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Standards

Irish Standard  
I.S. EN 60754-2:2014

# Test on gases evolved during combustion of materials from cables - Part 2: Determination of acidity (by pH measurement) and conductivity

## I.S. EN 60754-2:2014

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

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*This document is based on:*

EN 60754-2:2014

*Published:*

2014-04-18

*This document was published  
under the authority of the NSAI  
and comes into effect on:*

2014-06-30

ICS number:

NOTE: If blank see CEN/CENELEC cover page

NSAI  
1 Swift Square,  
Northwood, Santry  
Dublin 9

T +353 1 807 3800  
F +353 1 807 3838  
E standards@nsai.ie  
W NSAI.ie

Sales:  
T +353 1 857 6730  
F +353 1 857 6729  
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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 60754-2**

April 2014

ICS 13.220.40; 29.020; 29.060.20

Supersedes EN 50267-1:1998 (partially), EN 50267-2-1:1998 (partially), EN 50267-2-2:1998 (partially), EN 50267-2-3:1998 (partially)

English version

**Test on gases evolved during combustion of materials from cables -  
Part 2: Determination of acidity (by pH measurement) and conductivity  
(IEC 60754-2:2011)**

Essai sur les gaz émis lors de la  
combustion des matériaux prélevés  
sur câbles -  
Partie 2: Détermination de la conductivité  
et de l'acidité (par mesure du pH)  
(CEI 60754-2:2011)

Prüfung der bei der Verbrennung der  
Werkstoffe von Kabeln und isolierten  
Leitungen entstehenden Gase -  
Teil 2: Bestimmung der Azidität (durch  
Messung des pH-Wertes) und  
Leitfähigkeit  
(IEC 60754-2:2011)

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Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**CEN-CENELEC Management Centre: Avenue Marnix 17, B - 1000 Brussels**

## **Foreword**

This document (EN 60754-2:2014) consists of the text of IEC 60754-2:2011, prepared by IEC/TC 20 "Electric cables".

The following dates are fixed:

- latest date by which the document has to be (dop) 2015-01-27  
implemented at national level by  
publication of an identical national  
standard or by endorsement
- latest date by which the national (dow) 2017-01-27  
standards conflicting with the  
document have to be withdrawn

This document supersedes EN 50267-1:1998 (PART), EN 50267-2-1:1998 (PART), EN 50267-2-2:1998 (PART), 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 60754-2:2011 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 60695-5-1      NOTE      Harmonized as EN 60695-5-1.

## **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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
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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**IEC 60754-2**

Edition 2.0 2011-11

# **INTERNATIONAL STANDARD**

# **NORME INTERNATIONALE**

GROUP SAFETY PUBLICATION  
PUBLICATION GROUPEE DE SÉCURITÉ

**Test on gases evolved during combustion of materials from cables –  
Part 2: Determination of acidity (by pH measurement) and conductivity**

**Essai sur les gaz émis lors de la combustion des matériaux prélevés sur  
câbles –  
Partie 2: Détermination de la conductivité et de l'acidité (par mesure du pH)**



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IEC Central Office  
3, rue de Varembe  
CH-1211 Geneva 20  
Switzerland  
Email: [inmail@iec.ch](mailto:inmail@iec.ch)  
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Email: [csc@iec.ch](mailto:csc@iec.ch)

Tél.: +41 22 919 02 11

Fax: +41 22 919 03 00





**IEC 60754-2**

Edition 2.0 2011-11

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

GROUP SAFETY PUBLICATION  
PUBLICATION GROUPEE DE SÉCURITÉ

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

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INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

PRICE CODE  
CODE PRIX

**R**

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ICS 13.220.40; 29.020; 29.060.20

ISBN 978-2-88912-716-0

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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### **TEST ON GASES EVOLVED DURING COMBUSTION OF MATERIALS FROM CABLES –**

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

### FOREWORD

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International Standard IEC 60754-2 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 second edition of IEC 60754-2 cancels and replaces the first edition, published in 1991, Amendment 1 (1997), 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;
- introduction of guidance on the preparation of test specimens for more even combustion;
- better expression of tolerances and precision;
- clarification of the conductivity and acidity functions;

- improved definition of the heating procedure;
- greater precision in the definition of the test temperature for the determination of pH value and conductivity;
- correction of the formulae for the calculation of the test results.

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

FDIS	Report on voting
20/1265/FDIS	20/1275/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.

## 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.*

IEC 60754-2 was originally developed due to concerns expressed by cable users over the amount of acid gas evolved when some cable insulating, sheathing and other materials are burned, as such corrosive effluent can cause extensive damage to electrical and electronic equipment not involved in the fire itself.

NOTE Guidance on the corrosivity of fire effluent is given in IEC 60695-5-1.

This standard provides a method for determining the acidity (by pH measurement) and conductivity of an aqueous solution of gases evolved during the combustion of materials 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.

The method provides an indirect assessment of corrosivity. However, the recommended limits of pH and conductivity can only be regarded as an indication, as the relationship between corrosion and these two parameters does not necessarily embrace all materials.

This part of IEC 60754 is linked with IEC 60754-1, but the test procedure differs considerably.

## **TEST ON GASES EVOLVED DURING COMBUSTION OF MATERIALS FROM CABLES –**

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

#### **1 Scope**

This part of IEC 60754 specifies the apparatus and procedure for the determination of the potential corrosivity of gases evolved during the combustion of materials taken from electric or optical fibre cable constructions by measuring the acidity (pH) and conductivity of an aqueous solution resulting from the gases evolved during the combustion.

The general method specified in this standard is intended for the testing of individual components used in a cable construction. Formulae are given for the calculation of a weighted value for a combination of materials found in a specified cable. The use of this method will enable the verification of relevant requirements for either individual components or combined components of a cable construction stated in the appropriate cable specification.

A simplified method is included for the testing of individual components where it is required only to demonstrate compliance with a stated performance requirement for quality control purposes.

NOTE 1 The relevant cable standard should indicate which components of the cable should be tested, and which method of calculation (see Clause 8) should be used in the case of dispute.

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

#### **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 1042, *Laboratory glassware – One-mark volumetric flasks*  
(available only in French)

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**

##### **pH value**

pH of an aqueous solution resulting from the gases evolved during the combustion of the material under the conditions given in this standard

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