SLOVENSKI STANDARD
SIST EN 420:2003+A1:2010

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Varovalne rokavice - Splošne zahteve in preskusne metode

Protective gloves - General requirements and test methods

Schutzhandschuhe - Allgemeine Anforderungen und Prüfverfahren

Gants de protection - Exigences générales et méthodes d'essai

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13.340.40 Varovanje dlani in rok Hand and arm protection

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Protective gloves - General requirements and test methods

Gants de protection - Exigences générales et méthodes d'essai

Schutzhandschuhe - Allgemeine Anforderungen und Prüfverfahren

This European Standard was approved by CEN on 24 July 2003 and includes Corrigendum 1 issued by CEN on 29 November 2006 and Amendment 1 approved by CEN on 10 October 2009.

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Foreword

This document (EN 420:2003+A1:2009) 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of an identical text or by endorsement, at the latest by May 2010, and conflicting national standards shall be withdrawn at the latest by May 2010.

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This document includes Corrigendum 1 issued by CEN on 29 November 2006 and Amendment 1 approved by CEN on 10 October 2009.

This document supersedes [A1] EN 420:2003 [A1].

The start and finish of text introduced or altered by amendment is indicated in the text by tags [A1] [A1].

The modifications of the related CEN Corrigendum have been implemented at the appropriate places in the text and are indicated by the tags [AC] [AC].

This document has been prepared under a mandate given to CEN/CENELEC 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.

[A1] Annexes A and C [A1] are informative and [A1] Annex B is [A1] normative.

This document includes a Bibliography.

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

Introduction

This European Standard is a reference standard to be called up as appropriate by the specific European Standards relevant or applicable to protective gloves.

This standard should not be used alone, but only in combination with the appropriate specific standard.

1 Scope

This standard defines the general requirements and relevant test procedures for glove design and construction, resistance of glove materials to water penetration, innocuousness, comfort and efficiency, marking and information supplied by the manufacturer applicable to all protective gloves.

NOTE It can also be applicable to arm protectors and gloves permanently incorporated in containment enclosures.

This European Standard does not address the protective properties of gloves and therefore should not be used alone but only in combination with the appropriate specific European Standard(s).

A non exhaustive list of these standards is given in the Bibliography.

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 344-1:1992, *Safety, protective and occupational footwear for professional use — Part 1: Requirements and test methods*

EN 374-1:2003, *Protective gloves against chemicals and micro-organisms — Part 1:Terminology and performance requirements*

EN 407, *Protective gloves against thermal risks (heat and/or fire)*

EN 455-3, *Medical gloves for single use — Part 3: Requirements and testing for biological evaluation*

EN 1149-1, *Protective clothing — Electrostatic properties — Part 1: Surface resistivity (Test methods and requirements)*

EN 1149-2, *Protective clothing — Electrostatic properties — Part 2: Test method for measurement of the electrical resistance through a material (vertical resistance)*

EN 1149-3, *Protective clothing — Electrostatic properties — Part 3: Test methods for measurement of charge decay*

EN 1413, *Textiles —Determination of pH of aqueous extract*

EN 20811, *Textiles — Determination of resistance to water penetration — Hydrostatic pressure test*

EN 23758, *Textiles — Care labelling code using symbols (ISO 3758:1991)*

EN ISO 2419, *Leather — Physical and mechanical tests — Sample preparation and conditioning (ISO 2419:2002)*

[A1) *deleted text* (A1]

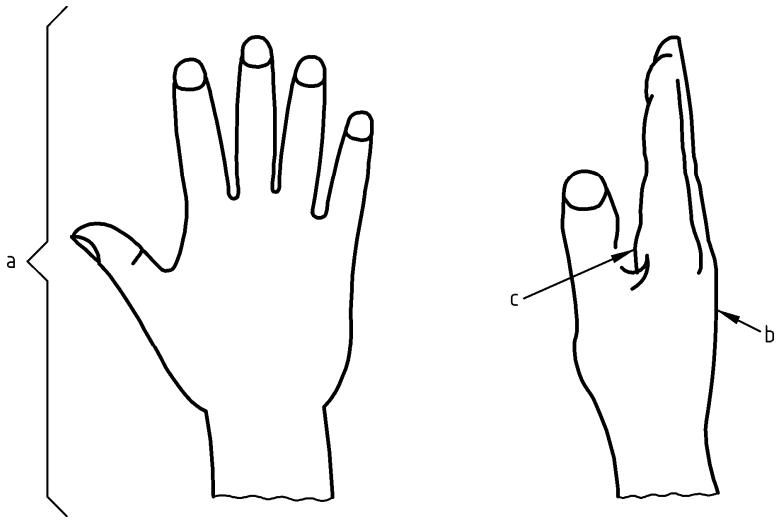
EN ISO 4045, *Leather — Determination of pH (ISO 4045:1977)*

EN ISO 4048, *Leather — Determination of matter soluble in dichloromethane (ISO 4048:1977)*

[A1) EN ISO 17075:2007, *Leather — Chemical tests — Determination of chromium(VI) content (ISO 17075:2007)* (A1]

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply (see Figure 1).



