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

## Part 11: Non-toleranced data

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

*Partie 11: Données non tolérancées*



Reference number  
ISO 10110-11:2016(E)

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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](http://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](http://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 on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 172, *Optics and photonics*, Subcommittee SC 1, *Fundamental standards*.

This second edition cancels and replaces the first edition (ISO 10110-11:1996), which has been technically revised.

It also incorporates the Corrigendum (ISO 10110-11:1996/Cor.1:2006).

The following changes were made.

- a) Additional categories have been added for categories not included in the former version. New parameters specified are clear aperture to part edge, mean index of refraction tolerance, and Abbe number error. Some terminology has also been updated as well.
- b) Some numbers have been updated to reflect common shop practice, with the intent that the numbers given here represent "loose" values for traditional optical fabrication processes at given sizes. This part of ISO 10110 covers cases where numbers are not included and assuming less stringent requirements is the default for non-toleranced data.
- c) Referenced normative and other ISO 10110 documents have been updated appropriately.

ISO 10110 consists of the following parts, under the general title *Optics and photonics — Preparation of drawings for optical elements and systems*:

- *Part 1: General*
- *Part 2: Material imperfections — Stress birefringence*
- *Part 3: Material imperfections — Bubbles and inclusions*
- *Part 4: Material imperfections — Inhomogeneity and striae*
- *Part 5: Surface form tolerances*
- *Part 6: Centring tolerances*

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- *Part 7: Surface imperfection tolerances*
- *Part 8: Surface texture; roughness and waviness*
- *Part 9: Surface treatment and coating*
- *Part 10: Table representing data of optical elements and cemented assemblies*
- *Part 11: Non-toleranced data*
- *Part 12: Aspheric surfaces*
- *Part 14: Wavefront deformation tolerance*
- *Part 17: Laser irradiation damage threshold*
- *Part 19: General description of surfaces and components*

## Introduction

Non-toleranced data covers cases where information required to fabricate optical components is not included on drawings. It is effectively the default values for the standard, dependent on size of the optic for many of the values. Because these values are the default, they are intentionally chosen to be values deemed as loose fabrication requirements for industry. These values do not represent absolute limits, however, and can be made looser for given drawings and application.

The current revision is an update to the 1996 edition of this part of ISO 10110. This version includes a few additional parameters and has magnitudes of some values updated. The values are intended to represent reasonable loose quantities for current standard practice optical fabrication with traditional methodology. Although it is quite difficult to come up with universal values representing such standard practice, it is important to have quantities defined as defaults for cases where such information is not included on drawings, whether unintentional or by design choice.