



SLOVENSKI STANDARD
SIST EN 407:2004

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

Schutzhandschuhe gegen thermische Risiken (Hitze und/oder Feuer)

Gants de protection contre les risques thermiques (chaleur et/ou feu)

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ICS:

13.340.40 Varovanje dlani in rok Hand and arm protection

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English version

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

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This European Standard was approved by CEN on 24 June 2004.

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. 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.

This European Standard exists 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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Foreword

This document (EN 407:2004) 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 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of an identical text or by endorsement, at the latest by March 2005, and conflicting national standards shall be withdrawn at the latest by March 2005.

This document supersedes EN 407:1994.

This document includes a Bibliography.

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

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

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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1 Scope

This document specifies requirements, test methods, information to be supplied and marking for protective gloves against heat and/or fire. It should be used for all gloves which protect the hands against heat and/or flames in one or more of the following forms: fire, contact heat, convective heat, radiant heat, small splashes or large quantities of molten metal.

This standard is only applicable in conjunction with EN420.

There are other standards relevant to specific applications, as for example fire-fighting or welding.

Product tests may only give performance levels and not protection levels.

2 Normative references

The following referenced documents are indispensable for the application 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 348, *Protective clothing — Test method: Determination of behaviour of materials on impact of small splashes of molten metal.*

EN 367, *Protective clothing - Protection against heat and fire - Method of determining heat transmission on exposure to flame.*

EN 373, *Protective clothing — Assessment of resistance of materials to molten metal splash.*

EN 388, *Protective gloves against mechanical risks.*

EN 420, *Protective gloves - General requirements and test methods.*

EN 702, *Protective clothing — Protection against heat and flame — Test method: Determination of the contact heat transmission through protective clothing or its materials.*

EN ISO 6941, *Textile fabrics — Burning behaviour — Measurement of flame spread properties of vertically oriented specimens (ISO 6941:2003).*

EN ISO 6942:2002, *Protective clothing — Protection against heat and fire — Method of test: Evaluation of materials and material assemblies when exposed to a source of radiant heat (ISO 6942:2002).*

3 Terms and definitions

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

3.1

after flame time

time in seconds from the removal of the ignition source until the extinction of the flame in the test specimen

3.2

after glow time

time in seconds from the extinction of the flame up to the cessation of glowing. If the sample is not ignited by the ignition source, but it glows after the removal of the ignition source, then the after glow time is measured from the time of removal of the ignition source

3.3

melting

liquefaction of the material under the influence of heat

3.4

dripping

detachment of molten droplets during the melting process

4 General requirements

4.1 General

The protective gloves according to this standard shall meet all the applicable requirements of EN 420.

4.2 Sizes

The gloves shall correspond to the relevant requirements of EN 420. Unless otherwise requested, protective gloves of performance levels 3 and 4 in all tests described in 5.1 to 5.6. shall be manufactured so that they can easily be removed in case of emergency. There is no test method for industrial protective gloves. Annex B gives an example of a test method and requirement applicable to fire-fighters gloves.

4.3 Abrasion

Using the test method 6.1 the material of the protective gloves shall correspond to at least performance level 1 of the relevant clause in EN 388.

4.4 Tear resistance

Using the test method 6.2 the material of the protective gloves shall correspond to at least performance level 1 of the relevant clause in EN 388.

5 Thermal performance

For each of the following test methods the defined performance level depends upon the intended field of application of the glove. Only the tests which are relevant to the risks in the intended end-use application shall be carried out.

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5.1 Burning behaviour

Using test method 6.3 the material shall correspond to the requirements of Table 1.

Table 1 — Performance levels for burning behaviour test

Performance level	After flame time s	After glow time s
1	≤ 20	no requirement
2	≤ 10	≤ 120
3	≤ 3	≤ 25
4	≤ 2	≤ 5

If it melts, the material shall not drip. Furthermore the innermost surface of the glove shall be inspected. It shall show no sign of melting, otherwise it fails the test.

The seam shall not come apart after an ignition time of 15 s in the test area.

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5.2 Contact heat

Using the test method 6.4 the material shall correspond to the requirements of Table 2.

Table 2 — Performance levels for contact heat test

Performance level	Contact Temperature T_c °C	Threshold time t_t s
1	100	≥ 15
2	250	≥ 15
3	350	≥ 15
4	500	≥ 15

For contact heat performance levels of 3 or 4, the burning behaviour according to 6.3 shall be performed. The product shall record at least level 3 in the burning behaviour test, otherwise the maximum contact heat performance that shall be reported is level 2.

5.3 Convective heat

Using the test method 6.5 the material shall correspond to the requirements of Table 3.

Table 3 — Performance levels for convective heat

Performance level	Heat transfer index HTI s
1	≥ 4
2	≥ 7
3	≥ 10
4	≥ 18

A level of performance in convective heat shall only be reported if a performance level 3 or 4 is obtained in burning behaviour.

5.4 Radiant heat

Using the test method 6.6 the material shall correspond to the requirements of Table 4.

Table 4 — Performance levels for radiant heat

Performance level	Heat transfer t_{24} s
1	≥ 7
2	≥ 20
3	≥ 50
4	≥ 95

A level of performance in radiant heat shall only be reported if a performance level 3 or 4 is obtained in burning behaviour.