



HOHENSTEIN

# ***Personal Protective Equipment (PPE)***

Overview Testing & Certifying



# Content

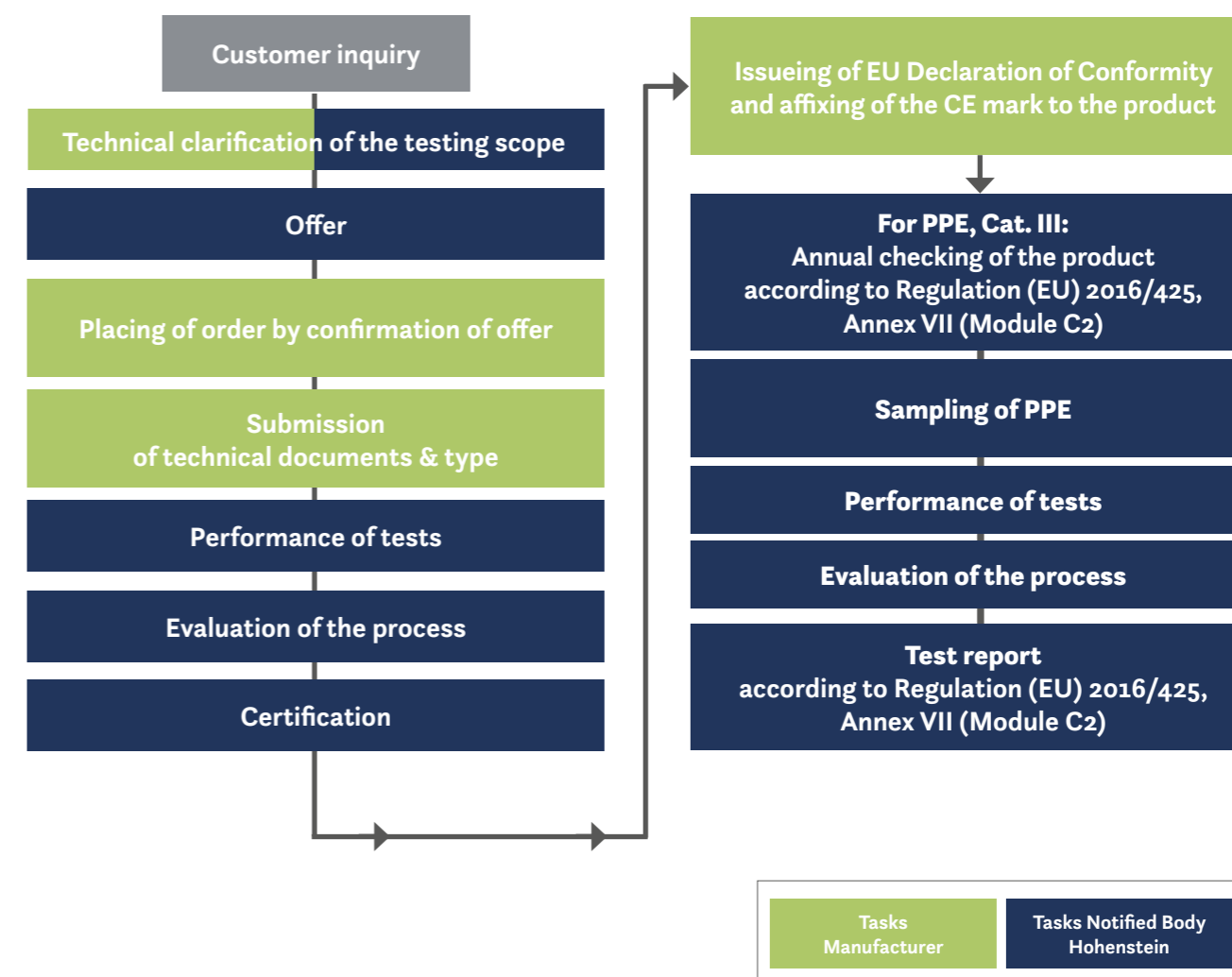
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# Overview

## Certification Process PPE

**Hohenstein –  
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*As accredited testing laboratory  
and Notified Body for Personal  
Protective Equipment (PPE) with  
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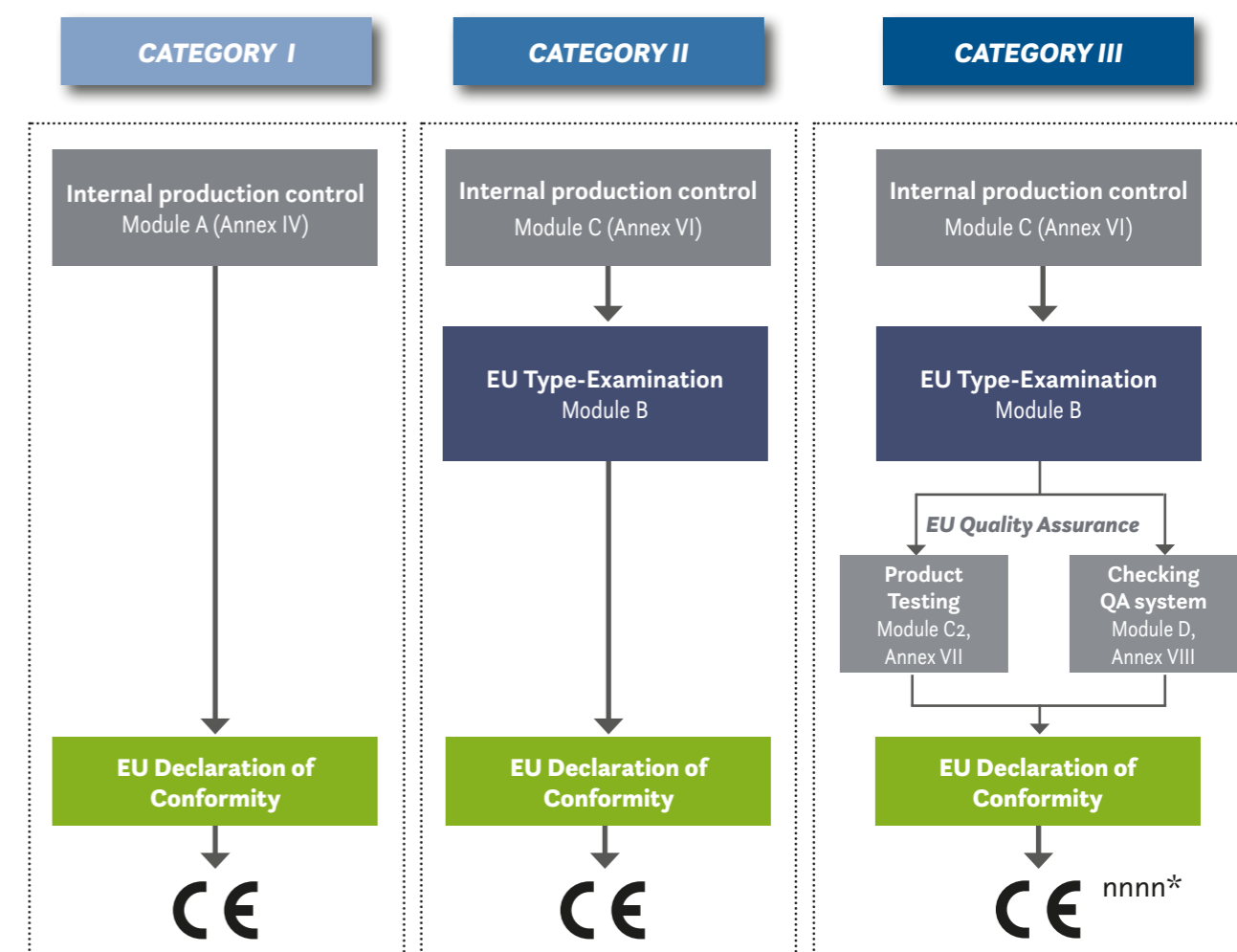
# Checklist according to Regulation (EU) 2016/425

