the thermal resistance is higher than class 4. If any of the above is marked with an X, the garment has not been tested for that specific characteristic.

**General for; ISO 11612/ISO11611/EN1149-5/IEC6148-2/EN13034:**  
 Protective properties may be affected by wear and tear, washing and/or contamination (oil, solvent, paint, hydrocarbon, petrol, et cetera). When any treatment is required in order to maintain protective properties, it shall be performed on a clean garment and by the supplier only.  
 After accidental brief and repeated contact with flames, the fabric may be perforated. This is a normal. An increase in the oxygen content of the air will considerably reduce the protection of welders' protective clothing against flames.  
 For operational reasons, it is not always possible to protect the user from all electrically charged parts of an electric welding circuit.  
 Your electrostatic dissipative garment offers no protection against the voltage of the electricity grid. Protective clothing must be worn correctly. The garment or the combination of garments shall always be worn closed. All pockets shall be closed.  
 Trousers, sleeveless coveralls and bib trousers must be worn together with a jacket or shirt with equal protective performance.  
 If a certified welding shirt is worn during welding activities, then it shall be worn like a jacket, e.g., fully closed and not tucked into trousers.  
 Garments with ventilation on the back may increase comfort but beware of the risk of entangling. Additional partial body protection can be required for different types of work.  
 The protective clothing itself does not protect against electric shock. When there is such a risk, multiple layers of flame-retardant clothing are recommended.  
 When a garment has loops, they shall only be used to attach ATEX-certified accessories.

**General for all**  
**The fabric used in this garment meets the European norm EN ISO 13688:2013 regarding shrinkage (less than 3% after 5 laundry cycles).**  
 Garment assembly shall be chosen based on the features and protective properties that best suit your needs.  
 Improper use may endanger your own safety.  
 The clothing supplier cannot be held liable if the clothing has been used incorrectly.  
 Safety cannot be guaranteed under all circumstances. Wearing this equipment does not exempt the wearer from following safety rules.  
 In order to maintain optimal protection, check your workwear regularly to evaluate the impact of wear and tear.  
 Usage will eventually degrade the protective properties of the clothing and, over time, the clothing may not continue to provide sufficient protection.  
 If the garment is soiled, its performance can be impaired.

**Risk assessment**

The risk assessment is the sole responsibility of the employer. This shall be carried out before making decisions concerning the clothing to be worn. All identified risks shall be verified and taken into consideration.

**Modifications**

Modifications to a PPE are not allowed. Alterations are the responsibility of the supplier. In the event of an accident, ELIS will bear no responsibility if a garment has been modified other than by ELIS.

**Repair**

All repairs must be made according to the directions given by ELIS and trained personnel. No other repairs/modifications are allowed.

**Harmlessness**

The materials or components of the garments do not contain any harmful substances at levels currently known to have adverse effects on the user's health under the foreseeable circumstances of use.

**Maintenance**

**For your safety, clothing should be industrially washed only.**  
 Regular and careful maintenance contributes to longer-lasting clothing. Always make sure all pockets are empty and knee pads are removed before handing in for laundry.  
 Follow the changing routines defined for your activities. Regular maintenance helps to preserve the protective performance.  
 Cleaning procedures shall be in line with manufacturers' instructions and standardised processes for industrial laundry.

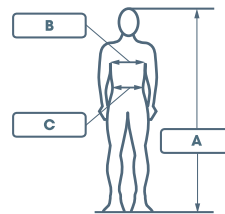
**Storage**

To extend the lifetime of your workwear, store it in a dry, well-ventilated and clean place when it is not in use. Used PPE shall be returned to the rental company which recycles it as per the procedures at the site.

**Sizing**

The user shall ensure the correct size of workwear has been chosen. PPE garments shall allow full body movement if the work activities do not prescribe other restrictions.  
 The size pictogram indicates the size of the garment but also the related body dimensions based on three measurements:

- (A) total height
- (B) chest width and
- (C) waist measure.



Size based on individual body dimensions shall be considered if the standard size range does not fit the wearer. Alterations of the size of clothing, such as shortening of trouser length and sleeves, must be performed by ELIS. The trouser hem shall rest upon the shoes during use. No turn-ups or gaps are allowed. If the length of the trouser legs needs to be shortened, the supplier shall perform this.

This document and all Declarations of Conformity are available at [www.elis.com](http://www.elis.com).  
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