BS ISO 10110-7:2017

BSI Standards Publication

# Optics and photonics - Preparation of drawings for optical elements and systems

Part 7: Surface imperfections

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# National foreword

This British Standard is the UK implementation of ISO 10110-7:2017. It supersedes BS ISO 10110-7:2008, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee CPW/172, Optics and Photonics.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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INTERNATIONAL STANDARD

# ISO 10110-7

Third edition
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# Optics and photonics — Preparation of drawings for optical elements and systems —

## Part 7: Surface imperfections

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

*Partie 7: Imperfections de surface*

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# Contents

Page

**Foreword** ..... **iv**
**Introduction** ..... **v**
**1 Scope** ..... **1**
**2 Normative references** ..... **1**
**3 Terms and definitions** ..... **1**
**4 Indication in drawings** ..... **3**
4.1 General ..... 3
4.2 Dimensional specification method for optical elements and assemblies ..... 3
4.2.1 Maximum permissible surface imperfections ..... 3
4.2.2 Surface imperfection indication for the dimensional specification method ..... 6
4.2.3 Imperfections with a smaller grade number in the dimensional specification method ..... 6
4.2.4 Concentrations of surface imperfections in the dimensional specification method ..... 6
4.2.5 Test methods for the dimensional specification method ..... 7
4.3 Visibility specification method for optical elements and assemblies ..... 7
4.3.1 Maximum permissible surface imperfections ..... 7
4.3.2 Visibility specification imperfections with smaller grade number ..... 10
4.3.3 Concentrations of visibility imperfections ..... 10
4.3.4 Test method for visibility ..... 10
4.4 Location of the indication ..... 10
**Bibliography** ..... **12**

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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).

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).

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For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

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

This third edition cancels and replaces the second edition (ISO 10110-7:2008), which has been technically revised.

The main changes compared to the previous edition are as follows:

— an additional notation has been added which allows the specification of a maximum allowable width for imperfections;

— long imperfection accumulation rules have been corrected to coincide with the Renard series of grades;

— the rules for determining concentrations have been clarified;

— the test method notations and meanings have been clarified;

— an additional notation has been added which allows the use of the popular scratch and dig specification for cosmetic surface imperfections;

— in addition, several changes have been made to bring this document into alignment with the inspection methods for surface imperfections which are described in ISO 14997, and various editorial corrections have been made throughout this document.

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


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# Introduction

A localized surface imperfection, such as a dig or a scratch resulting from handling or manufacture, can degrade the perceived quality of an optical component. In some cases, surface imperfections are specified according to their visibility, and in other cases, according to their size.

Visual dark field inspection reveals the location of very small imperfections. The use of a brightness comparison standard, together with tolerance levels agreed upon by the manufacturer and user, permits classification of an imperfection as acceptable or unacceptable. This form of subjective inspection based on visibility or a visual assessment of brightness or apparent size, although economical and fast, lacks precision.

In cases where the size, and not the brightness, is important, surface imperfections are specified according to their affected area (dimensional assessment). In this case, visual assessment using a dimensional comparison standard is still possible, but lacks the precision required for some applications. Measurement is only required as a second stage operation following a visual inspection to determine location and to select a surface imperfection worthy of study. In such cases, a drawing notation indicating this level of inspection is required and can be added to the specification.

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