

Insulating and sheathing materials of electric and optical fibre cables — Common test methods —

Part 4-2: Methods specific to polyethylene and polypropylene compounds — Tensile strength and elongation at break after pre-conditioning — Wrapping test after thermal ageing in air — Measurement of mass increase — Long-term stability test — Test method for copper-catalysed oxidative degradation

The European Standard EN 60811-4-2:1999 has the status of a British Standard

ICS 29.035.20

National foreword

This British Standard is the official English language version of EN 60811-4-2:1999. It was derived by CENELEC from IEC 60811-4-2:1990. It supersedes BS 6469-4.2:1992 which is withdrawn.

The CENELEC common modifications have been implemented at the appropriate places in the text and are indicated by a sideline in the margin.

The UK participation in its preparation was entrusted by Technical Committee GEL/20, Electric cables, to Subcommittee GEL/20/3, Insulation and sheath, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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

From 1 January 1997, all IEC publications have the number 60000 added to the old number. For instance, IEC 27-1 has been renumbered as IEC 60027-1. For a period of time during the change over from one numbering system to the other, publications may contain identifiers from both systems.

Cross-references

Attention is drawn to the fact that CEN and CENELEC Standards normally include an annex which lists normative references to international publications with their corresponding European publications. The British Standards which implement these international or European publications may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 16, and inside back cover and a back cover.

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English version

**Insulating and sheathing materials of electric and optical fibre cables
Common test methods**

Part 4: Methods specific to polyethylene and polypropylene compounds

**Section 2: Tensile strength and elongation at break after pre-conditioning - Wrapping
test after thermal ageing in air - Measurement of mass increase - Long-term stability test
Test method for copper-catalysed oxidative degradation
(IEC 60811-4-2:1990, modified)**

Matériaux d'isolation et de gainage des câbles
électriques et des câbles à fibres optiques
Méthodes d'essai communes
Partie 4: Méthodes spécifiques pour les
mélanges polyéthylène et polypropylène
Section 2: Résistance à la traction et
allongement à la rupture après
préconditionnement - Essai d'enroulement après
vieillesse thermique dans l'air - Mesure de
l'augmentation de masse - Essai de stabilité à
long terme - Méthode d'essai pour l'oxydation
catalytique par le cuivre
(CEI 60811-4-2:1990, modifiée)

Isolier- und Mantelwerkstoffe für Kabel und
isolierte Leitungen - Allgemeine Prüfverfahren
Teil 4: Besondere Prüfverfahren für Polyethylen
und Polypropylen-Mischungen
Hauptabschnitt 2: Zugfestigkeit und
Reißdehnung nach Vorbehandlung
Wickelprüfung nach thermischer Alterung in Luft
Messung der Masseaufnahme
Langzeit(Lebensdauer)-Prüfung - Prüfverfahren
der Sauerstoffalterung unter Kupfereinfluß
(IEC 60811-4-2:1990, modifiziert)

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of the International Standard IEC 60811-4-2:1990, prepared by IEC TC 20, Electric cables, together with common modifications prepared by the Technical Committee CENELEC TC 20, Electric cables, with input from CENELEC TC 46X, Communication cables, was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 60811-4-2 on 1999-04-01.

This European Standard supersedes HD 505.4.2 S1:1992.

The following dates were fixed:

- latest date by which the EN has to be implemented (dop) 2000-07-01
at national level by publication of an identical
national standard or by endorsement
- latest date by which the national standards conflicting (dow) 2001-07-01
with the EN have to be withdrawn

Annexes designated "normative" are part of the body of the standard.

In this standard, annexes A, B and ZA are normative.

Annex ZA has been added by CENELEC.

Where reference is made to HD 505.4.2 S1:1992 (IEC 60811-4-2:1990) in another standard, users should refer to this EN 60811-4-2:1999 for the current information.

The text of this European Standard consists of the text of the International Standard IEC 60811-4-2:1990 with agreed common modifications which are indicated by a vertical line in the left margin of the text.

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1 General

1.1 Scope

This standard specifies the test methods for testing polymeric insulating and sheathing materials of electric and optical fibre cables for power distribution and communications including cables used on ships.

This Part 4-2 gives the methods for measurement of tensile strength and elongation at break after pre-conditioning, for wrapping test after pre-conditioning, for wrapping test after thermal ageing in air, for measurement of mass increase, for long-term stability test and for measurement of copper-catalysed oxidative degradation, which apply to polyolefin insulations.

1.2 Normative references

NOTE Normative references to international publications are listed in annex ZA (normative).

2 Test values

Full test conditions (such as temperatures, durations, etc) and full test requirements are not specified in this standard; it is intended that they should be specified by the standard dealing with the relevant type of cable.

Any test requirements which are given in this standard may be modified by the relevant cable standard to suit the needs of a particular type of cable.

3 Applicability

Conditioning values and testing parameters are either specified in the material specifications or in the product specifications.

4 Definitions

For the purpose of these tests, a distinction shall be made between low-density, medium-density and high-density PE:

Low-density polyethylene	$\leq 0,925 \text{ g/cm}^3$	} at 23°C
Medium-density polyethylene	$> 0,925 \leq 0,940 \text{ g/cm}^3$	
High-density polyethylene	$> 0,940 \text{ g/cm}^3$	

NOTE These densities refer to unfilled resins as determined by the method specified in clause 8 of IEC 60811-1-3.

5 Type tests and other tests

The test methods described in this standard are primarily intended to be used for type tests. In certain tests where there are essential differences between the conditions for type tests and those for more frequent tests, such as routine tests, these differences are indicated.

For multicore cables and cords, not more than three cores (of different colours, if any) shall be tested unless otherwise specified in the relevant cable standard.