SLOVENSKI STANDARD

SIST EN 50363-0:2006

maj 2006

Materiali za izoliranje, oplaščenje in prevleke nizkonapetostnih energetskih kablov – 0. del: Splošni uvod

Insulating, sheathing and covering materials for low-voltage energy cables – Part 0: General introduction

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ICS 29.035.20; 29.060.20

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 50363-0

November 2005

ICS 29.035.01

English version

Insulating, sheathing and covering materials for low-voltage energy cables Part 0: General introduction

Matériaux pour enveloppe isolante, gainage et revętement pour les câbles d'énergie basse tension
Partie 0: Introduction générale

Isolier-, Mantel- und Umhüllungswerkstoffe für Niederspannungskabel und -leitungen
Teil 0: Allgemeine Einführung

This European Standard was approved by CENELEC on 2005-11-01. 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.

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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

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Ref. No. EN 50363-0:2005 E

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 50363-0 on 2005-11-01.

EN 50363 (in all its parts) supersedes the equivalent information at present in HD 21.1 S4, HD 21.14 S1, HD 22.1 S4, HD 22.10 S1, HD 22.14 S2 and prHD 21.15 S1. The existing information in these HDs will be deleted at the next maintenance review.

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)	2006-11-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2007-11-01

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Introduction

EN 50363 contains, in its various parts, the requirements for insulating, sheathing and covering materials that are used for harmonized low voltage energy cables previously contained in HD 21 and HD 22. Annex A gives a comparison between the original location of each material and its place in this new series of ENs.

The content of EN 50363 is not, and will not be, restricted only to materials for cables to HD 21 and HD 22. Other materials for harmonized LV industrial cables may be included. Furthermore, the use of materials in EN 50363 for cables outside HD 21 and HD 22 is not prohibited, but it is strongly recommended that expert advice be taken before such use, or before any proposal for incorporation into another standard.

1 Scope

EN 50363 contains, in its various parts, the requirements for insulating, sheathing and covering materials that are used for harmonized low voltage energy cables.

NOTE A description of the origin of these materials and of the background to the EN is given in the Introduction and Annex A.

EN 50363 is published as this Part 0 together with a series of separately published parts as listed in Table 1 and these parts require that Part 0 be read in conjunction with them. It also includes a list of the test methods called up in the particular parts of the standard, with references to the current editions of other standards in which the relevant test methods are given.

Table 1 – Parts for EN 50363

Part number	Title	Compounds included
0	General introduction	-
1	Cross-linked elastomeric insulating compounds	EI 2, EI 3, EI 4, EI 6, EI 7
2-1	Cross-linked elastomeric sheathing compounds	EM 2, EM 3, EM 4, EM 6, EM 7, EM 9
2-2	Cross-linked elastomeric covering compounds	EM 5
3	PVC insulating compounds	TI 1, TI 2, TI 3, TI 4, TI 5
4-1	PVC sheathing compounds	TM 1, TM 2, TM 3, TM 4, TM 5,
4-2	PVC covering compounds	TM 6
5	Halogen-free, cross-linked insulating compounds	EI 5, EI 8
6	Halogen-free, cross-linked sheathing compounds	EM 8, EM 10
7	Halogen-free, thermoplastic insulating compounds	TI 6, TI 7
8	Halogen-free, thermoplastic sheathing compounds	TM 7
9-1	Miscellaneous insulating compounds – Cross-linked polyvinyl chloride (XLPVC)	XI 1
10-1	Miscellaneous sheathing compounds – Cross-linked polyvinyl chloride (XLPVC)	XM 1
10-2	Miscellaneous sheathing compounds – Thermoplastic polyurethane	TMPU

Materials for use specifically in utility power cables are not covered by this EN. They can be found in HD 603, HD 604, HD 620, HD 621, HD 622, HD 626 and HD 627.

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Materials for use specifically in communications cables are the responsibility of CENELEC TC 46X. At present such materials are given in EN 50290-2-20 to –2-30 inclusive.

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.

