

Australian/New Zealand Standard™

**Test methods for electric cables, cords
and conductors**

**Method 5.2: Fire tests—Measurement of
smoke density of cables burning under
defined conditions**



AS/NZS 1660.5.2:2006

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL-003, Electric Wires and Cables. It was approved on behalf of the Council of Standards Australia on 16 May 2006 and on behalf of the Council of Standards New Zealand on 26 May 2006.

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The following are represented on Committee EL-003:

Australasian Railway Association
Australian Electrical and Electronic Manufacturers Association
Australian Industry Group
Canterbury Manufacturers Association New Zealand
Department of Primary Industries, Mine Safety (NSW)
Electrical Contractors Association of New Zealand
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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 AS/NZS 1660.5.2:1998, *Test methods for electric cables, cords and conductors*, Method 5.2: *Fire tests—Smoke density*. It is one of a set of fire tests for electric cables included in the AS/NZS 1660 series.

The objective of this Standard is to provide details of a test procedure used for the measurement of the density of the smoke emitted from electric or optical fibre cables burning under defined conditions.

This Standard adopts the content of IEC 61034, *Measurement of smoke density of cables burning under defined conditions* (both Parts). While this Standard is technically equivalent to the IEC Standards, it has been structured to include both Parts of IEC 61034 in the one Australian/New Zealand Standard. This has been necessary due to the fact that AS/NZS 1660.5.2 is referenced as such in a number of other Standards. It was not possible to accommodate a further division with the Standards numbering system adopted by Standards Australia.

The technical content of AS/NZS 1660.5.2 and IEC 61034 is aligned as follows:

IEC 61034 Part	AS/NZS 1660.5.2 Section
1: Test apparatus	2
2: Test procedure and requirements	3

This Standard differs from the 1998 version in that it has adopted the technical contents of IEC 61034 (both Parts).

The term ‘informative’ has been used in this Standard to define the application of the appendix to which it applies. An ‘informative’ appendix is only for information and guidance.

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INTRODUCTION

The measurement of smoke density is an important aspect in the evaluation of the burning performance of cables as it is related to the evacuation of persons and accessibility for firefighting.

This Standard specifies a method of test for measurement of smoke density of cables burning under defined conditions. Users of this test are reminded that the configurations of cable in the test (i.e. as test pieces or bundles of test pieces) may not represent actual installation conditions.

Section 2 gives details of the test apparatus and verification procedure to be used for the measurement of smoke density of the products of combustion of cables burnt under defined conditions. It includes details of a test enclosure of 27 m³ volume, a photometric system for light measurement, the fire source, smoke mixing method and a qualification procedure. Appendix A gives guidance on various aspects of the test apparatus which may be useful when first constructing the test enclosure.

Section 3 gives the test procedure, and Appendix C gives recommended requirements for compliance where no specified requirement is given in the particular cable standard or specification. The measurement of smoke density is expressed in terms of minimum levels of light transmittance, and Appendix B explains possibilities for using these values for fire safety engineering calculations.

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard provides details of the test procedure to be employed for the measurement of the density of the smoke emitted from electric or optical fibre cables burning under defined conditions, for example, a few cables burnt horizontally.

It describes the test apparatus to be used, the means of preparing and assembling cables for test, the method of burning the cables and gives recommended requirements for evaluating test results.

The light transmittance (I_t) under flaming combustion and smouldering conditions can be used as a means of comparing different cables or complying with specific requirements.

NOTE: For the purposes of this Standard, the term 'electric cable' covers all insulated metallic conductor cables used for the conveyance of energy or signals.

1.2 REFERENCES

The following documents are referred to in this Standard.

AS/NZS

- 60695 Fire hazard testing
60695.4 Part 4: Terminology concerning fire tests

IEC

- 60695 Fire hazard testing
60695-6-1 Part 6-1: Smoke obscuration—General guidance

- 60879 Performance and construction of electric circulating fans and regulators

ISO

- 13943 Fire safety—Vocabulary

1.3 DEFINITIONS

For the purposes of this document, the definitions in AS/NZS 60695.4 apply, or if a term is not defined in AS/NZS 60695.4 then the definition in ISO 13943 applies.