

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Electric and optical fibre cables – Test methods for non-metallic materials –
Part 501: Mechanical tests – Tests for determining the mechanical properties of
insulating and sheathing compounds**

**Câbles électriques et à fibres optiques – Méthodes d'essai pour les matériaux
non métalliques –
Partie 501: Essais mécaniques – Détermination des propriétés mécaniques des
mélanges pour les enveloppes isolantes et les gaines**



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**Electric and optical fibre cables – Test methods for non-metallic materials –
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTRIC AND OPTICAL FIBRE CABLES –
TEST METHODS FOR NON-METALLIC MATERIALS –**

**Part 501: Mechanical tests –
Tests for determining the mechanical properties
of insulating and sheathing compounds**

FOREWORD

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This consolidated version of the official IEC Standard and its amendments has been prepared for user convenience.

IEC 60811-501 edition 1.2 contains the first edition (2012-03) [documents 20/1297/FDIS and 20/1346/RVD], its amendment 1 (2018-06) [documents 20/1795/FDIS and 20/1809/RVD] and its amendment 2 (2023-11) [documents 20/2128/FDIS and 20/2138/RVD].

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendments 1 and 2. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

International Standard IEC 60811-501 has been prepared by IEC technical committee 20: Electric cables.

This Part 501 of IEC 60811 cancels and replaces Clause 9 of IEC 60811-1-1:1993, which is withdrawn. Full details of the replacements are shown in Annex A of IEC 60811-100:2012.

There is one significant technical change with respect to the previous edition:

- the requirements for the (minimum) thickness of dumb-bell test pieces have changed.

See also the Foreword to IEC 60811-100.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

This part of IEC 60811 shall be used in conjunction with IEC 60811-100.

A list of all the parts in the IEC 60811 series, published under the general title *Electric and optical fibre cables – Test methods for non-metallic materials*, can be found on the IEC website.

The committee has decided that the contents of this document and its amendments will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
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- amended.

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INTRODUCTION

The IEC 60811 series specifies the test methods to be used for testing non-metallic materials of all types of cables. These test methods are intended to be referenced in standards for cable construction and for cable materials.

NOTE 1 Non-metallic materials are typically used for insulating, sheathing, bedding, filling or taping within cables.

NOTE 2 These test methods are accepted as basic and fundamental and have been developed and used over many years principally for the materials in all energy cables. They have also been widely accepted and used for other cables, in particular optical fibre cables, communication and control cables and cables for ships and offshore applications.

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ELECTRIC AND OPTICAL FIBRE CABLES – TEST METHODS FOR NON-METALLIC MATERIALS –

Part 501: Mechanical tests – Tests for determining the mechanical properties of insulating and sheathing compounds

1 Scope

This Part 501 of IEC 60811 gives the procedure for determining the mechanical properties, which typically applies to cross-linked and thermoplastic compounds used for insulating and sheathing materials.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60811-100:2012, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 100: General*

IEC 60811-201, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 201: General tests – Measurement of insulation thickness*

IEC 60811-202, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 202: General tests – Measurement of thickness of non-metallic sheaths*

IEC 60811-203, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 203: General tests – Measurement of overall dimensions*

IEC 60811-401, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 401: Miscellaneous tests – Thermal ageing methods – Ageing in an air oven*

IEC 60811-404, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 404: Miscellaneous tests – Mineral oil immersion tests for sheaths made with cross-linked compounds*

IEC 60811-606, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 606: Physical tests – Methods for determining the density*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60811-100, together with the following, apply.

3.1

maximum tensile force

highest value reached by the load during the test