SLOVENSKI PREDSTANDARD

OSIST prEN 50214:2004

junij 2004

Flat polyvinyl chloride sheathed flexible cables

ICS 29.060.20

Referenčna številka
OSIST prEN 50214:2004(en)

DRAFT
prEN 50214

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2004

ICS

Will supersede EN 50214:1997 & HD 359 S2:1990

English version

Flat polyvinyl chloride sheathed flexible cables

Câbles souples méplats gainés en polychlorure de vinyle

Flache PVC-ummantelte Steuerleitung

This draft European Standard is submitted to CENELEC members for CENELEC enquiry.
Deadline for CENELEC: 2004-09-17

It has been drawn up by Technical Committee CENELEC TC 20.

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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.

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

Project: 11537

Ref. No. prEN 50214:2004 E

Foreword

This draft European Standard was prepared for Technical Committee CENELEC TC 20, Electric cables, with the agreement of CEN TC 10. It is submitted to the CENELEC enquiry.

This draft European standard will supersede EN 50214:1997 and HD 359 S2:1990.

———————

Contents

1 Scope

This draft of European Standard covers the construction, requirements and particular test methods for flat, flexible PVC insulated and PVC sheathed cables, of rated voltage U_o/U 300/500 V, for use in passenger and goods lifts (elevators), and U_o/U 450/750 V for general purposes and for special applications such as hoists and travelling cranes.

Cables of composite construction (for instance, cables with cores of different sizes) are not specified, but conditions are given for the inclusion of telecommunication units into the cables.

NOTE 1 This revision is in accordance with an agreement with CEN TC 10 to specify in the same standard a) flexible cables for lifts as required by EN 81, and b) flexible cable for applications such as hoists and travelling cranes, previously found in HD 359. In accordance with this agreement only those cables in Clauses 5 and 6 are suitable for use with EN 81.

NOTE 2 The limits for the overall diameter of the cables have been calculated in accordance with EN 60719.

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 81	Safety rules for the construction and installation of lifts and service lifts
EN 50265-1	Common test method for cables under fire conditions - Test for resistance to vertical flame propagation for a single insulated conductor or cable Part 1: Apparatus
EN 50265-2-1	Common test method for cables under fire conditions - Test for resistance to vertical flame propagation for a single insulated conductor or cable Part 2-1: Procedures - 1kW pre-mixed flame
EN 50334	Marking by inscription for the identification of cores of electric cables
EN 50363 [1)] (series)	Insulating, sheathing and covering materials for low voltage energy cables
EN 50395 [1)]	Electrical test methods for low voltage energy cables
EN 50396 [1)]	Non electrical test methods for electric cables
EN 60719	Calculation of the lower and upper limits for the average outer dimensions of cables with circular copper conductors and of rated voltages up to and including 450/750V (IEC 60719)
EN 60811 (series)	Insulating and sheathing materials of electric and optical cables - Common test methods (IEC 60811 series)
HD 21 (series)	Cables of rated voltages up to and including 450/750 V and having thermoplastic insulation
HD 308	Identification of cores in cables and flexible cords
HD 383	Conductors of insulated cables (IEC 60228)
IEC 60227-6	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V - Part 6: Lift cables and cables for flexible connections

1) At draft stage.

3 Definitions

3.1 Definitions relating to insulating and sheathing materials

3.1.1
type of compound
the category in which a compound is placed according to its properties, and determined by specific tests. The type designation is not directly related to the composition of the compound

3.1.2
polyvinyl chloride compound (PVC)
combinations of materials, of which polyvinyl chloride is the characteristic constituent, suitably selected, proportioned and treated which meet the requirements given in the particular specification

3.2 Definitions relating to the tests

3.2.1
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. 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

3.2.2
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

3.2.3
routine tests (Symbol R)
tests made on all production cable lengths to demonstrate their integrity

3.3
rated voltage
the rated voltage of a cable is the reference voltage for which the cable is designed, and which serves to define the electrical tests

The rated voltage is expressed by the combination of two values U_o/U, expressed in volts:

U_o being the r.m.s. value between any insulated conductor and "earth" (metal covering of the cable or the surrounding medium);

U being 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 shall be at least equal to the nominal voltage of the system for which it is intended.

This condition applies both to the value U_o and to the value U.

In a direct current system, the nominal voltage between conductors shall be not higher than 1,5 times the rated voltage (U) of the cable, and the nominal voltage between any conductor and earth shall not be higher than 1,5 times the rated voltage (U_o) of the cable.

NOTE The operating voltage of a system may permanently exceed the nominal voltage of such a system by 10 %. A cable can be used at a 10 % higher operating voltage than its rated voltage if the latter is at least equal to the nominal voltage of the system.

