



SLOVENSKI STANDARD

SIST EN 659:1996

01-december-1996

Zaščitne rokavice za gasilce

Protective gloves for firefighters

Feuerwehrschtutzhandschuhe

Gants de protection pour sapeurs-pompiers

Ta slovenski standard je istoveten z: EN 659:1996

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ICS:

13.220.10	Gašenje požara	Fire-fighting
13.340.40	Varovanje dlani in rok	Hand and arm protection

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EUROPEAN STANDARD

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EUROPÄISCHE NORM

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Descriptors: personal protective equipment, accident prevention, heat protection, fire protection, protective clothing, gloves, specifications, characteristics, dimensions, tests, testing conditions, marking

English version

Protective gloves for firefighters

Gants de protection pour sapeurs-bombers (standards.iteh.ai) Feuerwehrschutzhandschuhe

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard has been prepared by the Technical Committee CEN/TC 162 "Protective clothing including hand and arm protection and lifejackets" of which the secretariat is held by DIN.

The annex A is normativ and contains the heat resistance test.

The annex ZA is informativ and contains the relationship between this European Standard and the EC-Directive for PPE.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by July 1996, and conflicting national standards shall be withdrawn at the latest by July 1996.

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

According to the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

0 Introduction

Suitable gloves for firefighters can enable the 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 because the thermal hazards and wet and dry conditions may be very different.

Performance levels of wet gloves are not yet precisely known and require further investigation. Specific tests on these properties are being assessed and will be incorporated in this standard later.

1 Scope

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

This European Standard applies only to firefighters' protective gloves which protect the hands during normal firefighting, including search and rescue.

Protective gloves for special firefighting operations, such as those covered by prEN 1486, or for interventions involving a contact with oils and chemicals are outside the scope of this standard.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 344 : 1992

Requirements and test methods for safety, protective and occupational footwear for professional use

EN 366 : 1993

Protective clothing - Protection against heat and fire - Method of test: Evaluation of materials and material assemblies when exposed to a source of radiant heat

EN 367 : 1992

Protective clothing - Protection against heat and fire - Method of determining heat transmission on exposure to flame

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EN 388 : 1994

Protective gloves against mechanical risks <https://standards.iteh.ai/catalog/standards/sist/2d421945-eb51-416a-8d7d-f06989/sist-en-659-1996>

EN 407 : 1994

Protective gloves against thermal risks (heat and/or fire)

EN 420 : 1994

General requirements for gloves

EN 702:1994

Protective clothing - Protection against heat and flame - Test method: Determination of the contact heat transmission through protective clothing or its materials

prEN 1486

Protective clothing for firefighters - Test methods and requirements for clothing for specialized fire fighting

EN 20 811 : 1992

Textile fabrics - Determination of resistance to water penetration - Hydrostatic pressure test (ISO 811:1981)

3 Requirements

The firefighters' protective gloves shall conform with all the general requirements of EN 420 except the lengths which are defined in 3.1.

When parts of the palm and/or parts of the back of the glove are made from dissimilar materials, these dissimilar materials shall be tested separately. In those circumstances, if the sample size is significantly larger than the particular part of the glove being tested, then the manufacturer shall be requested to supply samples of the appropriate materials.

3.1 Sizes -

When measured according to 6.2.3 and 6.2.4 of EN 420:1994, the sizes shall correspond with those requirements established in 5.1.2 of EN 420:1994, but the minimum length shall be in accordance with table 1.

Table 1

Hand size	6	7	8	9	10	11
Minimum length of glove (mm)	260	270	280	290	305	315

The gloves shall be compatible with the sleeves of the protective clothing.

3.2 Abrasion

The material for firefighters' protective gloves shall be tested according to 6.1 of EN 388:1994, on the palm of the glove. When tested accordingly, it shall be in accordance with at least performance level 2 (500 cycles).

3.3 Cut resistance

The material for firefighters' protective gloves shall be tested according to 6.2 of EN 388:1994, both on the palm and the back of the glove. When tested accordingly, it shall be in accordance with at least performance level 2 (index 2.5).

3.4 Tear resistance

The material for firefighters' protective gloves shall be tested according to 6.3 of EN 388:1994, on the palm of the glove. When tested accordingly, it shall be in accordance with at least performance level 2 (25 N).