Publication	Year	Title
EN 50267-2-1		Common test methods for cables under fire conditions – Tests on gases evolved during combustion of material 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 material from cables — Part 2-2: Procedures – Determination of degree of acidity of gases for materials by measuring pH and conductivity
EN 50395		Electrical test methods for low voltage energy cables
EN 50396		Non-electrical test methods for low voltage energy cables
EN 60684-2		Flexible insulating sleeving — Part 2: Methods of test (IEC 60684-2)
EN 60811-1-1		Insulating and sheathing materials of electric and optical cables – Common test methods — Part 1-1: General application – Measurement of thickness and overall dimensions – Tests for determining the mechanical properties (IEC 60811-1-1)
EN 60811-1-2		Insulating and sheathing materials of electric cables – Common test methods — Part 1-2: General application – Thermal ageing methods (IEC 60811-1-2)
EN 60811-1-3		Insulating and sheathing materials of electric and optical cables – Common test methods — Part 1-3: General application – Methods for determining the density – Water absorption tests – Shrinkage test (IEC 60811-1-3)
EN 60811-1-4		Insulating and sheathing materials of electric and optical cables – Common test methods — Part 1-4: General application – Tests at low temperature (IEC 60811-1-4)
EN 60811-2-1		Insulating and sheathing materials of electric and optical cables – Common test methods — Part 2-1: Methods specific to elastomeric compounds – Ozone resistance, hot set and mineral oil immersion tests (IEC 60811-2-1)
EN 60811-3-1		Insulating and sheathing materials of electric and optical cables – Common test methods — Part 3-1: Methods specific to PVC compounds – Pressure test at high temperature – Tests for resistance to cracking (IEC 60811-3-1)
EN 60811-3-2		Insulating and sheathing materials of electric and optical cables – Common test methods — Part 3-2: Methods specific to PVC compounds – Loss of mass test – Thermal stability test (IEC 60811-3-2)
EN 60811-4-1		Insulating and sheathing materials of electric cables – Common test methods — Part 4-1: Methods specific to polyethylene and polypropylene compounds – Resistance to environmental stress cracking – Wrapping test after thermal ageing in air – Measurement of the melt flow index – Carbon black and/or mineral content measurement in PE (IEC 60811-4-1)

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HD 21.14	Cables of rated voltages up to and including 450/750 V and having thermoplastic insulation — Part 14: Flexible cables (cords), insulated and sheathed with halogen-free thermoplastic compounds
HD 21.15 [1)]	Cables of rated voltages up to and including 450/750 V and having thermoplastic insulation — Part 15:Single core cables, insulated with halogen-free thermoplastic compound, for fixed wiring
HD 22.10	Cables of rated voltages up to and including 450/750 V and having cross-linked insulation — Part 10: EPR insulated and polyurethane sheathed flexible cables
HD 22.15	Cables of rated voltages up to and including 450/750 V and having cross-linked insulation — Part 15: Multicore cables insulated and sheathed with heat resistant silicone rubber

3 Definitions

For the purposes of all parts of EN 50363 the following definitions apply:

3.1
variation
difference between the median value after ageing and the median value without ageing expressed as a percentage of the latter

3.2
median value
when several test results have been obtained and ordered in an increasing or decreasing succession the median is the middle value if the number of available values is odd and is the mean of the two middle values if the number is even

3.3 Type of material/compound

3.3.1
cross-linked silicone rubber (SiR)
compound based on a poly-siloxane polymer which, when cross-linked, meets the requirements given in the particular specification

3.3.2
ethylene vinyl acetate rubber compound (EVA) or equivalent synthetic elastomer
cross-linked compound in which the elastomer is ethylene vinyl acetate or equivalent synthetic elastomer providing a compound with properties similar to EVA

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3.3.3
ethylene-propylene rubber compound (EPR) or equivalent synthetic elastomer
cross-linked compound in which the elastomer is ethylene-propylene or equivalent synthetic elastomer providing a compound with properties similar to EPR

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3.3.4
polychloroprene compound or equivalent synthetic elastomer
cross-linked compound in which the elastomer is polychloroprene (PCP) or equivalent synthetic elastomer providing a compound with properties similar to polychloroprene

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[1)] At draft stage.

3.3.5
chlorinated rubber compound
cross-linked compound in which the characteristic constituent is a synthetic chlorinated rubber, e.g. Polychloroprene (PCP), Chlorosulphonated Polyethylene (CSP), Chlorinated Polyethylene (CPE), etc.

3.3.6
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

3.3.7
crosslinked polyvinyl chloride (XLPVC)
combinations of materials of which polyvinyl chloride is the characteristic constituent, including adequate crosslinking agents, suitably selected, proportioned and treated which when crosslinked, meet the requirements given in the particular specification

3.3.8
polyolefin based halogen-free compound
compound, either crosslinked or thermoplastic, in which the polymer is a polyolefin or equivalent synthetic polymer not containing halogens providing a compound which meets the requirements given in the particular specification

3.3.9
thermoplastic polyurethane compound (TMPU)
thermoplastic compound based on an ether-based polyurethane which meets the requirements given in the particular specification

4 Testing

4.1 General

The test methods called up in the particular parts of EN 50363 are listed in Table 2.

4.2 Sampling

4.2.1 Insulation

Unless otherwise stated in the standard for the particular cable, the tests on insulation shall be made on samples from each core if the cable has one, two or three cores; and on samples from three cores (of differing colours if any) if the cable has more than three cores, with samples taken not less than 16 h after extrusion, and crosslinking if appropriate.

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4.2.2 Sheath

Samples shall be taken not less than 16 h after extrusion, and cross-linking if appropriate.

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4.3 Ambient temperature

Tests shall be made at an ambient temperature within the range 5 °C to 35 °C unless otherwise specified in the details for the particular test.