

# SLOVENSKI STANDARD

## oSIST prEN 50528:2009

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Isolating ladders for use on or near low voltage electrical installations

Insolierende Leiter für arbeiten an oder in der Nähe elektrischer Anlagen

Echelles isolantes pour utilisation sur ou à proximité des installations électriques

Ta slovenski standard je istoveten z: prEN 50528:2008

### ICS:

13.260	Protection against electric shock. Live working
97.145	Ladders

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**Insulating ladders for use on or near low voltage electrical installations**

Echelles isolantes pour utilisation sur ou à  
proximité des installations électriques

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der Nähe elektrischer Anlagen

This draft European Standard is submitted to CENELEC members for CENELEC enquiry.  
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It has been drawn up by CLC/TC 78.

If this draft becomes a European Standard, CENELEC 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.

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**CENELEC**

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

**Central Secretariat: rue de Stassart 35, B - 1050 Brussels**

1

**Foreword**

2 This draft European Standard was prepared by the Technical Committee CENELEC TC 78,  
3 Equipment and tools for live working. It is submitted to the CENELEC enquiry.

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## 64 Introduction

65 Ladders covered by this European Standard are used to work on low voltage live parts, such as to  
66 perform connectors fittings, repair on pole, switching actions. They are also used to carry out  
67 operations prior to dead working, as in the case of voltage detection, earthing and short-circuiting,  
68 etc.

69 In all these cases the ladders has two main functions, to reach the part of the installation that needs  
70 to be operated on and to protect the worker from risk of electrical injury, by providing the insulation  
71 level and maintaining the safety distance between the worker and the live or potentially live  
72 installation.

73 Taking the local risk assessment into account, additional protection (either personal or collective)  
74 can be furthermore considered.

75 This standard contributes to the safety of the users provided they are trained to the operations  
76 envisaged.

77 Additional requirements when using the ladders should be considered to fulfil the European  
78 Directives and national regulations.

79 The ladder is used in accordance with EN 50110 series.

80 This European Standard has been prepared in accordance with the requirements of EN 61477.

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81

82 **1 Scope**

83 The present European Standard is applicable to portable ladders made of non conductive stiles,  
 84 including accessories (cradle, adjustable foot, adjustable ladder stabilizer, foot leveller device, etc.)  
 85 used to work on or near electrical systems and installations in the low voltage range (below  
 86 1 000 V a.c./1 500 V d.c.).

87 These ladders are used, to provide temporary access, generally on overhead line structures and to  
 88 undertake electrical operations. They shall be used by one person only per ascending leg of ladder.

89 When ladders are used where the voltage is greater than 1 000 V a.c./1 500 V d.c., EN 61478  
 90 applies.

91 These ladders are not intended to be put in direct contact with energized parts nevertheless they  
 92 provide sufficient insulation level to protect against inadvertent contact with low voltage live parts.

93 The requirements and tests described in this standard shall be considered in addition to the EN 131  
 94 series.

95 NOTE The present European Standard does not cover ladders for applications upper than 1 000 V a.c./1 500 V d.c.  
 96 These products are separately covered by a specific standard (EN 61478).

97 **2 Normative references**

98 The following referenced documents are indispensable for the application of this document. For  
 99 dated references, only the edition cited applies. For undated references, the latest edition of the  
 100 referenced document (including any amendments) applies.

101 EN 131-1:2007, *Ladders – Part 1: Terms, types, functional sizes*

102 EN 131-2:1993, *Ladders – Part 2: Requirements, testing, marking*

103 EN 131-3:2007, *Ladders – Part 3 User instructions*

104 EN 131-4:2007, *Ladders – Part 4 Single or multiple hinge-joint ladders*

105 EN 60068-1:1994, *Environmental testing – Part 1: General and guidance* (IEC 60068-1:1988 +  
 106 corrigendum Oct. 1988 + A1:1992)

107 EN 60743:2001, *Live working – Terminology for tools, equipment and devices* (IEC 60743:2001)

108 EN 61477:2002, *Live working – Minimum requirements for the utilization of tools, devices and*  
 109 *equipment* (IEC 61477:2001)

110 EN 61478:2001, *Live working – Ladders of insulating material* (IEC 61478:2001)

111 EN 61478:2001/A1:2003, *Live working – Ladders of insulating material* (IEC 61478:2001/A1:2003,  
 112 mod.)

113 EN 61318:2008, *Live working – Conformity assessment applicable to tools, devices and equipment*  
 114 (IEC 61318:2007)



### 115 3 Definitions

116 For the purposes of this document the following definitions apply.

117 NOTE 1 Further information on terminology is given in EN 131-1.

118 NOTE 2 The term ladder is used in this document for “ladders for use on or near low voltage installations”.

#### 120 3.1

##### 121 **non conductive material**

122 material either insulating or insulated

#### 123 3.2

##### 124 **cradle**

125 device designed to rest on the pole on which it is positioned

#### 126 3.3

##### 127 **fixing straps**

128 device designed to secure the ladder to the structure (pole)

#### 129 3.4

##### 130 **adjustable foot**

131 rotating shoe inserted or secured on the base of the stiles in order to adjust a level difference and  
132 firmly grip to the ground

#### 133 3.5

##### 134 **adjustable ladder stabilizer**

135 system of support legs fitted to the ladder to reinforce stability when working

#### 136 3.6

##### 137 **foot leveller device**

138 device inserted or secured at the base of the stiles that provides stability to the ladder and/or  
139 balances automatically the ground level differences

#### 140 3.7

##### 141 **stile closures**

142 bottom and upper-ends caps to close the stiles

#### 143 3.8

##### 144 **rung wear devices**

145 devices that reduce the friction and ease the operation of extending ladders by limiting the  
146 rung/stile contact

#### 147 3.9

##### 148 **sliding guides**

149 sleeves that help to slide sections of extending ladders and avoid rim damage to the ladder stiles

#### 150 3.10

##### 151 **sliding wheels**

152 roller devices that help to erect extending ladders and to protect walls from dents and scratches

#### 153 3.11

##### 154 **individual standing platform**

155 standing surface allowing to stay (and operate) at the working place

#### 156 3.12

##### 157 **insulated material**

158 conductive material partly or totally coated with insulating material

## 159 4 Requirements

### 160 4.1 Safety requirements

161 The ladders shall be designed and manufactured to contribute to the safety of the users provided  
162 they are used in accordance with the manufacturer's instruction for use.

163 Constructive arrangements shall be such as to prevent any misuse (i.e. ladders set at reverse side).  
164 Construction design shall be such as to minimise the penetration of water and dirt.

165 The stiles shall be of electrically non conductive material.

166 The rungs (whatever their length) may be either in conductive or non conductive material.

167 All items that could reach inadvertently live conductors and having overall dimension exceeding  
168 300 mm shall not impair the electrical properties of the ladder.

169 Among they are: Cradle, Individual standing platform.

170 Any bare conductive parts (see 4.3.1) of these items shall not exceed 300 mm in length.

171 This requirement excludes the following items:

- 172 • foot leveller device;
- 173 • adjustable ladder stabilizer;
- 174 • locking device;
- 175 • rope(s).

176 The rungs shall have a non-slip surface. The shape of the rungs shall be designed to ensure a firm  
177 grip for gloved hands and also a support that ensures comfort for the worker wearing shoes or  
178 boots.

### 179 4.2 Functional requirements

#### 180 4.2.1 General

181 All metallic elements shall be protected against corrosion.

182 The complete ladder shall be as light as practicable

#### 183 4.2.2 Ropes (if any)

184 Ropes for extending ladders shall be made of poly-strands polyester fibre or equivalent-  
185 (approximate diameter 10 mm)

186 Ropes shall have a minimum breaking strength of 1 250 daN. Their length shall be such that it could  
187 be always possible to secure their free extremity at the lower rung of the base section whatever the  
188 allowed extension of the ladder.

#### 189 4.2.3 Stile closures

190 The stile closures shall be made of soft material and shall be antiskid. The stile closures at the base  
191 shall be such designed to provide a satisfactory adherence to the ground.

192 In both cases they shall be easily dismountable for replacement.

193 **4.2.4 Pulleys (if any)**

194 Their sheaves shall have a groove wider than 10 mm.

195 When secured on the rungs the pulleys shall be mounted at mid-span of the rungs.

196 **4.2.5 Rung wear devices**

197 The rung wear devices shall be such designed they avoid any premature wearing effect of the rungs  
198 and stiles.

199 **4.2.6 Cradle**

200 The ladder shall be equipped with a cradle (an example is shown in Figure 1) avoiding that the  
201 upper rung rests on the structure. Wearable parts shall be easily dismountable for replacement and  
202 made of soft slip resistant material.

203 Cradle shall withstand stresses without breaking.

204 **4.2.7 Foot leveller device (if any)**

205 They shall provide height adjustments to either one or both sides of the ladder.

206 They shall be such designed to be safely attached at the base of the ladder without causing  
207 damages to the stiles.

208 Their shoes shall offer either soft antiskid or ice pick plates.

209 They shall be manually or automatically locked in place and withstand the weight of the whole  
210 equipment.

211 Example of design are given in Figure 3a while Figure 3b shows an example of leveller device  
212 equipped with adjustable feet.

213 **4.2.8 Adjustable ladder stabilizer (if any)**

214 They shall provide extra stability by extending the base of the ladder.

215 **4.2.9 Individual standing platform (if any)**

216 The overall length of the platform shall not exceed 1,5 m; its width shall be within 0,4 m and 1 m.

217 The platform shall be fixed at residence to the ladder. The access side shall be equipped with  
218 mobile and interdependent rigid top guard rails and intermediate rails. The platform shall be  
219 equipped with toe board on the three other sides.

220 The gap defined by the vertical plans, passing one by the external edge of the plinth or floor, the  
221 other by the interior edge of the stringer or under stringer of the safety devices against height falls,  
222 is lower or equal to 50 mm.

223 The difference in width between the external edge of the toe boards and the internal edge of the top  
224 guard rails should be less than or equal to 50 mm on each side.

225 The platform shall withstand a static load.

226 The guard rails and the floor shall withstand stresses without permanent deformation dislocation or  
227 breaking.