



SLOVENSKI STANDARD
SIST EN 16350:2014

01-julij-2014

Varovalne rokavice - Elektrostatične lastnosti

Protective gloves - Electrostatic properties

Schutzhandschuhe - Elektrostatische Eigenschaften

Gants de protection - Propriétés électrostatiques

Ta slovenski standard je istoveten z: EN 16350:2014

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EUROPEAN STANDARD

EN 16350

NORME EUROPÉENNE

EUROPÄISCHE NORM

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ICS 13.340.40

English Version

Protective gloves - Electrostatic properties

Gants de protection - Propriétés électrostatiques

Schutzhandschuhe - Elektrostatische Eigenschaften

This European Standard was approved by CEN on 20 March 2014.

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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 CEN-CENELEC Management Centre has the same status as the official versions.

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Foreword

This document (EN 16350:2014) 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of an identical text or by endorsement, at the latest by October 2014 and conflicting national standards shall be withdrawn at the latest by October 2014.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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, 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, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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EN 16350:2014 (E)**1 Scope**

This European Standard provides additional requirements for protective gloves that are worn in areas where flammable or explosive areas exist or might be present (see IEC 60079-32-1). It specifies a test method and requirements for performance, marking and information for electrostatic dissipative protective gloves to minimize explosion risks.

This European Standard does not cover:

- protection of electronic devices;
- protection against mains voltages;
- insulative protective gloves for live working (EN 60903);
- protective gloves for welders (EN 12477).

The requirements may not be sufficient in oxygen enriched flammable atmospheres.

This European Standard should be used with the specific standards applicable to the risks for which the glove is designed.

NOTE The electrostatic dissipative protective gloves are effective only if the wearer is earthed through a resistance lower than $10^8 \Omega$.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 420, *Protective gloves — General requirements and test methods*

EN 1149-2:1997, *Protective clothing — Electrostatic properties — Part 2: Test method for measurement of the electrical resistance through a material (vertical resistance)*

EN 61340-2-3, *Electrostatics — Part 2-3: Methods of test for determining the resistance and resistivity of solid planar materials used to avoid electrostatic charge accumulation (IEC 61340-2-3)*

3 Terms and definitions

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

3.1**oxygen-enriched flammable atmosphere**

atmosphere in which the oxygen content exceeds 21,5 % volume fraction of air

Note 1 to entry: Minimum ignition energy values are commonly specified for mixtures with air containing normal levels of oxygen, i.e. (21,0 ± 0,5) % volume fraction.

Note 2 to entry: In normal industrial situations, it is unlikely that people will be working in an oxygen-enriched atmosphere.

[SOURCE: SUCAM of JWG electrostatic risk management for PPE]

3.2**vertical resistance****RV**

electrical resistance through a material in Ohms, as determined by using specified electrodes

[SOURCE: EN 1149-2:1997, definition 3.1]

3.3**to earth**

connect a conductor to the main body of the earth to ensure that it is at earth potential

[SOURCE: SUCAM of JWG electrostatic risk management for PPE]

4 Requirements**4.1 General**

The protective glove shall comply with the general requirements of EN 420 and the requirements of the relevant specific standards if applicable.

4.2 Electrostatic requirements**4.2.1 Material requirements**

4.2.1.1 The vertical resistance shall be determined according to the test method described in Clause 5.

4.2.1.2 For electrostatic dissipative protective gloves, each individual measurement shall fulfil the requirement:

Vertical resistance: $R_v < 1,0 \times 10^8 \Omega$. [SIST EN 16350:2014
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4.2.2 Design requirements

4.2.2.1 Protective gloves shall be produced without electrically conductive connections (e.g. by metal rivets).

4.2.2.2 External thin attachments, such as labels or reflective stripes shall be permanently attached around all edges.

4.2.2.3 Adjustment systems such as hook and loop systems shall not be used.

5 Test methods**5.1 Preparation of test specimens**

Testing shall be conducted on unused gloves. If care instructions are provided, the test shall be performed also after the recommended number of cleaning cycles.

5.2 Specimens

5.2.1 One specimen sized 10 cm x 10 cm shall be taken from each palm of 5 different gloves of the same type.

5.2.2 If this size of specimen is not possible, then a smaller specimen suitable for the adjusted test apparatus specified in 5.4.2 shall be used. It shall be mentioned in the test report.

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5.2.3 The specimens shall be free of any seam.

5.2.4 Multiple layers which are unbonded to each other shall be tested together.

5.2.5 If palm, back of the hand or cuff consist of different materials or material combinations, five specimens shall be taken of each.

5.2.6 The specimens shall be handled only at the edges.

5.3 Conditioning and testing atmosphere

The electrostatic properties may vary with the moisture content of the material. The specimens shall be conditioned prior to testing for at least 48h. The conditioning atmosphere shall be the same as the test atmosphere.

The testing atmosphere for the determination of the vertical resistance shall be:

- Air temperature: (23 ± 1) °C;
- Relative humidity: (25 ± 5) %.

5.4 Test apparatus

5.4.1 The test apparatus shall comply with EN 1149-2:1997, Clause 5.

5.4.2 A smaller test apparatus shall be used to test smaller size specimens, as specified in EN 61340-2-3. If a smaller test apparatus is used, it shall be mentioned in the test report.

NOTE Inter laboratory tests have showed good correlation between both methods of EN 1149-2:1997 and EN 61340-2-3.

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5.5 Test procedure

The test shall be carried out according to EN 1149-2:1997, Clause 7.

If a smaller test apparatus as specified in 5.4.2 is used, then the test shall be carried out according to EN 61340-2-3.

Should the specimens consist of multiple layers which are unbonded, all layers shall be tested together.

5.6 Expression of results

Each test result determined on the palm and on materials or material combinations as described in 5.2.5 is expressed as a vertical resistance R_v , in Ohm.

5.7 Test report

In the test report reference shall be made to this European Standard and the following shall be reported:

- a) Description of the material tested and dimensions of the test specimen as required in 5.2.2;
- b) Test atmosphere;
- c) Test apparatus used as required in 5.4.2;
- d) All five single measurements for each material or material combination;

- e) Any variation from this European Standard;
- f) Date of test.

6 Marking

Marking shall be according to EN 420.

7 Information supplied by the manufacturer

The information supplied by the manufacturer shall be according to EN 420 and the specific protective glove standards.

In addition, the following information, warning notices and instructions shall be provided:

- reference to this standard;
- test results and testing conditions relative to vertical resistance testing;
- Warning: the person wearing the electrostatic dissipative protective gloves shall be properly earthed e.g. by wearing adequate footwear;
- Warning: Electrostatic dissipative protective gloves shall not be unpacked, opened, adjusted or removed whilst in flammable or explosive atmospheres or while handling flammable or explosive substances;
- Warning: The electrostatic properties of the protective gloves might be adversely affected by ageing, wear, contamination and damage, and might not be sufficient for oxygen enriched flammable atmospheres where additional assessments are necessary.

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