

**Masinate ohutus. Lasertöötlusseadmed.
Osa 2: Käeshoitavate
lasertöötlusseadmete ohutusnõuded
(ISO 11553-2:2007)**

Safety of machinery - Laser processing machines -
Part 2: Safety requirements for hand-held laser
processing devices

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN ISO 11553-2:2007 sisaldab Euroopa standardi EN ISO 11553-2:2007 ingliskeelset teksti. Käesolev dokument on jõustatud 22.11.2007 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN ISO 11553-2:2007 consists of the English text of the European standard EN ISO 11553-2:2007. This document is endorsed on 22.11.2007 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.
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Käsitlusala: This part of ISO 11553 specifies the requirements for laser processing devices, as defined in ISO 11553-1, which are hand-held or hand-operated. The purpose of this part of ISO 11553 is to draw attention to the particular hazards related to the use of hand-held laser and hand-operated laser processing devices and to prevent personal injury. This includes both the areas of hazard analysis and risk assessment as well as protective measures. Requirements concerning noise as a hazard are not included in this part of ISO 11553. These requirements are to be included in a subsequent amendment. This part of ISO 11553 does not apply to laser products or equipment manufactured solely or expressly for applications which are excluded from the scope of ISO 11553-1.	Scope: This part of ISO 11553 specifies the requirements for laser processing devices, as defined in ISO 11553-1, which are hand-held or hand-operated. The purpose of this part of ISO 11553 is to draw attention to the particular hazards related to the use of hand-held laser and hand-operated laser processing devices and to prevent personal injury. This includes both the areas of hazard analysis and risk assessment as well as protective measures. Requirements concerning noise as a hazard are not included in this part of ISO 11553. These requirements are to be included in a subsequent amendment. This part of ISO 11553 does not apply to laser products or equipment manufactured solely or expressly for applications which are excluded from the scope of ISO 11553-1.
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ICS 13.110, 31.260

Võtmesõnad:

ICS 13.110; 31.260

English Version

**Safety of machinery - Laser processing machines - Part 2:
Safety requirements for hand-held laser processing devices
(ISO 11553-2:2007)**

Sécurité des machines - Machines à laser - Partie 2:
Exigences de sécurité pour dispositifs de traitement laser
portatifs (ISO 11553-2:2007)

Sicherheit von Maschinen - Laserbearbeitungsmaschinen -
Teil 2: Sicherheitsanforderungen an handgeführte
Laserbearbeitungsgeräte (ISO 11553-2:2007)

This European Standard was approved by CEN on 28 February 2007.

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

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Foreword

This document (EN ISO 11553-2:2007) has been prepared by Technical Committee ISO/TC 172 "Optics and optical instruments" 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 September 2007, and conflicting national standards shall be withdrawn at the latest by September 2007.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

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, 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.

Endorsement notice

The text of ISO 11553-2:2007 has been approved by CEN as EN ISO 11553-2:2007 without any modifications.

Annex ZA (informative)

Clauses of this European Standard addressing essential requirements or other provisions of EU directives 98/37/EC

This European standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association and supports essential requirement 1.5.12 of the following EU Directives: Machinery safety Directive 98/37/EC.

Once this standard is cited in the Official Journal of the European Communities under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative clauses of this standard confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding Essential Requirements of that Directive and associated EFTA regulations.

WARNING: Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.

**Safety of machinery — Laser processing
machines —**

Part 2:
**Safety requirements for hand-held laser
processing devices**

Sécurité des machines — Machines à laser —

*Partie 2: Exigences de sécurité pour dispositifs de traitement laser
portatifs*



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Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Hazards	2
4.1 Inherent hazards.....	2
4.2 Hazards induced by external effects (interferences).....	3
4.3 Further hazards related to the use of hand-held laser processing devices.....	4
5 Safety requirements and measures	4
5.1 General requirements.....	4
5.2 Risk assessment.....	5
5.3 Implementation of corrective measures.....	5
5.4 Design requirements.....	7
6 Verification of safety requirements and measures	11
6.1 General conformance.....	11
6.2 Control category classification.....	11
6.3 Laser classification.....	12
7 Information for the user	12
7.1 Additional requirements.....	12
7.2 Recommended inclusions.....	13
8 Labelling	14
Annex A (informative) Risk assessment examples	15
Annex B (informative) Types of hand-held laser processing machines	17
Bibliography	19

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 11553-2 was prepared by Technical Committee ISO/TC 172, *Optics and photonics*, Subcommittee SC 9, *Electro-optical systems*.

