Railway applications - Railway rolling stock cables having special fire performance - Thin wall - Part 4: Multicore and multipair screened or not screened sheathed cables

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NATIONAL FOREWORD

See Eesti standard EVS-EN 50306-4:2020 sisaldab Euroopa standardi EN 50306-4:2020 ingliskeelset teksti.	This Estonian standard EVS-EN 50306-4:2020 consists of the English text of the European standard EN 50306-4:2020.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 20.03.2020.	Date of Availability of the European standard is 20.03.2020.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 13.220.40, 29.060.20, 45.060.01

EUROPEAN STANDARD

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EN 50306-4

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Supersedes EN 50306-4:2002 and all of its amendments and corrigenda (if any)

English Version

Railway applications - Railway rolling stock cables having special fire performance - Thin wall - Part 4: Multicore and multipair screened or not screened sheathed cables

Applications ferroviaires - Câbles pour matériel roulant ferroviaire ayant des performances particulières de comportement au feu - Isolation mince - Partie 4: Câbles multiconducteurs et multipaires gainés blindés ou non blindés

Bahnanwendungen - Kabel und Leitungen für Schienenfahrzeuge mit verbessertem Verhalten im Brandfall - Reduzierte Isolierwanddicken - Teil 4: Mehradrige und mehrpaarige Leitungen

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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European foreword

This document (EN 50306-4:2020) has been prepared by CLC/TC 20, “Electric cables.

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)	2020-12-30
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2022-12-30

This document supersedes EN 50306-4:2002 and all of its amendments and corrigenda (if any).

This edition includes the following significant technical changes with respect to the previous edition:

— The documents have been updated to reflect the changes in the test standard EN 50305;

— The range of the conductor cross sections has been extended;

— The reference to cited standards (e.g. EN 60811 series) has been updated.

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.

Introduction

The EN 50306 series covers a range of sheathed and unsheathed cables with thin wall thickness insulation, based on halogen-free materials, for use in railway rolling stock. It is divided into four parts:

Part 1: General requirements;

Part 2: Single core cables;

Part 3: Single core and multicore cables screened and thin wall sheathed;

Part 4: Multicore and multipair screened or not screened sheathed cables.

Special test methods referred to in the EN 50306 series are given in EN 50305. A guide to use is given in EN 50355 and rules for installation are given in EN 50343.

EN 50306-1:2020, General requirements, contains a more extensive introduction to the EN 50306 series and should be read in conjunction with this document.

1 Scope

This document specifies requirements for, and constructions and dimensions of, multicore and multipair cables rated voltage U_0/U: 300/500 V, of the following types:

— unscreened, sheathed for either exposed or protected wiring (0,5 mm^2 to 2,5 mm^2, number of cores from 2 to 48);

— screened, sheathed for either exposed or protected wiring (0,5 mm^2 to 2,5 mm^2, number of cores from 2 to 8);

— unscreened, sheathed for either exposed or protected wiring (0,5 mm^2 to 1,5 mm^2, number of screened pairs of cores from 2 to 7).

— screened, sheathed for either exposed or protected wiring (0,5 mm^2 to 1,5 mm^2, number of unscreened pairs of cores from 2 to 7).

All cables have stranded tinned copper conductors, halogen-free, thin wall thickness insulation and standard wall thickness sheath. Cable types are specified for use in exposed situations (Class E), and for protected situations (Class P). They are for use in railway rolling stock as fixed wiring or wiring where limited flexing in operation is encountered.

These cables are rated for occasional thermal stresses causing ageing equivalent to continuous operational life at a temperature of 90 °C. For standard cables this is determined by the acceptance test defined in EN 50305, using accelerated long-term (5 000 h) thermal ageing indicating a 110 °C/20 000 h temperature index. If the customer were to require lifetime predictions this would be demonstrated based on the temperature index of the product as supplied by the manufacturer.

The maximum temperature for short circuit conditions is 160 °C based on duration of 5 s.

Under fire conditions the cables exhibit special performance characteristics in respect of maximum permissible flame propagation (flame spread) and maximum permissible emission of smoke and toxic gases. These requirements are specified to permit the cables to satisfy Hazard Level 3 of EN 45545-1 and EN 45545-2.

EN 50306-4:2020 is expected to be used in conjunction with EN 50306-1:2020, General requirements, EN 50306-2:2020, Single core cables, and EN 50306-3:2020, Single core and multicore cables.

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

EN 50264-1:2008, *Railway applications - Railway rolling stock power and control cables having special fire performance - Part 1: General requirements*

EN 50305:2020, *Railway applications - Railway rolling stock cables having special fire performance - Test methods*

EN 50306-1:2020, *Railway applications - Railway rolling stock cables having special fire performance - Thin wall - Part 1: General requirements*

EN 50306-2:2020, *Railway applications - Railway rolling stock cables having special fire performance - Thin wall - Part 2: Single core cables*

EN 50306-3:2020, *Railway applications - Railway rolling stock cables having special fire performance - Thin wall - Part 3: Single core and multicore cables screened and thin wall sheathed*

EN 60332-1-2, *Tests on electric and optical fibre cables under fire conditions - Part 1-2: Test for vertical flame propagation for a single insulated wire or cable - Procedure for 1 kW pre-mixed flame*

EN 60332-3-24, *Tests on electric and optical fibre cables under fire conditions - Part 3-24: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category C*

EN 61034-2, *Measurement of smoke density of cables burning under defined conditions - Part 2: Test procedure and requirements*

EN 60811 (all parts), *Electric and optical fibre cables - Test methods for non-metallic materials*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISOOnline browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 Multicore cables - sheathed

4.1 General

The completed cables shall conform to the applicable general requirements given in EN 50306-1:2020 and to the specific requirements of Clause 4 and Clause 5.

Conformity with the requirements shall be checked by inspection and by the tests given in Table 2.

4.2 Marking and code designation

4.2.1 Marking of cable

Cables shall be marked with the following:

— Manufacturer's name;

— EN reference;

— table number;

— cable class (P or E);

— Voltage rating (U_0);

— No. of cores and conductor size;

— A code designation according for use of the cable (see 4.2.2);

— Conductor temperature rating

For example: