BS EN IEC 60332-3-10:2018+A11:2020

BSI Standards Publication

Tests on electric and optical fibre cables under fire conditions

Part 3-10: Test for vertical flame spread of vertically-mounted bunched wires or cables — Apparatus

bsi.

National foreword

This British Standard is the UK implementation of EN IEC 60332-3-10:2018+A11:2020. It is derived from IEC 60332-3-10:2018. It supersedes BS EN IEC 60332-3-10:2018, which will be withdrawn on 16 September 2023.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to text carry the number of the CENELEC amendment. For example, text altered by CENELEC amendment A11 is indicated by ⟨A11⟩ ⟨/A11⟩.

The UK participation in its preparation was entrusted to Technical Committee GEL/20/18, Electric Cables - Fire testing.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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

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Compliance with a British Standard cannot confer immunity from legal obligations.

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Date	Text affected
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English Version

Tests on electric and optical fibre cables under fire conditions - Part 3-10: Test for vertical flame spread of vertically-mounted bunched wires or cables - Apparatus (IEC 60332-3-10:2018)

Essais des câbles électriques et des câbles à fibres optiques soumis au feu - Partie 3-10: Essai de propagation verticale de la flamme des fils ou câbles montés en nappes en position verticale - Appareillage (IEC 60332-3-10:2018)

Prüfungen an Kabeln, isolierten Leitungen und Glasfaserkabeln im Brandfall - Teil 3-10: Prüfung der vertikalen Flammenausbreitung von vertikal angeordneten Bündeln von Kabeln und isolierten Leitungen - Prüfvorrichtung (IEC 60332-3-10:2018)

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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

Ref. No. EN IEC 60332-3-10:2018/A11:2020 E

European foreword

The text of document 20/1797/FDIS, future edition 2 of IEC 60332-3-10, prepared by IEC/TC 20 "Electric cables" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60332-3-10:2018.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2019-05-17
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2021-08-17

This document supersedes EN 60332-3-10:2009.

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.

Endorsement notice

The text of the International Standard IEC 60332-3-10:2018 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

ISO 13943:2017 NOTE Harmonized as EN ISO 13943:2017 (not modified)

Foreword to amendment A11

This document (EN IEC 60332-3-10:2018/A11:2020) 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)	2021-09-16
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2023-09-16

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

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International Standard IEC 60332-3-10 has been prepared by IEC technical committee 20: Electric cables.

This second edition cancels and replaces the first edition published in 2000 and Amendment 1:2008. This edition constitutes a technical revision.

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

a) adjustments have been made to the title, and elsewhere, to emphasise the standard is applicable to optical fibre cables as well as metallic conductor types;
b) details of the way in which cables are mounted on the ladder have been better defined in order to improve repeatability and reproducibility;

c) the connection of the venturi mixer to the burner is better defined.

It has the status of a group safety publication in accordance with IEC Guide 104.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
20/1797/FDIS	20/1814/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

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

A list of all parts in the IEC 60332 series, published under the general title *Tests on electric and optical fibre cables under fire conditions*, can be found on the IEC website.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website 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.

The contents of the corrigendum of October 2018 have been included in this copy.

INTRODUCTION

IEC 60332-3-10 is part of a series of publications dealing with tests on electric and optical fibre cables under fire conditions.

The IEC 60332-1 and IEC 60332-2 series specify methods of test for flame spread characteristics for a single vertical insulated wire or cable. It cannot be assumed that, because a wire or cable meets the requirements of the IEC 60332-1 and IEC 60332-2 series, a vertical bunch of similar cables or wires will behave in a similar manner. This is because flame spread along a vertical bunch of cables depends on a number of features, such as

a) the volume of combustible material exposed to the fire and to any flame which may be produced by the combustion of the cables;
b) the geometrical configuration of the cables and their relationship to an enclosure;
c) the temperature at which it is possible to ignite the gases emitted from the cables;
d) the quantity of combustible gas released from the cables for a given temperature rise;
e) the volume of air passing through the cable installation;
f) the construction of the cable, for example armoured or unarmoured, multi- or single-core.

All of the foregoing assume that the cables are able to be ignited when involved in an external fire.

The IEC 60332-3 series gives details of a test where a number of cables are bunched together to form various test sample installations. For easier use and differentiation of various test categories, the parts are designated as follows:

Part 3-10: Apparatus

Part 3-21: Category A F/R

Part 3-22: Category A

Part 3-23: Category B

Part 3-24: Category C

Part 3-25: Category D

Parts from 3-21 onwards define the various categories and the relevant procedures. The categories are distinguished by test duration, the volume of non-metallic material of the test sample and the method of mounting the sample for the test. In all categories, cables having at least one conductor of cross-sectional area greater than 35 mm^2 are tested in a spaced configuration, whereas cables of conductor cross-sectional area of 35 mm^2 or smaller and optical fibre cables are tested in a touching configuration.

The categories are not necessarily related to different safety levels in actual cable installations. The actual installed configuration of the cables may be a major determinant in the level of flame spread occurring in an actual fire.

The method of mounting described as category A F/R (Part 3-21) is intended for special cable designs used in particular installations.

Categories A, B, C and D (Part 3-22 to Part 3-25 respectively) are for general use where different non-metallic volumes are applicable.

TESTS ON ELECTRIC AND OPTICAL FIBRE CABLES UNDER FIRE CONDITIONS –

Part 3-10: Test for vertical flame spread of vertically-mounted bunched wires or cables – Apparatus

1 Scope

This part of IEC 60332 details the apparatus and its arrangement and calibration for methods of test for the assessment of vertical flame spread of vertically-mounted bunched wires or cables, electrical or optical, under defined conditions.

NOTE For the purpose of this document the term “electric wire or cable” covers all insulated metallic conductor cables used for the conveyance of energy or signals.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
ignition source
source of energy that initiates combustion

[SOURCE: ISO 13943:2017, 3.219]

4 Test environment

The test shall not be carried out if the external wind speed, measured by an anemometer fitted on the top of the test rig, is greater than 8 m/s and shall not be carried out if the temperature of the inside walls is below 5 °C or above 40 °C measured at a point approximately 1 500 mm above floor level, 50 mm from a side wall, and 1 000 mm from the door. The enclosure door shall be closed throughout the test.

5 Test apparatus

The test apparatus consists of the following.