



SLOVENSKI STANDARD
oSIST prEN IEC 60674-3-3:2023
01-februar-2023

**Plastične folije za električne namene - 3. del: Specifikacije za posamezne materiale
- 3. list: Polikarbonatne (PC) folije, ki se uporabljajo za električno izolacijo**

Plastic films for electrical purposes - Part 3: Specifications for individual materials - Sheet
3: Polycarbonate (PC) films used for electrical insulation

iTeh STANDARD PREVIEW
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Spécification pour les films en matière plastique à usages électriques - Partie 3:
Spécifications pour matériaux particuliers - Feuille 3: Prescriptions pour les films
polycarbonate (PC) utilisés dans l'isolation électrique

Ta slovenski standard je istoveten z: prEN IEC 60674-3-3:2022

ICS:

29.035.20	Plastični in gumeni izolacijski materiali	Plastics and rubber insulating materials
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IEC TC 15 : SOLID ELECTRICAL INSULATING MATERIALS	
SECRETARIAT: United States of America	SECRETARY: Mr Solomon Chiang
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 112	PROPOSED HORIZONTAL STANDARD: <input type="checkbox"/> Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: <input type="checkbox"/> EMC <input type="checkbox"/> ENVIRONMENT <input type="checkbox"/> QUALITY ASSURANCE <input type="checkbox"/> SAFETY	
<input checked="" type="checkbox"/> SUBMITTED FOR CENELEC PARALLEL VOTING <input type="checkbox"/> NOT SUBMITTED FOR CENELEC PARALLEL VOTING	
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TITLE:

Plastic films for electrical purposes - Part 3: Specifications for individual materials - Sheet 3: Polycarbonate (PC) films used for electrical insulation

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NOTE FROM TC/SC OFFICERS:

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

PLASTIC FILMS FOR ELECTRICAL PURPOSES –**Part 3: Specifications for individual materials –
Sheet 3: Polycarbonate (PC) films used for electrical insulation**

FOREWORD

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International Standard IEC 60674-3-3 has been prepared by IEC technical committee 15: Solid electrical insulating materials.

This second edition cancels and replaces the first edition published in 1992. This edition constitutes an editorial revision.

This edition includes the following significant editorial changes with respect to the previous edition:

- a) Title of the standard has been changed to unify the name within the IEC 60674 series;

This second edition:

PLASTIC FILMS FOR ELECTRICAL PURPOSES –
Part 3: Specifications for individual materials

97 Sheet 3: Polycarbonate (PC) films used for electrical insulation

98 The first edition:

99 SPECIFICATION FOR PLASTIC FILMS FOR ELECTRICAL PURPOSES –
100 Part 3: Specifications for individual materials
101 Sheet 3: Requirements for polycarbonate (PC) films used for electrical insulation

102 b) Application of the latest version of IEC Template (Version 7.1);

103 c) Update of normative references.

104 The text of this International Standard is based on the following documents:

FDIS	Report on voting
XX/XX/FDIS	XX/XX/RVD

105

106 Full information on the voting for the approval of this International Standard can be found in
107 the report on voting indicated in the above table.

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

109 A list of all parts in the IEC 60674 series, published under the general title *Plastic films for*
110 *electrical purposes*, can be found on the IEC website.

111 Future standards in this series will carry the new general title as cited above. Titles of existing
112 standards in this series will be updated at the time of the next edition.

113 The committee has decided that the contents of this document will remain unchanged until the
114 stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to
115 the specific document. At this date, the document will be

- 116 • reconfirmed,
- 117 • withdrawn,
- 118 • replaced by a revised edition, or
- 119 • amended.

120

121

INTRODUCTION

122 This standard is one of a series which deals with plastic films for electrical purposes. The
123 series will consist of three parts:

124 Part 1: Definitions and general requirements (IEC 60674-1);

125 Part 2: Methods of test (IEC 60674-2);

126 Part 3: Specifications for individual materials (IEC 60674-3).

127 This standard contains one of the sheets comprising Part 3, as follows:

128 Sheet 3: Polycarbonate (PC) films used for electrical insulation

129

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PLASTIC FILMS FOR ELECTRICAL PURPOSES –

Part 3: Specifications for individual materials – Sheet 3: Polycarbonate (PC) films used for electrical insulation

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137 **1 Scope**

138 This sheet of IEC 60674-3 gives the requirements for polycarbonate films used for electrical
139 insulation.

140 Materials which conform to this specification meet established levels of performance.
141 However, the selection of a material by a user for a specific application can be based on the
142 actual requirements necessary for adequate performance in that application and not based on
143 this specification alone.

