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Optics and photonics — Optical materials and components — Specification of calcium fluoride used in the infrared spectrum

Optique et photonique — Matériaux et composants optiques — Spécification de fluorure de calcium utilisé dans le spectre infrarouge

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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*.

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.

Introduction

This document applies to the classification of calcium fluoride used in the infrared spectrum.

Calcium fluoride is used for infrared optical systems such as optical windows and lenses. The specifications for its use in the infrared spectrum are different than those used in the visible range.

The crystal structure of calcium fluoride is referred to as the fluorite structure. A single crystal of calcium fluoride is composed of the crystal lattice with no grain boundaries. The birefringence of the crystal depends on the light propagation direction with respect to the crystal axis.

Optics and photonics — Optical materials and components — Specification of calcium fluoride used in the infrared spectrum

1 Scope

This document specifies calcium fluoride used in the infrared spectral range from 0,78 µm to 10 µm.

The material specified in this document can also transmit light in other spectral domains (ultraviolet and visible).

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 10110-18, *Optics and photonics — Preparation of drawings for optical elements and systems — Part 18: Stress birefringence, bubbles and inclusions, homogeneity, and striae*

ISO 12123, *Optics and photonics — Specification of raw optical glass*

ISO 80000-7, *Quantities and units — Part 7: Light and radiation*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 80000-7 and the following 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
regular transmittance
ratio of the regularly transmitted part of the (whole) transmitted flux to the incident flux

[SOURCE: ISO 11382:2010, 3.1]

3.2
internal transmittance
ratio of the radiation flux reaching the internal exit surface of the layer to the flux that enters into the layer after crossing the entry surface

[SOURCE: ISO 15368:2001, 3.3]

3.3
optical homogeneity
measure of the refractive index variation within a single piece of optical material and being the difference between the maximum and minimum values of the refractive index within the optical glass

[SOURCE: ISO 12123:2018, 3.16]