Low-frequency cables with polyolefin insulation and moisture barrier polyolefin sheath

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 60708:2005 sisaldab Euroopa standardi EN 60708:2005 ingliskeelset teksti. Käesolev dokument on jõustatud 19.12.2005 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN 60708:2005 consists of the English text of the European standard EN 60708:2005. This document is endorsed on 19.12.2005 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.

Käsitlusala: is intended to define polyolefin insulated cables for insertion into local outdoor networks.is applicable to polyolefin insulated and moisture barrier polyolefin sheathed telephone cables, filled or unfilled with copper conductors,includes general design details and requirements for dimensions and other constructional details as well as mechanical, electrical and environmental characteristics for all types of low-frequency cables with polyolefin insulation (solid or cellular), filled or unfilled, and moisture barrier polyolefin sheath (with integral suspension strand)	**Scope:** is intended to define polyolefin insulated cables for insertion into local outdoor networks.is applicable to polyolefin insulated and moisture barrier polyolefin sheathed telephone cables, filled or unfilled with copper conductors,includes general design details and requirements for dimensions and other constructional details as well as mechanical, electrical and environmental characteristics for all types of low-frequency cables with polyolefin insulation (solid or cellular), filled or unfilled, and moisture barrier polyolefin sheath (with integral suspension strand)

ICS 29.060.20

Võtmesõnad:

EUROPEAN STANDARD **EN 60708**

NORME EUROPÉENNE

EUROPÄISCHE NORM November 2005

ICS 29.060.20

English version

Low-frequency cables with polyolefin insulation and moisture barrier polyolefin sheath
(IEC 60708:2005)

Câbles pour basses fréquences
à isolation polyoléfine et gaine polyoléfine
à barrière d'étanchéité
(CEI 60708:2005)

Niederfrequenzkabel mit Isolierung
aus Polyolefin und mit Polyolefin-
Schichtenmantel
(IEC 60708:2005)

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

Ref. No. EN 60708:2005 E

Foreword

The text of document 46C/713/FDIS, future edition 1 of IEC 60708, prepared by SC 46C, Wires and symmetric cables, of IEC TC 46, Cables, wires, waveguides, R.F. connectors, R.F. and microwave passive components and accessories, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60708 on 2005-09-13.

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)	2006-07-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2008-10-01

Annex ZA has been added by CENELEC.

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Endorsement notice

The text of the International Standard IEC 60708:2005 was approved by CENELEC as a European Standard without any modification.

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Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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 Where an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60028	– [1)]	International standard of resistance for copper	-	-
IEC 60189-1	– [1)]	Low-frequency cables and wires with PVC insulation and PVC sheath Part 1: General test and measuring methods	-	-
IEC 60304	– [1)]	Standard colours for insulation for low-frequency cables and wires	HD 402 S2	1984 [2)]
IEC 60794-1-2	– [1)]	Optical fibre cables Part 1-2: Generic specification - Basic optical cable test procedures	EN 60794-1-2	2003 [2)]
IEC 60811-1-1	– [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	EN 60811-1-1	1995 [2)]
IEC 60811-1-2	– [1)]	Part 1-2: General application - Thermal ageing methods	EN 60811-1-2	1995 [2)]
IEC 60811-1-3	– [1)]	Part 1-3: General application - Methods for determining the density - Water absorption tests - Shrinkage test	EN 60811-1-3	1995 [2)]
IEC 60811-1-4	– [1)]	Part 1-4: General application - Tests at low temperature	EN 60811-1-4	1995 [2)]

[1)] undated reference.

[2)] valid edition at date of issue.

