



SLOVENSKI STANDARD
oSIST prEN 50441-5:2017
01-junij-2017

Kabli za notranjo stanovanjsko telekomunikacijsko montažo - 5. del: Kabli za frekvence do 2200 MHz za en par in za preostale pare do 1000 MHz

Cables for indoor residential telecommunication installations - Part 5: Cables up to 2 200 Mhz for one pair and remaining pairs up to 1 000 Mhz

iTeh STANDARD PREVIEW

Câbles pour les installations résidentielles de télécommunications en intérieur - Partie 5: Câbles caractérisés jusqu'à 2 200 Mhz pour une seule paire et les autres paires jusqu'à 1 000 Mhz

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ICS:

33.120.10 Koaksialni kabli. Valovodi Coaxial cables. Waveguides

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EUROPEAN STANDARD
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ICS

English Version

**Cables for indoor residential telecommunication installations -
Part 5: Cables up to 2 200 Mhz for one pair and remaining pairs
up to 1 000 Mhz**

Câbles pour les installations résidentielles de
télécommunications en intérieur - Partie 5: Câbles
caractérisés jusqu'à 2 200 Mhz pour une seule paire et les
autres paires jusqu'à 1 000 Mhz

This draft European Standard is submitted to CENELEC members for enquiry.
Deadline for CENELEC: 2017-07-21.

It has been drawn up by CLC/SC 46XC.

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.

This draft European Standard was established by CENELEC in three official versions (English, French, German).
A version in any other language made by translation under the responsibility of a CENELEC 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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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: Avenue Marnix 17, B-1000 Brussels

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prEN 50441-5:2017 (E)**69 European foreword**

70 This document [prEN 50441-5:2017] has been prepared by WG 2 of CLC/SC 46XC, "Multicore, multipair and
71 quad data communication cables", of CLC/TC 46X, "Communication cables".

72 This document is currently submitted to the Enquiry.

73 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)

74 EN 50441-5 is to be read in conjunction with EN 50441-1.

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75 1 Scope

76 This European Standard covers cables for installation in indoor Residential Cabling Systems. The cables are
77 specified up to 2 200 MHz for only 1 pair and the remaining pairs to 1 000 MHz. Their design is based on the
78 requirements of EN 50290-2-1. They are specifically designed for cabling in residential environments supporting
79 ICT and BCT applications (Telephone, Computer and TV services). This specification defines the constructional
80 details as well as the specific performances of the cables.

81 Unless otherwise specified, all cables covered by this standard may be subjected to voltages not more than
82 300 V a.c. or 450 V d.c. and will meet the essential requirements of the low voltage directive. Due to current
83 limitation related to the conductor cross sectional area, they are not intended for direct connection to mains
84 electricity supply. The maximum current rating per conductor is less than or equal to 3 A/mm² unless otherwise
85 specified in the relevant detail specification.

86 2 Normative references

87 The following documents are referred to in the text in such a way that some or all of their content constitutes
88 requirements of this document. For dated references, only the edition cited applies. For undated references, the
89 latest edition of the referenced document (including any amendments) applies.

90 EN 50173:2007, *Information technology - Generic cabling systems*

91 EN 50289-1-2, *Communication cables - Specifications for test methods - Part 1-2: Electrical test methods - DC*
92 *resistance*

93 EN 50289-1-3, *Communication cables - Specifications for test methods - Part 1-3: Electrical test methods -*
94 *Dielectric strength*

95 EN 50289-1-4, *Communication cables - Specifications for test methods - Part 1-4: Electrical test methods -*
96 *Insulation resistance*

97 EN 50289-1-6:2002, *Communication cables - Specifications for test methods - Part 1-6: Electrical test methods*
98 *- Electromagnetic performance*

99 EN 50289-1-8, *Communication cables - Specifications for test methods - Part 1-8: Electrical test methods -*
100 *Attenuation*

101 EN 50289-1-10, *Communication cables - Specifications for test methods - Part 1-10: Electrical test methods -*
102 *Crosstalk*

103 EN 50289-1-11:2016, *Communication cables - Specifications for test methods - Part 1-11: Electrical test*
104 *methods - Characteristic impedance, input impedance, return loss*

105 EN 50289-3-7, *Communication cables - Specifications for test methods - Part 3-7: Mechanical test methods -*
106 *Abrasion resistance of the cable sheath*

107 EN 50289-3-9:2001, *Communication cables - Specifications for test methods - Part 3-9: Mechanical test*
108 *methods - Bending tests*

109 EN 50289-3-17, *Communication cables - Specifications for test methods - Part 3-17: Mechanical test methods*
110 *- Adhesion of dielectric and sheath*

111 EN 50290-2-1:2005, *Communication cables - Part 2-1: Common design rules and construction*

112 EN 50290-2-22, *Communication cables - Part 2-22: Common design rules and construction - PVC sheathing*
113 *compounds*

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- 114 EN 50290-2-23, *Communication cables - Part 2-23: Common design rules and construction - Polyethylene*
115 *insulation for multi-pair cables used in access telecommunication networks: Outdoor cables*
- 116 EN 50290-2-27, *Communication cables - Part 2-27: Common design rules and construction - Halogen free flame*
117 *retardant thermoplastic sheathing compounds*
- 118 EN 60332-1-2, *Tests on electric and optical fibre cables under fire conditions - Part 1-2: Test for vertical flame*
119 *propagation for a single insulated wire or cable - Procedure for 1 kW pre-mixed flame*
- 120 EN 60794-1-2:2014, *Optical fibre cables - Part 1-2: Generic specification - Cross reference table for optical*
121 *cable test procedures (IEC 60794-1-2:2013)*
- 122 EN 60811-202, *Electric and optical fibre cables - Test methods for non-metallic materials - Part 202: General*
123 *tests - Measurement of thickness of non-metallic sheath (IEC 60811-202)*
- 124 EN 62230, *Electric cables - Spark-test method*
- 125 HD 402 S2, *Standard colours for insulation for low-frequency cables and wires (IEC 60304)*

