Australian/New Zealand Standard™

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

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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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This Standard was issued in draft form for comment as DR AS/NZS IEC 60331.1:2016.

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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 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 subject to fire and mechanical shock under specified conditions. It is intended for use when testing cables of greater than 20 mm overall diameter.

This Standard is identical with, and has been reproduced from IEC 60331-1, Ed 1.0 (2009), *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*.

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.

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

Successful tests carried out in accordance with this standard will enable an identification to be marked on the product.

NOTES

AUSTRALIAN/NEW ZEALAND STANDARD

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

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 subject to fire and mechanical shock under specified conditions. It is intended for use when testing cables of greater than 20 mm overall diameter.

NOTE 1 Cables of smaller diameter should be tested using the apparatus, procedure and requirements of IEC 60331-2.

This standard describes the means of test specimen 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 2 Although the scope is restricted to cables with rated voltage up to and including 0,6/1,0 kV, the procedure may be used, with the agreement of the manufacturer and the purchaser, for cables with rated voltage up to and including 3,3 kV, provided that suitable fuses are used.

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

Requirements are stated for an identification that may optionally be marked on the cable to signify compliance with this standard.

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

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