

INTERNATIONAL STANDARD

NORME INTERNATIONALE

GROUP SAFETY PUBLICATION
PUBLICATION GROUPEE DE SÉCURITÉ

**Tests for electric cables under fire conditions – Circuit integrity –
Part 11: Apparatus – Fire alone at a flame temperature of at least 750 °C**

**Essais pour câbles électriques soumis au feu – Intégrité des circuits –
Partie 11: Appareillage – Incendie seul avec flamme à une température d'au
moins 750 °C**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**TESTS FOR ELECTRIC CABLES UNDER FIRE CONDITIONS –
CIRCUIT INTEGRITY –****Part 11: Apparatus – Fire alone at a flame temperature
of at least 750 °C**

FOREWORD

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International Standard IEC 60331-11 has been prepared by subcommittee 20C: Burning characteristics of electric cables, of IEC technical committee 20: Electric cables.

This consolidated version of IEC 60331-11 consists of the first edition (1999) [documents 20C/81/FDIS and 20C/86/RVD] and its amendment 1 (2009) [documents 20/1052/FDIS and 20/1056/RVD].

The technical content is therefore identical to the base edition and its amendment and has been prepared for user convenience.

It bears the edition number 1.1.

A vertical line in the margin shows where the base publication has been modified by amendment 1.

| IEC 60331-11 is to be used in conjunction with Parts 21, 23 or 25.

It has the status of a group safety publication in accordance with IEC Guide 104.

Annex A forms an integral part of this standard.

Annexes B, C and D are for information only.

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the maintenance result 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- withdrawn,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.

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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.

When first published in 1999, IEC 60331-11 introduced a range of improvements, based upon practical experience gained with IEC 60331(1970), which have been retained. These improvements cover the following:

- the definition of the burner and its positioning in the test, especially to ensure that no interference with the test flame will arise from debris falling from the test sample;
- the definition of the fuel, the flow rate and control of its supply;
- the control, measurement and verification of the temperature.

TESTS FOR ELECTRIC CABLES UNDER FIRE CONDITIONS – CIRCUIT INTEGRITY –

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

1 Scope

This part of IEC 60331 specifies the test apparatus to be used for testing cables required to maintain circuit integrity when subject to fire alone where the test condition is based upon a flame with a controlled heat output corresponding to a temperature of at least 750 °C.

It also provides in annex A 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 60584-1:1995, *Thermocouples – Part 1: Reference tables*

IEC Guide 104:1997, *The preparation of safety publications and the use of basic safety publications and group safety publications*

3 Definition

For the purpose of this part of IEC 60331, the following definition applies.

3.1

circuit integrity

ability to continue to operate in the designated manner whilst subjected to a specified flame source for a specified period

4 Test conditions

4.1 Test environment

The test shall be carried out in a suitable chamber with facilities for disposing of any noxious gases resulting from burning. Sufficient ventilation shall be available to sustain the flame for the duration of the test.

NOTE 1 An example of a suitable chamber is given in IEC 61034-1.

The chamber shall be maintained in an external environment where the temperature is between 5 °C and 40 °C.