This is a free page sample. Access the full version online.

NSAI Standards

Irish Standard
I.S. EN 50306-1:2020

Railway applications - Railway rolling stock cables having special fire performance - Thin wall - Part 1: General requirements

© CENELEC 2020 No copying without NSAI permission except as permitted by copyright law.

This is a free page sample. Access the full version online.

I.S. EN 50306-1:2020

Incorporating amendments/corrigenda/National Annexes issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.

This document is based on:	*Published:*
EN 50306-1:2020	2020-03-20

This document was published under the authority of the NSAI and comes into effect on:	ICS number:
2020-04-06	13.220.40 29.060.20 45.060.01 NOTE: If blank see CEN/CENELEC cover page

NSAI	T +353 1 807 3800	Sales:
1 Swift Square,	F +353 1 807 3838	T +353 1 857 6730
Northwood, Santry	E standards@nsai.ie	F +353 1 857 6729
Dublin 9	W NSAI.ie	W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

This is a free page sample. Access the full version online.

National Foreword

I.S. EN 50306-1:2020 is the adopted Irish version of the European Document EN 50306-1:2020, Railway applications - Railway rolling stock cables having special fire performance - Thin wall - Part 1: General requirements

This document does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

For relationships with other publications refer to the NSAI web store.

Compliance with this document does not of itself confer immunity from legal obligations.

In line with international standards practice the decimal point is shown as a comma (,) throughout this document.

This is a free page sample. Access the full version online.

This page is intentionally left blank

This is a free page sample. Access the full version online.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 50306-1

March 2020

ICS 13.220.40; 29.060.20; 45.060.01

Supersedes EN 50306-1:2002 and all of its amendments and corrigenda (if any)

English Version

Railway applications - Railway rolling stock cables having special fire performance - Thin wall - Part 1: General requirements

Applications ferroviaires - Câbles pour matériel roulant ferroviaire ayant des performances particulières de comportement au feu - Isolation mince - Partie 1: Exigences générales

Bahnanwendungen - Kabel und Leitungen für Schienenfahrzeuge mit verbessertem Verhalten im Brandfall - Reduzierte Isolierwanddicken - Teil 1: Allgemeine Anforderungen

This European Standard was approved by CENELEC on 2019-12-30. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

© 2020 CENELEC All rights of exploitation in any form and by any means reserved worldwide for CENELEC Members.

Ref. No. EN 50306-1:2020 E

This is a free page sample. Access the full version online.

Contents

Page

European foreword 4
Introduction 5
1 Scope 6
2 Normative references 6
3 Terms and definitions 7
4 Rated voltage 8
5 Marking 9
5.1 Indication of origin 9
5.2 Continuity of marks 9
5.3 Durability 9
5.4 Legibility 9
5.5 Additional marking 10
5.6 Use of the name CENELEC 10
6 General requirements for the construction of cables 10
6.1 Conductors 10
6.1.1 Material 10
6.1.2 Construction 10
6.1.3 Check of construction 10
6.1.4 Electrical resistance 10
6.2 Insulation system 10
6.2.1 Material 10
6.2.2 Application 10
6.2.3 Thickness and concentricity 10
6.3 Fillers and tapes 11
6.3.1 Material 11
6.3.2 Application 11
6.4 Inner sheath 11
6.4.1 Material 11
6.4.2 Application 11
6.4.3 Thickness 11
6.5 Metallic screen 11
6.5.1 Type of screen 11
6.5.2 Application 11
6.6 Sheath 11
6.6.1 Material 11
6.6.2 Application 12
6.6.3 Thickness 12
6.7 Overall diameter 12
7 Electrical performance 12
8 Fire performance - cables 12
8.1 Flame propagation (flame spread) - single vertical cable 12
8.2 Flame propagation (flame spread) - bunched cables 12
8.2.1 Cables with diameter more than or equal to 12 mm 12

This is a free page sample. Access the full version online.

