

**Electric cables - Low voltage energy cables of rated voltages up to and including 450/750 V (U<sub>0</sub>/U) - Part 1: General requirements**

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 50525-1:2011 sisaldab Euroopa standardi EN 50525-1:2011 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 31.05.2011 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

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English version

**Electric cables -  
Low voltage energy cables of rated voltages up to and including  
450/750 V ( $U_0/U$ ) -  
Part 1: General requirements**

Câbles électriques -  
Câbles d'énergie basse tension de  
tension assignée au plus égale à  
450/750 V ( $U_0/U$ ) -  
Partie 1: Exigences générales

Kabel und Leitungen -  
Starkstromleitungen mit  
Nennspannungen bis 450/750 V ( $U_0/U$ ) -  
Teil 1: Allgemeine Anforderungen

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**CENELEC**

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

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## Foreword

This European Standard was prepared by the Technical Committee CENELEC TC 20, Electric cables.

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50525-1 on 2011-01-17.

This document, which is one of a multipart series, supersedes HD 21.1 S4:2002 and HD 22.1 S4:2002.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN and CENELEC shall not be held responsible for identifying any or all such patent rights.

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) 2012-01-17
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2014-01-17

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## Contents

	Page
<b>Introduction .....</b>	<b>5</b>
<b>1 Scope .....</b>	<b>6</b>
<b>2 Normative references .....</b>	<b>6</b>
<b>3 Terms and definitions .....</b>	<b>7</b>
<b>4 Rated voltage .....</b>	<b>7</b>
<b>5 Requirements for the construction of cables .....</b>	<b>8</b>
5.1 General .....	8
5.2 Conductors .....	8
5.3 Insulation .....	8
5.4 Core identification .....	9
5.5 Assembly of cores .....	10
5.6 Other components .....	10
5.7 Sheath .....	13
<b>6 Marking .....</b>	<b>15</b>
6.1 Indication of origin .....	15
6.2 Continuity of marking .....	15
6.3 Use of the name CENELEC .....	16
6.4 Code designation .....	16
6.5 Additional voluntary marking .....	16
6.6 Additional requirements .....	16
<b>7 Tests on completed cables .....</b>	<b>16</b>
7.1 General .....	16
7.2 Electrical requirements .....	16
7.3 Overall dimensions .....	20
7.4 Mechanical strength of flexible cables .....	20
7.5 Assessment of halogens .....	20
<b>8 Guide to use of the cables .....</b>	<b>20</b>
<b>Annex A (normative) Mechanical tests – Requirements for flexible cables .....</b>	<b>21</b>
A.1 Two-pulley flexing test .....	21
A.2 Wear resistance test .....	21
A.3 Three-pulley test .....	21
A.4 Kink test .....	22
A.5 Test for separation of cores .....	22
<b>Annex B (normative) Assessment of halogens .....</b>	<b>23</b>
B.1 Requirements for extruded material .....	23
B.2 Requirements for non-extruded materials .....	24
<b>Annex C (normative) Determination of halogens – Elemental test .....</b>	<b>25</b>
C.1 Equipment .....	25
C.2 Materials .....	25
C.3 Procedure .....	26
<b>Annex D (normative) Requirements for core identification of multicore cables with more than five cores .....</b>	<b>27</b>
D.1 Core identification .....	27

<b>D.2 Marking by inscription .....</b>	<b>27</b>
<b>D.3 Colour coding (pilot and marker system) .....</b>	<b>27</b>
<b>Annex E (informative) Structure and content of EN 50525 and its derivation from HD 21 and HD 22.....</b>	<b>28</b>
<b>Bibliography .....</b>	<b>31</b>

## **Tables**

Table 1 – Requirements for electrical tests for cables.....	18
Table B.1 – Test method, measurement, requirements .....	23
Table B.2 – Sequential test programme .....	24
Table E.1 – General structure of EN 50525 .....	28
Table E.2 – Specific structure of EN 50525 and its derivation from HD 21 and HD 22.....	29
Table E.3 – Location of each part of HD 21 and HD 22.....	30

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## Introduction

EN 50525 derives from CENELEC Harmonization Documents HD 21 and HD 22. It has the following parts:

- Part 1: General requirements;
- Part 2: Cables for general applications;
- Part 3: Cables with special fire performance.

Parts 2 and 3 are further subdivided for the particular cables and applications.

NOTE Annex E gives a full description of the structure of EN 50525, its content and its derivation from HD 21 and HD 22.

An intention of the conversion work, which forms part of an overall CENELEC initiative to convert remaining HDs to ENs, is to create a structure for the EN that will be sufficiently robust to ensure a simple means of making future additions or amendments.

As part of the work there has been a review of the market relevance of cable types in HD 21 and HD 22, and changes have been made accordingly.

Some matters previously in HD 21 and HD 22 are now in separate publications thus:

- Insulating, sheathing and covering materials – EN 50363 series;
- Electrical test methods – EN 50395;
- Non-electrical test methods – EN 50396.

The collective object of all parts of EN 50525 is:

- to standardise cables that are safe and reliable when properly selected, installed and used;
- to state the characteristics and manufacturing requirements directly or indirectly bearing on safety; and
- to specify methods for checking conformity with those requirements.

European and national regulations contain requirements and recommendations relating to the environment. CENELEC TC 20 has published a Technical Report (TR) that offers guidance and assistance to standard-writers of TC 20, to take into account the relevant environmental aspects as far as they are specific to electric cables in normal use. The TR is CLC/TR 62125, *Environmental statement specific to TC 20 - Electric cables*

This EN takes account, where appropriate and practicable, of the guidance in CLC/TR 62125.

Cables within EN 50525 satisfy the essential health and safety requirements of the Low Voltage Directive (2006/95/EC).

## 1 Scope

This European Standard gives the general requirements for rigid and flexible energy cables of rated voltages  $U_0/U$  up to and including 450/750 V a.c., used in power installations and with domestic and industrial appliances and equipment.

NOTE 1 For some types of flexible cables, the term "cord" is used.

NOTE 2 Rated voltages are given by reference to alternating current (a.c.) systems. Use of the cables in direct current (d.c.) systems is permitted.

NOTE 3 National regulations may prescribe additional performance requirements for cables that are not given in the particular requirements. For example for buildings with high levels of public access, additional fire performance requirements may be applicable.

The test methods for checking conformity with the requirements are given in other standards (see Introduction).

The particular types of cables are specified in EN 50525-2 (series) and EN 50525-3 (series). The individual parts within those two series are collectively referred to hereafter as "the particular specifications".

Only the sizes (conductor class, cross-sectional area), number of cores, other constructional features and rated voltages given in the particular specification apply to the individual cable type.

The code designations of these types of cables are in accordance with HD 361.

## 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.

NOTE One or more references to the standards below are in respect of a specific sub-division of that standard, for instance a clause, a table, a class or a type. Cross-references to these standards are undated and, at all times, the latest version applies.

EN 50267-2-1		Common test methods for cables under fire conditions – Tests on gases evolved during combustion of materials from cables – Part 2-1: Procedures – Determination of the amount of halogen acid gas
EN 50267-2-2		Common test methods for cables under fire conditions – Tests on gases evolved during combustion of materials from cables – Part 2-2: Procedures – Determination of degree of acidity of gases for materials by measuring pH and conductivity
EN 50334		Marking by inscription for the identification of cores of electric cables
EN 50363	Series	Insulating, sheathing and covering materials for low-voltage energy cables
EN 50395		Electrical test methods for low voltage energy cables
EN 50396		Non electrical test methods for low voltage energy cables
EN 60228		Conductors of insulated cables (IEC 60228)
EN 60684-2		Flexible insulating sleeving – Part 2: Methods of test (IEC 60684-2)



HD 308	Identification of cores in cables and flexible cords
HD 361	System for cable designation
HD 516	Guide to use of low voltage harmonized cables

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

#### 3.1

##### **type tests (Symbol T)**

tests required to be made before supplying a type of cable covered by this standard on a general commercial basis, in order to demonstrate satisfactory performance characteristics to meet the intended application

NOTE These tests are of such a nature that, after they have been made, they need not be repeated unless changes are made in the cable materials, design or type of manufacturing process which might change the performance characteristics.

#### 3.2

##### **sample tests (Symbol S)**

tests made on samples of completed cable, or components taken from a completed cable adequate to verify that the finished product meets the design specifications

#### 3.3

##### **routine tests (Symbol R)**

tests made on all production cable lengths to demonstrate their integrity

#### 3.4

##### **dummy core**

extruded element having the same overall diameter as the insulated core

### 4 Rated voltage

The rated voltage of a cable is the reference voltage for which the cable is designed.

The rated voltage in an alternating current system, is expressed by the combination of two values  $U_0/U$ , expressed in volts, where:

- $U_0$  is the r.m.s. value between any insulated conductor and "earth" (metal covering of the cable or the surrounding medium);
- $U$  is the r.m.s. value between any two phase conductors of a multicore cable or of a system of single core cables.

In an alternating current system, the rated voltage of a cable should be at least equal to the nominal voltage of the system for which it is intended. This condition applies to the values of both  $U_0$  and  $U$ .

NOTE For information about the maximum permanent permitted operating voltage of the system (a.c. or d.c.) refer to HD 516.