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Optics and photonics — Preparation of drawings for optical elements and systems —

Part 16: Diffractive surfaces

Optique et photonique — Indications sur les dessins pour éléments et systèmes optiques —

Partie 16: Surfaces diffractives

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 172, *Optics and photonics*, Subcommittee SC 1, *Fundamental standards*.

A list of all parts in the ISO 10110 series can be found on the ISO website.

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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Introduction

A diffractive surface contains diffractive structures (see Annex A), which are very small structures on or in the surface which use the wave properties of the light and work with diffraction and interference. The diffractive optical function is realized by relief structures on or in the surface or by variations of the index of refraction in the coating material. Diffractive surfaces may be also situated inside of optical assemblies.

Due to the large variety of diffractive optical elements for many purposes, this document is divided in several sub clauses. Common diffractive properties and specifications will be described in the beginning of this document. Specific properties and specifications of several basic types are described in the Annex to this document.

The three most applied types of diffractive structures are linear diffractive structures, concentric circular structures and more complex computer generated diffractive structures.

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Optics and photonics — Preparation of drawings for optical elements and systems —

Part 16: Diffractive surfaces

1 Scope

This document provides general methods of describing surfaces adding a diffractive optical function on optical surfaces, such as planes, spheres, aspheres or general optical surfaces, in the ISO 10110 series, which standardizes drawing indications for optical elements and systems. The subject of this document is the presentation, description and dimensioning of diffractive surfaces in technical drawings.

This document does not apply to diffractive surfaces with random surface texture, for example stochastic antireflective structures. Also not addressed by this document are all types of 3-dimensionally extended diffractive structures: Bragg gratings, volume holograms (HOE) and acousto-optic modulators.

This document does not address the methods to test and qualify the specifications.

This document does not address tools and methods for manufacturing diffractive surfaces.

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 10110-1, *Optics and photonics — Preparation of drawings for optical elements and systems — Part 1: General*

ISO 10110-5, *Optics and photonics — Preparation of drawings for optical elements and systems — Part 5: Surface form tolerances*

ISO 10110-14, *Optics and photonics — Preparation of drawings for optical elements and systems — Part 14: Wavefront deformation tolerance*

ISO 15902, *Optics and photonics — Diffractive optics — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 15902 and the following apply.

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/

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