3 Cable construction**3.1 Conductors****3.1.1 Conductor construction**

129 According to 4.1 of EN 50290-2-1:2005.

3.1.2 Conductor Type

131 According to 4.1.1 of EN 50290-2-1:2005, the conductor is a solid wire of annealed copper with a minimum
132 diameter of 0,5 mm (diameters larger than 0,8 mm could cause connectorization problems).

133 NOTE Diameter < 0,5 mm and > 0,65 mm may cause problems with connecting hardware.

3.2 Insulation**3.2.1 Insulation material**

136 The insulation of the conductor shall be polyethylene in accordance with EN 50290-2-23. Other relevant
137 materials may be used providing that they would not affect the compliance of the cable against local regulations
138 (e.g. Environmental Directives).

3.2.2 Thickness of the insulation

140 The thickness of the insulation shall be compatible with the electrical requirements as defined in Clause 6.

3.2.3 Colour of the insulated conductor

142 The colour of insulation should be a reasonable match to HD 402 S2.

3.3 Cable element

144 The cable element shall be a pair.

145 The lay length shall be in accordance with EN 50290-2-1.

3.4 Screening of the cable element

147 Not specified but might be needed to meet local regulation for EMC performance. Performance required over
148 1GHz shall require individual screening to maintain signal performance and reduce interference between pairs.

149 **3.5 Cabling**

150 The cables shall have at least 4 pairs. The core of the cable shall be such that 6.5 and 6.6 are fulfilled.

151 **3.6 Spare pairs**

152 Not applicable.

153 **3.7 Colour code**

154 The colour code shall be given in the detail specification. It should take into account the local practices as well
155 as international recognized codes.

156 The colours shall be easily identifiable.

157 **3.8 Screening and wrapping of the core**158 **3.8.1 Core wrapping**

159 The cable core may be wrapped with one or more non-hydroscopic synthetic tapes. The synthetic tape shall be
160 applied helically or longitudinally with an overlap of a minimum of 10 %

161 **3.8.2 Screen**

162 The cable core may be screened. When screened, it shall be in accordance with 4.1.1.2 of EN 50290-2-1:2005.

163 Where a braid is applied, the minimum coverage (mainly for mechanical reasons) shall be 60 %. Where the
164 screen is a metallized foil and a braid, this minimum coverage shall be 30 %. The method of calculating the
165 coverage is described in EN 50290-2-1.

166 **3.9 Sheath**167 **3.9.1 Sheath material**

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168 The sheath shall be of a thermoplastic compound according to EN 50290-2-27 or EN 50290-2-22.

169 **3.9.2 Sheath construction**

170 Unless otherwise specified, the colour of sheath shall be cream. The sheath shall be applied to fit closely to the
171 core of the cable. However, it shall be possible to strip the cable over 20 cm without removing foils or damaging
172 conductors.

173 The sheath shall be cylindrical and its external aspect shall not reveal the core profile.

174 The ovality of the finished cable shall be not greater than 0,16.

175 **3.9.3 Thickness of the sheath**

176 The minimum thickness shall be equal or greater than 0,5 mm when measured according to EN 60811-202.

177 **3.10 Ripcord**

178 A ripcord under the sheath is optional.

179 **3.11 Overall diameter**

180 For installation practices and connectorization, the following outer diameter is recommended:

Number of pairs	Max OD mm	Minimum thickness of the sheath mm
4	9,0	0,50

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181 NOTE In case of installation by stapling, other diameters may be required (see 6.4.7.3).

182 3.12 Identification**183 3.12.1 General**

184 Identification shall be provided either by sheath marking or by identification thread.

185 3.12.2 Sheath marking

186 Unless otherwise specified by the customer, the cable may be marked.

187 Sheath marking shall be in accordance with a non-degradable print or embossing containing the following
188 minimum information:

- 189 — designation of cable including the numbering of the relevant standard;
- 190 — reaction to fire classification;
- 191 — name of supplier;
- 192 — metric marking.

193 3.12.3 Identification thread

194 In case the cable is not identified by sheath marking, there shall be another means of identification (e.g.
195 identification thread laid under the sheath, identification tape, printing on the core wrapping, etc.).

196 Identification shall contain the following minimum information:

- 197 — designation of cable including the numbering of the relevant standard;
- 198 — reaction to fire classification;
- 199 — name of supplier.

200 3.13 Delivery length**201 3.13.1 Labelling**

202 Unless otherwise specified in the detail specification, drums or coils shall be provided with a label with a non-
203 degradable print containing the following minimum information:

- 204 — designation of cable including the numbering of the relevant standard;
- 205 — reaction to fire classification;
- 206 — name of supplier;
- 207 — batch part number;
- 208 — length of cable.

209 EXAMPLE EN 50XXX - £££ - 03/00 - 543 m.

210 3.13.2 End caps

211 The ends of the delivery length of cable shall be adequately capped to avoid water ingress.