BS EN 60811-301:2012

BSI Standards Publication

Electric and optical fibre cables — Test methods for non-metallic materials

Part 301: Electrical tests — Measurement of the permittivity at 23 °C of filling compounds

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National foreword

This British Standard is the UK implementation of EN 60811-301:2012. It is identical to IEC 60811-301:2012.

In the UK, the relationship between the supersessions of BS EN 60811 series can be summarized as follows.

BS EN 60811-100 together with	Supersedes -
-201, -202, -203, -501	BS EN 60811-1-1:1995
-301, -302, -411, -601, -602, -603, -604	BS EN 60811-5-1:2000
-401, -412	BS EN 60811-1-2:1995
-402, -502, -503, -606	BS EN 60811-1-3:1995
-403, -404, -507	BS EN 60811-2-1:1998
-405, -409	BS EN 60811-3-2:1995
-406, -511, -605, -607	BS EN 60811-4-1:2004
-407, -408, -410, -510, -512, -513	BS EN 60811-4-2:2004
-504, -505, -506	BS EN 60811-1-4:1995
-508, -509	BS EN 60811-3-1:1995

Superseded standards are withdrawn

The UK participation in its preparation was entrusted by Technical Committee GEL/20, Electric cables, to Subcommittee GEL/20/17, Electric Cables - Low voltage.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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EUROPEAN STANDARD

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EUROPÄISCHE NORM

EN 60811-301

June 2012

ICS 29.035.01; 29.060.20

Supersedes EN 60811-5-1:1999 (partially) + A1:2004 (partially)

English version

Electric and optical fibre cables - Test methods for non-metallic materials - Part 301: Electrical tests - Measurement of the permittivity at 23 °C of filling compounds

(IEC 60811-301:2012)

Câbles électriques et à fibres optiques - Méthodes d'essai pour les matériaux non-métalliques - Partie 301: Essais électriques - Mesure de la permittivité à 23 °C des matières de remplissage
(CEI 60811-301:2012)

Kabel, isolierte Leitungen und Glasfaserkabel - Prüfverfahren für nichtmetallene Werkstoffe - Teil 301: Elektrische Prüfungen - Messung der Dielektrizitätskonstanten von Füllmassen bei 23 °C
(IEC 60811-301:2012)

CENELEC

European Committee for Electrotechnical Standardization
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Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of document 20/1283/FDIS, future edition 1 of IEC 60811-301, prepared by IEC/TC 20 "Electric cables" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60811-301:2012.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2013-01-16
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2015-04-16

This document supersedes Clause 9 of EN 60811-5-1:1999 + A1:2004 (partially). Full details of the replacements are shown in Annex A of EN 60811-100:2012.

There are no technical changes with respect to EN 60811-5-1:1999 + A1:2004, but see the Foreword to EN 60811-100:2012.

This standard is to be read in conjunction with EN 60811-100.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

This standard covers the Principle Elements of the Safety Objectives for Electrical Equipment Designed for Use within Certain Voltage Limits (LVD - 2006/95/EC)

Endorsement notice

The text of the International Standard IEC 60811-301:2012 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60247	-	Insulating liquids - Measurement of relative permittivity, dielectric dissipation factor (tan δ) and d.c. resistivity	EN 60247	-
IEC 60811-100	2012	Electric and optical fibre cables - Test methods for non-metallic materials - Part 100: General	EN 60811-100	2012

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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.

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

Part 301: Electrical tests – Measurement of the permittivity at 23 °C of filling compounds

1 Scope

This Part 301 of IEC 60811 gives the procedure to determine the permittivity at 23 °C which typically applies to filling compounds used for optical cables, communication cables and optical fibre cables.

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 60247*, Insulating liquids – Measurement of relative permittivity, dielectric dissipation factor (tan δ) and d.c. resistivity*

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.

This test shall be carried out in accordance with the method specified in IEC 60247.

4.2 Apparatus

The test apparatus used shall be a three-terminal cell as described in IEC 60247.

4.3 Sample and test piece preparation

In addition to details given in IEC 60247, the filling compound shall be heated to its clarify point and poured into the cell which has been preheated to the same temperature.

4.4 Ageing procedure

This test shall be carried out according to IEC 60247. Care shall be taken that no air bubbles are introduced into the cell.

The test shall be carried out at temperatures of (23 ± 2) °C.

4.5 Measurements

Measurement details are given in IEC 60247.

4.6 Expression of the results

Calculation details are given in IEC 60247.

5 Test report

In addition to the test report given in IEC 60247, the test report shall be in accordance with that given in IEC 60811-100.

Bibliography

IEC 60811-5-1:1990, *Common test methods for insulating and sheathing materials of electric cables – Part 5: Methods specific to filling compounds – Section One — Drop-point — Separation of oil – Lower temperature brittleness — Total acid number — Absence of corrosive components – Permittivity at 23 °C — D.C. resistivity at 23 °C and 100 °C*
(withdrawn)

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