SRI LANKA STANDARD 1007 : PART 1.3 : 2008
IEC 60332 : PART 1-3 : 2004

METHODS OF TEST ON ELECTRIC AND OPTICAL FIBRE CABLES UNDER FIRE CONDITIONS

PART 1.3 : TEST FOR VERTICAL FLAME PROPAGATION FOR A SINGLE INSULATED WIRE OR CABLE – PROCEDURE FOR DETERMINATION OF FLAMING DROPLETS / PARTICLES

SRI LANKA STANDARDS INSTITUTION

Sri Lanka Standard

METHODS OF TEST ON ELECTRIC AND OPTICAL FIBRE CABLES UNDER FIRE CONDITIONS PART 1.3 : TEST FOR VERTICAL FLAME PROPAGATION FOR A SINGLE INSULATED WIRE OR CABLE – PROCEDURE FOR DETERMINATION OF FLAMING DROPLETS / PARTICLES

SLS 1007 Part 1.3 : 2008
IEC 60332 Part 1-3 : 2004
(Attached Amd No.1 (AMD 535))
Gr. F

SRI LANKA STANDARDS INSTITUTION
No. 17, Victoria Place
Elvitigala Mawatha
Colombo 8
Sri Lanka.

Sri Lanka Standards are subject to periodical revision in order to accommodate the progress made by industry. Suggestions for improvement will be recorded and brought to the notice of the Committees to which the revisions are entrusted.

This standard does not purport to include all the necessary provisions of a contract.

Sri Lanka Standard
METHODS OF TEST ON ELECTRIC AND OPTICAL FIBRE CABLES UNDER FIRE CONDITIONS
PART 1.3 : TEST FOR VERTICAL FLAME PROPAGATION FOR A SINGLE INSULATED WIRE OR CABLE – PROCEDURE FOR DETERMINATION OF FLAMING DROPLETS / PARTICLES

NATIONAL FOREWORD

This standard was approved by the Sectoral Committee on Electric Cables and Conductors and was authorized for adoption and publication as a Sri Lanka Standard by the Council of Sri Lanka Standards Institution on 2008-08-28

SLS 1007 Methods of test for electric and optical cables under fire conditions is published in five parts as follows:

Part 1.1	Tests for vertical flame propagation for a single insulated wire or cable - Apparatus
Part 1.2	Tests for vertical flame propagation for a single insulated wire or cable - Procedure for 1 kW pre-mixed flame
Part 1.3	Tests for vertical flame propagation for a single insulated wire or cable - Procedure for determination of flaming droplets / particles.
Part 2.1	Tests for vertical flame propagation for a single small insulated wire or cable - Apparatus
Part 2.2	Tests for vertical flame propagation for a single small insulated wire or cable - Procedure for diffusion flame.

This part of the standard is identical with **IEC 60332-1-3 : 2004 :** Tests on electric and optical fibre cables under fire conditions – Part 1-3 : Test for vertical flame propagation for a single insulated wire or cable – Procedure for determination of flaming droplets / particles, published by the International Electrotechnical Commission (IEC).

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the results of a test or an analysis shall be rounded off in accordance with **CS 102**. The number of significant places to be retained in the rounded off value shall be the same as that of the specified value in the standard.

Terminology and conventions

The text of the International Standard has been accepted as suitable for publication without deviation, as a Sri Lanka Standard. However, certain terminology and conventions are not identical with those used in Sri Lanka Standards; attention is therefore drawn to the following:

a) Wherever the words “International Standard” appear referring to this standard they should be interpreted as “Sri Lanka Standard”.

b) Wherever the page numbers are quoted they are page number of IEC standard.

c) The Comma has been used throughout the standard as a decimal marker. In Sri Lanka Standards it is the current practice to use full point on the base line as the decimal marker

CROSS REFERENCES

International Standards	**Corresponding Sri Lanka Standards**
IEC 60332 : Tests on electric and optical fibre cables under fire conditions Part 1.1 : Test for vertical flame propagation for a single insulated wire or cable – Apparatus	SLS 1007 : Tests on electric and optical fibre cables under fire conditions Part 1.1 : Test for vertical flame propagation for a single insulated wire or cable – Apparatus

NOTE : *Corresponding Sri Lanka Standards for other international standards listed under references in IEC 60322-1-3, are not available.*