This first edition, together with ISO 11553-1, cancels and replaces ISO 11553:1996, which has been technically revised.

ISO 11553 consists of the following parts, under the general title *Safety of machinery — Laser processing machines*:

- *Part 1: General safety requirements*
- *Part 2: Safety requirements for hand-held laser processing devices*

Introduction

This document is a type C standard as stated in ISO 12100-1:2003.

The machinery concerned and the extent to which hazards, hazardous situations and events are covered are indicated in the scope of this document. When provisions of this type C standard are different from those which are stated in type A or B standards, the provisions of this type C standard take precedence over the provisions of the other standards, for machines that have been designed and built according to the provisions of this type C standard.

It is applicable to machines using laser radiation to process materials. The purpose of this part of ISO 11553 is to prevent injuries to persons:

- by listing potential hazards generated by machines containing lasers;
- by specifying safety measures and verifications necessary for reducing the risk caused by specific hazardous conditions;
- by providing references to pertinent standards;
- by specifying the information which is to be supplied to the users so that they can establish proper procedures and precautions.

Safety of machinery — Laser processing machines —

Part 2: Safety requirements for hand-held laser processing devices

1 Scope

This part of ISO 11553 specifies the requirements for laser processing devices, as defined in ISO 11553-1, which are hand-held or hand-operated.

The purpose of this part of ISO 11553 is to draw attention to the particular hazards related to the use of hand-held laser and hand-operated laser processing devices and to prevent personal injury. This includes both the areas of hazard analysis and risk assessment as well as protective measures.

Requirements concerning noise as a hazard are not included in this part of ISO 11553. These requirements are to be included in a subsequent amendment.

This part of ISO 11553 does not apply to laser products or equipment manufactured solely or expressly for applications which are excluded from the scope of ISO 11553-1.

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 3864-1:2002, *Graphical symbols — Safety colours and safety signs — Part 1: Design principles for safety signs in workplaces and public areas*

ISO 3864-2:2004, *Graphical symbols — Safety colours and safety signs — Part 2: Design principles for product safety labels*

ISO 3864-3:2006, *Graphical symbols — Safety colours and safety signs — Part 3: Design principles for graphical symbols used in safety signs*

ISO 11145:2006, *Optics and photonics — Lasers and laser-related equipment — Vocabulary and symbols*

ISO 11252:2004, *Lasers and laser related equipment — Laser device — Minimum requirements for documentation*

ISO 11553-1:2005, *Safety of machinery — Laser processing machines — Part 1: General safety requirements*

ISO 12100-1:2003, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology*

ISO 12100-2:2003, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles*

ISO 13849-1:1999, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design*

ISO 13850:1996, *Safety of machinery — Emergency stop — Principles for design*

ISO 14118:2000, *Safety of machinery — Prevention of unexpected start-up*

ISO 14119:1998, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection*

IEC 60204-1:2005, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements*

IEC 60825-1 ed. 1.2:2001, *Safety of laser products — Part 1: Equipment classification, requirements and user's guide*

IEC/TR 60825-14:2004, *Safety of laser products — Part 14: A user's guide*

IEC 60825-4-am1:2002, *Safety of laser products — Part 4: Laser guards*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 11145, ISO 11553-1, ISO 12100-1, IEC 60825-4 and the following apply.

3.1
hand-held laser processing device
device in which a laser provides sufficient energy/power to melt, evaporate or cause a phase transition in a part of the workpiece and where the laser output or workpiece to be processed is guided manually or hand-held during the laser process

NOTE For the purposes of this document, the terms “hand-held” and “hand-operated” have the same meaning.

3.2
confined spaces
working areas surrounded on all sides, or for the most part, by solid walls where they, on account of their confinement or containment of materials, preparation or equipment, augment or can augment particular hazards that considerably exceed the hazard potential normally prevailing at workplaces

3.3
supply unit
all devices that provide the process energies and operating material supply, direct these energies to the point of action and are absolutely necessary for the operation of the hand-held laser processing device (e.g. cooling system, power and gas supply)

3.4
disposal units
equipment that captures and removes effluents and by-products during laser material processing passing these on for filtration (e.g. capture devices, pipes, filtration systems, ventilation systems)

4 Hazards

4.1 Inherent hazards

The following hazards (see ISO 12100-1 and ISO 12100-2) may be generated by a laser-processing device:

- a) mechanical hazards;