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NSAI Standards

Irish Standard
I.S. EN ISO 11151-1:2015

Lasers and laser-related equipment - Standard optical components - Part 1: Components for the UV, visible and near-infrared spectral ranges (ISO 11151-1:2015)

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This document is based on:	*Published:*
EN ISO 11151-1:2015	2015-07-08

This document was published under the authority of the NSAI and comes into effect on:	ICS number:
2015-07-25	31.260
	NOTE: If blank see CEN/CENELEC cover page

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 11151-1

July 2015

ICS 31.260

Supersedes EN ISO 11151-1:2000

English Version

Lasers and laser-related equipment - Standard optical components - Part 1: Components for the UV, visible and near-infrared spectral ranges (ISO 11151-1:2015)

Lasers et équipements associés aux lasers - Composants optiques standards - Partie 1: Composants pour les plages spectrales UV, visible et proche de l'infrarouge (ISO 11151-1:2015)

Laser und Laseranlagen - Optische Standardkomponenten - Teil 1: Komponenten für den UV-, den sichtbaren und den nah-infraroten Spektralbereich (ISO 11151-1:2015)

This European Standard was approved by CEN on 28 February 2015.

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Eurpean foreword

This document (EN ISO 11151-1:2015) has been prepared by Technical Committee ISO/TC 172 "Optics and photonics" in collaboration with Technical Committee CEN/TC 123 “Lasers and photonics” the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2016, and conflicting national standards shall be withdrawn at the latest by January 2016.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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INTERNATIONAL STANDARD

ISO 11151-1

Second edition
2015-07-01

Lasers and laser-related equipment — Standard optical components —

Part 1: Components for the UV, visible and near-infrared spectral ranges

Lasers et équipements associés aux lasers — Composants optiques standards —

Partie 1: Composants pour les plages spectrales UV, visible et proche de l'infrarouge

Reference number
ISO 11151-1:2015(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).

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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 9, *Electro-optical systems*.

This second edition cancels and replaces the first edition (ISO 11151-1:2000), which has been technically revised with the following changes:

— Clause 2 was revised;

— Clause 4 was changed to align with Clause 2;

— the "Class A surface imperfection" values in Tables 2 to 6 were revised;

— the "Major edge length" and "Thickness" values in Table 7 were revised;

— the "Edge thickness" and "Centre thickness" values in Table 8 were revised;

— the "Edge thickness" in Table 9 were revised;

— Figure 1 was revised.

ISO 11151 consists of the following parts, under the general title *Lasers and laser-related equipment — Standard optical components*:

— *Part 1: Components for the UV, visible and near-infrared spectral ranges*

— *Part 2: Components for the infrared spectral range*

Annex A of this part of ISO 11151 is for information only.

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Introduction

Lasers are used in a wide variety of applications, including medicine, materials processing, information technology, and metrology. Most lasers contain optical windows and mirrors (intracavity) and most laser systems use a variety of windows, beamsplitters, deflectors, mirrors, and lenses. Those components used in high power laser applications have to withstand high peak power and/or energy densities to avoid laser-induced damage, thus their component specifications are more demanding than those used in low power applications.

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Lasers and laser-related equipment — Standard optical components —

Part 1: Components for the UV, visible and near-infrared spectral ranges

1 Scope

This part of ISO 11151 specifies requirements for laser components used in the ultraviolet, visible, and near infrared spectral ranges, from wavelengths 170 nm to 2 100 nm, and facilitates the supply of spare parts

— by specifying preferred dimensions and tolerances, thereby reducing the variety of types,

— by standardizing the specifications and removing barriers to trade, and

— by establishing an agreed designation for item orders.

This part of ISO 11151 covers planar, plano-spherical and spherical substrates, lenses, and optical components that are designed specifically as standardized optical components normally offered through a catalogue from suppliers and intended for use with lasers.

This part of ISO 11151 includes component descriptions, materials employed, physical dimensions, and manufacturing tolerances (including surface finish, figure, and parallelism). Although most, but not all, of these components are coated (fully reflecting, partially reflecting or anti-reflecting) before incorporation into the laser system, this part of ISO 11151 does not include recommendations for the specification of coatings.

NOTE The optical components used in the infrared spectral range (>2 100 nm) is referred to ISO 11151-2. The specification and testing of optical coatings is referred to ISO 9211 (all parts).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 9211-1, *Optics and photonics — Optical coatings — Part 1: Definitions*

ISO 9211-2, *Optics and photonics — Optical coatings — Part 2: Optical properties*

ISO 10110-1:2006, *Optics and photonics — Preparation of drawings for optical elements and systems — Part 1: General*

ISO 10110-2, *Optics and optical instruments — Preparation of drawings for optical elements and systems — Part 2: Material imperfections — Stress birefringence*

ISO 10110-3, *Optics and optical instruments — Preparation of drawings for optical elements and systems — Part 3: Material imperfections — Bubbles and inclusions*

ISO 10110-4, *Optics and optical instruments — Preparation of drawings for optical elements and systems — Part 4: Material imperfections — Inhomogeneity and striae*

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