Publication	Year	Title	EN/HD	Year
IEC 60811-4-1	– [1)]	Part 4-1: Methods specific to polyethylene and polypropylene compounds - Resistance to environmental stress cracking - Measurement of the melt flow index - Carbon black and/or mineral filler content measurement in polyethylene by direct combustion - Measurement of carbon black content by thermogravimetric analysis (TGA) - Assessment of carbon black dispersion in polyethylene using a microscope	EN 60811-4-1	2004 [2)]
IEC 60811-4-2	– [1)]	Part 4-2: Methods specific to polyethylene and polypropylene compounds - Tensile strength and elongation at break after conditioning at elevated temperature - Wrapping test after conditioning at elevated temperature - Wrapping test after thermal ageing in air - Measurement of mass increase - Long-term stability test - Test method for copper-catalyzed oxidative degradation	EN 60811-4-2	2004 [2)]
IEC 60811-5-1 (mod)	– [1)]	Part 5-1: Methods specific to filling compounds - Drop point - Separation of oil - Lower temperature brittleness - Total acid number - Absence of corrosive components - Permittivity at 23 °C - D.C. resistivity at 23 °C and 100 °C	EN 60811-5-1	1999 [2)]
IEC 61156-1	– [1)]	Multicore and symmetrical pair/quad cables for digital communications Part 1: Generic specification	-	-
ITU-T L.3	– [1)]	Armouring of cables	-	-

INTERNATIONAL STANDARD

IEC 60708

First edition
2005-06

Low-frequency cables with polyolefin insulation and moisture barrier polyolefin sheath

Reference number
IEC 60708:2005(E)

Publication numbering

As from 1 January 1997 all IEC publications are issued with a designation in the 60000 series. For example, IEC 34-1 is now referred to as IEC 60034-1.

Consolidated editions

The IEC is now publishing consolidated versions of its publications. For example, edition numbers 1.0, 1.1 and 1.2 refer, respectively, to the base publication, the base publication incorporating amendment 1 and the base publication incorporating amendments 1 and 2.

Further information on IEC publications

The technical content of IEC publications is kept under constant review by the IEC, thus ensuring that the content reflects current technology. Information relating to this publication, including its validity, is available in the IEC Catalogue of publications (see below) in addition to new editions, amendments and corrigenda. Information on the subjects under consideration and work in progress undertaken by the technical committee which has prepared this publication, as well as the list of publications issued, is also available from the following:

- **IEC Web Site (www.iec.ch)**

- **Catalogue of IEC publications**

  The on-line catalogue on the IEC web site (www.iec.ch/searchpub) enables you to search by a variety of criteria including text searches, technical committees and date of publication. On-line information is also available on recently issued publications, withdrawn and replaced publications, as well as corrigenda.

- **IEC Just Published**

  This summary of recently issued publications (www.iec.ch/online_news/ justpub) is also available by email. Please contact the Customer Service Centre (see below) for further information.

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INTERNATIONAL STANDARD

IEC 60708

First edition
2005-06

Low-frequency cables with polyolefin insulation and moisture barrier polyolefin sheath

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International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE U

For price, see current catalogue

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

LOW-FREQUENCY CABLES WITH POLYOLEFIN INSULATION AND MOISTURE BARRIER POLYOLEFIN SHEATH

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60708 has been prepared by subcommittee 46C: Wires and symmetric cables, of IEC technical committee 46: Cables, wires, waveguides, r.f. connectors, r.f. and microwave passive components and accessories.

IEC 60708 cancels and replaces IEC 60708-1 published in 1981 and amendment 3(1988). This edition constitutes a technical revision.

IEC 60708 has been completely revised technically and structurally. IEC 60708 now comprises only one single standard dealing with general design details and requirements. The old IEC 60708-2(1981), IEC 60708-3(1981) and IEC 60708-4(1983) have already been withdrawn because they are not used anymore. Although IEC 60708 addresses low frequency cables, these cables are often used for digital communications up to 2 Mbit/s or 1 MHz. Therefore a Subclause 7.8 has been added, which provides transmission characteristics for the cable when used for digital communication. Furthermore, Annex H of IEC 60708-1(1981) was deleted: The requirements for filling compounds are not needed anymore since they are covered by the cable performance requirements.

The text of this standard is based on the following documents:

FDIS	Report on voting
46C/713/FDIS	46C/728/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above Table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

A bilingual version of this standard may be issued at a later date.

LOW-FREQUENCY CABLES WITH POLYOLEFIN INSULATION AND MOISTURE BARRIER POLYOLEFIN SHEATH

1 Scope

This standard is intended to define polyolefin-insulated cables for insertion into local outdoor networks.

