IEC 60811-502

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Electric and optical fibre cables – Test methods for non-metallic materials – Part 502: Mechanical tests – Shrinkage test for insulations

Câbles électriques et à fibres optiques – Méthodes d'essai pour les matériaux non-métalliques – Partie 502: Essais mécaniques – Essai de rétraction des enveloppes isolantes

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

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International Standard IEC 60811-502 has been prepared by IEC technical committee 20: Electric cables.

This Part 502 of IEC 60811 cancels and replaces Clause 10 of IEC 60811-1-3:1993, which is withdrawn. Full details of the replacements are shown in Annex A of IEC 60811-100:2012.

There are no specific technical changes with respect to the previous edition, but see the Foreword to IEC 60811-100:2012.

The text of this standard is based on the following documents:

FDIS	Report on voting
20/1298/FDIS	20/1347/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

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 publication will remain unchanged until the stability 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- withdrawn,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.

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.

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

Part 502: Mechanical tests – Shrinkage test for insulations

1 Scope

This Part 502 of IEC 60811 gives the test method for the shrinkage for insulations.

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*

3 Terms and definitions

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

4 Test method

4.1 General

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

4.2 Test equipment

The test equipment shall be as follows:

– an air oven, electrically heated, capable of maintaining the test temperature;

– a measuring device with a scale division of 0,5 mm.

4.3 Sampling

One sample about 1,5 L mm in length of each core to be tested shall be taken at least 0,5 m away from the end of the cable length.

L is the length given in the relevant cable standard.

4.4 Preparation of test pieces

All coverings, except adherent, extruded semi-conducting screens, if any, shall be removed from the samples of insulated conductor.

Within an interval of not more than 5 min from the time of cutting the samples, a test length of L ±5 mm shall be marked on the middle part of each piece of core. The distance between the marks shall be measured to an accuracy of 0,5 mm. Each test piece shall then be

prepared by cutting and removing the insulation from both ends of each sample up to positions between 2 mm and 5 mm away from the marks.

4.5 Test procedure

Each test piece shall be supported horizontally in the air oven preheated to the temperature specified in the cable standard by the bare ends of conductors or on the surface of a preheated talc bath, to permit free movement of the insulation. Each test piece should remain in the oven for the time specified in the cable standard.

Each test piece shall then be removed from the oven and allowed to cool in air to room temperature and the distance between the two marks on each piece measured again to the nearest 0,5 mm.

4.6 Expression of results

The percentage shrinkage ΔL is the difference between the distances between the marks before the heat treatment (L_1) and after the heating and cooling (L_2), recorded as a percentage of the distance between the marks before the treatment:

$$\Delta L = \frac{L_1 - L_2}{L_1} \times 100\,\%$$

5 Test report

The test report shall be in accordance with that given in IEC 60811-100.

Bibliography

IEC 60811-1-3:1993, *Insulating and sheathing materials of electric cables - Common test methods – Part 1: General application v Section 3: Methods for determining the density – Water absorption tests – Shrinkage test*
(withdrawn)