



SLOVENSKI STANDARD

oSIST prEN IEC 61111:2025

01-maj-2025

Delo pod napetostjo - Podloge iz izolacijskega materiala za uporabo v elektrotehniki

Live working - Electrical insulating matting

Arbeiten unter Spannung - Elektrisch isolierende Matten

Travaux sous tension - Tapis isolants électriques

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Varstvo pred električnim
udarom. Delo pod napetostjo

Protection against electric
shock. Live working

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TITLE:

Live working - Electrical insulating matting

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**LIVE WORKING –
ELECTRICAL INSULATING MATTING**
FOREWORD

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International Standard IEC 61111 has been prepared by IEC technical committee 78: Live Working.

This third edition cancels and replaces the second edition published in 2009. This edition constitutes a technical revision.

It includes the following significant technical changes with regard to the previous edition:

- review of the scope;
- introduction of AC/DC use and AC use only;
- verification of dated referenced standards;
- improvement of the marking;
- rewriting of the test for slip resistance;
- updating the use of IEC 61318:2021;
- creation of an alternative test;

- 138 • revision and updating of Annexes A, B and D to H.

139 The text of this standard is based on the following documents:

FDIS	Report on voting
78/XXXX/FDIS	78/XXXX/RVD

140

141 Full information on the voting for the approval of this standard can be found in the report on
142 voting indicated in the above table.

143 This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

144 The committee has decided that the contents of this publication will remain unchanged until the
145 maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data
146 related to the specific publication. At this date, the publication will be:

- 147 • reconfirmed,
148 • withdrawn,
149 • replaced by a revised edition, or
150 • amended.

151

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152

INTRODUCTION

153 This document has been prepared according to the requirements of IEC 61477:2009 where
154 applicable.

155 The product covered by this standard may have an impact on the environment during some or
156 all stages of its life cycle. These impacts can range from slight to significant, be of short-term
157 or long-term, and occur at the global, regional or local level.

158 Except for a disposal statement in the instructions for use, this standard does not include
159 requirements and test provisions for the manufacturers of the product, or recommendations to
160 the users of the product for environmental improvement. However, all parties intervening in its
161 design, manufacture, packaging, distribution, use, maintenance, repair, reuse, recovery and
162 disposal are invited to take account of environmental considerations.

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LIVE WORKING – ELECTRICAL INSULATING MATTING

1 Scope

This document is applicable to electrical insulating matting made of flexible insulating material for use as a covering of the surface on which the worker is positioned and for worker's electrical protection on electrical installations up to 36 000 V AC for AC use or 36 000 V AC and 54 000 V DC for AC/DC use.

NOTE 1 The electric potential of the surface on which the worker is positioned is usually that of earth.

NOTE 2 See Clause 4.2 for maximum use voltage.

NOTE 3 DC only rated matting is not specified in this document.

NOTE 4 This document does not cover the use of insulating blankets (see IEC 61112)

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.

IEC 60060-1:2010, *High-voltage test techniques – Part 1: General definitions and test requirements*

IEC 60060-2:2010, *High-voltage test techniques – Part 2: Measuring systems*

IEC 60068-1:2013, *Environmental testing – Part 1: General and guidance*

IEC 60212:2010, *Standard conditions for use prior to and during the testing of solid electrical insulating materials*

IEC 61318:2021, *Live Working - Methods for assessment of defects and verification of performance applicable to tools, devices and equipment*

IEC 61477:2009, *Live working – Minimum requirements for the utilization of tools, devices and equipment*

ISO 2592:2017, *Petroleum and Related Products - Determination of flash and fire points – Cleveland open cup method*

ISO 2977:1997, *Petroleum products and hydrocarbon solvents – Determination of aniline point and mixed aniline point*

ISO 3104:2020, *Petroleum products – Transparent and opaque liquids – Determination of kinematic viscosity and calculation of dynamic viscosity*

ISO 23529:2016, *Rubber - General procedures for preparing and conditioning test pieces for physical test methods*

ISO 4649:2017, *Rubber, vulcanized or thermoplastic - Determination of abrasion resistance using a rotating cylindrical drum device*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61318:2021 and the following apply.

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

205 • ISO Online browsing platform: available at <https://www.iso.org/obp>

206 • IEC Electropedia: available at <http://www.electropedia.org/>

207 3.1

208 **disruptive discharge**

209 passage of an electric arc following electric breakdown

210 Note 1 to entry: The term “sparkover” (in French “amorçage”) is used when a disruptive discharge occurs in a
211 gaseous or liquid dielectric.

