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Optics and photonics — Optical materials and components — Test method for refractive index of infrared optical materials

Optique et photonique — Matériaux et composants optiques — Méthode d'essai de l'indice de réfraction des matériaux optiques infrarouges

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Contents

Page

Foreword

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The committee responsible for this document is ISO/TC 172, *Optics and photonics*, Subcommittee SC 3, *Optical materials and components*.

Introduction

This International Standard applies to the measurement of relative refractive index to the air for infrared optical materials.

Two major methods for measuring the refractive index of infrared materials exist. These are interferometric methods and minimum deviation methods. In this International Standard, a test method using minimum deviation for infrared materials is described, which is also used in the visible spectral range. It has the advantages of being applicable to more kinds of materials compared with interferometric methods and of ease of data processing because of the simple measurement principle.

Optics and photonics — Optical materials and components — Test method for refractive index of infrared optical materials

1 Scope

This International Standard provides a standard method for measuring the relative refractive index to the air of infrared materials used in the infrared spectral range from 0,78 μm to 25 μm.

The scope of this International Standard excludes methods for measuring the refractive index of birefringent materials and methods for measuring the complex refractive index.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 11382:2010, *Optics and photonics — Optical materials and components — Characterization of optical materials used in the infrared spectral range from 0,78 μm to 25 μm*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
refractive index
absolute refractive index
ratio of the velocity of the electromagnetic waves at a specific wavelength in a vacuum to the velocity of the waves in the material

[SOURCE: ISO 12123:2010, 3.1]

3.2
relative refractive index
ratio of the (absolute) refractive index of the material of the specimen to the (absolute) refractive index of the material in contact with the specimen at a specific wavelength

3.3
angle of minimum deviation
angle between the ray incident upon the specimen prism and the ray exiting the specimen prism at its minimum value, which occurs when the ray inside the specimen prism makes equal angles with the entrance and exit faces of the specimen prism

4 Method for measuring

4.1 General

In this International Standard, the technique of the minimum deviation method for measuring refractive index is described.

The minimum deviation method shall be applied for measuring refractive index.