8.2.2 Cables with diameter greater than 6 mm and less than 12 mm 12
8.2.3 Cables with diameter not greater than 6 mm 13
8.3 Smoke emission 13
9 Fire performance - components 13
9.1 Tests for corrosive and acid gas emission, and for fluorine 13
9.2 Toxicity 13
Annex A (normative) Thickness and overall diameter Selection of samples and calculation of results 15
A.1 Insulation thickness 15
A.1.1 Procedure 15
A.1.2 Evaluation of results 15
A.1.3 Concentricity 15
A.2 Measurement of sheath thickness 15
A.2.1 Procedure 15
A.2.2 Evaluation of results 15
A.3 Measurement of overall diameter 15
Bibliography 16

This is a free page sample. Access the full version online.

European foreword

This document (EN 50306-1:2020) 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 50306-1:2002 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. 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.

This is a free page sample. Access the full version online.

Introduction

The railway industry is generally concerned with the movement of people as well as goods. It is therefore essential that a high level of safety is achieved, even when failures occur which could involve fire, howsoever caused, affecting railway rolling stock.

Hence it is necessary to provide cables for use in railway environments which minimize the hazard to people when a fire could damage the cable, irrespective of whether the fire is caused by an external source or from within the electrical system.

The EN 50306 series specifies cables which, in the event of fire will limit the risk to people and improve the safety on railways in general. It covers cables with thin wall thickness of both insulation and sheath, based on halogen free materials, for use in railway rolling stock. There is provision for screening in some of the parts and also for a standard wall thickness sheath. In the event of a fire affecting cables to the EN 50306 series they will have a limited flame spread and limited emission of toxic gases. In addition these cables when burnt, produce limited amounts of smoke. This last characteristic will minimize loss of visibility in the event of a fire and will aid reduced evacuation times.

The objectives of this standard are:

— to standardize cables that are safe and reliable when properly used;

— to state the characteristics, performance, and construction requirements directly or indirectly bearing on safety;

— to specify methods for checking conformity with these requirements.

The EN 50306 series, which covers a range of cables of rated voltage U_0 = 300V with conductor sizes 0,5 mm^2 up to 2,5 mm^2, is divided into 4 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.

These cables are intended for a limited number of applications. Further information on these applications is given in EN 50355 and EN 50343.

Special test methods referred to in the EN 50306 series are given in EN 50305.

A separate European Standard, the EN 50264 series covers cables for similar applications up to 3,6/6 kV rating with a conductor temperature at 90°C, but with standard wall and medium wall thicknesses of both insulation and sheath, and provides for a maximum conductor size of 400 mm^2.

A separate European Standard, the EN 50382 series covers cables for similar applications up to 3,6/6 kV rating with a conductor temperature at 120°C and 150°C, and provides for a maximum conductor size of 400 mm^2.

This is a free page sample. Access the full version online.

1 Scope

EN 50306-1 specifies the general requirements applicable to the cables given in EN 50306-2, EN 50306-3 and EN 50306-4. It includes the detailed requirements for S2 sheathing materials and other components called up in the separate parts.

NOTE Detailed requirements for insulation systems are given in EN 50306-2.

In particular, EN 50306-1 specifies those requirements relating to fire safety which enable the cables to satisfy Hazard Level 3 of EN 45545-1 and EN 45545-2.

These cables are rated for occasional thermal stresses which causes ageing equivalent to continuous operational life at a temperature of 105 °C or 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 125 °C or 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.

EN 50306-1 is expected to be used in conjunction with one or more of the other parts of EN 50306.

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 50264-1, *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 50306-2:2020, *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 50306-4:2020, *Railway applications — Railway rolling stock cables having special fire performance — Thin wall — Part 4: Multicore and multipair screened or not screened sheathed cables*

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

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 IEC 60332-3-24:2018, *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 60332-3-25, *Tests on electric and optical fibre cables under fire conditions — Part 3-25: Test for vertical flame spread of vertically-mounted bunched wires or cables — Category D*

EN 60754-1, *Test on gases evolved during combustion of materials from cables — Part 1: Determination of the halogen acid gas content*

SAI GLOBAL

This is a free preview. Purchase the entire publication at the link below:

Product Page

Looking for additional Standards? Visit Intertek Inform Infostore

Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation