

**SLOVENSKI STANDARD**  
**SIST EN 60811-511:2012/A1:2018**  
**01-januar-2018**

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**Električni in optični kabli - Preskusne metode za nekovinske materiale - 511. del:  
Mehanski preskusi - Meritve indeksa pretoka taline polietilenskih zmesi - Dopnilo  
A1 (IEC 60811-511:2012/A1:2017)**

Electric and optical fibre cables - Test methods for non-metallic materials - Part 511:  
Mechanical tests - Measurement of the melt flow index of polyethylene and  
polypropylene compounds (IEC 60811-511:2012/A1:2017)

**iTeh STANDARD PREVIEW**  
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Kabel, isolierte Leitungen und Glasfaserkabel - Prüfverfahren für nichtmetallene  
Werkstoffe - Teil 511: Mechanische Prüfungen - Messung des Schmelzindex von  
Polyethylenmischungen (IEC 60811-511:2012/A1:2017)

[SIST EN 60811-511:2012/A1:2018](https://standards.iteh.ai/catalog/standards/sist/0c52cc6d-9443-496f-9f26-397014293516/sist-en-60811-511-2012-a1-2018)

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Câbles électriques et à fibres optiques - Méthodes d'essai pour les matériaux non-  
métalliques - Partie 511: Essais mécaniques - Mesure de l'indice de fluidité à chaud des  
mélanges polyéthylène (IEC 60811-511:2012/A1:2017)

**Ta slovenski standard je istoveten z: EN 60811-511:2012/A1:2017**

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**ICS:**

29.035.20	Plastični in gumeni izolacijski materiali	Plastics and rubber insulating materials
29.060.20	Kabli	Cables

**SIST EN 60811-511:2012/A1:2018**      **en**

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EUROPEAN STANDARD

EN 60811-511:2012/A1

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2017

ICS 29.035.01; 29.060.20

English Version

Electric and optical fibre cables - Test methods for non-metallic materials - Part 511: Mechanical tests - Measurement of the melt flow index of polyethylene compounds  
(IEC 60811-511:2012/A1:2017)

Câbles électriques et à fibres optiques - Méthodes d'essai pour les matériaux non-métalliques - Partie 511: Essais mécaniques - Mesure de l'indice de fluidité à chaud des mélanges polyéthylène  
(IEC 60811-511:2012/A1:2017)

Kabel, isolierte Leitungen und Glasfaserkabel - Prüfverfahren für nichtmetallene Werkstoffe - Teil 511: Mechanische Prüfungen - Messung des Schmelzindex von Polyethylenmischungen  
(IEC 60811-511:2012/A1:2017)

This amendment A1 modifies the European Standard EN 60811-511:2012; it was approved by CENELEC on 2017-08-25. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

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

This amendment 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 CEN-CENELEC Management Centre has the same status as the official versions.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

**EN 60811-511:2012/A1:2017****European foreword**

The text of document 20/1736/FDIS, future IEC 60811-511:2012/A1, prepared by IEC/TC 20 "Electric cables" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60811-511:2012/A1:2017.

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) 2018-05-25
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2020-08-25

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The text of the International Standard IEC 60811-511:2012/A1:2017 was approved by CENELEC as a European Standard without any modification.

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IEC 60811-511

Edition 1.0 2017-07

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

AMENDMENT 1  
AMENDEMENT 1

**Electric and optical fibre cables – Test methods for non-metallic materials –  
Part 511: Mechanical tests – Measurement of the melt flow index of polyethylene  
and polypropylene compounds**

**Câbles électriques et à fibres optiques – Méthodes d'essai pour les matériaux  
non-métalliques –  
Partie 511: Essais mécaniques – Mesure de l'indice de fluidité à chaud des  
mélanges polyéthylène et polypropylène**

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COMMISSION

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ICS 29.035.01; 29.060.20

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## FOREWORD

This amendment has been prepared by IEC technical committee 20: Electric cables.

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

FDIS	Report on voting
20/1736/FDIS	20/1741/RVD

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

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the stability date indicated on the IEC website 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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### Part title

*Replace, in the part title, "polyethylene compounds" by "polyethylene and polypropylene compounds".*

### Contents

*Delete the reference to Table 1.*

### 1 Scope

*Replace the existing paragraph by the following new text:*

This Part 511 of IEC 60811 describes the procedure for the measurement of the melt flow index for polyethylene and polypropylene compounds.

### 3 Terms and definitions

*Delete the second paragraph and Table 1.*

#### 4.1 General

*Replace the existing text by the following new text:*

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

The melt flow index (MFI) of polyethylene and polypropylene compounds is the quantity of material extruded in 1,5 min or 10 min at a given temperature through a specified die under the action of a load determined by the method used.

The temperature for polyethylene compounds is 190 °C and for polypropylene compounds it is 230 °C.

NOTE 1 The same method is also specified in ISO 1133 as melt mass-flow rate (MFR) procedure.

NOTE 2 The melt flow index is not applicable to flame retarding polyethylene. Flame retardant polyethylene is defined as polyethylene containing additives intended to reduce flame propagation.

## 4.2 Apparatus

Replace the list item d) by the following new list item d):

### d) Heater

A heater to maintain the compound in the cylinder at the given temperature of  $(190 \pm 0,5)$  °C for polyethylene and of  $(230 \pm 0,5)$  °C for polypropylene. An automatic temperature control is strongly recommended.

## 4.3 Test samples

Replace the first paragraph by the following new text:

The test shall be carried out on granules or a section of insulation or sheath of sufficient mass taken from one end of the cable or wire. In the latter case, the sample shall be cut into pieces, the dimension of which shall not exceed 3 mm in any direction.

## 4.4 Cleaning and maintenance of the apparatus

Replace, in the second paragraph, "polyethylene" by "compound".

### 4.5.2 Test procedure

Replace the first paragraph by the following new text:

The apparatus shall be cleaned (see 4.4). Before beginning a series of tests, the temperature of the cylinder and piston shall be at  $(190 \pm 0,5)$  °C for polyethylene or  $(230 \pm 0,5)$  °C for polypropylene for 15 min and this temperature maintained during the extrusion of the compound.

Replace the NOTE by the following new normal text:

If any other temperature measuring device is used, it should be calibrated at  $(190 \pm 0,5)$  °C for polyethylene or  $(230 \pm 0,5)$  °C for polypropylene before the beginning of each series of tests in comparison with a mercury-in-glass thermometer, conforming to item e) of 4.2, placed within the cylinder and immersed in the compound to its appropriate depth of immersion.

Replace the first sentence of the fourth paragraph with the following new text:

Four minutes after introducing the sample, during which time the temperature of the cylinder shall have returned to  $(190 \pm 0,5)$  °C for polyethylene or  $(230 \pm 0,5)$  °C for polypropylene, the load is placed on the piston to extrude the compound through the die.

#### 4.5.3 Expression of results

*Replace, in the first sentence and formula, "MFI.190.20.A" by "MFI.T.20.A".*

*Replace the NOTE by the following new NOTE:*

NOTE T = temperature of tests, expressed in degrees Celsius; 20 (or 50 for method C) = approximate load, expressed in newtons applied to the melt.

#### 4.6 Method B

*Replace the NOTE by the following new NOTE:*

NOTE This heading is included only for clarity, as it appears in ISO 1133 as melt volume-flow rate (MVR) procedure.

#### 4.7.1 General

*Replace "polyethylene" by "compound"*

#### 4.7.3 Expression of results

*Replace in the first sentence and formula, "MFI.190.50.C" by "MFI.T.50.C".*

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