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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

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 2.

The main task of technical committees is to prepare International Standards. 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 document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 9211-2 was prepared by Technical Committee ISO/TC 172, *Optics and photonics*, Subcommittee SC 3, *Optical materials and components*.

This second edition cancels and replaces the first edition (ISO 9211-2:1994) which has been technically revised.

ISO 9211 consists of the following parts, under the general title *Optics and photonics — Optical coatings*:

- *Part 1: Definitions*
- *Part 2: Optical properties*
- *Part 3: Environmental durability*
- *Part 4: Specific test methods*

# Optics and photonics — Optical coatings —

## Part 2: Optical properties

### 1 Scope

ISO 9211 identifies surface treatments of components and substrates excluding ophthalmic optics (spectacles) by the application of optical coatings and gives a standard form for their specification. It defines the general characteristics and the test and measurement methods whenever necessary, but is not intended to define the process method.

This part of ISO 9211 indicates how to specify optical properties of coatings and to represent their spectral characterization graphically.

### 2 Normative references

The following referenced documents are indispensable for the application 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: Definitions*

### 3 Terms and definitions

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

### 4 Optical properties to be specified

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

The optical properties  $\tau(\lambda)$ ,  $\rho(\lambda)$ ,  $\alpha(\lambda)$ ,  $D(\lambda)$  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 like scattering or colorimetric parameters etc. shall be subject to agreement between supplier and user if appropriate.

### 5 Measurement conditions

The measurement conditions for the spectrophotometric characterization shall be subject to agreement between supplier and user. These conditions depend on the principle of the measurement method and the instruments used, including the angle of incidence, the state of polarization, the spectral range and bandwidth