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Optics and photonics — Optical materials and components — Test method for homogeneity of optical glasses by laser interferometry

Optique et photonique — Matériaux et composants optiques — Méthode d'essai d'homogénéité des verres optiques par interférométrie laser

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Contents

Page

Foreword ..... **iv**
Introduction ..... **v**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
4 Principle **2**
5 Measuring apparatus **2**
5.1 General 2
5.2 Laser interferometer 3
5.3 Interferogram analysis device 3
5.4 Thermostatic chamber 3
5.5 Vibration isolation device 3
5.6 Biaxial adjustment platform 3
6 Preparation of test part **4**
6.1 General 4
6.2 Transmission method 4
6.3 PHom method 4
6.4 Oil-on plate method 4
6.5 FT-PSI and SCI method 4
7 Operation **4**
8 Measurement **5**
8.1 General 5
8.2 Transmission method 5
8.3 PHom method 5
8.4 Oil-on plate method 6
8.5 FT-PSI method and SCI method 6
9 Calculation **6**
10 Test report **7**
10.1 Requirements 7
10.2 Optional 7
Annex A (informative) **Laser interferometer** **8**
Annex B (informative) **Temperature stability for homogeneity measurements** **11**
Annex C (normative) **Measurement using oil-on plate method** **14**
Annex D (informative) **Flatness of the test part** **19**
Annex E (informative) **Method for obtaining W_{PV}** **20**
Annex F (informative) **Measurement using PHom (Polished test part Homogeneity) method** **22**
Annex G (normative) **Method that can measure the linear change among the refractive index variations** **24**
Bibliography **27**

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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 documents 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 17411:2014), which has been technically revised.

The main changes are as follows:

— the PHom method was added;

— the FT-PSI method and the SCI method were added;

— the linear change of the refractive index is described as an evaluation target.

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Introduction

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Optics and photonics — Optical materials and components — Test method for homogeneity of optical glasses by laser interferometry

1 Scope

This document specifies the measuring method for the homogeneity of the refractive index of optical glasses by laser interferometry to cope with the grades from ISO 10110-18 and ISO 12123.

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 80000-1, *Quantities and units — Part 1: General*

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
homogeneity of the refractive index
peak to valley (PV) of the refractive index variation within the predetermined area in a single test part

3.2
index-matching liquid
transparent liquid with the refractive index which is equivalent or approximate to the refractive index of a test part at the wavelength of the laser to be used and the measurement temperature

3.3
oil-on plate
plane plate, used for flatness correction, obtained by polishing an optical glass, which is attached to a test part by using an *index-matching liquid* (3.2) (where the index matching liquid is sometimes called "oil") as an intermediate liquid

3.4
peak to valley of wavefront
PV value of wavefront
W_{PV}
maximum minus the minimum value of the wavefront in the observation range, as observed by the interferometer when light passes through the test part under test once

Note 1 to entry: W_{PV} is analogous to the peak to valley of f_{WD} in ISO 14999-4[3].

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