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NSAI Standards

Irish Standard
I.S. EN 60332-3-22:2009

Tests on electric and optical fibre cables under fire conditions -- Part 3 -22: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category A (IEC 60332-3 -22:2000 (EQV) + A1:2008 (EQV))

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EUROPEAN STANDARD

NORME EUROPÉENNE

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EN 60332-3-22

October 2009

ICS 29.060.20; 13.220.40; 29.020

Supersedes EN 50266-2-2:2001 + corr. March 2002

English version

Tests on electric and optical fibre cables under fire conditions - Part 3-22: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category A

(IEC 60332-3-22:2000 + A1:2008)

Essais des câbles électriques et des câbles à fibres optiques soumis au feu - Partie 3-22: Essai de propagation verticale de la flamme des fils ou câbles montés en nappes en position verticale - Catégorie A
(CEI 60332-3-22:2000 + A1:2008)

Prüfungen an Kabeln, isolierten Leitungen und Glasfaserkabeln im Brandfall - Teil 3-22: Prüfung der vertikalen Flammenausbreitung von vertikal angeordneten Bündeln von Kabeln und isolierten Leitungen - Prüfart A
(IEC 60332-3-22:2000 + A1:2008)

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CENELEC

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

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Foreword

The text of the International Standard IEC 60332-3-22:2000 and its amendment A1:2008, prepared by IEC TC 20, Electric cables, was submitted to the CENELEC Unique Acceptance Procedure and was accepted as EN 60332-3-22 on 2009-08-01.

This European Standard supersedes EN 50266-2-2:2001 + corrigendum March 2002.

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)	2010-08-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2012-08-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60332-3-22:2000 and its amendment A1:2008 was approved by CENELEC as a European Standard without any modification.

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Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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.

NOTE Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60332-3-10	-[1)]	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	EN 60332-3-10	2009[2)]
IEC 60695-4	-[1)]	Fire hazard testing - Part 4: Terminology concerning fire tests	EN 60695-4	2006[2)]
IEC 60811-1-3	-[1)]	Insulating and sheathing materials of electric and optical cables - Common test methods - Part 1-3: General application - Methods for determining the density - Water absorption tests - Shrinkage test	EN 60811-1-3	1995[2)]
IEC Guide 104	-[1)]	The preparation of safety publications and the use of basic safety publications and group safety publications	-	-

[1)] Undated reference.

[2)] Valid edition at date of issue.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

TESTS ON ELECTRIC AND OPTICAL FIBRE CABLES UNDER FIRE CONDITIONS –

Part 3-22: Test for vertical flame spread of vertically-mounted bunched wires or cables – Category A

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 60332-3-22 has been prepared by IEC technical committee 20: Electric cables.

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

IEC 60332-3-22 forms one of a series of publications dealing with tests on electric cables under fire conditions; the series supersedes IEC 60332-3 published in 1992. The parts of the series are described in the introduction.

All pre-existing categories of test are retained and updated. A new category (category D) has been added to cater for testing at very low non-metallic volumes.

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This consolidated version of IEC 60332-3-22 consists of the first edition (2000) [documents 20/404/FDIS and 20/428/RVD] and its amendment 1 (2008) [documents 20/934/CDV and 20/983A/RVC].

The technical content is therefore identical to the base edition and its amendment and has been prepared for user convenience.

It bears the edition number 1.1.

A vertical line in the margin shows where the base publication has been modified by amendment 1.

Annex A forms an integral part of this standard.

Annex B is for information only.

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the maintenance result date indicated on the IEC web site 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.

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INTRODUCTION

Parts 1 and 2 of IEC 60332 specify methods of test for flame spread characteristics for a single vertical insulated wire or cable. It cannot be assumed that, because a cable or wire meets the requirements of parts 1 and 2, 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.

Part 3 of IEC 60332 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 the 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 mm² are tested in a spaced configuration, whereas cables of conductor cross-sectional area of 35 mm^2 or smaller and optical 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 (parts 3-22 to 3-25 respectively) are for general use where different non-metallic volumes are applicable.

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TESTS ON ELECTRIC AND OPTICAL FIBRE CABLES UNDER FIRE CONDITIONS –

Part 3-22: Test for vertical flame spread of vertically-mounted bunched wires or cables – Category A

1 Scope

The series of International Standards covered by Parts 3-10, 3-21, 3-22, 3-23, 3-24 and 3-25 of IEC 60332 specifies 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 standard the term "electric wire or cable" covers all insulated metallic conductor cables used for the conveyance of energy or signals.

The test is intended for type approval testing. The requirements for the selection of cables for testing are given in annex A. The flame spread is measured as the extent of damage of the cable sample. This procedure may be used to demonstrate the cable's ability to limit flame spread.

This part of IEC 60332 covers category A and relates to cables installed on the test ladder to achieve a nominal total volume of non-metallic material of 7 l/m of test sample. The flame application time is 40 min. The method of mounting uses the front of the ladder, a standard or wide ladder being used for cables having a conductor cross-section greater than 35 mm² according to the number of test pieces required, and a standard ladder for conductor cross-sections 35 mm² and smaller. The category is intended for general use where high volumes of non-metallic material are required to be evaluated.

A recommended performance requirement is given in annex B.

2 Normative references

The following referenced documents are indispensable for the application 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.

IEC 60332-3-10,*Tests on electric cables under fire conditions – Part 3-10: Test for vertical flame spread of vertically-mounted bunched wires or cables – Apparatus*

IEC 60695-4, *Fire hazard testing – Part 4: Terminology concerning fire tests*

IEC 60811-1-3, *Insulating and sheathing materials of electric cables – Common test methods Part 1: General application – Section 3: Methods for determining the density – Water absorption tests – Shrinkage test*

IEC Guide 104, *The preparation of safety publications and the use of basic safety publications and group safety publications*

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