

SLOVENSKI STANDARD

oSIST prHD 629.3 S1:2023

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Nadomešča:

SIST HD 629.2 S2:2006

SIST HD 629.2 S2:2006/A1:2009

Preskusne zahteve za pribor, ki se uporablja na elektroenergetskih kabljih za naznačene napetosti od 3,6/6(7,2) kV do vključno 20,8/36(42) kV - 3. del: Prehodni spoji med kabli z impregnirano papirno izolacijo in kabli z ekstrudirano izolacijo

Test requirements for accessories for use on power cables of rated voltage from 3,6/6 (7,2) kV up to 20,8/36(42) kV - Part 3: Transition joints between cables with impregnated paper insulation and cables with extruded insulation

Prüfanforderungen für Kabelgarnituren für Starkstromkabel mit einer 12 Nennspannung von 3,6/6(7,2) kV bis 20,8/36(42) kV 13 Teil 3: Übergangsmuffen für Kabel mit massegetränkter Papierisolierung 14 und für Kabel mit extrudierter Kunststoffisolierung

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29.060.20	Kabli	Cables

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en

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Will supersede HD 629.2 S2:2006 (PART); HD 629.2 S2:2006/A1:2008 (PART)

English Version

Test requirements for accessories for use on power cables of rated voltage from 3,6/6(7,2) kV up to 20,8/36(42) kV Part 3: Transition joints between cables with impregnated paper insulation and cables with extruded insulation

To be completed

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This draft Harmonization Document is submitted to CENELEC members for enquiry.
Deadline for CENELEC: 2023-04-07.

It has been drawn up by CLC/TC 20.

If this draft becomes a Harmonization Document, CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for implementation of this Harmonization Document on a national level.

This draft Harmonization Document was established by CENELEC in three official versions (English, French, German).

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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prHD 629.3 S1:2023 (E)**89 European foreword**

90 This document (prHD 629.3 S1:2022) has been prepared by the CLC/TC 20 "Electric cables".

91 This document is currently submitted to the Enquiry.

92 The following dates are proposed:

- latest date by which the existence of this document has to be announced at national level (doa) dor + 6 months
- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) dor + 12 months
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) dor + 36 months (to be confirmed or modified when voting)

93 This document will partially supersede HD 629.2 S2:2006 and all of its amendments and corrigenda (if any).

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94 **Introduction**

95 This document has been written as part of a series of standards to satisfy the Public Procurement Directive
96 and is complementary to HD 620 and HD 621 or other relevant standard, which covers extruded insulated
97 power cables and impregnated paper insulated power cables from 3,6/6(7,2) kV to 20,8/36(42) kV, inclusive.

98 This document defines the requirements which can be called up for transition joints, when used between
99 extruded insulated power cables and impregnated paper insulated power cables covered by HD 620 and
100 HD 621 or other relevant standard.

101 The test methods for these accessories are given in EN 61442:2005 and Annex E.

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prHD 629.3 S1:2023 (E)**1 Scope****1.1 General**

This document specifies performance requirements for type tests for transition joints for use between extruded insulated power cables as specified in HD 620 and impregnated paper insulated power cables as specified in HD 621 or other relevant standard.

Once type test for an accessory is successfully completed, it is not necessary to repeat the test, unless changes are made in the materials, design or manufacturing process, which might affect the performance characteristics.

Possible extra thermo-mechanical forces due to high current loads from renewable sources of power generation are not covered by these tests (under consideration).

Accessories for special applications such as submarine cables, ships cables or hazardous situations (explosive environments, fire resistant cables or seismic conditions) are not included.

Test methods are included in EN 61442:2005 and Annex E.

NOTE 1 This document does not invalidate existing approvals of products achieved on the basis of national standards and specifications and/or the demonstration of satisfactory service performance. However, products approved according to such national standards or specifications cannot directly claim approval to this document.

NOTE 2 It might be possible, subject to agreement between supplier and purchaser, and/or the relevant conformity assessment body, to demonstrate that conformity to the earlier standard can be used to claim conformity to this document, provided an assessment is made of any additional type testing that might need to be carried out. Any such additional testing that is part of a sequence of testing cannot be done separately.

1.2 Type of accessories

The accessories covered by this document are straight and branch transition joints of all designs, suitable for use underground or in air.

1.3 Rated voltage

The rated voltages U_0/U (U_m) of the accessories covered by this document are 3,6/6(7,2) - 3,8/6,6(7,2) - 6/10(12) - 6,35/11(12) - 8,7/15(17,5) - 12/20(24) - 12,7/22(24) - 18/30(36) - 19/33(36) - 20,8/36(42) kV where:

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 IEC 61238-1-3, *Compression and mechanical connectors for power cables - Part 1-3: Test methods and requirements for compression and mechanical connectors for power cables for rated voltages above 1 kV ($U_m = 1,2$ kV) up to 36 kV ($U_m = 42$ kV) tested on non-insulated conductors*

EN 61442:2005, *Test methods for accessories for power cables with rated voltages from 6 kV ($U_m = 7,2$ kV) up to 36 kV ($U_m = 42$ kV) (IEC 61442:2005)*

HD 620 S2, *Distribution cables with extruded insulation for rated voltages from 3,6/6 (7,2) kV up to and including 20,8/36 (42) kV*

HD 621 S1, *Medium voltage impregnated paper insulated distribution cables*

140 HD 629.1 S3, Test requirements for accessories for use on power cables of rated voltage from 3,6/6(7,2) kV
141 up to 20,8/36(42) kV - Part 1: Accessories for cables with extruded insulation

142 IEC 60050-461, *International Electrotechnical Vocabulary - Chapter 461: Electric cables*

143 3 Definitions

144 For the purposes of this document, the terms and definitions given in IEC 60050-461 and the following apply.

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

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

147 — IEC Electropedia: available at <https://www.electropedia.org/>

148 3.1

149 connector

150 device for connecting a conductor to an equipment terminal or for connecting two or more conductors to each
151 other

152 [SOURCE: EN IEC 61238-1-3]

153 3.2

154 joint

155 accessory suitable for use in air or underground which makes a connection between two or more insulated
156 power cables to form a continuous circuit

157 3.3

158 type I joint

159 joint suitable for use where an impact resistance withstand is not required

160 3.4

161 type II joint

162 joint which has an impact resistance withstand in accordance with this document

163 3.5

164 R category joint

165 joint which has an AC breakdown minimum performance after extended immersion period in water with
166 combined water and conductor heating cycling tests

167 3.6

168 W category joint

169 joint which has an AC withstand minimum performance after extended immersion period in water with
170 combined water and conductor heating cycling tests

171 3.7

172 Z category joint

173 joint not tested with the extended immersion period in water and combined water and conductor heating
174 cycling tests

175 3.8

176 straight joint

177 accessory making a connection between two cables to form a continuous circuit

178 Note 1 to entry: For types of joint see 3.3 and 3.4.

179 [SOURCE: IEC 461-11-01]

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- 180 **3.9**
 181 **branch joint**
 182 accessory making a connection of a branch cable to a main cable
- 183 Note 1 to entry: For types of joint see 3.3 and 3.4.
- 184 [SOURCE: IEV 461-11-17]
- 185 **3.10**
 186 **transition joint**
 187 straight or branch joint making a connection between paper insulated cable and extruded cable
- 188 [SOURCE: IEV 461-11-04 modified]
- 189 **3.11**
 190 **trifurcating transition joint**
 191 straight or branch joint making a connection between 3 core paper insulated cable and 3 separate single core
 192 extruded cables
- 193 **3.12**
 194 **radial field joint**
 195 joint where the individual cores are screened throughout the joint
- 196 **3.13**
 197 **non-radial field joint**
 198 joint, which does not contain individual core screens
- 199 **3.14**
 200 **shelf life / storage life**
 201 duration of the time interval components may be stored under specified conditions without changing any
 202 important properties
- 203 [SOURCE: IEV 212-13-15, modified]
- 204 **3.15**
 205 U_0
 206 rated power-frequency voltage between conductor and earth or metallic screen, for which the cable accessory
 207 is designed
- 208 **3.16**
 209 **U**
 210 rated power-frequency voltage between conductors for which the cable accessory is used
- 211 **3.17**
 212 U_m
 213 maximum value of the 'highest system voltage' for which the cable accessory is used
- 214 **4 Current**
- 215 The continuous current rating of a transition joint is in accordance with the operating temperature of the cable
 216 specified in HD 621 or other relevant cable standards and is suitable for operation at the rated current and
 217 under short circuit fault conditions at the temperatures stated therein.