This standard is applicable to polyolefin insulated and moisture barrier polyolefin sheathed telephone cables, filled or unfilled with copper conductors, and used as:

a) Cables suitable for installation in ducts.

b) Cables suitable for direct burial in the ground.

c) Cables with integral suspension strand for aerial installations.

This standard is in accordance with ITU-T Recommendations.

This standard includes general design details and requirements for dimensions and other constructional details as well as mechanical, electrical and environmental characteristics for all types of low-frequency cables with polyolefin insulation (solid or cellular), filled or unfilled, and moisture barrier polyolefin sheath (with integral suspension strand).

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.

IEC 60028, *International Standard of Resistance for Copper*

IEC 60189-1, *Low-frequency cables and wires with PVC Insulation and PVC sheath – Part 1: General test and measuring methods*

IEC 60304, *Standard colours for insulation for low-frequency cables and wires*

IEC 60794-1-2, *Optical fibre cables – Part 1-2: Generic specification – Basic optical cable test procedures*

IEC 60811-1-1, *Common test methods for insulating and sheathing materials of electric cables – Part 1: Methods for general application – Section 1: Measurement of thickness and overall dimensions – Tests for determining the mechanical properties*

IEC 60811-1-2, *Common test methods for insulating and sheathing materials of electric cables – Part 1: Methods for general application – Section Two: Thermal ageing methods*

IEC 60811-1-3, *Insulating and sheathing materials of electric cables – Part 1: General application – Section 3: Methods for determining the density – Water absorption tests – Shrinkage test*

IEC 60811-1-4, *Common test methods for insulating and sheathing materials of electric cables – Part 1: Methods for general application – Section Four – Test at low temperature*

IEC 60811-4-1, *Insulating and sheathing materials of electric and optical cables – Common test methods – Part 4-1: Methods specific to polyethylene and polypropylene compounds – Resistance to environmental stress cracking – Measurement of the melt flow index – Carbon black and/or mineral filler content measurement in polyethylene by direct combustion – Measurement of carbon black content by thermogravimetric analysis (TGA) – Assessment of carbon black dispersion in polyethylene using a microscope*

IEC 60811-4-2, *Insulating and sheathing materials of electric and optical cables – Common test methods – Part 4-2: Methods specific to polyethylene and polypropylene compounds – Tensile strength and elongation at break after conditioning at elevated temperature – Wrapping test after conditioning at elevated temperature – Wrapping test after thermal ageing in air – Measurement of mass increase – Long-term stability test – Test method for copper-catalyzed oxidative degradation*

IEC 60811-5-1, *Common test methods for insulating and sheathing materials of electric cables – Part 5-1: Methods specific to filling compounds – Drop point – Separation of oil – Lower temperature brittleness – Total acid number – Absence of corrosive components – Permittivity at 23 °C – DC resistivity at 23 °C and 100 °C*

IEC 61156-1, *Multicore and symmetrical pair/quad cables for digital communications – Part 1: Generic specification*

ITU-T L.3, *Armouring of cables*

3 Quality assurance

It is the responsibility of the manufacturer to establish quality assurance by quality control procedures which will ensure that the product will meet the requirements of this standard.

It is not intended that a complete testing programme shall be carried out on every length of conductor and cable. When the purchaser wishes to specify acceptance tests or other quality procedures, it is essential that agreement be reached between the purchaser and the manufacturer by the time of ordering.

4 Cable construction

4.1 Conductor

4.1.1 Conductor material

The conductor shall consist of annealed copper, uniform in quality and free from defects. The properties of the copper shall be in accordance with IEC 60028.

4.1.2 Type of conductor

The conductor shall consist of a single strand circular in section. The nominal diameter shall be at least 0,4 mm.

4.1.3 Conductor-finish

The conductor shall be plain.

4.1.4 Continuity of conductor

Joints in the conductor are permitted provided that the tensile strength of a joint is not less than 90 % of the tensile strength of the unjointed conductor.