3.5 Puncture resistance

The material for firefighters' protective gloves shall be tested according to EN 388:1994 clause 6.4, on the palm of the glove. When tested accordingly, it shall be in accordance with at least performance level 2 (60 N).

3.6 Burning behaviour

The glove shall be tested according to 6.3 of EN 407:1994. When tested accordingly, it shall be in accordance with level 4 (afterflame time ≤ 2 s and afterglow time ≤ 5 s). The material shall not melt drip if the material melts. The seam shall not come apart in the test area after an ignition time of 15 s.

3.7 Convective heat

The material for firefighters' protective gloves shall be tested according to EN 367, both on the back and the palm of the glove. For each material or each material-assembly, three samples shall be tested. When tested accordingly, the material shall be in accordance with at least performance level 3 (HTI ≥ 10).

3.8 Radiant heat

The material for firefighters' protective gloves shall be tested according to EN 366 method B, on the back of the glove, with a heat flux density of 20 kW/m². A sample 70 mm x 170 mm is taken from each glove back, from one pair of gloves. The arithmetic mean of the two t_2 values is calculated and stated to the nearest whole second. When tested accordingly, the material shall have a time t_2 of at least 15 s.

3.9 Contact heat

The material for firefighters' protective gloves shall be tested according to EN 702, on the palm of the glove, with a contact temperature of 250 °C. A sample with a diameter of 80 mm is taken from each palm area of three gloves. The arithmetic mean of the three values for the threshold time t_t is calculated and stated to the nearest whole second. When tested accordingly, the material shall have threshold time t_t of at least 10 s.

3.10 Heat resistance of the lining material

The lining material closest to the skin, when tested in accordance with the instructions given in annex A, shall not melt, drip or ignite.

3.11 Dexterity

The glove shall be tested according to 6.3 of EN 420:1994. When tested accordingly, the glove shall be in accordance with at least performance level 1 (smallest diameter of pin: 11 mm).

3.12 Water permeability

The manufacturer shall supply information on the behaviour of the glove when the waterproof layer of the glove is tested according to EN 20811 for textiles or to 5.12 of EN 344:1992 for leather.

4 Test methods

Before testing, the test samples shall be conditioned for at least 24 h in the following standard atmosphere.

Temperature (20 ± 2) °C

Relative humidity (65 ± 5) %

The test is preferably carried out in this atmosphere. If the test is carried out under different climatic conditions, then this should be done within 5 min of the time the test samples were removed from the standard atmosphere.

For protective gloves with a multilayer construction, the test shall be carried out on all layers simultaneously, even if these, after removal, are no longer connected to one another.

5 Marking

The marking shall be in accordance with 7.2 of EN 420:1994. In addition, each glove shall be marked with the number of this standard, i. e. EN 659.

6 Instructions of use

Instructions for use shall be in accordance with 7.3 of EN 420:1994.

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Annex A (normative) Heat resistance test

A.1 Principle

A specimen of material is suspended in a hot air circulating oven for 5 min at a temperature of 180 °C to 190 °C. Any ignition, melting or dripping of the specimen is reported.

A.2 Equipment

A.2.1 Oven

A forced air circulating oven capable of maintaining a temperature within the range 180 °C to 190 °C over a period of 5 min and of sufficient internal volume to allow the test specimen (see A.3) to be suspended as specified in A.4.

A.2.2 Template

A rigid square template 150 mm by 150 mm.

A.2.3 A rule graduated in millimetres

A.3 Specimens

Condition the material for at least 24 h in a standard atmosphere at (20 ± 2) °C and (65 ± 5) % relative humidity. Mark and cut out a square specimen using the template (A.2.2). If the material or item to be tested is narrower than 150 mm, cut the specimen 150 mm in the length direction by the width of the material. If the item for test is less than 150 mm by 150 mm, test the complete item.

A.4 Procedure

Attach a metal clip to the top centre of the specimen. Heat the oven to a temperature of 185 °C to 190 °C. Open quickly the oven door and insert the specimen so that it hangs in the centre of the oven and is not less than 50 mm from any inner surface of the oven. Close the door and time the exposure from the door closure. After 5 min open the oven door and remove the specimen.

NOTE: The oven temperature will drop when the door is opened. The temperature throughout the 5 min exposure shall remain above 180 °C. If the temperature falls below this level the test shall be repeated.

A.5 Test report

The test report shall state the following information:

- any ignition of the specimen;
- any melting of the specimen: hole formation, dripping;