



SLOVENSKI STANDARD
oSIST prEN 659:2021

01-oktober-2021

Zaščitne rokavice za gasilce

Protective gloves for firefighters

Feuerwehrschtutzhandschuhe

Gants de protection pour sapeurs-pompiers

Ta slovenski standard je istoveten z: prEN 659

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ICS:

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English Version

Protective gloves for firefighters

Gants de protection pour sapeurs-pompiers

Feuerweherschutzhandschuhe

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 162.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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prEN 659:2021 (E)**European foreword**

This document (prEN 659:2021) has been prepared by Technical Committee CEN/TC 162 “Protective clothing including hand and arm protection and lifejackets”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 659:2003+A1:2008.

In comparison with the previous edition, the following major changes have been made:

- 3 categories of glove for firefighter (structural fire, rescue, wildland);
- Alignment with the term and definition standardized in ISO/TC 94/SC 13;
- Reference to new standard EN 388:2016+A1:2018, EN 407:2020, EN ISO 21420:2020, etc.;
- New TDM test coming from EN 388:2016+A1:2018;
- Larger number of sizes;
- New test for whole glove integrity;
- New marking system;
- New test and requirement for “melting of thread”;
- New Annex ZA with reference to Regulation (EU) 2016/425.

<https://standards.iteh.ai/catalog/standards/sist/e4e88740-ff43-4101-98e8-144591571997/iso-10076-1-2016-659-2021>

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For relationship with EU Directive(s) / Regulation(s), see informative Annex ZA, which is an integral part of this document.

Introduction

Suitable gloves for firefighters can enable firefighters to work for long periods under hazardous conditions. However, it is not possible to relate the performance levels achieved in laboratory testing to protection levels under actual use conditions.

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prEN 659:2021 (E)**1 Scope**

This document defines minimum performance requirements and test methods for firefighters' protective gloves.

This document applies only to firefighters' protective gloves which protect the hands during normal firefighting, including structural fire, wildland and rescue.

These gloves are not intended for deliberate handling of liquid chemicals, but provide some protection against accidental contact with chemicals.

Protective gloves for special operations within firefighting service are excluded from the scope of this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 388:2016+A1:2018, *Protective gloves against mechanical risks*

EN 407:2020, *Protective gloves and other hand protective equipments against thermal risks (Heat and/or fire)*

EN ISO 811:2018, *Textiles — Determination of resistance to water penetration — Hydrostatic pressure test (ISO 811:2018)*

EN ISO 3146:2000, *Plastics — Determination of melting behaviour (melting temperature or melting range) of semi-crystalline polymers by capillary tube and polarizing microscope methods (ISO 3146:2000)*

EN ISO 6530:2005, *Protective clothing — Protection against liquid chemicals — Test method for resistance of materials to penetration by liquids (ISO 6530:2005)*

EN ISO 13935-2:2014, *Textiles — Seam tensile properties of fabrics and made-up textile articles — Part 2: Determination of maximum force to seam rupture using the grab method (ISO 13935-2:2014)*

EN ISO 20344:2011, *Personal protective equipment — Test methods for footwear (ISO 20344:2011)*

EN ISO 20345:2011, *Personal protective equipment — Safety footwear (ISO 20345:2011)*

EN ISO 21420:2020, *Protective gloves — General requirements and test methods (ISO 21420:2020)*

ISO 17493:2016, *Clothing and equipment for protection against heat — Test method for convective heat resistance using a hot air circulating oven*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1

cleaning

process by which a PPE is made serviceable again and/or hygienically wearable by removing any dirt or contamination

Note 1 to entry: A cleaning cycle is typically a washing plus drying and/or a dry-cleaning treatment followed, if required, by ironing or other finishing.

