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(Incorporating Amendment No. 1)



Australian/New Zealand Standard™

Test on gases evolved during combustion of materials from cables

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



AS/NZS IEC 60754.2:2017

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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
- Queensland University of Technology
- Worksafe New Zealand

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

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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 1660.5.4:1998, *Test methods for electric cables, cords and conductors, Method 5.4: Fire tests—Determination of degree of acidity of gases evolved during the combustion of materials taken from electric cables by measuring pH and conductivity*.

^[A1]Amendment No. 1 (October 2021) to this Standard was prepared by the joint Standards Australia/Standards New Zealand Committee EL-003, *Electric Cables and Wires*.^[A1]

The objective of this Standard is to specify 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.

^[A1]This Standard is identical with, and has been reproduced from IEC 60754-2:2011 (ED. 2.0), *Test on gases evolved during combustion of materials from cables, Part 2: Determination of acidity (by pH measurement) and conductivity* and its Amendment No. 1 (2019) which has been added at the end of the source text.^[A1]

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.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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.