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Coaxial cables - Part 3-1: Sectional specifications for cables used in Telecom applications - Miniaturized cables used in digital communication systems

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EUROPEAN STANDARD

**EN 50117-3-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2002

ICS 33.120.10

English version

**Coaxial cables**  
**Part 3-1: Sectional specifications for cables**  
**used in Telecom applications -**  
**Miniaturized cables used in digital communication systems**

Câbles coaxiaux  
Partie 3-1: Spécification intermédiaire  
pour les câbles utilisés dans les  
applications de télécommunication -  
Câbles miniaturisés utilisés dans les  
réseaux de communication numériques

Koaxialkabel  
Teil 3-1: Rahmenspezifikation  
für Kabel für Anwendungen  
in der Telekommunikation -  
Miniaturkabel für digitale  
Kommunikationssysteme

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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, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, 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 was prepared by SC 46XA, Coaxial cables, of Technical Committee CENELEC TC 46X, Communication cables.

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 50117-3-1 on 2002-03-01.

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) 2003-03-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2005-03-01

Annexes designated "informative" are given for information only. In this standard, annex A is informative.

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## 1 Scope

This European Standard relates to EN 50117-1 and should be read in conjunction with this generic specification. This standard applies to single and/or multiple miniaturised coaxial cables used in digital communication systems on the Telecom applications.

The cables covered by this standard are used for the internal wiring of and interconnection between switching-, transmission-, multiplexing- and cross-connect equipment and for the connections to the digital distribution frame.

These coaxial cables are designed for the transmission of E1 (2 Mbit/s), E2 (8 Mbit/s), E3 (34 Mbit/s), E4 (140 Mbit/s), STM (155 Mbit/s), DS1 (1,5 Mbit/s), DS2 (6 Mbit/s) and DS3 (34 Mbit/s) signals.

Cables are connected to the equipment via a coaxial connector or other suitable ways.

The purpose of this standard is to specify the applicable test methods and requirements for the electrical, mechanical, environmental and fire performance of the cables.

The cables covered by this standard are intended to be used with voltages up to 50 V a.c. and/or 120 V d.c.

## 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 50117-1	Coaxial cables used in cabled distribution networks Part 1: Generic specification
EN 50290-1-2 <sup>1)</sup>	Communication cables – Part 1-2: Definitions
EN 50290-2-20	Communication cables – Part 2-20: Common design rules and construction - General
EN 50290-2-27	Communication cables – Part 2-27: Common design rules and construction – Halogen free flame retardant thermoplastic sheathing compounds
EN 50290-4-1	Communication cables – Part 4-1: General considerations for the use of cables – Environmental conditions and safety aspects

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<sup>1)</sup> At draft stage.

### 3 Definitions

For the purposes of this European Standard, the definitions of EN 50290-1-2 and EN 50117-1 apply.

## 4 Requirements for cable construction

### 4.1 General

Maximum current carrying ampacity shall be in accordance with subclause 4.1 of EN 50117-1 if applicable.

### 4.2 Inner conductor

The conductor shall meet the requirements of 4.2 of EN 50117-1 and shall be solid or stranded. Individual wires can be plain or metal coated.

### 4.3 Dielectric

The dielectric material(s) shall be in accordance with 4.3 of EN 50117-1 and shall consist of polyolefin materials according to the relevant part of EN 50290-2-20.

The foamed dielectric is used to reduce the outer diameter.

For special cases, other materials may be used on agreement between supplier and customer.

The diameter over dielectric and the maximum allowed ovality shall be given in the relevant Detail Specification.

### 4.4 Outer conductor or screen

The construction and material of the outer conductor shall be as specified in the Detail Specification.

The outer conductor may be composed of

- a) a braid of plain, tinned or silvered annealed copper wires. Joints in the braiding wires shall be soldered, twisted or woven-in and there shall be no joint in the complete braid. The braid shall be evenly applied,
- b) a layer of metal or metallized plastic foil applied with a sufficient overlap covered with a braid as in item a) above. The wires of braid shall be of plain copper where the metal of foil is copper and of tinned copper where the metal of foil is aluminium,
- c) a high permeability alloy tape, helically wound with overlap,
- d) a longitudinal foil of copper applied with overlap,

or any combination of a), b), c) and d). Item c) shall not be used alone.

For braid constructions, the braid angle shall be between 15° and 45°.

#### 4.5 Filling compounds

Not applicable

#### 4.6 Moisture barriers

Not applicable

#### 4.7 Wrapping layers

Not applicable

#### 4.8 Sheath

Sheath material(s) shall meet the requirements of EN 50290-2-27 for halogen free flame retardant materials.

The sheath shall also meet the requirements of 4.8 of EN 50117-1.

For special cases, other materials may be used on agreement between supplier and customer.

#### 4.9 Metallic protection

Not applicable

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#### 4.10 Cable integral suspension strand (messenger wire)

Not applicable

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#### 4.11 Oversheath

Not applicable

#### 4.12 Fauna proofing

Not applicable

#### 4.13 Chemical and/or environmental proofing

Not applicable

#### 4.14 Cable identification

Cable identification shall be in accordance with 4.14 of EN 50117-1.



#### 4.14.1 Sheath marking

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

- the numbering of the relevant standard;
- the designation of the cable;
- Euro-class;
- name of supplier.

EXAMPLE : EN 50117-3-1 « xxx » Euro-class C « yyy »

#### 4.14.2 Labelling

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

- the numbering of the relevant standard;
- the designation of the cable;
- Euro-class;
- name of supplier;
- batch part number; [SIST EN 50117-3-1:2004](https://standards.iteh.ai/catalog/standards/sist/7eb581d4-1d7d-4de6-a3b4-6f0bedc871ce/sist-en-50117-3-1-2004)
- length of cable.

EXAMPLE : EN 50117-3-1 « xxx » Euro-class C « yyy » 03/00 543 m

### 5 Test methods for completed cables

When tested in accordance with the requirements of EN 50117-1, the requirements given below shall apply.