AS/NZS IEC 60754.1:2017
IEC 60754-1:2011

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Australian/New Zealand Standard™

Test on gases evolved during combustion of materials from cables

Part 1: Determination of the halogen acid gas content

AS/NZS IEC 60754.1:2017

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Australian Cablemakers Association
Australian Industry Group
Electrical Compliance Testing Association
Electrical Contractors Association of New Zealand
Electrical Regulatory Authorities Council
Institute of Electrical Inspectors
National Electrical and Communications Association
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Part 1: Determination of the halogen acid gas content

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Preface

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee, EL-003 Electric Wires and Cables, to supersede, in part, AS/NZS 1660.5.3:1998, *Test methods for electric cables, cords and conductors*, Method 5.3: *Fire tests—Determination of the amount of halogen acid gas evolved during the combustion of polymeric materials taken from cables.*

The objective of this Standard is to specify 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.

This Standard is identical with, and has been reproduced from IEC 60754-1:2011 (ED. 3.0), *Test on gases evolved during combustion of materials from cables,* Part 1: *Determination of the halogen acid gas content.*

As this Standard is reproduced from an International Standard, the following applies:

(a) In the source text 'this part of IEC 60754' should read 'this Australian/New Zealand Standard'.

(b) A full point substitutes for a comma when referring to a decimal marker.

None of the normative references in the source document have been adopted as Australian or Australian/New Zealand Standards.

NOTES

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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

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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*

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