When applying for certification, the certification body requires the following technical documents and samples:

- ✓ Signed application for certification including certification agreement
- ✓ Proof of ensuring of product conformity / quality control
- ✓ Risk assessment of PPE (list of health and safety requirements in accordance with Regulation (EU) 2016/425, Annex II and description of the risks from which the PPE is intended to protect).
- ✓ Label  
Manufacturer's information
- ✓ Sufficient number of representative products in necessary sizes, (*minimum 2 products*)
- ✓ Sufficient testing material (*approx. 2 5 running meters*)
- ✓ Detailed description of the product (*e.g. drawings, construction overview, design description, photos, finished measurement tables, bill of materials [BOM]*)
- ✓ Test reports of the materials used in the type (*documents must be issued and signed by an accredited body*)

# PPE Categories & CE Marking

based on the Regulation (EU) 2016/425



\* Identification number Notified Body

# Requirement standards

Personal Protective Equipment

**NOTE:**

*The following overview is an excerpt from the standards. The requirements are summarised analogously. Only the harmonised standards are binding.*



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## Protective clothing – General requirements

EN ISO 13688:2020

(complementary to the following product standards)

| Test   | Test method   | Pictogram   |
|--|---|---|
| 4.2 Innocuousness<br>(e.g. AZO dyestuffs and pH value) | ISO 17075 (chromium VI)<br>ISO 3071 (pH textile)<br>ISO 4045 (pH leather)<br>EN 1811 (nickel)<br>EN 14362-1 (AZO dyestuffs) |  <i>Basic pictogram for protection</i>           |
| 4.3 Design   | —   |  <i>Information supplied by the manufacturer</i> |
| 4.4 Wearing comfort                                    | —   |   |
| 5 Ageing   | ISO 15797 (industrial) or<br>ISO 6330 (domestic)<br>ISO 3175-2 to -4 (dry cleaning)<br>ISO 5077 (dimensional change)        |   |
| 6 General size designation                             | ISO 3635  |   |
| 7 Marking  |   |   |
| 8 Information supplied by the manufacturer             |   |   |

### Note



Graphic symbols (pictograms) in the form of a shield, display the hazard against which the clothing shall offer protection. The type of hazard is symbolized by the picture within the shield frame.




Graphic symbols (pictograms) in the form of a quadrat show the intended use of the clothing. The type of use is symbolized by the picture within the frame of the quadrat, e. g. protective clothing (-equipment) for firefighters.

## Protective clothing – Ensembles & garments for protection against cold


EN 342:2017

(Temperatures below -5 °C)

| Test  | Test method   | Pictogram   |
|---|---|---|
| 4.2 Resulting thermal insulation $I_{cler}$                                       | EN ISO 15831<br>after pretreatment  |  |
| 4.3 Air permeability  | EN ISO 9237<br>after pretreatment   |   |
| 4.4 Resistance to water penetration (surface),<br><i>optional</i>                 | EN 20811<br>after pretreatment  |   |
| 4.5 Water vapour resistance<br>( <i>only if water penetration was tested</i> )    | EN ISO 11092<br>in new state  |   |
| 4.6.1 Tear resistance of woven fabrics  | EN ISO 4674-1,<br>method A,<br>in new state   |   |
| 4.6.2 Bursting strength of knitted fabrics  | EN ISO 13938-1 or<br>EN ISO 13938-2<br>in new state                                 |   |
| 4.6.3 Flexibility of coated or laminated material<br>with protection below -50 °C | ISO 4675  |   |
| 4.7 Dimensional change  | EN ISO 5077   |   |
| 5. Pretreatment:<br>Washing and drying<br>or<br>Dry cleaning                      | ISO 15797 (industrial) or<br>ISO 6330<br>(domestic)<br>ISO 3175-2<br>(Dry cleaning) |   |

## Protective clothing – Protection against rain

EN 343:2019


| Test | Test method   | Pictogram   |
|------|---|---|
| 4.2  | Resistance to water penetration on functional layer |  |
|      | Resistance to water penetration, seam               |   |
| 4.3  | Water vapour resistance $R_{et}$                    |   |
| 4.4  | Tensile strength of woven outer shell material      |   |
| 4.5  | Tear strength of woven outer shell material         |   |
| 4.6  | Bursting strength of knitted outer shell material   |   |
| 4.7  | Dimensional change                                  |   |
| 4.8  | Maximum force to seam strength, surface             |   |
| 4.9  | Water resistance of a finished garment (optional)   |   |
| 5.2  | Pretreatment: Cleaning                              |   |
| 5.3  | Pretreatment – abrasion                             |   |
| 5.4  | Pretreatment – flexing                              |   |
| 5.5  | Pretreatment – influence of fuel and oil            |   |

## Protective clothing – for users of hand-held chain saws

EN ISO 11393-2:2019

Performance requirements and test methods for leg protectors

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| Test | Test method   | Pictogram   |
|------|---|---|
| 4.4  | Ergonomics  |  |
| 4.5  | Dimensional change (EN ISO 11393-2, section 6.2)  |   |
| 4.6  | Protective coverage   |   |
| 4.7  | Resistance to cutting   |   |
| 4.8  | Requirements to attachment of protective padding  |   |
| 6.1  | Pretreatment for EN ISO 11393-2; section 6.2, 6.3, 6.4 and 6.5<br>5 x washing and drying<br>or dry cleaning |   |

## Protective clothing – for users of hand-held chain saws

EN ISO 11393-6:2019

Performance requirements and test methods for upper body protectors

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|     | Test  | Test method  | Pictogram   |
|-----|---|--|---|
| 4.4 | Ergonomics  | EN ISO 11393-6, section 11                             |  |
| 4.5 | Protective coverage   | EN ISO 11393-6, section 8                              |   |
| 4.6 | Dimensional change<br>(EN ISO 11393-6, section 7)   | ISO 5077   |   |
| 4.7 | Resistance to cutting   | EN ISO 11393-6, section 9                              |   |
| 4.8 | Requirements to attachment of protective padding  | EN ISO 11393-6, section 10                             |   |
| 6.1 | Pretreatment for EN ISO 11393-6;<br>Section 7, 8, 9 and 10<br>5 x washing and drying<br>or dry cleaning | ISO 6330<br>(domestic)<br>ISO 3175-2<br>(dry cleaning) |   |

