BS EN 60754-1:2014+A1:2020

BSI Standards Publication

Test on gases evolved during combustion of materials from cables

Part 1: Determination of the halogen acid gas content

bsi.

National foreword

This British Standard is the UK implementation of EN 60754-1:2014+A1:2020. It is identical to IEC 60754-1:2011+A1:2019, incorporating amendment 1:2019. It supersedes BS EN 60754-1:2014, which will be withdrawn on 30 December 2022.

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 secretary.

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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Amendments/corrigenda issued since publication

Date	Text affected
30 April 2020	Implementation of IEC amendment 1:2019 with CENELEC endorsement A1:2020

EUROPEAN STANDARD

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English Version

est on gases evolved during combustion of materials from cables - Part 1: Determination of the halogen acid gas content (IEC 60754-1:2011 + corrigendum Nov. 2013)

Essai sur les gaz émis lors de la combustion des matériaux prélevés sur câbles - Partie 1: Détermination de la quantité de gaz acide halogéné (IEC 60754-1:2011 + corrigendum Nov. 2013)

Prüfung der bei der Verbrennung der Werkstoffe von Kabeln und isolierten Leitungen entstehenden Gase - Teil 1: Bestimmung des Gehaltes an Halogenwasserstoffsäure (IEC 60754-1:2011 + Corrigendum Nov. 2013)

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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.

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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

Foreword

This document (EN 60754-1:2014) consists of the text of IEC 60754-1:2011 + corrigendum November 2013, prepared by IEC/TC 20 "Electric cables".

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)	2015-01-27
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2017-01-27

This document supersedes EN 50267-1:1998 (PART), EN 50267-2-1:1998 (PART), EN 50267-2-2:1998 (PART) and EN 50267-2-3:1998 (PART).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

This standard covers the Principle Elements of the Safety Objectives for Electrical Equipment Designed for Use within Certain Voltage Limits (LVD - 2006/95/EC).

Endorsement notice

The text of the International Standard IEC 60754-1:2011 + corrigendum November 2013 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 :

IEC 60684-2	NOTE	Harmonized as EN 60684-2.

Foreword to Amendment A1

The text of document 20/1882/FDIS, future IEC 60754-1/A1, prepared by IEC/TC 20 "Electric cables" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60754-1:2014/A1:2020.

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) 2020-09-30
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2022-12-30

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 60754-1:2011/A1:2019 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
ISO 385	-	Laboratory glassware - Burettes	EN ISO 385	-
ISO 1042	-	Laboratory glassware - One-mark volumetric flasks	EN ISO 1042	-
ISO 3696	-	Water for analytical laboratory use - Specification and test methods	EN ISO 3696	-

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

TEST ON GASES EVOLVED DURING COMBUSTION OF MATERIALS FROM CABLES –

Part 1: Determination of the halogen acid gas content

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 60754-1 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.

This third edition cancels and replaces the second edition, published in 1994, and constitutes a technical revision.

The significant technical changes with respect to the previous edition are as follows:

– improved definition of safety requirements relating to capture of gases and use of reagents;
– introduction of guidance on preparation of test specimens for a more even combustion;
– improvements to the procedure for establishing the heating regime;
– improved expression of tolerances and precision;

– definition of the procedure for the blank test;

– introduction of an informative annex giving details of a methodology for the determination of the halogen acid gas content of a sample representative of a cable construction.

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

FDIS	Report on voting
20/1266/FDIS	20/1276/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.

A list of all the parts in the IEC 60754 series, published under the general title *Test on gases evolved during combustion of materials from cables*, can be found on the IEC website.

The committee has decided that the contents of this 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.

The contents of the corrigendum of November 2013 have been included in this copy.

INTRODUCTION

IEC 60754 consists of the following parts, under the general title *Test on gases evolved during combustion of materials from cables*:

– *Part 1: Determination of the halogen acid gas content*

– *Part 2: Determination of acidity (by pH measurement) and conductivity*

– 〈A1〉 *Part 3: Measurement of low level of halogen content by ion chromatography* 〈A1〉

IEC 60754-1 was developed due to concerns expressed by cable users over the amount of acid gas which is evolved when some cable insulating, sheathing and other materials are burned, as this acid can cause extensive damage to electrical and electronic equipment not involved in the fire itself.

This standard provides a method for determining the amount of acid gases evolved by burning cable components so that limits can be agreed for cable specifications. As the test is not carried out on a complete cable test piece, for a hazard assessment the actual material volumes of the cable components should be taken into consideration.

TEST ON GASES EVOLVED DURING COMBUSTION OF MATERIALS FROM CABLES –

Part 1: Determination of the halogen acid gas content

1 Scope

This part of IEC 60754 specifies the apparatus and procedure for the determination of the amount of halogen acid gas, other than hydrofluoric acid, evolved during the combustion of compounds based on halogenated polymers and compounds containing halogenated additives taken from electric or optical fibre cable constructions.

NOTE 1 This test method is not able to determine hydrofluoric acid. A suitable method may be found in IEC 60684-2.

NOTE 2 This test method may be used to test materials to be used in cable manufacture, but a declaration of cable performance should not be made based on such a test.

NOTE 3 The relevant cable standard should indicate which components of the cable should be tested.

NOTE 4 For the purposes of this standard, the term “electric cable” covers all insulated metallic conductor cables used for the conveyance of energy or signals.

The method specified in this standard is intended for the testing of individual components used in a cable construction. The use of this method will enable the verification of requirements which are stated in the appropriate cable specification for individual components of a cable construction.

NOTE 5 By agreement between the producer and purchaser, the methodology given in this standard may be used to test combinations of materials representing a cable construction, but a declaration of cable performance to this standard should not be made based on such a test. Information on such a method is given in Annex A.

For reasons of precision this method is not recommended for reporting values of halogen acid evolved less than 5 mg/g of the sample taken.

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.

ISO 385, *Laboratory glassware – Burettes*

ISO 1042, *Laboratory glassware – One-mark volumetric flasks*

ISO 3696, *Water for analytical laboratory use – Specification and test methods*

3 Terms and definitions

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

3.1
halogen acid gas content

amount of halogen acid gas evolved, except hydrofluoric acid, expressed as milligrams of hydrochloric acid per gram of total test specimen