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Plastics — Determination of the total luminous transmittance of transparent materials —

Part 1: Single-beam instrument

Plastiques — Détermination du facteur de transmission du flux lumineux total des matériaux transparents —

Partie 1: Instrument à faisceau unique

Reference number
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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).

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For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 5, *Physical-chemical properties*.

This second edition cancels and replaces the first edition (ISO 13468-1:1996), of which it constitutes a minor revision. The changes compared to the previous edition are as follows:

— the format of figures has been revised;

— the normative references have been revised;

— editorial changes have been applied.

A list of all parts in the ISO 13468 series can be found on the ISO website.

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Plastics — Determination of the total luminous transmittance of transparent materials —

Part 1: Single-beam instrument

1 Scope

This document covers the determination of the total luminous transmittance, in the visible region of the spectrum, of planar transparent and substantially colourless plastics, using a single-beam photometer with a specified CIE Standard light source and photodetector. This document cannot be used for plastics which contain fluorescent materials.

This document is applicable to transparent moulding materials, films and sheets not exceeding 10 mm in thickness.

NOTE 1 Total luminous transmittance can also be determined by a double-beam spectrophotometer as in ISO 13468-2. This document, however, provides a simple but precise, practical and quick determination. This method is suitable for use not only for analytical purposes but also for quality control.

NOTE 2 Substantially colourless plastics include those which are faintly tinted.

NOTE 3 Specimens more than 10 mm thick can be measured provided the instrument can accommodate them, but the results might not be comparable with those obtained using specimens less than 10 mm thick.

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*

ISO 5725-1, *Accuracy (trueness and precision) of measurement methods and results — Part 1: General principles and definitions*

ISO 5725-2, *Accuracy (trueness and precision) of measurement methods and results — Part 2: Basic method for the determination of repeatability and reproducibility of a standard measurement method*

ISO 5725-3, *Accuracy (trueness and precision) of measurement methods and results — Part 3: Intermediate measures of the precision of a standard measurement method*

ISO 11664-1, *Colorimetry — Part 1: CIE standard colorimetric observers*

ISO 11664-2, *Colorimetry — Part 2: CIE standard illuminants*

CIE Publication No. 15, *Colorimetry*

CIE Publication No. 17, *CIE International lighting vocabulary*[1)]

1) Also published as IEC 60050-845.

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3 Terms and definitions

For the purposes of this document, the terms and definitions given in CIE Publication No. 17 and the following apply.

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 http://www.electropedia.org/

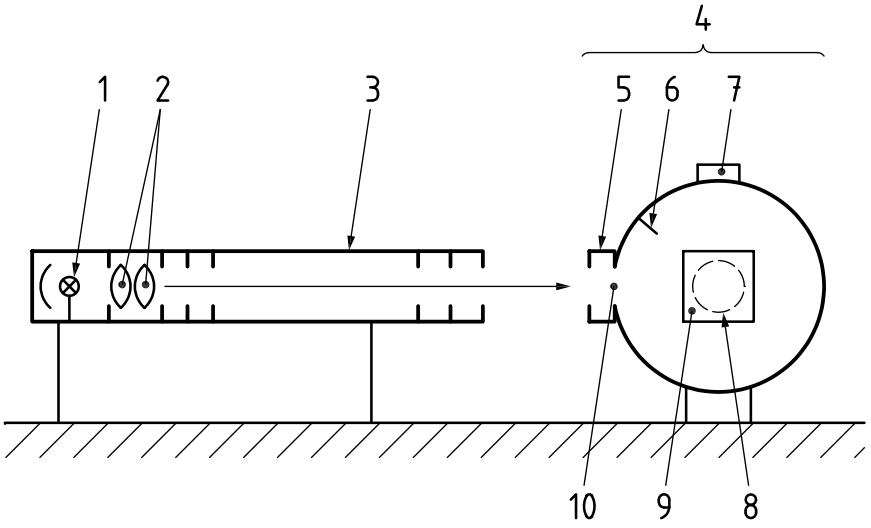
3.1
transparent plastics
plastics in which the transmission of light is essentially regular and which have a high transmittance in the visible region of the spectrum

Note 1 to entry: Provided their geometrical shape is suitable, objects will be seen distinctly through plastic which is transparent in the visible region.

3.2
total luminous transmittance
ratio of the transmitted luminous flux to the incident luminous flux when a parallel beam of light passes through a specimen

4 Apparatus

4.1 The apparatus shall consist of a stabilized light source, an associated optical system, an integrating sphere fitted with ports, and a photometer. Ingress of external light into the integrating sphere shall be prevented. A schematic arrangement of the apparatus is shown in Figure 1.



Key

1	lamp	6	baffle
2	condensing lens	7	photodetector
3	collimator tube	8	compensation port
4	integrating sphere	9	light trap
5	specimen holder	10	entrance port

Figure 1 — Schematic arrangement of the apparatus

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