

<b>STN</b>	<b>Lasery a laserové zariadenia</b> <b>Skúšobné metódy parametrov zväzku laserových</b> <b>lúčov</b> <b>Polarizácia (ISO 12005: 2022)</b>	<b>STN</b> <b>EN ISO 12005</b>  19 2016
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Lasers and laser-related equipment - Test methods for laser beam parameters - Polarization (ISO 12005:2022)

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 08/22

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English Version

## Lasers and laser-related equipment - Test methods for laser beam parameters - Polarization (ISO 12005:2022)

Lasers et équipements associés aux lasers - Méthodes  
d'essai des paramètres du faisceau laser - Polarisation  
(ISO 12005:2022)

Laser und Laseranlagen - Prüfverfahren für  
Laserstrahlparameter - Polarisation (ISO 12005:2022)

This European Standard was approved by CEN on 21 May 2022.

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**EN ISO 12005:2022 (E)**

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## **European foreword**

This document (EN ISO 12005:2022) 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of an identical text or by endorsement, at the latest by December 2022, and conflicting national standards shall be withdrawn at the latest by December 2022.

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

This document supersedes EN ISO 12005:2003.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## **Endorsement notice**

The text of ISO 12005:2022 has been approved by CEN as EN ISO 12005:2022 without any modification.

INTERNATIONAL  
STANDARD

ISO  
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2022-05

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**Lasers and laser-related equipment —  
Test methods for laser beam  
parameters — Polarization**

*Lasers et équipements associés aux lasers — Méthodes d'essai des  
paramètres du faisceau laser — Polarisation*



Reference number  
ISO 12005:2022(E)

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## ISO 12005:2022(E)

### 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 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](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 172, *Optics and Photonics*, Subcommittee SC 9, *Laser and electro-optical systems*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 123, *Lasers and photonics*, in accordance with the agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 12005:2003), which has been technically revised.

The main changes are as follows:

- Description errors in [4.5](#) (Analysis of the results) were corrected.
- Definitions of the “degree of polarization” and the “degree of linear polarization” were made clear.
- Definition of extinction ratio was changed.
- Previous [3.3](#) (direction of polarization), [3.4](#) (plane of polarization), and [3.5](#) (ellipticity) were deleted, because these terms are confusing due to the different definitions, and they are not necessarily required for this document. Previous 3.11 (Stokes parameters) was deleted and moved to [Annex A](#), because they are not used in the measurement and analysis.

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](http://www.iso.org/members.html).



## Introduction

This document deals with a method for determining the polarization state of a laser beam.

This document is applicable for well-polarized laser beams, including those emitted by lasers with a high divergence angle. However, if more completeness in the determination of the polarization status is required, the use of a more sophisticated analysing device is necessary. Although not within the scope of this document, the principle of operation of such devices is given in [Annex A](#), together with a description of the Stokes parameters which are needed in that case.

# Lasers and laser-related equipment — Test methods for laser beam parameters — Polarization

## 1 Scope

This document specifies a method, which is a relatively quick and simple method with minimum equipment, for determining the polarization status and, whenever possible, the degree of polarization of the beam from a continuous wave (cw) laser. It can also be applied to repetitively pulsed lasers, if their electric field vector orientation does not change from pulse to pulse.

This document also specifies the method for determining the direction of the electric-field vector oscillation in the case of (completely or partially) linearly polarized laser beams. It is assumed that the laser radiation is quasimonochromatic and sufficiently stable for the purpose of the measurement. This document is applicable to radiation that has uniform polarization over its cross-sectional area.

The knowledge of the polarization status can be very important for some applications of lasers with a high divergence angle, for instance when the beam of such a laser shall be coupled with polarization dependent devices (e.g. polarization maintaining fibres). This document is applicable not only for a narrow and almost collimated laser beam but also for highly divergent beams as well as for beams with large apertures.

## 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 11145, *Optics and photonics — Lasers and laser-related equipment — Vocabulary and symbols*

ISO 11554, *Optics and photonics — Lasers and laser-related equipment — Test methods for laser beam power, energy and temporal characteristics*

CIE 059-1984, *Definitions and Nomenclature, Instrument Polarization*

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