Railway applications - Rolling stock - Rules for installation of cabling

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 50343:2003 sisaldab Euroopa standardi EN 50343:2003 ingliskeelset teksti. Käesolev dokument on jõustatud 05.06.2003 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN 50343:2003 consists of the English text of the European standard EN 50343:2003. This document is endorsed on 05.06.2003 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.

Käsitlusala: This European Standard specifies requirements for the installation of cabling on railway vehicles and within electrical enclosures on railway vehicles, including magnetic levitation trains and trolley buses.This standard covers cabling for making electrical connections between items of electrical equipment, including cables, busbars, terminals and plug/socket devices. It does not cover special effect conductors like fibre optic cables or hollow conductors (waveguides).The material selection criteria given here are applicable to cables with a copper conductor.	**Scope:** This European Standard specifies requirements for the installation of cabling on railway vehicles and within electrical enclosures on railway vehicles, including magnetic levitation trains and trolley buses.This standard covers cabling for making electrical connections between items of electrical equipment, including cables, busbars, terminals and plug/socket devices. It does not cover special effect conductors like fibre optic cables or hollow conductors (waveguides).The material selection criteria given here are applicable to cables with a copper conductor.

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Võtmesõnad:

EUROPEAN STANDARD **EN 50343**

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English version

Railway applications - Rolling stock - Rules for installation of cabling

Applications ferroviaires - Matériel roulant - Règles d'installation du câblage

Bahnanwendungen - Fahrzeuge - Regeln für die Installation von elektrischen Leitungen

This European Standard was approved by CENELEC on 2002-12-03. 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and 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

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Foreword

This European Standard has been prepared by the Working Group B8 of SC 9XB "Electromechanical material on board of rolling stock" of the Technical Committee CENELEC TC 9X, Electrical and electronic applications for railways. As the subjects „Cabling“ and „Cables“ have much in common, a close co-operation between the above Working Group and Working Group 12 „Railway cables“ of CENELEC TC 20 „Electric cables“ has been maintained during preparation.

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50343 on 2002-12-03.

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) 2003-12-01

- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2005-12-01

Annexes designated "normative" are part of the body of the standard.
Annexes designated "informative" are given for information only.
In this standard, Annexes A, C, D, E, H and J are normative and Annexes B, F, G, and I are informative.

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1 Scope

This European Standard specifies requirements for the installation of cabling on railway vehicles and within electrical enclosures on railway vehicles, including magnetic levitation trains and trolley buses.

NOTE With respect to trolley buses, this standard applies to the whole electric traction system, including current collecting circuits, power converters and the respective control circuits. The installation of other circuits is covered by street vehicle standards for example those for combustion driven buses.

This standard covers cabling for making electrical connections between items of electrical equipment, including cables, busbars, terminals and plug/socket devices. It does not cover special effect conductors like fibre optic cables or hollow conductors (waveguides).

The material selection criteria given here are applicable to cables with a copper conductor.

This standard is not applicable to the following:

- special purpose vehicles, such as track-laying machines, ballast cleaners and personnel carriers;
- vehicles used for entertainment on fairgrounds;
- vehicles used in mining;
- electric cars;
- funicular railways.

As the field of cabling in rolling stock is also dealt with in the cable makers' standard, references are made to EN 50264, EN 50306 and EN 50355.

This European Standard applies in conjunction with the relevant product and installation standards. Stricter requirements than those given in this standard may be necessary.

2 Normative references

This European Standard incorporates by dated or undated references, provisions from other publications. These normative references are cited at the appropriate place in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 45545-1 [1)]	Railway applications - Fire protection on railway vehicles - Part 1: General
EN 45545-5 [1)]	Railway applications - Fire protection on railway vehicles - Part 5: Fire safety requirements for electrical equipment including that of trolley buses, track guided buses and magnetic levitation vehicles
EN 50121-3-1	Railway applications - Electromagnetic compatibility - Part 3-1: Rolling stock - Train and complete vehicle
EN 50121-3-2	Railway applications - Electromagnetic compatibility - Part 3-2: Rolling stock - Apparatus
EN 50124-1	Railway applications - Insulation coordination - Part 1: Basic requirements - Clearances and creepage distances for all electrical and electronic equipment
EN 50125-1	Railway applications - Environmental conditions for equipment - Part 1: Equipment on board rolling stock
EN 50153	Railway applications - Rolling stock - Protective provisions relating to electrical hazards
EN 50200	Method of test for resistance to fire of unprotected small cables for use in emergency circuits

[1)] At draft stage.