3.2

conditioning

one or more operations intended to bring a sample or test specimen into a state of equilibrium with regard to temperature and humidity

3.3

hole

break in original structure of the test specimen's fabric in any dimension and having a continuous perimeter caused e.g. by melting, glowing or flaming

3.4

outer material

outermost material of which a glove is made, including hardware, labels, protectors, closure and reflecting materials

3.5

vapour moisture barrier

part of the glove that is used to achieve the properties of hydrostatic pressure and water vapour permeability

3.6

innermost lining

innermost layer of fabric or other material inserted in a glove which is intended to be nearest to the wearer's body

Note 1 to entry: Where the innermost lining forms part of a material combination, the material combination is regarded as the innermost lining.

3.7

gloves made from several layers

- unbonded layers: a glove that is made from 2 or more layers of materials which are not connected together, after preparing the sample for the test;
- bonded layers: a glove that is made from 2 or more layers of materials which are connected together (e.g. glued, stitched, dipped, impregnated) after preparing the sample for the test

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3.8 seam

method of permanent fastening between two or more pieces of material by sewing or any other method

4 General requirements

4.1 General

4.1.1 Table of requirements

All tests required in this document shall be performed on unused gloves unless otherwise specified.

Firefighters' protective gloves shall meet all the applicable requirements of EN ISO 21420:2020 except for specific requirements defined in this document (e.g. length of gloves).

This document defines 3 types of gloves for firefighters (Structural fire, rescue and wildland) corresponding to 3 work conditions. For each of its his firefighter gloves, the manufacturer shall chose one of these 3 categories. Then, the glove shall conform to the basic requirements of the chosen type as given in Table 1

A empty box, in Table 2 to Table 15, means that this property is not required.

Table 1 — Requirements for the different types of gloves for firefighter

Requirements	Clause	Structural fire	Rescue	Wildland	Test to be performed before (B) and/or after (A) cleaning
General	4.1	X	X	X	
Cleaning	4.2	X	X	X	
Sizes	4.3	X		X	B
dexterity	4.4	X	X		A
Time for removal	4.5	X		X	A
Resistance to Water penetration Material	4.6.1	X		O	B
Resistance to Water penetration Whole gloves integrity	4.6.2	X		O	B and A
Resistance to abrasion	4.7	X	X	X	B
Resistance to Cut	4.8	X	X	X	B
Resistance to Tear	4.9	X	X	X	B
Resistance to Puncture	4.10	X	X	X	B
Burning behaviour	4.11	X	X	X	B-A

Requirements	Clause	Structural fire	Rescue	Wildland	Test to be performed before (B) and/or after (A) cleaning
Resistance to Convective Heat	4.12	X	X	X	B-A
Resistance to Radiant heat	4.13	X		X	A
Resistance to Contact heat	4.14	X	X	X	A
Heat resistance	4.15	X	X	X	A
Resistance to Chemical	4.16	X	X		B
Seam breaking strength	4.17	X		X	B
Thread melting	4.18	X		X	B
NOTE X means the requirement given in the clause of this document shall be met. O means that this requirement is optional. An empty box means that this property is not required for the associated risk.					

4.1.2 Sampling

When parts of the glove are made from different materials, these different materials shall be tested separately, except if another way is specified in the standard. The results of each material shall comply with the requirements given in Table 1.

NOTE Different material means different materials as part of the outer layer and/or reinforcements on a single layer for example.

In those circumstances when the sample size is significantly larger than the particular part of the glove or hand protective equipment being tested (for example the fingers area), then the manufacturer shall be requested to supply samples of the appropriate dimensions representative of the glove performances.

4.2 Cleaning

The number of cleaning cycles shall be at least 5. If care instructions are provided, the relevant tests shall be performed on the gloves, before and after they have been subjected to the procedure described in the care instruction, including the maximum recommended number of cleaning cycles.

If the maximum number of cleaning cycles is not specified by the manufacturer, the gloves to be tested shall be washed and dried or cleaned at least 5 times according to the information on the care label.

The levels of performance are given by the lowest of the result obtained before and/or after cleaning as defined in Table 1.

NOTE Manufacturer's instructions typically indicate one or several of the various methods and processes of EN ISO 6330, EN ISO 15797 or equivalent as standardized processes for cleaning.

This clause does not apply to single use gloves.