

**SLOVENSKI
STANDARD**

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Cable trunking systems and cable ducting systems for electrical installations -- Part
1: General requirements

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English version

**Cable trunking systems and cable ducting systems
for electrical installations
Part 1: General requirements**

Systèmes de goulottes et de conduits
profilés pour installations électriques
Partie 1: Règles générales

Elektroinstallationskanalsysteme
für elektrische Installationen
Teil 1: Allgemeine Anforderungen

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

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 CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

Foreword

This European Standard has been prepared by the Technical Committee CENELEC TC 213, Cable management.

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50085-1 on 1996-07-02.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1997-07-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1999-07-01

For products which have complied with the relevant national standard before 1999-07-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 2004-07-01.

Annexes designated "informative" are given for information only. In this standard, annexes A and B are informative.

This standard is a system standard for cable management products used for electro-technical purposes. It relates to the Council Directives on the approximation of laws, regulations and administrative provisions of the Member States relating to:

Low Voltage

(Directive 73/23/EEC)

through consideration of the essential requirements of this directive.

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This standard is supported by separate standards to which references are made.

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1 Scope

This European Standard specifies requirements and tests for cable trunking systems and cable ducting systems intended for the accommodation, and where necessary for the segregation, of insulated conductors, cables, cords and possibly other electrical equipment in electrical and/or communication systems installations up to 1 000 V a.c. and/or 1 500 V d.c.

This standard does not apply to conduit systems, cable tray systems, cable ladder systems, power track systems or equipment covered by other standards.

This Part 1 shall be used in conjunction with the relevant Part 2 for particular requirements.

NOTE: This Part 1 is not intended to be used by itself.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 60423	1994	Conduits for electrical purposes - Outside diameters of conduits for electrical installations and threads for conduits and fittings (IEC 423:1993, modified)
EN 60529	1991	Degrees of protection provided by enclosures (IP Code) (IEC 529:1989)
EN 60695-2-4/1	1993	Fire hazard testing - Part 2: Test methods Section 4/Sheet 1: 1 kW nominal pre-mixed test flame and guidance (IEC 695-2-4/1:1991)
HD 383 S2	1986	Conductors of insulated cables (IEC 228:1978 + IEC 228A:1982)
HD 384.1 S1	1979	Electrical installations of buildings (IEC 364:1:1972 + A1:1976, modified)
HD 384.5.51 S1	1985	Part 5: Selection and erection of electrical equipment Chapter 51: Common rules (IEC 364-5-51:1979, modified)
HD 384.5.54 S1	1988	Chapter 54: Earthing arrangements and protective conductors (IEC 364-5-54:1980, modified)
IEC 50(826)	1982	International Electrotechnical Vocabulary (IEV) - Chapter 826: Electrical installations of buildings (harmonized as HD 384.2 S1:1986)
IEC 695-2-1	1991	Fire hazard testing - Part 2: Test methods Section 1: Glow-wire test and guidance

3 Definitions

For the purpose of this European Standard the following definitions apply.

3.1 cable trunking system (CTS): An assembly comprising a trunking length and possibly other system components to provide an enclosure for the accommodation and laying in of insulated conductors, cables and cords and possibly the accommodation of other electrical equipment.

NOTE: Different types of CTS are shown in figure 1 and explained in annex A.

3.2 cable ducting system (CDS): An assembly comprising a ducting length and possibly other system components to provide an enclosure for the accommodation and drawing in of insulated conductors, cables and cords and possibly the accommodation of other electrical equipment.

NOTE: Different types of CDS are shown in figure 1 and explained in annex A.

3.3 system component: Part of the system which includes

- a) trunking length or ducting length ;
- b) trunking fitting or ducting fitting ;
- c) fixing device ;
- d) apparatus mounting device ;
- e) system accessory.

NOTE: A system does not necessarily include all system components a) to e). Different combinations of system components may be used.

3.4 trunking length: The main component of a cable trunking system comprising a base with one or more access covers which may be opened or removed.

3.5 ducting length: The main component of a cable ducting system, characterized by a closed non-circular cross section.

3.6 fitting: A system component to connect, change direction or terminate trunking lengths or ducting lengths.