NORME INTERNATIONALE

INTERNATIONAL STANDARD

CEI
IEC
60332-1-3

Première édition
First edition
2004-07

PUBLICATION GROUPÉE DE SÉCURITÉ
GROUP SAFETY PUBLICATION

Essais des câbles électriques et à fibres optiques soumis au feu –

Partie 1-3: Essai de propagation verticale de la flamme sur conducteur ou câble isolé – Procédure pour la détermination des particules/gouttelettes enflammées

Tests on electric and optical fibre cables under fire conditions –

Part 1-3: Test for vertical flame propagation for a single insulated wire or cable – Procedure for determination of flaming droplets/particles

Numéro de référence
Reference number
CEI/IEC 60332-1-3:2004

Numérotation des publications

Depuis le 1er janvier 1997, les publications de la CEI sont numérotées à partir de 60000. Ainsi, la CEI 34-1 devient la CEI 60034-1.

Editions consolidées

Les versions consolidées de certaines publications de la CEI incorporant les amendements sont disponibles. Par exemple, les numéros d'édition 1.0, 1.1 et 1.2 indiquent respectivement la publication de base, la publication de base incorporant l'amendement 1, et la publication de base incorporant les amendements 1 et 2.

Informations supplémentaires sur les publications de la CEI

Le contenu technique des publications de la CEI est constamment revu par la CEI afin qu'il reflète l'état actuel de la technique. Des renseignements relatifs à cette publication, y compris sa validité, sont disponibles dans le Catalogue des publications de la CEI (voir ci-dessous) en plus des nouvelles éditions, amendements et corrigenda. Des informations sur les sujets à l'étude et l'avancement des travaux entrepris par le comité d'études qui a élaboré cette publication, ainsi que la liste des publications parues, sont également disponibles par l'intermédiaire de:

- **Site web de la CEI (www.iec.ch)**
- **Catalogue des publications de la CEI**

  Le catalogue en ligne sur le site web de la CEI (www.iec.ch/searchpub) vous permet de faire des recherches en utilisant de nombreux critères, comprenant des recherches textuelles, par comité d'études ou date de publication. Des informations en ligne sont également disponibles sur les nouvelles publications, les publications remplacées ou retirées, ainsi que sur les corrigenda.
- **IEC Just Published**

  Ce résumé des dernières publications parues (www.iec.ch/online_news/justpub) est aussi disponible par courrier électronique. Veuillez prendre contact avec le Service client (voir ci-dessous) pour plus d'informations.
- **Service clients**

  Si vous avez des questions au sujet de cette publication ou avez besoin de renseignements supplémentaires, prenez contact avec le Service clients:

  Email: custserv@iec.ch
  Tél: +41 22 919 02 11
  Fax: +41 22 919 03 00

Publication numbering

As from 1 January 1997 all IEC publications are issued with a designation in the 60000 series. For example, IEC 34-1 is now referred to as IEC 60034-1.

Consolidated editions

The IEC is now publishing consolidated versions of its publications. For example, edition numbers 1.0, 1.1 and 1.2 refer, respectively, to the base publication, the base publication incorporating amendment 1 and the base publication incorporating amendments 1 and 2.

Further information on IEC publications

The technical content of IEC publications is kept under constant review by the IEC, thus ensuring that the content reflects current technology. Information relating to this publication, including its validity, is available in the IEC Catalogue of publications (see below) in addition to new editions, amendments and corrigenda. Information on the subjects under consideration and work in progress undertaken by the technical committee which has prepared this publication, as well as the list of publications issued, is also available from the following:

- **IEC Web Site (www.iec.ch)**
- **Catalogue of IEC publications**

  The on-line catalogue on the IEC web site (www.iec.ch/searchpub) enables you to search by a variety of criteria including text searches, technical committees and date of publication. On-line information is also available on recently issued publications, withdrawn and replaced publications, as well as corrigenda.
- **IEC Just Published**

  This summary of recently issued publications (www.iec.ch/online_news/justpub) is also available by email. Please contact the Customer Service Centre (see below) for further information.
- **Customer Service Centre**

  If you have any questions regarding this publication or need further assistance, please contact the Customer Service Centre:

  Email: custserv@iec.ch
  Tel: +41 22 919 02 11
  Fax: +41 22 919 03 00

.

NORME INTERNATIONALE

INTERNATIONAL STANDARD

CEI
IEC
60332-1-3

Première édition
First edition
2004-07

PUBLICATION GROUPÉE DE SÉCURITÉ
GROUP SAFETY PUBLICATION

Essais des câbles électriques et à fibres optiques soumis au feu –

Partie 1-3: Essai de propagation verticale de la flamme sur conducteur ou câble isolé – Procédure pour la détermination des particules/gouttelettes enflammées

Tests on electric and optical fibre cables under fire conditions –

Part 1-3: Test for vertical flame propagation for a single insulated wire or cable – Procedure for determination of flaming droplets/particles

International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch

Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

CODE PRIX
PRICE CODE L

Pour prix, voir catalogue en vigueur
For price, see current catalogue

CONTENTS

FOREWORD 5

1 Scope 9
2 Normative references 9
3 Terms and definitions 9
4 Test apparatus 11
4.1 General 11
4.2 Ignition source 11
4.3 Filter paper 11
5 Procedure 11
5.1 Sample 11
5.2 Conditioning 11
5.3 Positioning of test piece and filter paper 11
5.4 Flame application 13
6 Evaluation of test results 13

Annex A (informative) Recommended performance requirements 19

Bibliography 21

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

TESTS ON ELECTRIC AND OPTICAL FIBRE CABLES UNDER FIRE CONDITIONS –

Part 1-3: Test for vertical flame propagation for a single insulated wire or cable – Procedure for determination of flaming droplets/particles

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.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60332-1-3 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.

The text of this standard is based on the following documents:

FDIS	Report on voting
20/698/FDIS	20/712/RVD

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

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

IEC 60332 consists of the following parts, under the general title *Tests on electric and optical fibre cables under fire conditions:*

Part 1-1: Test for vertical flame propagation for a single insulated wire or cable – Apparatus

Part 1-2: Test for vertical flame propagation for a single insulated wire or cable – Procedure for 1kW pre-mixed flame

Part 1-3: Test for vertical flame propagation for a single insulated wire or cable – Procedure for determination of flaming droplets/particles

Part 2-1: Test for vertical flame propagation for a single small insulated wire or cable – Apparatus

Part 2-2: Test for vertical flame propagation for a single small insulated wire or cable - Procedure for diffusion flame

The committee has decided that the contents of this publication 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.

TESTS ON ELECTRIC AND OPTICAL FIBRE CABLES UNDER FIRE CONDITIONS –

Part 1-3: Test for vertical flame propagation for a single insulated wire or cable – Procedure for determination of flaming droplets/particles

1 Scope

This part of IEC 60332 specifies a test procedure for assessment of falling flaming droplets/ particles when a single vertical electrical insulated conductor or cable, or optical fibre cable, is subjected to defined fire conditions.

NOTE 1 Testing to IEC 60332-1-3 may be performed simultaneously with that to IEC 60332-1-2, if required.

Recommended requirements for performance are given in Annex A.

IEC 60332-1-3 specifies the use of a 1 kW pre-mixed flame and is for general use, except that the procedure specified may not be suitable for the testing of small single insulated conductors or cables of less than 0,5 mm^2 total cross-section because the conductor melts before the test is completed, or for the testing of small optical fibre cables because the cable is broken before the test is completed.

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 60332-1-1, *Tests on electric and optical fibre cables under fire conditions – Part 1-1: Test for vertical flame propagation for a single insulated wire or cable – Apparatus*

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

ISO 187, *Paper, board and pulps – Standard atmosphere for conditioning and testing and procedure for monitoring the atmosphere and conditioning of samples*

3 Terms and definitions

For the purposes of this document, the following terms and definitions, apply. Some definitions are taken from IEC 60695-4.

3.1
ignition source
source of energy that initiates combustion

[IEC 60695-4:1993, definition 2.76]

3.2
flaming debris
matter flowing or separating from the specimen during the test procedure and falling below the initial lower edge of the specimen, continuing to flame as it falls, and igniting the filter paper beneath

4 Test apparatus

4.1 General

The apparatus specified in IEC 60332-1-1 shall be used.

4.2 Ignition source

The ignition source shall comply with 4.3 of IEC 60332-1-1.

