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

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

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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 second edition cancels and replaces the first edition (ISO 19741:2018), which has been technically revised.

The main changes are as follows:

— editorial changes throughout the document.

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.

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

1 Scope

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

It is applicable for the determination of striae in infrared optical materials, such as infrared optical glass, which is 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 10110-7, *Optics and photonics — Preparation of drawings for optical elements and systems — Part 7: Surface imperfections*

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

3 Terms and definitions

For the purposes of this document, 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/

3.1
striae in infrared optical material
internal imperfections of an infrared material appearing as wavy distortions, usually representing a localized variation in refractive index

3.2
striae value
average grey level of striae multiplying the percentage of striae area per thickness of infrared optical materials

4 Principle

The principle of this test is to illuminate a sample with collimated infrared radiation and image the material in a Schlieren or projection imaging system. The striae will be imaged and measured, and then the area and the product of striae area percentage to the mean grey level will be calculated. When the projection optical system is adjusted to a beam-contracting telescope system, it is known as a projection measurement system, and when the projection optical system is adjusted to a camera system which utilizes a knife edge device, it is known as a Schlieren measurement system. The schematic diagram of striae measurement in infrared optical materials is shown in Figure 1.

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