218 5 Components

219 5.1 Connectors

220 Connectors used within the accessory shall comply with EN IEC 61238-1-3, or with another relevant standard
221 or specification when agreed between manufacturer/supplier. All connectors shall be identified in accordance
222 with Annex B.

223 Where an accessory is to be installed with a different connector than that used for qualification, its compatibility
224 and performance shall be verified.

225 Compliance is demonstrated with the connector used in the tests. For extension of compliance to other
226 connectors refer to 7.2.

227 5.2 Materials

228 It is not a prerequisite for compliance with this testing standard that any component material (resin, heat-shrink
229 tubing etc.) should be subject to any form of individual type testing or fingerprinting.

230 Where required, monitoring of the ongoing suitability of component material supplies should be done by
231 fingerprinting using the EN 50655 series.

232 If type testing of resins, pressure sensitive adhesive tapes and flexible insulating sleeveings for electrical
233 purposes is required, reference should be made to the relevant standards produced by IEC/TC 15, which have
234 been adopted by CENELEC, as listed for information in the bibliography.

235 The term "material characterization" is sometimes used in conjunction with both type testing and fingerprinting
236 of component materials, but it is undefined, and its use should therefore be avoided.

237 6 Test assemblies

238 6.1 Identification

239 6.1.1 Cables

240 The cables used for testing shall comply with HD 620 S2 and/or HD 621 S1 or other relevant standards as
241 applicable. Constructional details of the cables shall be identified (refer to A.1 and A.2).

242 Paper insulated cables used for the tests are sometimes issued from the field. It is recommended to check the
243 quality of the insulation of the paper insulated cable (according to Annex D for example) prior to proceed to any
244 test.

245 6.1.2 Connectors

246 Connectors used within the accessories shall be identified as in Annex B.

247 6.1.3 Accessories

248 The accessory that is installed shall be within its shelf life.

249 Accessories to be tested shall be correctly identified with respect to

250 — name of manufacturer/supplier,

251 — type, designation, manufacturing date or code, end of shelf life date,

252 — minimum and maximum nominal cross sections, material and shape of cable conductor as used in
253 EN 60228 for conductors,

254 — minimum and maximum cable insulation diameters,

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- 255 — connector type(s),
 256 — rated voltage (see 1.3),
 257 — installation instructions (reference and date),
 258 — list of kit contents.

259 6.2 Cable conductor nominal cross section**260 6.2.1 Paper cable**

261 Unless otherwise specified, the nominal cross sections of the paper insulated cable shall be between 120 mm²
 262 and 240 mm².

263 6.2.2 Polymeric cable

264 The nominal cross sections of extruded insulated cable shall be selected in order not to overheat or cool the
 265 paper cable side (see Table 1).

266 **Table 1 — Selection of nominal cross sections of extruded insulated cable**
 267 **vs paper insulated cable conductor nominal cross sections**

nominal cross sections of paper insulated cable (mm ²)		nominal cross sections of extruded insulated cable (mm ²)	
Al	Cu	Al	Cu
120		120	95
	120	185	120
150		150	95
	150	240	150
185		185	120
	185	300	185
240		240	150
	240	400	240

268 6.2.3 Qualification

269 Compliance for the range of cable nominal cross sections from 35 mm² to 400 mm², shall be obtained by
 270 successfully completing all the appropriate tests of Table 6 on any one of the paper cable nominal cross
 271 sections specified in 6.2.1.