EN 50215	Railway applications - Testing of rolling stock after completion of construction and before entry into service
EN 50264-1	Railway applications - Railway rolling stock cables having special fire performance - Standard wall - Part 1: General requirements
EN 50264-2	Railway applications - Railway rolling stock cables having special fire performance - Standard wall - Part 2: Single core cables
EN 50264-3	Railway applications - Railway rolling stock cables having special fire performance - Standard wall - Part 3: Multicore cables
EN 50306-1	Railway applications - Railway rolling stock cables having special fire performance - Thin wall - Part 1: General requirements
EN 50306-2	Railway applications - Railway rolling stock cables having special fire performance - Thin wall - Part 2: Single core cables
EN 50306-3	Railway applications - Railway rolling stock cables having special fire performance - Thin wall - Part 3: Single core and multicore cables (Pairs, triples and quads) screened and thin wall sheathed
EN 50306-4	Railway applications - Railway rolling stock cables having special fire performance - Thin wall - Part 4: Multicore and multipair cables standard wall sheathed
EN 50355 [1)]	Railway applications - Railway rolling stock cables having special fire performance - Thin wall and Standard Wall - Guide to use
EN 60352-1	Solderless connections - Part 1: Wrapped connections - General requirements, test methods and practical guidance (IEC 60352-1)
EN 60352-7	Solderless connections - Part 7: Spring-clamp connections - General requirements, test methods and practical guidance (IEC 60352-7)
EN 60684-3-212	Flexible insulating sleeving - Part 3: Specifications for individual types of sleeving - Sheet 212: Heat-shrinkable polyolefin sleeving, flame retarded, shrink ratio 2:1 (IEC 60684-3-212)
EN 60684-3-216 [1)]	Flexible insulating sleeving - Part 3: Specifications for individual types of sleeving - Sheet 216: Heat-shrinkable, flame retarded, limited fire-hazard sleeving (IEC 60684-3-216)
EN 60684-3-217	Flexible insulating sleeving. Part 3: Specifications for individual types of sleeving - Sheet 217: Heat-shrinkable polyolefin sleeving, flame retarded shrink ratio 3:1 (IEC 60684-3-217)
EN 60684-3-271	Flexible insulating sleeving - Part 3: Specifications for individual types of sleeving - Sheet 271: Heat-shrinkable elastomer sleeving, flame retarded, fluid resistant, shrink ratio 2:1 (IEC 60684-3-271)
EN 60947-7-1	Low-voltage switchgear and controlgear - Part 7-1: Ancillary equipment - Terminal blocks for copper conductors (IEC 60947-7-1)
EN 60947-7-2	Low-voltage switchgear and controlgear - Part 7-2: Ancillary equipment - Protective conductor terminal blocks for copper conductor (IEC 60947-7-2)
EN 60998-2-2	Connecting devices for low-voltage circuits for household and similar purposes - Part 2-2: Particular requirements for connecting devices as separate entities with screwless-type clamping units (IEC 60998-2-2)
EN 60999-2 [1)]	Connecting devices - Electrical copper conductors - Safety requirements for screw-type and screwless-type clamping units - Part 2: Particular requirements for clamping units for conductors above 35 mm² up to 300 mm² (included) (IEC 60999-2)
EN 61210	Connecting devices - Flat quick-connect terminations for electrical copper conductors - Safety requirements (IEC 61210, modified)
EN 61310-1	Safety of machinery - Indication, marking and actuation - Part 1: Requirements for visual, auditory and tactile signals (IEC 61310-1)
HD 383 S2	Conductors of insulated cables – First supplement: Guide to the dimensional limits of circular conductors (IEC 60228:1978 + IEC 60228A:1982, modified)

HD 384.4.43 S2	Electrical installations of buildings -- Part 4: Protection for safety -- Chapter 43: Protection against overcurrent (IEC 60364-6-43:1977 + A1:1997, modified)
HD 384.5.54 S1	Electrical installations of buildings - Part 5: Selection and erection of electrical equipment - Chapter 54: Earthing arrangements and protective conductors (IEC 60364-5-54:1980, modified)
HD 588.1 S1	High-voltage test techniques - Part 1: General definitions and test requirements (IEC 60060-1:1989 + corrigendum March 1990)
IEC 60050-461	International Electrotechnical Vocabulary - Chapter 461: Electric cables
ISO 1302	Geometrical Product Specifications (GPS) – Indication of surface texture in technical product documentation

3 Definitions

For the purposes of this standard, the following definitions apply. Reference is made to IEC 60050-461.

3.1
cable
assembly consisting of

- one or more cores (screened or unscreened),
- their individual covering(s) (if any),
- assembly protection (if any),
- screen(s) (if any),
- sheath (if any)

[461-06-01, mod.]

3.2
conductor (of a cable)
part of a cable which has the specific function of carrying current

[461-01-01]

3.3
core
assembly comprising a conductor with its own insulation (and screens if any)

[461-04-04]

3.4
solid conductor
conductor consisting of a single wire

[461-01-06, mod.]

3.5
stranded conductor
conductor consisting of a number of individual wires or strands all or some of which generally have a helical form

[461-01-07, mod.]

3.6
busbar
conductor consisting of a rigid metal profile