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Optique et photonique — Matériaux et composants optiques — Méthodes d'essai pour déterminer les impuretés des matériaux optiques infrarouges

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Foreword

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

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Optics and photonics — Optical materials and components — Test method for bubbles and inclusions in infrared optical materials

1 Scope

This document specifies the apparatus, condition, sample, procedure and data processing of measuring bubbles and inclusions in infrared optical materials.

It is applicable to the determination of bubbles and inclusions in infrared optical materials, such as infrared optical glass, infrared crystals and infrared ceramics, which are opaque to visible wavelengths and whose transmission optical spectra are beyond 0,78 μm.

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 10110-8, *Optics and photonics — Preparation of drawings for optical elements and systems — Part 8: Surface texture; roughness and waviness*

3 Terms and definitions

For the purposes of this document, the following terms and definitions 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
bubble
gaseous voids in the bulk infrared glass and ceramics materials, of generally circular cross section

3.2
inclusion
all localized bulk infrared material defects of generally circular cross section

EXAMPLE Small knots, small stones, sand and crystals.

3.3
material imperfection value
total sum of the cross-sectional area of *bubbles* (3.1) and *inclusions* (3.2) per 100 cm^3 of a sample

4 Principle

The principle of this test is to measure bubbles and inclusions by utilizing a diffuse infrared light source to illuminate the test sample, calculate their number and sum up their cross-sectional areas per unit volume. A schematic diagram of the measurement of bubbles and inclusions is shown in Figure 1.

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