212 Note 2 to entry: The term “flashover” (in French “contournement”) is used when a disruptive discharge occurs at
213 least partly along the surface of a solid dielectric surrounded by a gaseous or liquid medium.

214 Note 3 to entry: The term “puncture” (in French “perforation”) is used when a disruptive discharge occurs through
215 a solid dielectric producing permanent damage.

216 [SOURCE: IEC 60050-212:2010, 212-11-46]

217 3.2

218 **elastomer**

219 macromolecular material which returns after substantial deformation by a weak stress and
220 release of the stress rapidly to approximately its initial dimensions and shape

221 Note 1 to entry: The definition applies to room temperature test conditions.

222 Note 2 to entry: Elastomer is a generic term that includes rubber, latex and elastomeric compounds that may be
223 natural or synthetic or a mixture or a combination of both. It also includes thermoplastic elastomer (TPE) material.

224 [SOURCE: IEC 60050-212:2010, 212-14-05, modified by adding Note 2 to entry.]

225 3.3

226 **electrical insulating matting**

227 flat protective cover made of flexible insulating material, used to provide electrical insulation
228 between the feet of the worker and the surface on which the worker is standing

229 Note 1 to entry: The electric potential of the surface on which the worker is standing is usually that of earth.

230 [SOURCE: IEC 60050-651:2014, 651-22-13]

231 3.4

232

233 **international rubber hardness degree**

234 **IRHD**

235 measure of hardness, the magnitude of which is derived from the depth of penetration of a
236 specified indenter into a test piece under specified conditions

237 Note 1 to entry: The IRHD scale is such that 0 degrees represents a material showing no measurable resistance to indentation
238 and 100 degrees represents a material showing no measurable indentation. The scale is described fully in [ISO 48](#).

239

240 [SOURCE: ISO 1382:2020, 3.264]

241 3.5

242 **nominal voltage of a system**

243 suitable approximate value of voltage used to designate or identify a system

244 [SOURCE: IEC 60050-601:1985, 601-01-21]

245 3.6

246 **proof test**

247 <dielectric testing> test to demonstrate the safety of the equipment for work by evaluating of
248 the capability of the insulating material or product under prescribed test conditions to conform
249 with applicable rating

250 Note 1 to entry: An AC proof test typically involves applying a voltage corresponding to a temporary overvoltage
251 higher than the equipment's nominal operating voltage for a specified period.

3.7**proof test voltage**

specified voltage that is applied to a device or test piece for the time defined under specified conditions to assure that the electrical strength of the insulation is above a specified value

3.8**withstand test**

<dielectric testing> test on insulating material and/or product made by applying a high voltage across the insulation to determine the adequacy of the dielectric strength

Note 1 to entry: The dielectric strength includes the material integrity.

Note 2 to entry: An AC withstand test typically involves applying a high voltage stress corresponding to a switching overvoltage.

3.9**withstand test voltage**

voltage that a test piece is required to withstand without disruptive discharge or other electric failure when voltage is applied under specified conditions

4 Requirements**4.1 General**

Electrical insulating matting shall be designed and manufactured to contribute to the safety of the users provided they are used by skilled persons, in accordance with safe methods of work and the instructions for use.

4.2 Electrical classification

The electrical insulating matting covered by this document shall be designated as follows:

- by electrical class as given in Table 1.

Table 1 – Classes and maximum use voltages for electrical insulating matting

Class	Maximum use voltages for AC/DC used matting	Maximum use voltage for AC only used matting
0	1 000 V AC / 1 500 V DC	1 000 V
1	7 500 V AC / 11 250 V DC	7 500 V
2	17 000 V AC / 25 500 V DC	17 000 V
3	26 500 V AC / 39 750 V DC	26 500 V
4	36 000 V AC / 54 000 V DC	36 000 V

- by adding the suffix "C" to the class designation, in case of category C matting (resistance to extremely low temperature).

Guidance for the selection of class (AC and DC) is given in Annex A.

4.3 Physical requirements**4.3.1 Composition**

The electrical insulating matting shall be manufactured of flexible insulating material such as elastomer.

Both sides of the electrical insulating matting shall be slip resistant. The slip resistance may be achieved with surface such as corrugated or diamond design.