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Optics and photonics — Optical coatings —

Part 2: Optical properties

Optique et photonique — Traitements optiques —
Partie 2: Propriétés optiques

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Foreword

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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 document 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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This document was prepared by Technical Committee ISO/TC 172, *Optics and Photonics*, Subcommittee SC 3, *Optical materials and components*.

This third edition cancels and replaces the second edition (ISO 9211-2:2010), which has been technically revised.

The main changes are as follows:

— additional symbols (T, R, and A) for transmittance, reflectance and absorption added;

— definitions have been provided for average spectral characteristics;

— default wavelength units of nm added;

— more examples are provided;

— text added and modified for clarity;

— the use of the symbols of Annex A have been generalized.

A list of all parts in the ISO 9211 series can be found on the ISO website.

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.

Optics and photonics — Optical coatings —

Part 2: Optical properties

1 Scope

This document indicates how to specify optical properties of coatings and to represent their spectral characterization graphically in the ISO 9211 series, which defines the specifications for optical coatings excluding ophthalmic optics (spectacles). It defines the general characteristics and the test and measurement methods whenever necessary, but is not intended to define the process method.

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 9211-1, *Optics and photonics — Optical coatings — Part 1: Vocabulary*

ISO 15368, *Optics and photonics — Measurement of reflectance of plane surfaces and transmittance of plane parallel elements1*

ISO 19962, *Optics and photonics — Spectroscopic measurement methods for integrated scattering by plane parallel optical elements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 9211-1 and the following terms and definitions apply.

ISO and IEC maintain terminology 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 Optical properties to be specified

When specifying optical properties, the refractive indices of the incident medium and the emergent medium shall be given. The polarization state of the incident radiation shall also be indicated if the angle of incidence, θ, is different from zero or a range of angles of incidence is given. If there is no indication of polarization, unpolarized radiation is assumed.

The optical properties $\tau(\lambda)$, $\rho(\lambda)$, $\alpha(\lambda)$ (or alternatively $T(\lambda)$, $R(\lambda)$ and $A(\lambda)$), $D(\lambda)$ and $\Delta\Phi(\lambda)$ of a coating shall be specified by using the formulation given and explained in 6.2 in order to provide a comprehensive description of a coating with regard to its minimum set of optical properties. Other optical properties such as scattering or colorimetric parameters etc. shall be subject to agreement between manufacturer and customer if appropriate.

If the coating optical properties are required to be achieved at a specific temperature or range of temperatures, this shall be indicated with a note.