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Railway applications - Rolling stock - Rules for installation of cabling

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 12/24

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English Version

Railway applications - Rolling stock - Rules for installation of cabling

Applications ferroviaires - Matériel roulant - Règles
d'installation du câblageBahnanwendungen - Fahrzeuge - Regeln für die Installation
von elektrischen Leitungen

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
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EN 50343:2024**European foreword**

This document (EN 50343:2024) has been prepared by CLC/SC 9XB “Electromechanical material on board rolling stock”.

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2025-08-12
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2027-08-12

This document supersedes EN 50343:2014 and all of its amendments and corrigenda (if any).

EN 50343:2024 includes the following significant technical changes with respect to EN 50343:2014:

- references to EN standards updated and harmonized;
- modification based on IEC 62995;
- mechanical aspects detailed;
- cable lifetime considerations in accordance with Arrhenius.

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

This document has been prepared under a standardization request addressed to CENELEC by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

1 Scope

This document 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 document 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 document 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 copper conductors.

This document 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 series, EN 50306 series, EN 50382 series and EN 50355.

This document applies in conjunction with the relevant product and installation standards and describes minimum requirements.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 45545 (all parts), *Railway applications — Fire protection on railway vehicles*

EN 45545-1, *Railway applications — Fire protection on railway vehicles — Part 1: General*

EN 45545-2, *Railway applications — Fire protection on railway vehicles — Part 2: Requirements for fire behaviour of materials and components*

EN 45545-5:2013+A1:2015, *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*

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EN 50125-1, *Railway applications — Environmental conditions for equipment — Part 1: Rolling stock and on-board equipment*

EN 50153, *Railway applications — Rolling stock — Protective provisions relating to electrical hazards*

EN 50264 (all parts), *Railway applications — Railway rolling stock power and control cables having special fire performance*

EN 50306 (all parts), *Railway applications — Railway rolling stock cables having special fire performance — Thin wall*

EN 50355:2013, *Railway applications — Railway rolling stock cables having special fire performance — Guide to use*

EN 50382 (all parts), *Railway applications — Railway rolling stock high temperature power cables having special fire performance*

EN 50467:2011, *Railway applications — Rolling stock - Electrical connectors, requirements and test methods*

EN 50553, *Railway applications — Requirements for running capability in case of fire on board of rolling stock*

EN 60228, *Conductors of insulated cables (IEC 60228)*

EN 60423, *Conduit systems for cable management - Outside diameters of conduits for electrical installations and threads for conduits and fittings (IEC 60423)*

EN 60684-3-212, *Flexible insulating sleeving — Part 3: Specifications for individual types of sleeving — Sheet 212: Heat-shrinkable polyolefin sleeveings (IEC 60684-3-212)*

EN 60684-3-271, *Flexible insulating sleeving — Part 3: Specifications for individual types of sleeving — Sheet 271: Heat-shrinkable elastomer sleeveings, flame retarded, fluid resistant, shrink ratio 2:1 (IEC 60684-3-271)*

EN 61180, *High-voltage test techniques for low-voltage equipment — Definitions, test and procedure requirements, test equipment (IEC 61180)*

EN 61386-1, *Conduit systems for cable management — Part 1: General requirements (IEC 61386-1)*

EN IEC 60331-1, *Tests for electric cables under fire conditions - Circuit integrity - Part 1: Test method for fire with shock at a temperature of at least 830 °C for cables of rated voltage up to and including 0,6/1,0 kV and with an overall diameter exceeding 20 mm (IEC 60331-1)*

EN IEC 60684-3-216, *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)*

IEC 60331-2, *Tests for electric cable under fire conditions — Circuit integrity — Part 2: Test method for fire with shock at a temperature of at least 830 °C for cables of rated voltage up to and including 0,6/1,0 kV and with an overall diameter not exceeding 20 mm*

HD 60364-5-54:2011¹, *Low-voltage electrical installations — Part 5-54: Selection and erection of electrical equipment — Earthing arrangements and protective conductors (IEC 60364-5-54:2011)*

¹ As impacted by HD 60364-5-54:2011/A1:2022.