3.7 fixing device: A system component to secure other system components to the wall, ceiling, floor or another structure.

3.8 apparatus mounting device: A system component to accommodate electrical apparatus (switches, socket outlets, circuit-breakers, telephone outlets, etc.) which can be an integral part of electrical apparatus.

NOTE: An apparatus mounting device can also be a fitting, a trunking length, etc.

3.9 system accessory: A system component for supplementary functions such as cable separation, cable retention, cable outlet, etc.

3.10 metallic system component: A system component which consists of metal only.

3.11 non-metallic system component: A system component which consists of non-metallic material only.

3.12 composite system component: A system component comprising both metallic and non-metallic materials.

3.13 non-flame propagating system component: A system component which is liable to catch fire as a result of an applied flame, in which the flame does not propagate and which extinguishes itself within a limited time after the flame is removed.

3.14 external influence: Factor which may affect the system.

NOTE: Examples of such factors are, a presence of water, oil or building materials, low and high temperatures and corrosive or polluting substances.

3.15 membrane: Under consideration.

3.16 gland: Under consideration.

3.17 live part: A conductor or conductive part intended to be energized in normal use, including a neutral conductor, but, by convention, not a PEN conductor (IEV 826-03-01).

4 General requirements

CTS/CDS shall be so designed and constructed that where required they provide reliable mechanical protection to the insulated conductors, cables, cords and possibly other electrical equipment contained therein. Where required the system shall also provide adequate electrical protection.

Furthermore, the system components shall withstand the stresses likely to occur under classified minimum temperature for storage and transport, installation and application (see tables 1A and 1B) and maximum temperature for application (see table 2) and during recommended installation practice and usage. Equipment integral with or incorporated in a system component shall comply with the relevant standard for that equipment if any.

Compliance is checked by carrying out all the tests specified.

5 General conditions for tests

5.1 Tests according to this standard are type tests.

5.2 Samples of system components are called, hereafter samples.

5.3 Unless otherwise specified, tests are carried out, considering the declared classification and purposes of the system, with the CTS/CDS assembled and installed as in normal use according to the manufacturer's instructions.

Tests on non-metallic system components or composite system components shall not commence earlier than 240 h after manufacture. During this period the samples may be conditioned according to 10.3.1.1 when required.

5.4 Unless otherwise specified, tests are carried out at an ambient temperature of $20\text{ °C} \pm 5\text{ °C}$.

5.5 Samples of trunking lengths or ducting lengths for a given test are taken from different such system components.

5.6 All tests are carried out on new samples.

5.7 When toxic or hazardous processes are used, precautions shall be taken to safeguard the test personnel.

5.8 Unless otherwise specified, three samples are submitted to the tests and the requirements are satisfied if all the tests are met.

If only one of the samples does not satisfy a test due to an assembly or a manufacturing fault, that test and any preceding one which may have influenced the results of the test shall be repeated and also the tests which follow shall be carried out in the required sequence on another full set of samples, all of which shall comply with the requirements.

NOTE: The applicant, when submitting a set of samples, may also submit an additional set of samples which may be necessary should one sample fail. The testing station will then, without further request, test the additional set of samples and will reject only if a further failure occurs.
If the additional set of samples is not submitted at the same time, the failure of one sample will entail rejection.

6 Classification

6.1 *According to material*

6.1.1 Metallic CTS/CDS.

6.1.2 Non-metallic CTS/CDS.

6.1.3 Composite CTS/CDS.

6.2 According to resistance to impact for installation and application

6.2.1 CTS/CDS for very light impact.

6.2.2 CTS/CDS for light impact.

6.2.3 CTS/CDS for medium impact.

6.2.4 CTS/CDS for heavy impact.

6.2.5 CTS/CDS for very heavy impact.

6.3 According to temperatures as given in tables 1A, 1B and 2

Table 1A

Classification (First numeral)	Minimum storage and transport temperature ± 2 °C
1XX	- 45
2XX	- 25
3XX	- 5

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Table 1B

Classification (2nd numeral)	Minimum installation and application temperature ± 2 °C
X1X	- 25
X2X	- 15
X3X	- 5
X4X	+ 5
X5X	+ 15

Table 2

Classification (3rd numeral)	Maximum application temperature ± 2 °C
XX1	+ 60
XX2	+ 90
XX3	+ 105
XX4	+ 120

NOTE: The above application temperatures are operating temperatures and not ambient temperatures.

6.4 According to resistance to flame propagation

6.4.1 Flame propagating CTS/CDS.

6.4.2 Non-flame propagating CTS/CDS.

6.5 According to electrical continuity characteristic

6.5.1 CTS/CDS with electrical continuity characteristic.

6.5.2 CTS/CDS without electrical continuity characteristic.

6.6 According to electrical insulating characteristic

6.6.1 CTS/CDS with electrical insulating characteristic.

6.6.2 CTS/CDS without electrical insulating characteristic.

6.7 According to degrees of protection provided by enclosure according to EN 60529:1991

6.7.1 According to protection against ingress of solid foreign objects.

6.7.2 According to protection against ingress of water.

6.7.3 According to protection against access to hazardous parts.

6.8 According to protection against corrosive or polluting substances

6.8.1 CTS/CDS with low protection outside and inside.

6.8.2 CTS/CDS with medium protection outside, and low protection inside.

6.8.3 CTS/CDS with medium protection outside and inside.

6.8.4 CTS/CDS with high protection outside, and low protection inside.

6.8.5 CTS/CDS with high protection outside, and medium protection inside.

6.8.6 CTS/CDS with high protection outside and inside.

6.9 According to the system access cover retention

6.9.1 CTS/CDS access cover which can be opened without tools.

6.9.2 CTS/CDS access cover which can be opened with tools only.

7 Marking and documentation

7.1 Each system component shall be marked with :

- the manufacturer's or responsible vendor's name or trade mark or identification mark.
- a product identification mark, which may be, for example, a catalogue number, a symbol or the like.

When system components other than trunking length, ducting length and apparatus mounting device are supplied in a package, the product identification mark may be, as alternative, marked on the package only.

Earthing terminals shall be indicated by the symbol  . This marking shall not be placed on screws or any other easily removable part.

NOTE: The necessity to mark on the product, the flame propagating characteristic, is under consideration.

7.2 Marking shall be durable and easily legible.

Compliance is checked by inspection and for marking on the product, in addition, by rubbing the marking by hand for 15 s with a piece of cotton cloth soaked with water and again for 15 s with a piece of cotton cloth soaked with petroleum spirit.

NOTE 1: Petroleum spirit is defined as the aliphatic solvent hexane with a content of aromatics of maximum 0,1 % volume, a kauri-butanol value of 29, initial boiling point of 65 °C, a dry point of 69 °C and a specific gravity of approximately 0,68 kg/l.

NOTE 2: Marking may be applied, for example, by moulding, pressing, engraving, printing, adhesive labels, or water slide transfers.

NOTE 3: Marking made by moulding, pressing or engraving is not subjected to this test.

After the test, the marking shall be legible.

7.3 The manufacturer shall provide in his literature all information necessary for the proper and safe installation and use. It shall include :

- components of the system ;
- purpose of the system components and their assemblies ;
- classification of the system, in accordance with clause 6 ;
- guidance to reach the declared classification and purposes of the system.

Compliance is checked by inspection.

8 Dimensions

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The manufacturer shall declare in mm² the usable cross sectional area for cables of the CTS/CDS.

NOTE: Certain system components when mounted can reduce the usable cross sectional area for cables.

9 Construction

9.1 Sharp edges

Any surface or edge shall not damage the insulated conductors, cables or cords.

Compliance is checked by inspection, if necessary after cutting the samples apart.

Any screws, studs or other securing devices provided shall be fitted so as not to damage the insulated conductors, cables or cords.

Compliance is checked by inspection.

9.2 Apparatus mounting

It shall be possible to securely fix the apparatus.

Compliance is checked by the test of 10.5.1.

Where apparatus is intended for frequent movement in normal use precautions shall be taken to ensure that its components do not suffer damage due to fatigue.

Compliance is checked by inspection.