4.3 Filter paper

The filter paper shall consist of undyed cellulose filter paper of a density of (80 ± 15) g/m^2 with an ash content of less than 0,1 %. The filter paper shall be conditioned in accordance with ISO 187.

5 Procedure

5.1 Sample

The test sample shall be a piece of insulated conductor or cable (600 ± 25) mm long.

5.2 Conditioning

Before testing, all test pieces shall be conditioned at (23 ± 5) °C for not less than 16 h at a relative humidity of (50 ± 20) %.

In the case of an insulated conductor or cable with a finish of paint or lacquer, this conditioning shall follow an initial period where the test piece shall be kept at a temperature of (60 ± 2) °C for 4 h.

5.3 Positioning of test piece and filter paper

The test piece shall be straightened and secured to two horizontal supports by means of a suitable size of copper wire, in a vertical position in the centre of the metal screen, as described in 4.2 of IEC 60332-1-1, so that the distance between the bottom of the upper support and the top of the lower support is (550 ± 5) mm. In addition, the test piece shall be positioned so that the bottom of the specimen is approximately 50 mm from the base of the screen (see Figure 1).

The vertical axis of the test piece shall be arranged centrally within the screen (i.e. 150 mm from each side and 225 mm from the rear).

Two pieces of filter paper (300 ± 10 × 300 ± 10) mm shall be placed flat, one on top of the other, on the base of the metallic screen, no more than 3 min before the start of the test. The filter papers shall be positioned centrally beneath the test piece.

5.4 Flame application

Safety warning

Precautions shall be taken to safeguard personnel against the following when conducting tests:

a) the risk of fire or explosion;

b) the inhalation of smoke and/or noxious products, particularly when halogenated materials are burned;

c) harmful residues.

5.4.1 Positioning of flame

One calibrated burner, as described in 4.3 of IEC 60332-1-1, shall be ignited and the recommended flow rates of gas and air adjusted. The burner shall be positioned so that the tip of the inner blue cone impinges on the surface of the test piece at a distance of (475 ± 5) mm from the lower edge of the upper horizontal support, whilst the burner is at an angle of 45° ± 2° to the vertical axis of the test piece (see Figure 2).

For flat-form cables, the flame impingement shall be on the middle of the flat side of the cable.

5.4.2 Test duration

The flame shall be applied continuously for the period of time corresponding to the diameter shown in Table 1.

Table 1 – Time for flame application

Overall diameter of test piece [a] mm	Time for flame application [b] s
$D \leq 25$	60 ± 2
$25 < D \leq 50$	120 ± 2
$50 < D \leq 75$	240 ± 2
$D > 75$	480 ± 2

[a] Where non-circular cables (for example, flat-form constructions) are to be tested, the circumference shall be measured and used to calculate an equivalent diameter, as if the cable were circular.

[b] For flat cables having a ratio of major to minor axis greater than 17:1, the flame application time remains under consideration.

At the end of the specified test duration, the burner shall be removed and the flame of the burner extinguished.

