



NSAI
Standards

Irish Standard
I.S. EN ISO 21254-3:2011

Lasers and laser-related equipment - Test methods for laser-induced damage threshold - Part 3: Assurance of laser power (energy) handling capabilities (ISO 21254-3:2011)

I.S. EN ISO 21254-3:2011

Incorporating amendments/corrigenda/National Annexes issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard – national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation - recommendation based on the consensus of an expert panel and subject to public consultation.

SWIFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces:
EN ISO 11254-3:2006

This document is based on:
EN ISO 21254-3:2011

Published:
27 July, 2011

This document was published
under the authority of the NSAI
and comes into effect on:
27 July, 2011

ICS number:
31.260

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

English Version

Lasers and laser-related equipment - Test methods for laser-induced damage threshold - Part 3: Assurance of laser power (energy) handling capabilities (ISO 21254-3:2011)

Lasers et équipements associés aux lasers - Méthodes d'essai du seuil d'endommagement provoqué par laser - Partie 3: Possibilités de traitement par puissance (énergie) laser (ISO 21254-3:2011)

Laser und Laseranlagen - Prüfverfahren für die laserinduzierte Zerstörschwelle - Teil 3: Zertifizierung der Belastbarkeit hinsichtlich Laserleistung (-energie) (ISO 21254-3:2011)

This European Standard was approved by CEN on 14 July 2011.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword.....	3
----------------------	----------

Foreword

This document (EN ISO 21254-3:2011) 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 2012, and conflicting national standards shall be withdrawn at the latest by January 2012.

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.

This document supersedes EN ISO 11254-3:2006.

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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of ISO 21254-3:2011 has been approved by CEN as a EN ISO 21254-3:2011 without any modification.

This page is intentionally left BLANK.

I.S. EN ISO 21254-3:2011
**INTERNATIONAL
STANDARD**

**ISO
21254-3**

First edition
2011-07-15

**Lasers and laser-related equipment —
Test methods for laser-induced damage
threshold —**

**Part 3:
Assurance of laser power (energy)
handling capabilities**

*Lasers et équipements associés aux lasers — Méthodes d'essai du
seuil d'endommagement provoqué par laser —*

Partie 3: Possibilités de traitement par puissance (énergie) laser



Reference number
ISO 21254-3:2011(E)

© ISO 2011



COPYRIGHT PROTECTED DOCUMENT

© ISO 2011

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
Introduction.....	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Symbols and units of measurement.....	2
5 Test methods	3
5.1 Principle.....	3
5.2 Test methods	3
6 Accuracy.....	6
7 Test report.....	6
Annex A (informative) Example of a test report.....	7
Annex B (informative) Notes on use	10
Annex C (informative) Details of the derivation of the operating-characteristic curve	14
Bibliography.....	16

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 21254-3 was prepared by Technical Committee ISO/TC 172, *Optics and photonics*, Subcommittee SC 9, *Electro-optical systems*.

This first edition of ISO 21254-3:2011 cancels and replaces ISO 11254-3:2006, which has been technically revised.

ISO 21254 consists of the following parts, under the general title *Lasers and laser-related equipment — Test methods for laser-induced damage threshold*:

- *Part 1: Definitions and general principles*
- *Part 2: Threshold determination*
- *Part 3: Assurance of laser power (energy) handling capabilities*
- *Part 4: Inspection, detection and measurement* [Technical Report]

Introduction

This part of ISO 21254 describes two methods of verifying the power density (energy density) handling capability of optical components, both coated and uncoated.

The methods will give consistent measurement results and can therefore be used for acceptance testing or to produce results which can be compared between test laboratories.

The methods are applicable to all combinations of laser wavelengths and pulse lengths. Comparison of laser damage threshold data can, however, be misleading unless the measurements have been carried out at identical wavelengths and pulse lengths.

I.S. EN ISO 21254-3:2011

Lasers and laser-related equipment — Test methods for laser-induced damage threshold —

Part 3: Assurance of laser power (energy) handling capabilities

WARNING — The extrapolation of damage data can lead to an overestimation of the laser-induced damage threshold. In the case of toxic materials (e.g. ZnSe, GaAs, CdTe, ThF₄, chalcogenides, Be, Cr, Ni), this can lead to serious health hazards. See ISO 21254-1:2011, Annex A, for further comments.

1 Scope

This part of ISO 21254 specifies two methods of verifying the power density (energy density) handling capability of optical surfaces.

The first method provides a rigorous test that fulfils the requirements at a specified confidence level in the knowledge of potential defects.

The second method provides a simple, and hence inexpensive, test for an empirically derived test level.

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

ISO 21254-1:2011, *Lasers and laser-related equipment — Test methods for laser-induced damage threshold — Part 1: Definitions and general principles*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 11145 and ISO 21254-1 and the following apply.

3.1

assurance level

ϕ

energy density/power density/linear power density of the laser radiation incident on the optical surface of the component being tested

3.2

assurance area

A_ϕ

area over which the value of $H(x,y,z)$ is equal to or greater than the assurance level ϕ

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- Looking for additional Standards? Visit Intertek Inform Infostore
 - Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation
-