3.4
freely suspended length
the unsupported allowed length of cable between two fixing points

3.5
strain bearing member (sbm)
metallic or non-metallic high tensile strand or bunch included in the cable construction in order to hold the cable weight

4 Requirements for the construction of cables

4.1 General

Unless otherwise indicated in Clauses 5, 6 or 7 of this EN, the cables shall comply with the general requirements specified in HD 21.1, Clause 5.

4.2 Core identification

Both cables with or without a green-and-yellow core are harmonised. For cables with five cores or fewer, the identification of the remaining cores shall be either by colours, in accordance with a) below, or by numbers in accordance with b) below. For cables with six cores or more only identification by numbers shall be used, except for any green-and-yellow core.

a) Identification by colours

The identification system of HD 308 shall be used.

b) Identification by numbers

Identification by numbers shall be in accordance with EN 50334.

The green-and-yellow core, if any, shall not be identified by a number.

4.3 Telecommunication Units

It shall be permitted to introduce telecommunication units into the cable construction described in Clauses 5 and 6, subject to the following conditions:

1) units shall be chosen from copper pairs or copper coaxial or optical fibres;

NOTE Two pairs may alternatively be included as a quad.

2) units shall have a diameter equal or very close to the diameter of insulated cores;

3) preferably the number of telecommunication units in a cable shall not exceed three;

4) the position of units shall be central and symmetrical;

5) thickness (e_2) of the cable sheath, where measured over telecommunication units, shall comply with the requirements for minimum thickness (see 5.2.5 and 6.2.5) but shall not be taken into account when calculating the mean value;

6) the colour or identification of the outer sheath over units shall not conflict with that of the cores in 4.2. However, no restriction shall be placed on colours used for insulations under an outer sheath.

5 Flat PVC sheathed flexible cables for low rise lifts

5.1 Code designation

Without strain bearing members: H05VVH6-F

With strain bearing members: H05VVD3H6-F

5.2 Rated voltage

300/500 V

5.3 Construction

5.3.1 Conductor

Material: copper

Number of conductors: 4 up to 24

Cross sections: 0,75 mm² and 1 mm²

The conductors shall be in accordance with the requirements of Class 5 given in HD 383.

5.3.2 Insulation

The insulation shall be PVC compound of type TI 2 to EN 50363-3 applied around each conductor.

The mean value of the thickness of insulation shall be not less than the specified value for each type and size of cable shown in Table 3.

However, the thickness at any place may be less than the specified value provided that the difference does not exceed 0,1 mm + 10 % of the specified value.

Compliance shall be checked by the test given in EN 50396, Subclause 4.1.

The insulation resistance at 70 °C shall be not less than the values given in Table 3.

5.3.3 Assembly of cores

The preferred number of cores for the composition of the cables are given in Table 1, according to the nominal cross sectional areas of conductors.

Table 1 – Composition of cables

Nominal cross-sectional area mm²	Preferred number of cores
0,75	6, 9, 12, 16, 18, 20 and 24
1	4, 5, 6, 9, 12, 16, 18, 20 and 24

The cores shall be laid parallel and covered with the sheath.

The cores shall be grouped, lying closely side by side in groups of 2 to 5 cores.

For cables having the preferred number of cores, given in Table 1, the grouping shall comply with Table 2.

Table 2 – Grouping of cores

Number of cores	6	9	12	16	18	20	24
Number of groups x number of cores in group	2 x 3	3 x 3	3 x 4	4 x 4	2 x 4 + 2 x 5	5 x 4	6 x 4
NOTE A rip-cord may be added inside each core group.							

It shall be possible to separate the cores without damage to the insulation.

5.3.4 Strain bearing member (sbm)

A strain bearing member (or members) either of textile material or of metal may be included in the cable, but shall be separated from the core groups.

NOTE It is permitted to apply a protective surface coating to the sbm.

The sbm shall preferably be located on the edges of the cable in a symmetrical position and shall be easily separable from the cable, without damage to the cores, when separate terminations of the sbm are necessary.

5.3.5 Sheath

The sheath shall be PVC compound of type TM 2 to EN 50363-4-1 applied so as to substantially avoid the formation of cavities. The sheath shall not stick to the cores.

The sheath thickness shall be measured and evaluated generally in accordance with 4.3 of EN 50396, with the following exceptions.

Measurements for e_1, e_2 and e_3 shall be taken as follows (see Figures 1 and 2):

e_1 the clearance separating groups of cores shall not at any place be less than the value specified in Table 3;

e_2 the thickness on both flat sides shall be measured in each core group at the place where the sheath is thinnest ; the opposite thickness at the same core shall also be measured. The mean value of measurements above shall not be less than that specified in Table 3. The minimum value of e_2 at any place shall not be less than the specified value by more than 0,2 mm + 20 % of the specified value;

e_3 the thickness at the edge and the separation between sbm, if any, and cores shall be measured at both edges of the cable, along the major axis of the cross section. The mean value of measurements above shall not be less than that specified in Table 3. The minimum value of e_3 at any place shall not be less than the specified value by more than 0,2 mm + 20 % of the specified value.