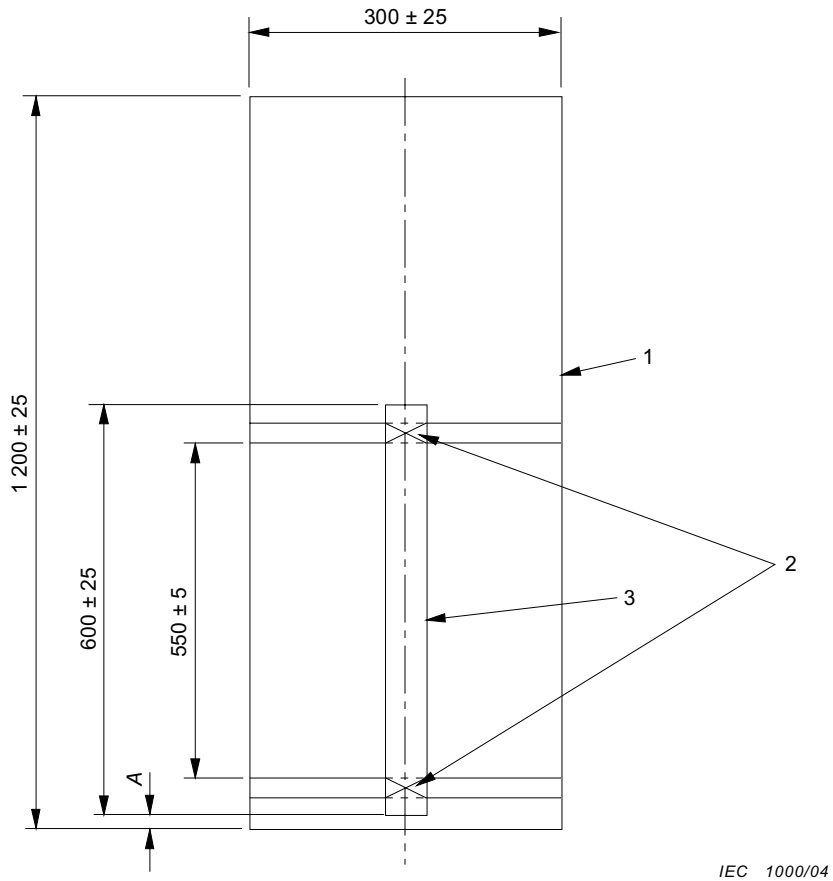
6 Evaluation of test results

During the test duration, it shall be recorded:

a) if the filter paper has ignited or not;

b) if the filter paper has ignited, the time from ignition of the filter paper to cessation of the burning.

Dimensions in millimetres



Key

1 metallic screen

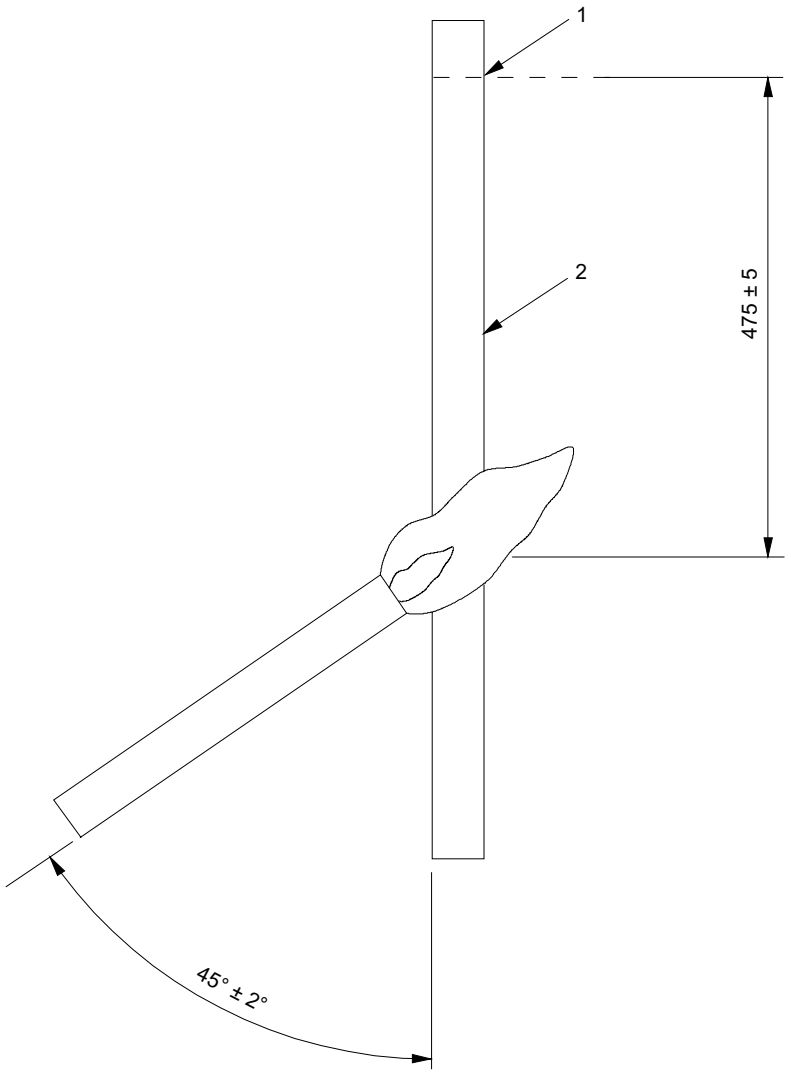
2 support arm and copper wire fixing

3 test piece

Distance A: Length from base of screen to bottom of sample = 50 mm (approximately)

Figure 1 – Arrangement of test piece in test apparatus

Dimensions in millimetres



Key

1 lower edge of top support

2 test piece

Figure 2 – Application of flame to test piece

Annex A
(informative)

Recommended performance requirements

The performance requirements for a particular type or class of insulated conductor or cable should preferably be given in the individual cable standard. In the absence of any given requirement, it is recommended that those given below should be taken as a minimum acceptable level.