## Protective clothing for firefighters – Protective clothing for firefighting

EN 469:2020

Performance requirements

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|         | Test   | Test method   | Pictogram   |
|---------|--|---|---|
| 4.      | Clothing design  |   |  |
| 5.3     | Pretreatment:<br>Washing and drying or<br>dry cleaning           | ISO 15797 (industrial) or<br>ISO 6330 (domestic)<br>ISO 3175-2 (dry cleaning) |   |
| 6.2.1.1 | Limited flame spread –<br>Face ignition                          | EN ISO 15025,<br>method A –<br>in new state and<br>after pretreatment         |   |
|         | Limited flame spread –<br>Seam ignition                          | EN ISO 15025,<br>method A –<br>in new state and<br>after pretreatment         |   |
|         | Limited flame formation – Hardware<br>(e.g. zip fasteners, etc.) | EN ISO 15025,<br>method A –<br>in new state and<br>after pretreatment         |   |
| 6.2.1.2 | Contact heat transmission  | EN ISO 12127-1 –<br>in new state and<br>after pretreatment                    |   |
| 6.2.1.3 | Heat transmission on exposure<br>to flame                        | EN ISO 9151 –<br>in new state and<br>after pretreatment                       |   |
| 6.2.1.4 | Heat transmission on exposure<br>to radiant heat                 | EN ISO 6942 –<br>in new state and<br>after pretreatment                       |   |
| 6.2.1.5 | Remaining material strength<br>after thermal radiation           | EN ISO 6942 +<br>EN ISO 13934-1   |   |
| 6.2.1.6 | Heat resistance  | ISO 17493 –<br>in new state   |   |




## Protective clothing for firefighters – protective clothing for firefighting

EN 469:2020


Performance requirements

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| Test   | Test method  | Pictogram   |
|--|--|---|
| 6.2.1.7 Heat resistance of sewing thread used in main seams                        | EN ISO 13937-2<br>ISO 4674-1 (coated material) in new state                |  |
| 6.2.2 Resistance to penetration by liquid chemicals                                | EN ISO 6530 - after pretreatment   |   |
| 6.2.3 Tensile strength   | EN ISO 13934-1 or<br>EN ISO 1421<br>(coated material) – after pretreatment |   |
| Seam strength  | EN ISO 13935-2 – after pretreatment  |   |
| 6.2.4 Tear strength  | EN ISO 13937-2 or<br>ISO 4674-1 (coated material) – after pretreatment     |   |
| 6.2.4 Water penetration resistance, surface<br>Water penetration resistance, seams | EN ISO 811 – after pretreatment  |   |
| 6.2.5 Dimensional change   | ISO 5077   |   |
| 6.2.6 High visibility (optional)   | EN ISO 20471,<br>section 5.1 / 5.2<br>EN 469 Annex B (normative)           |   |
| 6.3.1 Water vapour resistance  | EN ISO 11092<br>after pretreatment   |   |
| 7 Test method for complete garments (optional)                                     | EN 469 Annex D (informative)   |   |


## Requirements for protective clothing for use where there is a risk of entanglement with moving parts

EN 510:2019

| Test   | Test method   | Pictogram   |
|--|---|---|
| 3.1 Check of the design and functionality of the locking devices |   |  |
| 3.2 Sizes  |   |   |
| – Pretreatment:<br>5 x washing and drying or<br>dry cleaning     | ISO 15797 (industrial) or<br>ISO 6330 (domestic)<br>ISO 3175-2 (dry cleaning) |   |
| 3.3 Dimensional change   | ISO 5077  |   |
| 4.2 Effectiveness of locking devices                             | after pretreatment  |   |




## Protective clothing – Electrostatic properties

EN 1149-5:2018

| Test   | Test method   | Pictogram   |
|--|---|---|
| – Pretreatment:<br>5 x washing and drying or<br>dry cleaning   | ISO 15797 (industrial) or<br>ISO 6330 (domestic)<br>ISO 3175-2 (dry cleaning) |  |
| 4.2.1 Surface resistance<br><br>or:<br><br>Shielding factor and half-decay time<br>(induction charging)        | EN 1149-1<br>after pretreatment<br><br>EN 1149-3<br>after pretreatment        |   |
| 4.2.1 Check of distance between electrically<br>conductive yarns for material containing<br>conductive threads |   |   |
| 4.2.2 Check of construction  |   |   |


## Protective clothing – Enhanced visibility equipment for medium risk situations


EN 17353:2020

| Test   | Test method  | Pictogram   |
|--|--|---|
| 4 Types and minimum area requirements  |  |        |
| 5 Design (type A, B1, B2, B3 or AB)  |  |   |
| 6.1.1 Requirements for colour behaviour of<br>materials in new condition   | 7.2  |        |
| 6.1.2 Colour after Xenon exposure  | 7.2<br>After irradiation<br>(EN ISO 105-Bo2,<br>Method 3)  | or<br> |
| 6.1.3.2 Colour fastness to rubbing<br>(Type A and Type AB)   | EN ISO 105-X12   |   |
| 6.1.3.3 Colour fastness to perspiration  | EN ISO 105-E04   |   |
| 6.1.3.4 Colour fastness to washing<br><br>Colour fastness to dry cleaning<br>Bleaching with hypochlorite<br>Ironing                  | Domestic:<br>EN ISO 105-Co6 or<br>Industrial:<br>EN ISO 105-Co6<br>Test No. D1S<br>EN ISO 105-Do1<br>EN 20105-No1<br>EN ISO 105-X11<br>per temperature level |   |
| 6.2 Dimensional change of fluorescent and<br>non-fluorescent material  | EN ISO 5077  |   |
| 6.3 Photometric and physical<br>performance requirements for materials<br>with individual properties and with<br>combined properties | 7.3 (CIE 54.2)<br>in new state   |   |
| 6.4 Performance requirements for retro<br>reflection after test load   | 7.3 (CIE 54.2) and 7.4<br>(test loads)   |   |

# Protective clothing for use in welding and allied processes


EN ISO 11611:2015


| Test   | Test method   | Pictogram   |
|--|---|---|
| 4 General and design requirements                    |   |  |
| 5.2 Pretreatment: washing and drying or dry cleaning | ISO 15797 (industrial) or<br>ISO 6330 (domestic)<br>ISO 3175-2 (dry cleaning) |   |
| 6.1 Classification                                   |   |   |
| 6.2 Tensile strength                                 | ISO 13934-1 (woven fabric)<br>ISO 3376 (leather)<br>after pretreatment        |   |
| 6.3 Tear strength                                    | ISO 13937-2 (woven fabric)<br>ISO 3377-1 (leather)<br>after pretreatment      |   |
| 6.4 Bursting strength of knitted materials and seams | ISO 13938-1 or -2<br>after pretreatment                                       |   |
| 6.5 Maximum force to seam/strength                   | ISO 13935-2,<br>grab method,<br>after pretreatment                            |   |
| 6.6 Dimensional change                               | ISO 5077  |   |

| Test  | Test method  | Pictogram   |
|---|--|---|
| 6.7 Limited flame spread – Face ignition (Code A 1)                                 | EN ISO 15025, method A<br>in new state and<br>after pretreatment |  |
| Limited flame spread – Edge ignition (Code A 2), optional                           | EN ISO 15025, method B<br>in new state and<br>after pretreatment |   |
| Limited flame spread on seams – Face ignition (Code A 1)                            | EN ISO 15025, method A<br>after pretreatment                     |   |
| Limited flame spread on seams – Edge ignition (Code A 2), optional                  | EN ISO 15025, method B<br>after pretreatment                     |   |
| Limited flame spread on fittings (e.g. zip fasteners, etc.)                         | EN ISO 15025, method A<br>after pretreatment                     |   |
| Limited flame spread on badges (if larger than 10 cm <sup>2</sup> ) – Face ignition | EN ISO 15025, method A<br>after pretreatment                     |   |
| 6.8 Behaviour of materials on impact of small splashes of molten metal              | ISO 9150<br>after pretreatment                                   |   |
| 6.9 Heat transmission on exposure to radiant heat                                   | ISO 6942, method B<br>after pretreatment                         |   |
| 6.10 Electrical resistance  | EN 1149-2<br>after pretreatment                                  |   |
| 6.11 Fat content – only for leather items   | ISO 4048   |   |

# Protective clothing – Protection against heat and flames

EN ISO 11612:2015


| Test  | Test method   | Pictogram   |
|---|---|---|
| 4. General and design requirements  |   |  |
| 5.2 Pretreatment:<br>Washing and drying or<br>dry cleaning  | ISO 15797 (industrial) or<br>ISO 6330 (domestic)<br>ISO 3175-2 (dry cleaning) |   |
| 6.2 Heat resistance   | ISO 17493<br>after pretreatment   |   |
| 6.3 Limited flame spread – Face ignition<br>(Code A 1)<br><br>Limited flame spread – Face ignition<br>(Code A 2), <i>optional</i><br><br>Limited flame spread on seams –<br>Edge ignition (Code A 2), <i>optional</i><br><br>Limited flame spread on seams –<br>Face ignition (Code A 1)<br>Limited flame spread on seams –<br>Edge ignition (Code A 2), <i>optional</i><br><br>Limited flame spread – Hardware<br>(e.g. zip fasteners, etc.)<br>Limited flame spread on badges (larger<br>than 10 cm <sup>2</sup> ) – Face ignition<br>( <i>optional</i> ) | ISO 15025, method A<br>in new state and<br>after pretreatment                 |   |
|   | ISO 15025, method B<br>in new state and<br>after pretreatment                 |   |
|   | ISO 15025, method B<br>in new state and<br>after pretreatment                 |   |
|   | ISO 15025, method A<br>after pretreatment                                     |   |
|   | ISO 15025, method B<br>in new state and<br>after pretreatment                 |   |
| 6.4 Dimensional change  | EN ISO 15025, method A<br>after pretreatment                                  |   |
| 6.5.1 Tensile strength  | ISO 5077  |   |
| 6.5.1 Tensile strength  | ISO 13934-1 (woven fabric)<br>ISO 3376 (leather)<br>after pretreatment        |   |

| Test  | Test method  | Pictogram   |
|---|--|---|
| 6.5.2 Tear strength   | ISO 13937-2 (woven fabric)<br>ISO 3377-1 (leather)<br>after pretreatment |  |
| 6.5.3 Bursting strength of knitted fabrics,<br>materials and seams  | ISO 13938-1 or -2<br>dry, after pretreatment                             |   |
| 6.5.4 Maximum force to seam strength  | ISO 13935-2,<br>grab method<br>after pretreatment                        |   |
| 6.6 Fat content – <i>only for leather</i>   | ISO 4048   |   |
| <b>Compliance with at least one requirement Code B to F –<br/>depending on the intended use of the clothing</b> |  |   |
| 7.2 Heat transmission on exposure to flame<br>(Code B)  | ISO 9151<br>after pretreatment   |   |
| 7.3 Heat transmission on exposure to<br>radiant heat (Code C)   | EN ISO 6942, method B<br>after pretreatment                              |   |
| 7.4 Resistance of materials to molten<br>metal splash – aluminium (Code D)                                      | EN ISO 9185<br>after pretreatment  |   |
| 7.5 Resistance of materials to molten<br>metal splash – iron (Code E)   | EN ISO 9185<br>after pretreatment  |   |
| 7.6 Contact heat transmission (Code F)  | EN ISO 12127-1<br>after pretreatment                                     |   |
| 9 Manikin test ( <i>optional</i> )  | ISO 13506  |   |

## Protective clothing – Hand, arm, chest, abdomen, leg, genital and face protectors for fencers \*

EN 13567:2002+A1:2007

Performance requirements and test methods


| Test  | Test method  | Pictogram   |          |
|-------|--|---|----------|
| 4.2   | Innocuousness  |  |          |
| 4.3   | Ergonomics   |   |          |
| 4.4   | Restraint requirement  |   |          |
| 4.5   | Sizing   |   |          |
| 4.6   | Minimum dimensions of zones of protection                    |   |          |
| 4.7.3 | Materials and details for the manufacture of fencing apparel |   |          |
| 4.8.1 | Penetration resistance – General                             |   | 5.10.5.4 |
| 4.8.3 | Penetration resistance – Fencing jackets                     |   | 5.10.5.4 |
| 4.8.4 | Penetration resistance – Fencing breeches                    |   | 5.10.5.4 |
| 4.8.5 | Penetration resistance – Fencing under pants                 |   | 5.10.5.4 |
| 4.8.6 | Penetration resistance – Fencing under plastrons             | 5.10.5.4  |          |
| 4.8.7 | Thickness – Fencing gloves                                   | EN ISO 5084:1996  |          |
|       | Penetration resistance – Fencing gloves                      | 5.10.5.4  |          |
| 4.8.8 | Thickness – Fencing socks                                    | EN ISO 5084:1996  |          |
| 4.9   | Burst strength of seams                                      | EN ISO 13938-1:1999 <i>or</i><br>EN ISO 13938-2:1999                                |          |

### Note

\* Certification of textile products only.


## Protective clothing against liquid chemicals Chemical protective clothing with liquid-tight (Type 3) or spray-tight (Type 4) connections, including items providing protection to parts of the body only (Types PB [3] and PB [4])

EN 14605:2009

| Test | Test method                             | Pictogram   |
|------|---|---|
| 4.1  | Abrasion resistance                     |  |
|      | Flex cracking resistance                |   |
|      | Tear resistance                         |   |
|      | Tensile strength and tensile elongation |   |
|      | Puncture resistance                     |   |
| 4.2  | Resistance to permeation of liquids     |   |
|      | Jet test (Type 3)                       |   |
|      | Spray test (Type 4)                     |   |
|      | Seam strength                           |   |
|      |   |   |


## Protective clothing against liquid chemicals Chemical protective clothing offering limited protective performance against liquid chemicals (Type 6 and Type PB [6] equipment)

EN 13034:2009

| Test   | Test method  | Pictogram   |
|--|--|---|
| 4.1 Abrasion resistance  | EN ISO 12947-2<br>in new state <i>or</i><br>after pretreatment |  |
| Tear strength  | EN ISO 9073-4<br>in new state <i>or</i><br>after pretreatment  |   |
| Tensile strength and tensile elongation  | EN ISO 13934-1<br>in new state <i>or</i><br>after pretreatment |   |
| Puncture resistance  | EN 863<br>in new state <i>or</i><br>after pretreatment         |   |
| Liquid repellency  | EN 6530<br>in new state <i>or</i><br>after pretreatment        |   |
| 4.2.2 Maximum force to seam strength   | EN ISO 13935-2<br>in new state <i>or</i><br>after pretreatment |   |
| 5.2 Resistance to penetration by liquids in the form of a light spray (type 6) | EN ISO 17491-4<br>in new state <i>or</i><br>after pretreatment |   |


## Protective clothing for firefighters – requirements and test methods for fire hoods

EN 13911:2017

| Test  | Test method  | Pictogram   |
|---|--|---|
| 5.2 Pretreatment: Washing and drying                          | EN ISO 6330<br>(domestic)  |  |
| 6.1.2 Limited flame spread – Face ignition                    | EN ISO 15025, method A<br>in new state and<br>after pretreatment |   |
| Limited flame spread on seams – Face ignition                 | EN ISO 15025, method A<br>in new state and<br>after pretreatment |   |
| Limited flame spread – hardware (e.g. zip fasteners, etc.)    | EN ISO 15025, method A<br>in new state and<br>after pretreatment |   |
| 6.1.3 Heat transfer on exposure to flame                      | EN ISO 9151<br>in new state                                      |   |
| 6.1.4 Heat transfer on exposure to radiant heat               | EN ISO 6942, method B<br>in new state and<br>after pretreatment  |   |
| 6.1.5 Residual material strength when exposed to radiant heat | EN ISO 6942, method A +<br>EN ISO 13938-1<br>after pretreatment  |   |
| 6.1.6 Heat resistance   | ISO 17493<br>after pretreatment                                  |   |
| 6.1.7 Seam breaking strength                                  | EN ISO 13938-1<br>after pretreatment                             |   |
| 6.1.8 Dimensional change                                      | ISO 5077   |   |
| 6.2.1 Performance requirements – complete firehood            | EN 13911, Annex B<br>after pretreatment                          |   |


## Protective clothing – Protection against cool environments

EN 14058:2017+A1:2023

| Test   | Test method  | Pictogram   |
|--|--|---|
| 4.2 Thermal resistance $R_{ct}$  | EN ISO 11092<br>after pretreatment                                 |  |
| 4.3 Air permeability<br><i>if clothing is worn outdoors</i>                          | EN ISO 9237<br>after pretreatment                                  |   |
| 4.4 Water penetration,<br>surface material ( <i>optional</i> )                       | EN ISO 811<br>after pretreatment                                   |   |
| 4.5 Water vapour resistance $R_{et}$ –<br><i>only if water penetration is tested</i> | EN ISO 11092<br>after pretreatment                                 |   |
| 4.6 Resulting thermal insulation $I_{cler}$<br>( <i>optional</i> )                   | EN ISO 15831<br>after pretreatment                                 |   |
| 4.7.1 Tensile strength   | ISO 13937-2 (woven fabric)<br>ISO 3377-1 (leather)<br>in new state |   |
| 4.7.2 Bursting strength<br>of knitted fabrics  | ISO 13938-1 <i>or</i> -2<br>dry, in new state                      |   |
| 4.8 Dimensional change   | ISO 5077   |   |


## Protective clothing – Protection against heat and flame – Limited flame spread

EN ISO 14116:2015

| Test  | Test method  | Pictogram   |
|---|--|---|
| 4. Clothing design  |  |  |
| 5.2 Pretreatment:<br>Washing and drying <i>or</i><br>dry cleaning | ISO 15797 (industrial) <i>or</i><br>ISO 6330 (domestic)<br>ISO 3175-2 (dry cleaning) |   |
| 6.1 Limited flame spread –<br>Face ignition                       | EN ISO 15025, method A<br>in new state and<br>after pretreatment                     |   |
| Limited flame spread on seams –<br>Face ignition                  | EN ISO 15025, method A<br>after pretreatment   |   |
| Limited flame spread on badges<br>and hardware – Face ignition    | EN ISO 15025, method A<br>after pretreatment   |   |
| 6.2.1 Tensile strength  | EN ISO 13934-1<br>after pretreatment   |   |
| 6.2.2 Tear strength   | ISO 13937-2 (woven fabric)<br>ISO 9073-4 (nonwoven fabric)<br>after pretreatment     |   |
| 6.2.3 Bursting strength of knitted fabric                         | EN ISO 13938-1 <i>or</i> -2<br>after pretreatment                                    |   |
| 6.2.4 Maximum force to seam strength                              | ISO 13935-2,<br>grab method<br>after pretreatment                                    |   |
| 6.3 Dimensional change  | ISO 5077   |   |

## Personal protective equipment – Knee protector for work in the kneeling position

EN 14404:2004 + A1:2010


| Test   | Test method            | Pictogram   |
|--|------------------------|---|
| 5.1 General requirements   | EN 14404, section 6.4  |  |
| 5.2.3 +<br>5.2.4 Size and dimensions   |                        |   |
| 5.2.5 Puncture resistance  | EN 863<br>in new state |   |
| 5.2.6 Force distribution   | in new state           |   |
| 5.2.7 Impact testing   | in new state           |   |
| 5.2.8 Restraint testing  | in new state           |   |
| 5.3 Water resistance –<br><i>only applicable for type 1, 3 or 4<br/>(optional)</i> | in new state           |   |
| 5.4 Ergonomics (attachment and comfort<br>while wearing and flexibility of bands)  |                        |   |

## Protective clothing for firefighters – wildland firefighting clothing

EN ISO 15384:2020 + A1:2021

Laboratory test methods and performance requirements

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| Test  | Test method  | Pictogram   |
|---|--|---|
| 4. Clothing design  |  |  |
| 5.3 Pretreatment:<br>Washing and drying <i>or</i><br>dry cleaning | ISO 15797 (industrial) <i>or</i><br>ISO 6330 (domestic)<br>ISO 3175-2 (dry cleaning) |   |
| 6.1.2 Limited flame spread –<br>Face ignition                     | EN ISO 15025, method A<br>in new state and<br>after pretreatment                     |   |
| Limited flame spread –<br>Seam ignition                           | EN ISO 15025, method A<br>in new state and<br>after pretreatment                     |   |
| Limited flame spread –<br>Hardware<br>(e.g. zip fasteners, etc.)  | EN ISO 15025, method A<br>in new state and<br>after pretreatment                     |   |
| 6.1.3 Limited flame spread on seams –<br>Edge ignition            | EN ISO 15025, method B<br>in new state and<br>after pretreatment                     |   |
| 6.2 Heat transfer –<br>Radiation                                  | EN ISO 6942<br>after pretreatment  |   |




## Protective clothing for firefighters – wildland firefighting clothing

EN ISO 15384:2020 + A1:2021

Laboratory test methods and performance requirements

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| Test   | Test method  | Pictogram   |
|--|--|---|
| 6.3 Heat resistance  | ISO 17493 -<br>after pretreatment<br>(materials and hardware)<br>DIN EN ISO 3146<br>In new state (sewing thread) |  |
| 7.1 Tensile strength   | EN ISO 13934-1<br>after pretreatment   |   |
| 7.2 Tear strength  | ISO 4674-1, method B<br>after pretreatment   |   |
| 7.3 Main seam strength   | EN ISO 13935-2<br>after pretreatment   |   |
| 7.4 Abrasion resistance  | ISO 12947-2<br>after pretreatment  |   |
| 8.1 +<br>8.2 Thermal resistance and<br>Water vapour resistance | EN ISO 11092   |   |
| 9.1 Dimensional change   | ISO 5077   |   |
| 9.2 Retroreflective <i>and/or</i> fluorescent<br>performance   | EN ISO 20471   |   |

## Protective clothing for firefighters - Protective clothing for technical rescue

EN 16689:2017

Performance requirements

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| Test  | Test method   | Pictogram |
|---|---|-----------|
| 5.2 Pretreatment:<br>Washing and drying <i>or</i><br>dry cleaning | ISO 15797 (industrial) <i>or</i><br>ISO 6330 (domestic)<br>ISO 3175-2 (dry cleaning)  |           |
| 6.2 Limited flame spread  | EN ISO 15025, method A<br>in new state and<br>after pretreatment  |           |
| Limited flame spread –<br>seam                                    | EN ISO 15025, method A<br>in new state and<br>after pretreatment  |           |
| Limited flame spread –<br>hardware                                | EN ISO 15025, method A<br>in new state and<br>after pretreatment  |           |
| 6.3 Heat transmission on exposure<br>to radiant heat              | EN ISO 6942 in new state and<br>after pretreatment  |           |
| 6.4 Contact heat  | EN ISO 12127-1<br>after pretreatment  |           |
| 7.1 Tensile strength  | EN ISO 13934-1<br>after pretreatment  |           |
| 7.2 Tear strength   | <i>Coated woven fabrics:</i><br>EN ISO 4674-1, method B<br><i>Non-coated woven fabrics:</i><br>EN ISO 13937-2<br>after pretreatment |           |

## Protective clothing for firefighters - Performance requirements for protective clothing for technical rescue

EN 16689:2017


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| Test   | Test method  | Pictogram |
|--|--|-----------|
| 7.3 Abrasion resistance  | EN ISO 12947-2<br>after pretreatment   |           |
| 7.4 Surface wetting ( <i>optional</i> )  | EN ISO 4920<br>after pretreatment  |           |
| 7.5 Electrostatic properties<br>( <i>optional</i> )                                | EN 1149-5<br>after pretreatment  |           |
| 7.6 Dimensional change   | EN ISO 5077<br>after pretreatment  |           |
| 7.7 Water vapour resistance  | EN ISO 11092<br>after pretreatment   |           |
| 7.8 Resistance against penetration of<br>blood borne pathogens ( <i>optional</i> ) | ISO 16604<br>after pretreatment  |           |
| 7.9 Visibility   | EN ISO 20471, Colour<br>coordinates factor in<br>new state and after Xenon-<br>exposure and minimum area /<br>visibility |           |
| 7.10 Bursting strength   | EN ISO 13938-2<br>after pretreatment   |           |

## High visibility clothing – Test methods and requirements

EN ISO 20471:2013 + A1:2016


Page 1/2

| Test   | Test method   | Pictogram   |
|--|---|---|
| 4.1 Classification – types and classes                                       |   |  |
| 4.2 Specific requirements to design  |   |   |
| 4.3 Size designation   | EN ISO 13688  |   |
| 7.5 Pretreatment:<br>Washing and drying or<br>dry cleaning                   | ISO 15797 (industrial) or<br>ISO 6330 (domestic)<br>ISO 3175-2 (dry cleaning) |   |
| 5.2 Pretreatment – Xenon-exposure  | ISO 105-B02, method 3   |   |
| 5.1 Colour coordinates and luminance<br>factor for background material       | in new state  |   |
| 7.5 + Colour coordinates and luminance<br>5.2 factor for background material | after pretreatments   |   |
| 5.3.1 Colour fastness to rubbing   | ISO 105-X12 dry   |   |
| 5.3.2 Colour fastness to perspiration  | ISO 105-E04<br>alkaline + acid  |   |

# High visibility clothing – Test methods and requirements

EN ISO 20471:2013 + A1:2016

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| Test   | Test method  | Pictogram   |
|--|--|---|
| 5.3.3 Colour fastness to washing                         | ISO 105-Co6  |  |
| Colour fastness to dry cleaning                          | ISO 105-Do1  |   |
| Colour fastness to hypo-chlorite bleaching               | ISO 105-No1  |   |
| Colour fastness to hot pressing                          | ISO 105-X11  |   |
| 5.4 Dimensional change                                   | ISO 5077   |   |
| 5.5.1 Tensile strength (woven fabric)                    | ISO 13934-1<br>in new state                            |   |
| 5.5.2 Bursting strength (knitted fabric)                 | ISO 13938-2<br>in new state                            |   |
| 5.5.3 Tear strength (coated fabric) and tensile strength | ISO 4674-1<br>ISO 1421, method 1<br>in new state       |   |
| 5.6 * Water vapour resistance $R_{et}$                   | ISO 11092<br>in new state                              |   |
| Thermal resistance $R_{ct}$ – if necessary               | ISO 11092<br>in new state                              |   |
| Water vapour permeability index $i_{mt}$ – if necessary  | ISO 11092<br>Calculation from $R_{ct}$ and $R_{et}$    |   |
| 6 Requirements to retroreflective material               | CIE 54.2<br>in new state and<br>after testing exposure |   |


## Note

\* Clothing with protection against rain shall be tested and classified according to EN 343.

