Optika ja optikamõõteriistad. Laser ja laseriga seonduvad seadmed. Katsemeetod laseri optiliste komponentide neeldumisteguri määramiseks

Optics and optical instruments - Lasers and laser-related equipment - Test method for absorptance of optical laser components

EESTI STANDARDIKESKUS

EESTI STANDARDI EESSÕNA **NATIONAL FOREWORD**

Käesolev Eesti standard EVS-EN ISO 11551:2004 sisaldab Euroopa standardi EN ISO 11551:2003 ingliskeelset teksti. Käesolev dokument on jõustatud 27.04.2004 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN ISO 11551:2004 consists of the English text of the European standard EN ISO 11551:2003. This document is endorsed on 27.04.2004 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.

Käsitlusala: This International Standard specifies proceduser and techniques for obtaining comparable values for the absorptance of optical laser components.	**Scope:** This International Standard specifies proceduser and techniques for obtaining comparable values for the absorptance of optical laser components.

ICS 31.260

Võtmesõnad: katsed, laser, laserikiirgus, määramine, neeldumine, optika, optikaseadmed, optilised mõõtmised

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English version

Optics and optical instruments – Lasers and laser-related equipment

Test method for absorptance of optical laser components

(ISO 11551 : 2003)

Optique et instruments d'optique – Lasers et équipements associés aux lasers – Méthode d'essai du facteur d'absorption des composants optiques pour lasers (ISO 11551 : 2003)

Optik und optische Instrumente – Laser und Laseranlagen – Prüfverfahren für den Absorptionsgrad von optischen Laserkomponenten (ISO 11551 : 2003)

This European Standard was approved by CEN on 2003-12-01.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Ref. No. EN ISO 11551 : 2003 E

Foreword

International Standard

ISO 11551 : 2003 Optics and optical instruments – Lasers and laser-related equipment – Test method for absorptance of optical laser components,

which was prepared by ISO/TC 172 'Optics and optical instruments' of the International Organization for Standardization, has been adopted by Technical Committee CEN/TC 123 'Lasers and laser-related equipment', the Secretariat of which is held by DIN, as a European Standard.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, and conflicting national standards withdrawn, by June 2004 at the latest.

In accordance with the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard:

Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, the Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland, and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 11551 : 2003 was approved by CEN as a European Standard without any modification.

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Introduction

To characterize an optical component, it is important to know its absorptance. When radiation impinges upon a component, a part of that radiation is absorbed, increasing the temperature of the component. In this International Standard only the part of the absorbed power/energy that is converted into heat is measured. If enough energy is absorbed, the optical properties of the component may be changed, and the component may even be destroyed. Absorptance is the ratio of the radiant flux absorbed to the radiant flux of the incident radiation.

In the procedures described in this International Standard, the absorptance is determined calorimetrically as the ratio of power or energy absorbed by the component to the total power or energy, respectively, impinging upon the component. The assumption is made that the absorptance of the test sample is constant within the temperature fluctuations experienced by the component during the measurement and is independent of both the position of the irradiating beam on the sample surface and the power density of the impinging radiation.

For several bulk materials like CdTe, the absorptance depends on the position of the irradiating beam on the sample surface. Several infrared materials exhibit a strong dependence of absorptance on temperature, especially at high temperatures.

1 Scope

This International Standard specifies procedures and techniques for obtaining comparable values for the absorptance of optical laser components.

2 Normative references

The following referenced documents are indispensable for the application 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 31-6:1992, *Quantities and units — Part 6: Light and related electromagnetic radiations*

ISO 11145:2001, *Optics and optical instruments — Lasers and laser-related equipment — Vocabulary and symbols*

ISO 14644-1:1999, *Cleanrooms and associated controlled environments — Part 1: Classification of air cleanliness*

3 Terms and definitions

For the purposes of this document, the terms and definitions in ISO 11145 and ISO 31-6 and the following apply.

3.1
absorptance
α
ratio of the radiant flux absorbed to the radiant flux of the incident radiation

NOTE The definition of absorptance used for this international Standard is limited to absorptance processes which convert the absorbed energy into heat. For certain types of optics and radiation, additional non-thermal processes may result in absorption losses which will not be detected by the test procedure described here (see Annex A).