The insulated conductor or cable shall pass the test if the filter paper has not ignited during the test duration.

If a failure is recorded two more tests shall be carried out. If both tests result in passes, the insulated conductor or cable shall be deemed to have passed the test.

Bibliography

IEC 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*

_____

ISBN 2-8318-7585-4

ICS 13.220.40; 29.020; 29.060.20

Typeset and printed by the IEC Central Office
GENEVA, SWITZERLAND

AMD 535: 2020

Amendment Number1; Approved on 2020-07-22 for SLS 1007 Part 1 Section 3: 2008

SLS 1007: Methods of Tests on electric and optical fibre cables under fire conditions – Part 1-3: Test for vertical flame propagation for a single insulated wire or cable – Procedure for determination of flaming droplets/particles. (IEC 60332: Part 1.3:2004/ AMD1:2015)

Gr. C

IEC 60332-1-3

Edition 1.0 2015-07

INTERNATIONAL STANDARD

NORME INTERNATIONALE

GROUP SAFETY PUBLICATION
PUBLICATION GROUPÉE DE SÉCURITÉ

AMENDMENT 1
AMENDEMENT 1

Tests on electric and optical fibre cables under fire conditions – Part 1-3: Test for vertical flame propagation for a single insulated wire or cable – Procedure for determination of flaming droplets/particles

Essais des câbles électriques et à fibres optiques soumis au feu – Partie 1-3: Essai de propagation verticale de la flamme sur conducteur ou câble isolé – Procédure pour la détermination des particules/gouttelettes enflammées

IEC 60332-1-3:2004-07/AMD1:2015-07(en-fr)

IEC 60332-1-3

Edition 1.0 2015-07

INTERNATIONAL STANDARD

NORME INTERNATIONALE

GROUP SAFETY PUBLICATION
PUBLICATION GROUPÉE DE SÉCURITÉ

AMENDMENT 1
AMENDEMENT 1

Tests on electric and optical fibre cables under fire conditions – Part 1-3: Test for vertical flame propagation for a single insulated wire or cable – Procedure for determination of flaming droplets/particles

Essais des câbles électriques et à fibres optiques soumis au feu – Partie 1-3: Essai de propagation verticale de la flamme sur conducteur ou câble isolé – Procédure pour la détermination des particules/gouttelettes enflammées

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

ICS 13.220.40; 29.020; 29.060.20

ISBN 978-2-8322-2798-5

FOREWORD

This amendment has been prepared by IEC technical committee 20: Electric cables.

The text of this amendment is based on the following documents:

FDIS	Report on voting
20/1592/FDIS	20/1599/RVD

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

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the stability 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.

———————

2 Normative references

Add the following new reference:

IEC 60811-203, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 203: General tests – Measurement of overall dimensions*

Delete the reference ISO 187.

3 Terms and definitions

Replace the existing source of item 3.1 by the following new source:

[SOURCE: ISO 13943:2008, 1.489]

4.2 Ignition source

Replace the existing paragraph by the following new paragraph:

The ignition source shall comply with IEC 60332-1-1.

4.3 Filter paper

Replace the last sentence by the following new sentence:

The filter paper shall be conditioned at (23 ± 2) °C for not less than 4 h at a relative humidity of (50 ± 10) %.

5.1 Sample

Replace the existing subclause by the following new subclause:

The test sample shall be a piece of insulated conductor or cable (600 ± 25) mm long.

The test sample diameter shall be measured using the method given in IEC 60811-203. The measurement shall be made at each of three places, separated by at least 100 mm.

The average of the three values obtained shall be rounded to obtain the overall diameter. If the calculation gives 5 or more for the second decimal figure, raise the first to the next number; thus, for example, 5,75 is rounded to 5,8. If the calculation gives 4 or less for the second decimal figure, maintain the first number; thus, for example, 5,74 is rounded to 5,7.

The overall diameter obtained shall be used for the selection of the time for flame application.