# Protective clothing against the thermal hazards of an electric arc

EN 61482-2:2020

Requirements

| Test  | Test method   | Pictogram   |
|---|---|---|
| 4.2 Design requirements   | EN 61482-2 section 5.2  |  <div style="border: 1px solid black; padding: 2px; margin: 2px;"> <b>EN 61482-2</b><br/> <math>ELIM = xxx \text{ cal/cm}^2</math> </div> <p style="text-align: center;">or</p> <div style="border: 1px solid black; padding: 2px; margin: 2px;"> <b>EN 61482-2</b><br/>           APC y         </div> <p style="text-align: center;">oder</p> <div style="border: 1px solid black; padding: 2px; margin: 2px;"> <b>EN 61482-2</b><br/> <math>ELIM = xxx \text{ cal/cm}^2</math><br/>           APC z         </div> <p style="text-align: center;">or</p> <div style="border: 1px solid black; padding: 2px; margin: 2px;"> <b>EN 61482-2</b><br/>           undershirt ref. AAA: not determined<br/>           jacket ref. BBB: <math>ELIM = xxx \text{ cal/cm}^2 / APC y</math><br/>           parka ref. CCC: <math>ELIM = xxx \text{ cal/cm}^2 / APC y</math><br/>           Garment System: <math>ELIM = xxx \text{ cal/cm}^2 / APC z</math> </div> |
| 4.3.1 Heat resistance   | ISO 17493<br>after pretreatment                               |   |
| 4.3.2 Volume resistance   | IEC 61340-2-3 section 8.2.3 / EN 1149-2<br>after pretreatment |   |
| 4.3.3 Limited flame spread of material                                | ISO 15025, method A<br>after pretreatment                     |   |
| 4.3.4.1 Tear resistance of outer material (woven fabric or laminate)  | ISO 13937-2<br>after pretreatment                             |   |
| 4.3.4.2 Tensile strength of outer material (woven fabric or laminate) | ISO 13934-1<br>after pretreatment                             |   |
| 4.3.4.3 Bursting strength of outer material (knitted fabric)          | ISO 13938-1<br>after pretreatment                             |   |
| 4.3.5 Dimensional change  | ISO 5077  |   |
| 4.4.2 Arc rating  | IEC 61482-1-1<br>after pretreatment                           |   |
| 4.4.3 Arc protection class  | IEC 61482-1-2<br>after pretreatment                           |   |
| 5.1.3 Pretreatment  | ISO 15797 (industrial)<br>or ISO 6330 (household)             |   |
| 5.2.3 Sizes and ergonomics  |   |   |
| 5.2.5 Sewing thread and fasteners                                     | ISO 3146, method B  |   |
| 5.5.2 Durability of the marking                                       | in new state  |   |

# Requirement Standards

Respiratory Protective Devices

**NOTE:**

*The following overview is an excerpt from the standards. The requirements are summarised analogously. Only the harmonised standards are binding.*

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# Respiratory protective devices – Filtering half masks to protect against particles –

EN 149:2001 + A1:2009

| Prüfung  | Prüfmethode                | Piktogramm                          |
|--|----------------------------|-------------------------------------|
| 8.3.1 Pretreatment: simulated wearing treatment S.W                            |                            | Zum Beispiel<br>FFP3 NR<br>FFP2 R D |
| 8.3.2 Pretreatment: temperature conditioning T.C                               |                            |                                     |
| 8.3.3 Pretreatment: mechanical strength M.S                                    |                            |                                     |
| 8.3.4 Pretreatment: Flow Conditioning F.C (Valved masks)                       |                            |                                     |
| 7.6 Pretreatment: Cleaning and disinfection C.D (Reusable masks)               |                            |                                     |
| 7.4, 7.5, 7.8, 7.15 + 7.18 Material requirements                               | EN 149 section 8.2         |                                     |
| 7.7 Practical performance <i>and</i>   | EN 149 section 8.4 and 8.5 |                                     |
| 7.10, 7.13 + 7.14 Assessment of the skin compatibility <i>and</i> head harness |                            |                                     |
| 7.9.1 Total inward leakage   | EN 149 section 8.5         |                                     |

| Prüfung  | Prüfmethode                           | Piktogramm |
|--|---------------------------------------|------------|
| 7.9.2 Penetration of filter material (Sodium chloride und paraffin oil)              | EN 149, section 8.11 / DIN EN 13274-7 |            |
| 7.11 Flammability  | EN 149 section 8.6                    |            |
| 7.12 Carbon dioxide content of the inhalation air                                    | EN 149 section 8.7                    |            |
| 7.15 Exhalation valve und Befestigung des Ausatemventilgehäuses (Valved masks)       | EN 149 section 8.3.4 and section 8.8  |            |
| 7.16 Breathing resistance  | EN 149 section 8.9                    |            |
| 7.17.1 Clogging – breathing resistance +<br>7.17.2 (Optional for non-reusable masks) | EN 149: section 8.10 and 8.9          |            |
| 7.9.2 + 7.17.3 Clogging – Penetration of filter material *                           | EN 14, section 8.11 and DIN EN 13274  |            |

## Note

\* Only for masks which meet the clogging test requirements

# Requirement Standards

Protective Gloves

**NOTE:**

*The following overview is an excerpt from the standards. The requirements are summarised analogously. Only the harmonised standards are binding.*

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# Protective gloves – General requirements and test methods

EN ISO 21420:2020

(complementary to the following requirement standards)

| Test  | Test method  | Pictogram                         |
|---|--|-----------------------------------|
| 4.1 Design and fabrication of glove   |  | Depending on protection objective |
| 4.2 Innocuousness of protective gloves:                                     |  |                                   |
| Chromium (VI) content ( <i>leather</i> )                                    | ISO 17075-1 or<br>ISO 17075-2                          |                                   |
| Nickel release ( <i>metal</i> )   | EN 1811+A1:2015  |                                   |
| pH value<br>( <i>Glove materials</i> )                                      | ISO 4045 (Leather) or<br>ISO 3071<br>(other materials) |                                   |
| Azo dyes  | ISO 14362-1 (Textile)<br>ISO 17234-1 (Leather)         |                                   |
| Dimethylformamide (DMFa)<br>(PU-containing gloves)                          | EN 16778   |                                   |
| Polycyclic aromatic<br>hydrocarbons (PAH)<br>(Rubber / containing plastics) | ISO/TS 16190   |                                   |
| 4.2* Cleaning   |  |                                   |

| Test   | Test method   | Pictogram |
|--|---|-----------|
| 4.4.1 Electrostatic properties<br>( <i>if applicable</i> ) | EN 16350 or<br>EN 1149-1 or EN 1149-3   |           |
| 5.1 Glove size and dimensions                              | EN ISO 21420, section 6.1   |           |
| 5.2 Mobility   | EN ISO 21420, section 6.2   |           |
| 5.3.1 Water vapour permeability ( <i>optional</i> )        | EN ISO 21420, section<br>6.3.1 (leather) /<br>ISO 14268<br>EN ISO 21420, section<br>6.3.2 (textile) / ISO 11092 |           |
| 5.3.2 Water vapour absorption ( <i>optional</i> )          | EN ISO 21420, section<br>6.4.2 (leather) /<br>ISO 20344:2011,<br>section 6.7                                    |           |
| 7.2 Labelling (glove labelling and packaging<br>labelling) |   |           |
| 7.3 Manufacturers' information                             |   |           |


## Note

\* All tests required in the relevant requirement standards shall be performed on unused gloves. If care instructions are provided, the relevant tests of the specific standards shall be performed on the gloves, before and after they have been subjected to the maximum recommended number of cleaning cycles.