144 Safety warning: It is the responsibility of the user of the methods contained or referred to in
145 this document to ensure that they are used in a safe manner.

146 **2 Normative references**

147 The following documents are referred to in the text in such a way that some or all of their
148 content constitutes requirements of this document. For dated references, only the edition
149 cited applies. For undated references, the latest edition of the referenced document (including
150 any amendments) applies.

151 IEC 60674-1, *Specification for plastic films for electrical purposes - Part 1: Definitions and*
152 *general requirements*

153 IEC 60674-2:2016, *Specification for plastic films for electrical purposes - Part 2: Methods of*
154 *test*

155 IEC 60757:2021, *Code for designation of colours*

156 **3 Terms and definitions**

157 For the purposes of this document, the following terms and definitions apply.

158 ISO and IEC maintain terminological databases for use in standardization at the following
159 addresses:

- 160 • IEC Electropedia: available at <http://www.electropedia.org/>
- 161 • ISO Online browsing platform: available at <http://www.iso.org/obp>

162 **4 Classification**

163 The polycarbonate film shall be of the following types:

- 164 – Type 1: General purpose amorphous, unstretched;
- 165 – Type 2: General purpose amorphous, stretched;
- 166 – Type 3: For use as the dielectric of capacitors, partially crystalline and stretched.

167 These three types are available in regular and in flame-retardant types.

168 5 Designation

169 The plastic film shall be identified by the designation which follows:

IEC Publication number	Film name abbreviation	Type	Size			Colour	Flame-retardant or regular
			Thickness [µm]	width [mm]	length [m]		
↓	↓	↓	↓	↓	↓	↓	↓
IEC 60674-3-3	- PC	- Type 1	- 100	- 20	- 200	- nc	- f

170 Any colour abbreviation shall comply with IEC 60757:2021, where applicable. Non-standard
171 colours shall be written out in full.

172 Example: nc = natural colour.

173 The last letter of the designation shall indicate whether it is flame-retardant or regular.

174 Example: f = flame-retardant; r = regular.

175 6 General requirements

176 The material shall be made from bisphenol-A-polycarbonate.

177 Flame-retardant grades shall be made from a blend of bisphenol-A-polycarbonate and
178 brominated bisphenol-A-polycarbonate.

179 The material shall be a flexible, self-supporting film. All types shall conform to the general
180 requirements laid down in IEC 60674-1.

181 For certain applications, additives to the base material may be present (e.g. thermal or UV
182 stabilisers, dyes, or pigments for identification purposes).

183 Where such additives are used, they shall not affect the requirements for any of the properties
184 listed for that type, unless otherwise specified.

185 7 Dimensions

186 7.1 Thickness

187 The film thickness shall be measured by a gravimetric method in accordance with the
188 requirements of 4.3.2 of IEC 60674-2:2016.

189 There are no requirements for thickness in this standard, but preferred thicknesses are as
190 follows:

191 2 µm; 3 µm; 4 µm; 5 µm; 6 µm; 7 µm; 8 µm; 10 µm; 12 µm; 15 µm; 20 µm; 25 µm; 30 µm; 40
192 µm; 50 µm; 60 µm; 75 µm; 80 µm; 100 µm; 120 µm; 125 µm; 150 µm; 180 µm; 200 µm; 250
193 µm; 380 µm; 500 µm and 760 µm.

194 The following thicknesses are commonly available

195

Table 1 – Type and thickness range

Type	Thickness range for all types
	µm
1	20 – 760
2	20 – 100
3	2 – 60

196

197 The thickness tolerance shall comply with the requirements in 4.1 of IEC 60674-1, unless
198 otherwise specified in the purchase contract.

199 7.2 Width

200 The film width shall be measured in accordance with the requirements of clause 6 of IEC
201 60674 2:2016.

202 Preferred widths cannot be given on account of the great variety of applications.

203 The tolerance on the width shall comply with the requirements in 4.2 of IEC 60674-1.

204 7.3 Film length/roll diameter

205 There are no requirements in this document for film lengths or diameters of rolls. These
206 should be subject to purchase contract.

207 8 Properties

208 8.1 Properties not dependent on thickness

209 See Table 2.