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**Optics and optical instruments —  
Measurement of reflectance of plane  
surfaces and transmittance of plane parallel  
elements**

*Optique et instruments d'optique — Méthode de mesurage de la réflectance  
des surfaces planes et de la transmittance des éléments à plan parallèle*



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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 15368 was prepared by Technical Committee ISO/TC 172, *Optics and optical instruments*, Subcommittee SC 1, *Fundamental standards*.

Annexes A and B of this International Standard are for information only.

## Introduction

Measurements of reflectance and transmittance using spectrophotometers are the most fundamental methods for the characterization of optical components. Since the spectrophotometric methods are basic and normal, they are extensively used and further give measurement data for a wide range of wavelengths.

This International Standard describes the measurement of reflectance and transmittance using spectrophotometers which provides data with high reproducibility and repeatability.

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# Optics and optical instruments — Measurement of reflectance of plane surfaces and transmittance of plane parallel elements

## 1 Scope

This International Standard gives rules for the measurement of the spectral reflectance of plane surfaces and spectral transmittance of plane parallel elements using spectrophotometers over the spectral range 190 nm to 25 µm.

The transmittance  $\tau$  and the reflectance  $\rho$  of optical components are generally divided into two parts as follows:

$$\tau = \tau_r + \tau_d \quad (1)$$

$$\rho = \rho_r + \rho_d \quad (2)$$

where

$\tau_r$  is the regular transmittance;

$\tau_d$  is the diffuse transmittance;

$\rho_r$  is the regular reflectance;

$\rho_d$  is the diffuse reflectance.

This International Standard applies only to measurements of the regular transmittance and the regular reflectance; it does not apply to those of the diffuse transmittance and the diffuse reflectance.

This International Standard is applicable to test specimens which are coated or uncoated optical components without optical power.

## 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

IEC 60050-845:1987, *International Electrotechnical Vocabulary — Chapter 845: Lighting*

ISO 31-6:1992, *Quantities and units — Part 6: Light and related electromagnetic radiations*

ISO 9211-1:1994, *Optics and optical instruments — Optical coatings — Part 1: Definitions*

ISO 9211-2:1994, *Optics and optical instruments — Optical coatings — Part 2: Optical properties*

ISO 10110-8:1997, *Optics and optical instruments — Preparation of drawings for optical elements and systems — Part 8: Surface texture*