## Protective gloves against chemicals and microorganisms


EN ISO 374-1:2016+A1:2018

Terminology and performance requirements

|     | Test        | Test method   | Pictogram   |
|-----|-------------|---|---|
| 4.1 | Permeation  | EN 16523-1<br>in new state or<br>after pretreatment |  |
| 4.2 | Penetration | EN 374-2<br>in new state or<br>after pretreatment   |   |
| 4.3 | Degradation | EN 374-4<br>in new state or<br>after pretreatment   |   |

## Protective gloves against mechanical risks

EN 388:2016 + A1:2018

|     | Test  | Test method  | Pictogram   |
|-----|---|--------------|---|
| 4   | General requirement *   | EN 21420     |  |
| 6.1 | Abrasion resistance   |              |   |
| 6.2 | Blade cut resistance (Coupe-Test)                               |              |   |
| 6.3 | Cut resistance –<br><i>if 6.2 leads to dulling of the blade</i> | EN ISO 13997 |   |
| 6.4 | Tear resistance   |              |   |
| 6.5 | Puncture resistance   |              |   |
| 6.6 | Impact test ( <i>optional</i> )                                 | EN 13594     |   |



### Note

\* Protective gloves against mechanical risks must achieve at least one performance level for at least one of the properties (abrasion, cut, tear and puncture resistance).




## Protective gloves and other hand protective equipments against thermal risks (heat and/or fire)

EN 407:2020

| Test  | Test method  | Pictogram  |
|---|--|--|
| 4.1 General   | EN ISO 21420   | <br>(Gloves with limited flame formation)<br>or<br><br>(Gloves without limited flame formation) |
| 4.2 Cleaning  | ISO 15797 (industrial)<br>or<br>ISO 6330 (domestic)<br>ISO 3175-2 (dry cleaning) |  |
| 4.3 Tear resistance   | EN 407, section 6.8  |  |
| 4.4 Size and dimensions   | EN ISO 21420 or<br>EN 659  |  |
| <i>Compliance with at least one requirement – depending on the intended use of the clothing</i> |  |  |
| 4.5.2 Limited flame formation   | EN 407, section 6.2 /<br>EN ISO 15025  |  |
| 4.5.3 Contact heat  | EN 407, section 6.4 /<br>EN ISO 9151   |  |
| 4.5.4 Convective heat   | EN 407, section 6.4 /<br>EN ISO 9151   |  |
| 4.5.5 Radiant heat  | EN 407, section 6.5 /<br>EN ISO 6942   |  |
| 4.5.6 Small splashes of molten metal  | EN 407, section 6.6 /<br>EN 348  |  |
| 4.5.7 Large quantities of molten metal (iron)   | EN 407, section 6.7 /<br>EN ISO 9185   |  |


## Protective gloves against cold

EN 511:2006

| Test  | Test method                                    | Pictogram   |
|---|--|---|
| 3 Design Requirements   | EN 21420                                       | EN 511<br> |
| 4.1 Abrasion resistance   | EN 388   |   |
| Tear resistance   | EN 388   |   |
| 4.2 Long term folding resistance<br>(only for coated materials) | EN 511, section 5.2 /<br>EN ISO 7854, method A |   |
| 4.3 Whole glove integrity<br>(only for coated materials)        | EN 511, section 5.3 /<br>ISO 15383             |   |
| 4.4 Low temperature bend  | EN 511, section 5.4 /<br>ISO 4675              |   |
| 4.5 Convective cold   | DIN EN 511, section 5.5                        |   |
| 4.6 Contact cold  | ISO 5085-1                                     |   |


## Protective gloves for firefighters

EN 659:2003 + A1:2008

|      | Test   | Test method   | Pictogram   |
|------|--|---|---|
| 3.1  | General  | EN 420  |  |
| 3.2  | Size of glove  | EN 420  |   |
| 3.3  | Abrasion resistance  | EN 388  |   |
| 3.4  | Blade cut resistance   | EN 388  |   |
| 3.5  | Tear resistance  | EN 388  |   |
| 3.6  | Puncture resistance  | EN 388  |   |
| 3.7  | Burning behaviour  | EN ISO 6941   |   |
| 3.8  | Convective heat  | ISO 9151  |   |
| 3.9  | Radiant heat   | EN ISO 6942   |   |
| 3.10 | Contact heat   | EN ISO 12127-1  |   |
| 3.11 | Heat resistance of lining material                                     | ISO 17493   |   |
| 3.12 | Heat shrinkage of glove  | ISO 17493   |   |
| 3.13 | Finger dexterity – moveability   | EN 21420  |   |
| 3.14 | Maximum force to seam  | EN ISO 13935-2  |   |
| 3.15 | Time for the removal of glove  | –   |   |
| 3.16 | Water penetration ( <i>optional</i> )                                  | EN ISO 20344 (for leather)<br>EN 20811 (for textiles) |   |
| 3.17 | For waterproof glove: Test for penetration by liquids (complete glove) | ISO 15383   |   |
| 3.18 | Resistance to penetration by liquid chemicals                          | EN ISO 6530   |   |

## Protective gloves for welders

EN 12477:2001 + A1:2005

|     | Test   | Test method    | Pictogram   |
|-----|--|----------------|---|
| 3.1 | General requirements   | EN 21420       |  |
| 3.2 | Sizes  | EN 21420       |   |
| 3.3 | Abrasion resistance  | EN 388         |   |
|     | Blade cut resistance   | EN 388         |   |
|     | Tear resistance  | EN 388         |   |
|     | Puncture resistance  | EN 863         |   |
|     | Burning behaviour  | EN ISO 6941    |   |
|     | Contact heat   | EN ISO 12127-1 |   |
|     | Convective heat  | ISO 9151       |   |
|     | Resistance to small splash of molten metal   | EN 348         |   |
|     | Finger dexterity – moveability   | –              |   |
| 3.4 | Test for protective gloves for arc welding – electrical resistance ( <i>optional</i> ) | EN 1149-2      |   |

# Protective gloves: Electrostatic properties

EN 16350:2014

| Test                                 | Test method | Pictogram |
|--------------------------------------|-------------|-----------|
| 4.1 General                          | EN 21420    |           |
| 4.2.1 Electrical vertical resistance | EN 1149-2   |           |
| 4.2.2 Test of the construction       |             |           |



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