AS/NZS IEC 60331.3:2017
IEC 60331-3:2009

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Australian/New Zealand Standard™

Tests for electric cables under fire conditions—Circuit integrity

Part 3: Test method for fire with shock at a temperature of at least 830 °C for cables of rated voltage up to and including 0.6/1.0 kV tested in a metal enclosure

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 5 March 2017 and by the New Zealand Standards Approval Board on 4 April 2017.
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The following are represented on Committee EL-003:

Australian Cable Makers' 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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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 1660.5.5:2005, *Test methods for electric cables, cords and conductors*, Method 5.5: *Fire tests—Circuit integrity*.

The objective of this Standard is to specify the test apparatus and procedure and give the performance requirements, including recommended flame application times, for low-voltage power cables of rated voltage up to and including 0.6/1.0 kV, and control cables with a rated voltage which are required to maintain circuit integrity when tested in a metal enclosure and when subject to fire and mechanical shock under specified conditions.

This Standard is identical with, and has been reproduced from IEC 60331-3, Ed 1.0 (2009),*Tests for electric cables under fire conditions—Circuit integrity*, Part 3: *Test method for fire with shock at a temperature of at least 830 °C for cables of rated voltage up to and including 0,6/1,0 kV tested in a metal enclosure*.

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

(a) In the source text ‘this part of 60331’ should read ‘this Australian/New Zealand Standard’.

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

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

CONTENTS

INTRODUCTION

IEC 60331 consists of the following parts under the general title: *Tests for electric cables under fire conditions – Circuit integrity:*

Part 1: Test method for fire with shock at a temperature of at least 830 °C for cables of rated voltage up to and including 0,6/1,0 kV and with an overall diameter exceeding 20 mm

Part 2: Test method for fire with shock at a temperature of at least 830 °C for cables of rated voltage up to and including 0,6/1,0 kV and with an overall diameter not exceeding 20 mm

Part 3: Test method for fire with shock at a temperature of at least 830 °C for cables of rated voltage up to and including 0,6/1,0 kV tested in a metal enclosure

Part 11: Apparatus – Fire alone at a flame temperature of at least 750 °C

Part 21: Procedures and requirements – Cables of rated voltage up to and including 0,6/1,0 kV

Part 23: Procedures and requirements – Electric data cables

Part 25: Procedures and requirements – Optical fibre cables

NOTE Parts 21, 23 and 25 relate to fire-only conditions at a flame temperature of at least 750 °C.

Since its first edition (1970), IEC 60331 has been extended and has introduced a range of test apparatus in order that a test may be carried out on large and small power, control, data and optical fibre cables.

IEC 60331-3 introduces apparatus and a procedure to allow cables to be tested in a metal enclosure under conditions of mechanical shock as well as fire at temperature of at least 830 °C.

NOTES

AUSTRALIAN/NEW ZEALAND STANDARD

Tests for electric cables under fire conditions—Circuit integrity

Part 3:
Test method for fire with shock at a temperature of at least 830 °C for cables of rated voltage up to and including 0.6/1.0 kV tested in a metal enclosure

1 Scope

This part of IEC 60331 specifies the test apparatus and procedure and gives the performance requirements, including recommended flame application times, for low-voltage power cables of rated voltage up to and including 0,6/1,0 kV, and control cables with a rated voltage which are required to maintain circuit integrity when tested in a metal enclosure and when subject to fire and mechanical shock under specified conditions.

This standard describes the means of sample preparation, the continuity checking arrangements, the electrical testing procedure, the method of burning the cables and the method of shock production and gives requirements for evaluating test results.

NOTE All cables assessed by this method should first have been assessed against the test of IEC 60331-1 or IEC 60331-2. Such performance may be recognized by the marking according to Clause 11 of IEC 60331-1 or Clause 11 of IEC 60331-2.

Annex A provides the method of verification of the burner and control system used for the test.

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.

IEC 60269-3, *Low-voltage fuses – Part 3: Supplementary requirements for fuses for use by unskilled persons (fuses mainly for household and similar applications) – Examples of standardized systems of fuses A to F*

IEC 60331-1, *Tests for electric cables under fire conditions – Circuit integrity – Part 1: Test method for fire with shock at a temperature of at least 830 °C for cables of rated voltage up to and including 0,6/1,0 kV and with an overall diameter exceeding 20 mm*

IEC 60331-2, *Test for electric cables under fire conditions – Circuit integrity – Part 2: Test method for fire with shock at a temperature of at least 830 °C for cables of rated voltage up to and including 0,6/1,0 kV and with an overall diameter not exceeding 20 mm*

IEC 60584-1, *Thermocouples – Part 1: Reference tables*

IEC Guide 104, *The preparation of safety publications and the use of basic safety publications and group safety publications*

3 Terms and definitions

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