5.3 Positioning of test piece and filter paper

Replace the existing title by the following new title:

5.3 Positioning of test piece

Replace the existing subclause by the following new subclause:

The test piece shall be straightened and secured to two horizontal supports by means of a suitable size of copper wire, in a vertical position in the centre of the metal enclosure, as described in IEC 60332-1-1, so that the distance between the bottom of the upper support and the top of the lower support is (550 ± 5) mm. In addition, the test piece shall be positioned so that the bottom of the specimen is approximately 50 mm from the base of the enclosure (see Figure 1).

The vertical axis of the test piece shall be arranged centrally within the enclosure (i.e. 150 mm from each side and 225 mm from the rear).

Two pieces of filter paper (300 ± 10) mm × (300 ± 10) mm shall be placed flat, one on top of the other, on the base of the metal enclosure, no more than 3 min before the start of the test. The filter papers shall be positioned centrally beneath the test piece.

5.4.1 Positioning of flame

Replace the existing subclause by the following new subclause:

A burner, as described in IEC 60332-1-1, shall be ignited and the flow rates of gas and air adjusted to the specified values. The burner shall be positioned so that the tip of the blue cone impinges on the surface of the test piece at a distance of (475 ± 5) mm from the lower edge of the upper horizontal support, whilst the burner is at an angle of (45 ± 2) ° to the vertical axis of the test piece (see Figure 2). The burner position shall be fixed throughout the flame application time.

For flat-form cables, the flame impingement shall be on the middle of the flat side of the cable.

In case of an electrical insulated conductor or cable, should the test piece move significantly during the test so as to render the result invalid, the test piece shall be held straight by the attachment of a load of approximately 5 N/mm^2 of conductor area to the lower part of the sample so that the distance between the point where the load is attached and the lower edge of the top support measures (550 ± 5) mm. In such cases, the test piece shall not be secured to the lower support.

5.4.2 Test duration

Replace the second paragraph by the following new paragraph:

At the end of the specified flame application time, the burner shall be removed and the flame of the burner extinguished.

Table 1 – Time for flame application

Replace the existing footnote a by the following new footnote a:

[a] For non-circular cables in which the major to minor axis ratio is less than 3, the nominal minor axis shall be used as the overall diameter (D). For non-circular cables in which the major to minor axis ratio lies between 3 and 16, the overall diameter (D) shall be taken as the sum of the major and minor axis divided by 3,14 (π). For cables in which the major to minor axis ratio exceeds 16, the test criteria shall be given in the product standard or, if not, agreed between manufacturer and purchaser.

Delete the reference to footnote b in the second column heading and delete footnote b.

Figure 1 – Arrangement of test piece in test apparatus

Replace, under **Key***, the first line by the following new line:*

1 metal enclosure

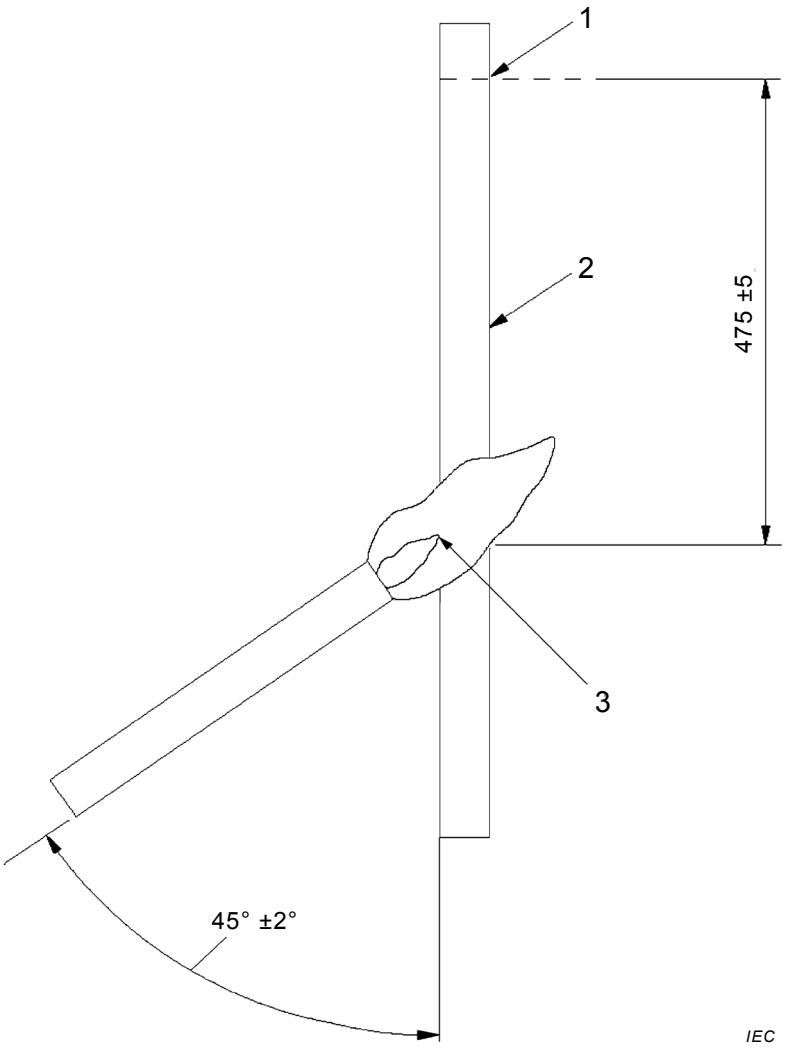
Replace the existing description of Distance A by the following new description:

Distance A: Length from base of enclosure to bottom of test piece = 50 mm (approximately).

Figure 2 – Application of flame to test piece

Replace the existing Figure 2 by the following new Figure 2:

Dimensions in millimetres



Key

1 lower edge of top support

2 test piece

3 position of impingement of blue cone

Figure 2 – Application of flame to test piece

Bibliography

Add the following new references:

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

ISO 13943*, Fire safety – Vocabulary*

_____

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

3, rue de Varembé
PO Box 131
CH-1211 Geneva 20
Switzerland

Tel: + 41 22 919 02 11
Fax: + 41 22 919 03 00
info@iec.ch
www.iec.ch

SRI LANKA STANDARDS INSTITUTION

The Sri Lanka Standards Institution (SLSI) is the National Standards Organization of Sri Lanka established under the Sri Lanka Standards Institution Act No. 6 of 1984 which repealed and replaced the Bureau of Ceylon Standards Act No. 38 of 1964. The Institution functions under the Ministry of Science & Technology.

The principal objects of the Institution as set out in the Act are to prepare standards and promote their adoption, to provide facilities for examination and testing of products, to operate a Certification Marks Scheme, to certify the quality of products meant for local consumption or exports and to promote standardization and quality control by educational, consultancy and research activity.

The Institution is financed by Government grants, and by the income from the sale of its publications and other services offered for Industry and Business Sector. Financial and administrative control is vested in a Council appointed in accordance with the provisions of the Act.

The development and formulation of National Standards is carried out by Technical Experts and representatives of other interest groups, assisted by the permanent officers of the Institution. These Technical Committees are appointed under the purview of the Sectoral Committees which in turn are appointed by the Council. The Sectoral Committees give the final Technical approval for the Draft National Standards prior to the approval by the Council of the SLSI.

All members of the Technical and Sectoral Committees render their services in an honorary capacity. In this process the Institution endeavours to ensure adequate representation of all view points.

In the International field the Institution represents Sri Lanka in the International Organization for Standardization (ISO), and participates in such fields of standardization as are of special interest to Sri Lanka.

Printed at the Sri Lanka Standards Institution, 17, Victoria Place, Elvitigala Mawatha, Colombo 08.

SLS CERTIFICATION MARK

The Sri Lanka Standards Institution is the owner of the registered certification mark shown below. Beneath the mark, the number of the Sri Lanka Standard relevant to the product is indicated. This mark may be used only by those who have obtained permits under the SLS certification marks scheme. The presence of this mark on or in relation to a product conveys the assurance that they have been produced to comply with the requirements of the relevant Sri Lanka Standard under a well designed system of quality control inspection and testing operated by the manufacturer and supervised by the SLSI *which includes surveillance inspection of the factory, testing of both factory and market samples.*

Further particulars of the terms and conditions of the permit may be obtained from the Sri *Lanka Standards Institution, 17, Victoria Place, Elvitigala Mawatha, Colombo 08.*

Printed at SLSI (Printing Unit)