
**Plastics — Determination of refractive
index**

Plastiques — Détermination de l'indice de réfraction



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Contents

	Page
Foreword.....	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Apparatus and materials	1
4.1 Method A.....	1
4.2 Method B.....	2
5 Preparation of test specimens	3
5.1 Method A.....	3
5.2 Method B.....	3
5.3 Required number of specimens or measurements.....	3
6 Conditioning	4
7 Procedure	4
7.1 Method A.....	4
7.1.1 General.....	4
7.1.2 Transparent sheet.....	4
7.1.3 Film.....	6
7.1.4 Anisotropic material.....	6
7.1.5 Translucent, coloured and opaque material.....	7
7.2 Method B.....	8
8 Precision	9
9 Test report	9
Annex A (informative) Precision data	10
Bibliography	12

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 5, *Physical-chemical properties*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 249, *Plastics*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 489:1999), which has been technically revised.

The main changes compared to the previous edition are as follows:

- in the Scope, the description about the precision of the explanation of the method A and method B has been deleted;
- normative references have been updated;
- the definition of the temperature control device of method A has been changed;
- the text of [Clause 8](#), Precision, has been moved to [Annex A](#);
- in [Clause 9](#), the type of the immersing liquid used in method B has been added;
- the document has been editorially revised.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Plastics — Determination of refractive index

1 Scope

This document specifies two test methods for determining the refractive index of plastics, namely:

- Method A: a refractometric method for measuring the refractive index of moulded parts, cast or extruded sheet or film, by means of a refractometer. It is applicable not only to isotropic transparent, translucent, coloured or opaque materials but also to anisotropic materials.
- Method B: an immersion method (making use of the Becke line phenomenon) for determining the refractive index of powdered or granulated transparent materials by means of a microscope. Monochromatic light, in general, is used to avoid dispersion effects.

NOTE The refractive index is a fundamental property which can be used for checking purity and composition, for the identification of materials and for the design of optical parts. The change in refractive index with temperature can give an indication of transition points of materials.

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.

ISO 291, *Plastics — Standard atmospheres for conditioning and testing*

3 Terms and definitions

No terms and definitions are listed in this document.

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

4 Apparatus and materials

4.1 Method A

4.1.1 Abbe refractometer, or any other refractometer that can be shown to give the same results, accurate to 0,001 and capable of measuring the refractive index in the range from 1,300 to 1,700. A temperature-controlling device (4.1.4) shall be provided for the specimens and prisms.

4.1.2 White or sodium lamp, used as a source of light.

4.1.3 Contacting liquid.

WARNING — The contacting liquid may present an environmental hazard during handling, storage and disposal. It is the responsibility of the user of this document to verify its toxicity and establish national and regional regulations for safe handling and disposal.