

**Communication cables -- Part 4-2: General
considerations for the use of cables - Guide to use**

Communication cables -- Part 4-2: General
considerations for the use of cables - Guide to use

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 50290-4-2:2008 sisaldab Euroopa standardi EN 50290-4-2:2008 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 19.08.2008 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 09.07.2008.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 50290-4-2:2008 consists of the English text of the European standard EN 50290-4-2:2008.

This standard is ratified with the order of Estonian Centre for Standardisation dated 19.08.2008 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

Date of Availability of the European standard text 09.07.2008.

The standard is available from Estonian standardisation organisation.

ICS 33.120.10

Võtmesõnad:

Standardite reprodutseerimis- ja levitamiseõigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:
Aru 10 Tallinn 10317 Eesti; www.evs.ee; Telefon: 605 5050; E-post: info@evs.ee

English version

**Communication cables -
Part 4-2: General considerations for the use of cables -
Guide to use**

Câbles de communication -
Partie 4-2: Considérations générales
pour l'utilisation des câbles -
Guide d'utilisation

Kommunikationskabel -
Teil 4-2: Allgemeine Betrachtungen
für die Anwendung der Kabel -
Leitfaden für die Verwendung

This European Standard was approved by CENELEC on 2008-02-01. 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.

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, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the 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 the Technical Committee CENELEC TC 46X, Communication cables, with the help of the CENELEC Co-operating Partner EUROPACABLE (ECBL).

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 50290-4-2 on 2008-02-01.

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) 2009-02-01
 - latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2011-02-01
-

Contents

1	Scope	5
2	Normative references	5
3	Communication cable basics	6
4	Types of cables	6
4.1	Twisted pairs cables	7
4.2	Coaxial cable (unbalanced)	8
4.3	Flexible cables versus rigid cables	9
5	Cables and regulations	9
5.1	Low voltage	10
5.2	Fire reactions and Euroclasses	11
5.3	Electromagnetic behaviour	10
6	Criteria for the choice of the cables	14
6.1	Cable construction	14
6.2	Cabling	16
6.3	Transmission performance	16
7	Installation practices	18
7.1	Delivery	18
7.2	Storage	18
7.3	Pre-installation procedure	19
7.4	Pulling of the cable	20
7.5	Installation	20
7.6	Mechanical considerations	20
8	Cabling installation versus location	25
8.1	Outside plant	25
8.2	Intrabuilding	28
	Figure 1 – Balanced cabling	6
	Figure 2 – Unbalanced cabling	6
	Figure 3 – Starquads	7
	Figure 4 – Pairs	7
	Figure 5 – Example of pair arrangement in a telecommunication cable	8
	Figure 6 – Coaxial cable illustration	8
	Figure 7 – Twisted pairs cables – Screen description	13
	Figure 8 – Reel of cables	18
	Figure 9 – Reel storage	19
	Figure 10 – Advised way for pulling a cable	20
	Figure 11 – Tensile strength	21
	Figure 12 – Shrinkage and elongation of Internal and external element	21
	Figure 13 – Common handling mistakes when bending cables	22
	Figure 14 – Crush and impact testing	23
	Figure 15 – Cable stapling	24
	Figure 16 – Cable buried in a trench	25
	Figure 17 – Cable buried in a trench with a warning tape	26

Figure 18 – Conduit for underground burial	26
Figure 19 – Example of an aerial cable installation	27
Figure 20 – Cable ‘messenger clamp/grip’	27
Figure 21 – Examples of installation of intrabuilding conduits	28
Figure 22 – Example of mistake in pulling cables in conduits	30
Figure 23 – External pulling grip	31
Figure 24 – Advised way for pulling a cable	31
Figure 25 – Example of cable pulling when a mechanical force is required	32
Table 1 – Types of cabling according to applications	16
Table 2 – Cables for CATV / MATV / TV and Video distribution	17
Table 3 – Cables for access network	17
Table 4 – Cables that might be used for some given applications	18

1 Scope

The scope of this European Standard is to help installers and cabling designers to understand the range of communication metallic cables available. To help this choice the fundamental and practical rules on how to use these cables are established.

The related cables are specified in the documents issued by CLC/TC 46X and its sub-committees.

These cables are:

- telecom cables used in access network,
- data communication twisted pairs cables,
- coaxial cables used in CATV.

2 Normative references

The following referenced documents are indispensable for the application 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 50083 series	Cable networks for television signals, sound signals and interactive services
EN 50117 series	Coaxial cables used in cabled distribution networks
EN 50173 series	Information technology - Generic cabling systems
EN 50174 series	Information technology - Cabling installation
EN 50200	Method of test for resistance to fire of unprotected small cables for use in emergency circuits
EN 50288 series	Multi-element metallic cables used in analogue and digital communication and control
EN 50289-3-9	Communication cables - Specifications for test methods - Part 3-9: Mechanical test methods - Bending tests
EN 50289-4-16 ¹⁾	Communication cables - Specifications for test methods - Part 4-16: Environmental test methods - Circuit integrity under fire conditions
EN 50290 series	Communication cables
EN 50406 series	End user multi-pair cables used in high bit rate telecommunication networks
EN 50407-1	Multi-pair cables used in high bit rate digital access telecommunication networks - Part 1: Outdoor cables
EN 50441 series	Cables for indoor residential telecommunication installations

¹⁾ At draft stage.