Key

a Hand

b Back

c Palm

Figure 1 — Definitions of hand, palm and back

3.1
hand
part of the body from the tip of the middle finger to the wrist

3.2
glove
personal protective equipment (PPE) which protects the hand or part of the hand against hazards. It can additionally cover part of the forearm and arm

3.3
glove palm
part of the glove which covers the palm of the hand, i.e. from the wrist to the base of the fingers

3.4
glove back
part of the glove which covers the back of the hand (i.e. from the wrist to the base of the fingers)

3.5
dexterity
manipulative ability to perform a task

3.6
hazard
situation which can be the cause of any harm or damage to the health of the human body. A non exhaustive list of specific standards dealing with hazards is given in the Bibliography

3.7
level of performance
number that designates a particular category or range of performance by which the results of testing can be graded

The level of performance is determined by the result of the corresponding test as described in the specific standards referred to in the Bibliography. A high level number corresponds to a high level of performance.

Levels of performance are based upon the results of laboratory tests, which do not necessarily reflect actual conditions in the workplace.

4 General requirements

4.1 Glove design and construction — General

The protective glove shall be designed and manufactured so that in the foreseeable conditions of use for which it is intended, the user can perform the hazard related activity normally whilst enjoying appropriate protection at the highest possible level.

If required, the glove shall be designed to minimize the time needed for putting on and taking off.

When the glove construction includes seams, the material and strength of the seams shall be such that the overall performance of the glove is not significantly decreased. Where relevant, test methods and requirements are specified in the specific standards listed in the Bibliography.

4.2 Resistance of glove materials to water penetration

For glove materials where resistance to water penetration is required (according to the intended use of the glove), the appropriate test methods shall be used:

— For leather gloves: 5.12 of EN 344-1:1992. The results shall be reported according to Table 1;

— Alternative test method which is more appropriate to textile materials: EN 20811. The results shall be reported as a pressure in Pascal as required in EN 20811.

NOTE 1 There is no known correlation between results obtained through these different test methods.

NOTE 2 These tests are not suitable to classify these gloves as waterproof.

Table 1 — Levels of performance — resistance to water penetration according to 5.12 of EN 344-1:1992

Level of performance	Time of penetration min
1	30
2	60
3	120
4	180

4.3 Innocuousness of protective gloves

4.3.1 General

Protective gloves shall be designed and manufactured to provide protection when used according to the manufacturer's instructions, without harm to the user.

Glove materials, degradation products, incorporated substances, seams and edges and particularly those parts of the glove in close contact with the user shall not adversely affect the user's health and hygiene.

The manufacturer or his authorized representative shall name all the substances contained in the glove which are known to cause allergies (see 7.3.8).

4.3.2 Determination of pH Value

The pH value for all gloves shall be greater than 3,5 and less than 9,5.

Determination of pH shall be according to EN ISO 4045 for leather gloves, and EN 1413 for other materials. Following amendments shall apply:

— the test piece shall be cut out from the palm area of the glove. If other parts of the glove are made of different materials, then each material shall be tested separately;

— if gloves are made of more than one layer, all layers shall be tested together;

— if the sample contains leather, then EN ISO 4045 shall be used;

— subclause 8.4 of EN ISO 4045:1998 does not apply.

4.3.3 [A1] Determination of chromium VI content

The quantity of Chromium VI in gloves containing leather shall not exceed 3,0 mg/kg when determined according to the test method described in EN ISO 17075:2007.

Depending on the measured Chromium VI content, the test report shall indicate:

— that the Chromium VI content is not in excess of 3,0 mg/kg, or

— that Chromium VI content is in excess of 3,0 mg/kg and the value that has been determined in mg/kg.

If the glove includes different types of leather, whether in contact with the skin or not, each leather type shall be tested separately and comply with the above requirement. At least two samples shall be taken from different gloves for each leather type. [A1]

4.3.4 Determination of extractable protein content

Natural rubber gloves shall be submitted to requirements stated in EN 455-3 on extractable protein content.

NOTE This method has not yet been validated for gloves other than medical gloves for single use.

4.4 Cleaning

All tests required in this standard as well as in the standards for protective gloves shall be performed on unused gloves unless otherwise specified. If care instructions are provided (see 7.3.10), the relevant tests of the specific standards (see Bibliography) shall be performed on the gloves, before and after they have been subjected to the maximum recommended number of cleaning cycles.

The levels of performance shall not be negatively affected throughout the recommended number of cycles.

4.5 Electrostatic properties

If required, the electrostatic properties shall be tested according to the test method described in the relevant standard EN 1149-1 or EN 1149-2 or EN 1149-3.

The test result shall be reported in the information supplied by the manufacturer accompanied by the information stated in 7.3.11. Electrostatic pictograms shall not be used for this property.

NOTE These tests are designed for garments and have not been validated for gloves. Some interlaboratory trials have shown significant discrepancies in test results for one of the methods. It is thus essential to give comprehensive information about the test parameters used along with any test result.

5 Comfort and efficiency

5.1 Sizing

5.1.1 Sizes and measurement of hands

Two primary measurements are taken according to 6.1:

— hand circumference;

— hand length (distance between the wrist and the tip of the middle finger).

Six sizes of hands are defined in Table 2, according to anthropomorphic surveys conducted in different countries. Half sizes can be derived by interpolation between full sizes. Any smaller and larger sizes can be derived by extrapolation of the data in Tables 2 and 3.