

INTERNATIONAL STANDARD

**Specification for plastic films for electrical purposes –
Part 2: Methods of test**



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Specification for plastic films for electrical purposes – Part 2: Methods of test

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International Standard IEC 60674-2 has been prepared by IEC technical committee 15: Solid electrical insulating materials.

This second edition cancels and replaces the first edition published in 1988 and Amendment 1 (2001). This edition constitutes a technical revision.

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

- a) this document was completely revised editorially and technically and included in the IEC 60674 series of standards;
- b) the test methods are updated to reflect today's state of the art;
- c) a method to obtain DC electric strength is now specified according to IEC 60243-2.

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

CDV	Report on voting
15/742/CDV	15/760/RVC

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

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

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

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

INTRODUCTION

This document is one of a series which deals with plastic films for electrical purposes. The series consists of three parts:

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

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

Part 3: Specifications for individual materials (IEC 60674-3 (all parts))

SPECIFICATION FOR PLASTIC FILMS FOR ELECTRICAL PURPOSES –

Part 2: Methods of test

1 Scope

This part of IEC 60674 is applicable to plastic films used for electrical purposes. This part of IEC 60674 gives methods of test.

2 Normative references

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

IEC 60212:2010, *Standard conditions for use prior to and during the testing of solid electrical insulating materials*

IEC 60216 (all parts), *Electrical insulating materials – Thermal endurance properties*

IEC 60243-1:2013, *Electric strength of insulating materials – Test methods – Part 1: Tests at power frequencies*

IEC 60243-2, *Electric strength of insulating materials – Test methods – Part 2: Additional requirements for tests using direct voltage*

IEC 60250:1969, *Recommended methods for the determination of the permittivity and dielectric dissipation factor of electrical insulating materials at power, audio and radio frequencies including metre wavelengths*

IEC 60343, *Recommended test methods for determining the relative resistance of insulating materials to breakdown by surface discharges*

IEC 60394-2:1972, *Varnished fabrics for electrical purposes – Part 2: Methods of test*

IEC 60426, *Electrical insulating materials – Determination of electrolytic corrosion caused by insulating materials – Test methods*

IEC 60454-2:2007, *Pressure-sensitive adhesive tapes for electrical purposes – Part 2: Methods of test*

IEC 60589, *Methods of test for the determination of ionic impurities in electrical insulating materials by extraction with liquids*

IEC TR 60648, *Method of test for coefficients of friction of plastic film and sheeting for use as electrical insulation*

IEC 60674-3 (all parts), *Specification for plastic films for electrical purposes – Part 3: Specifications for individual materials*

IEC 62631-3-1, *Dielectric and resistive properties of solid insulating materials – Part 3-1: Determination of resistive properties (DC methods) – Volume resistance and volume resistivity – General method*

IEC 62631-3-2, *Dielectric and resistive properties of solid insulating materials – Part 3-2: Determination of resistive properties (DC methods) – Surface resistance and surface resistivity*

ISO 527-3:1995, *Plastics – Determination of tensile properties – Part 3: Test conditions for films and sheets*

ISO 534, *Paper and board – Determination of thickness, density and specific volume*

ISO 1183, *Plastics – Methods for determining the density of non-cellular plastics – Part 1: Immersion method, liquid pycnometer method and titration method*

ISO 4591:1992, *Plastics – Film and sheeting – Determination of average thickness of a sample, and average thickness and yield of a roll, by gravimetric techniques (gravimetric thickness)*

ISO 4592, *Plastics – Film and sheeting – Determination of length and width*

ISO 4593, *Plastics – Film and sheeting – Determination of thickness by mechanical scanning*

ISO 6383-1, *Plastics – Film and sheeting – Determination of tear resistance – Part 1: Trouser tear method*

ISO 6383-2, *Plastics – Film and sheeting – Determination of tear resistance – Part 2: Elmendorf method*

ISO 11357-3:2011, *Plastics – Differential scanning calorimetry (DSC) – Part 3: Determination of temperature and enthalpy of melting and crystallization*

3 General notes on tests

3.1 Discard at least the first three layers of film from the roll to be tested before removing test specimens.

3.2 Sample rolls shall be exposed for at least 24 h to the standard atmosphere $23\text{ °C} \pm 2\text{ K}$ and $50\% \pm 5\% \text{ RH}$ before test specimens are removed for test. Unless otherwise specified, all individual test specimens shall be conditioned for 1 h and tested in the same standard atmosphere.

4 Thickness

4.1 General

Thickness shall be measured by any one or more of the methods given below as required by IEC 60674-3 (all parts).

4.2 Determination of thickness by mechanical scanning

4.2.1 General

Two methods, the first using a single sheet and the second using a stack of sheets, are given individually as follows.