

Australian/New Zealand Standard™

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

AS/NZS ISO 11553:2004

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee SF-019, Personal Protection Against Laser Radiation. It was approved on behalf of the Council of Standards Australia on 11 February 2004 and on behalf of the Council of Standards New Zealand on 16 February 2004. It was published on 16 April 2004.

The following are represented on Committee SF-019:

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Australian Chamber of Commerce and Industry
Australian Defence Force Academy
Australian Dental Association
Australian Radiation Laboratory
Department of Defence (Australia)
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Safety of machinery—Laser processing machines—Safety requirements

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee SF-019, Personal Protection Against Laser Radiation.

The Standard is identical with and has been reproduced from ISO 11553:1996, *Safety of machinery—Laser processing machines—Safety requirements*.

The objective of this Standard is to specify safety requirements related to radiation hazards and hazards generated by materials and substances. This Standard also specifies the information to be supplied by manufacturers of laser processing equipment.

As this Standard is reproduced from an International Standard, the following applies:

- (a) Its number appears on the cover and title page while the International Standard number appears only on the cover.
- (b) In the source text, ‘this International Standard’ should read ‘this Australian/New Zealand Standard’.
- (c) A full point should be substituted for a comma when referring to a decimal marker.

None of the documents referred in this Standard have been adopted as Australian or Australian/New Zealand Standards.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the annex to which they apply. A ‘normative’ annex is an integral part of a Standard, whereas an ‘informative’ annex is only for information and guidance.

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INTRODUCTION

The Machinery Safety Directive issued by the Council of the EEC outlines essential and mandatory requirements that must be met in order to ensure that machinery is safe. In response, CEN/CENELEC initiated a programme to produce safety standards for machines and their applications. This International Standard is one in that series.

It has been prepared as a harmonized standard to provide a means of conforming with the essential safety requirements of the Machinery Directive and associated EFTA Regulations.

The extent to which hazards are covered is indicated in the scope. Machinery should comply as appropriate with ISO/TR 12100 for hazards which are not covered by this International Standard.

It is applicable to machines using laser radiation to process materials. The purpose of this International Standard 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.

AUSTRALIAN/ NEW ZEALAND STANDARD

1 Scope

This International Standard describes hazards generated by laser processing machines, as defined in 3.2, and specifies the safety requirements relating to radiation hazards and hazards generated by materials and substances. It also specifies the information to be supplied by manufacturers of such equipment.

It is not applicable to laser products, or equipment containing such products, which are manufactured solely and expressly for the following applications:

- photolithography;
- stereolithography;
- holography;
- medical applications (per IEC 601-2-22);
- data storage.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 3864:1984, *Safety colours and safety signs*.

ISO 11252:1993, *Lasers and laser-related equipment — Laser device — Minimum requirements for documentation*.

ISO/TR 12100-1:1992, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology*.

ISO/TR 12100-2:1992, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles and specifications*.

IEC 204-1:1992, *Electrical equipment of industrial machines — Part 1: General requirements*.

IEC 825-1:1993, *Safety of laser products — Part 1: Equipment classification, requirements and user's guide*.

3 Definitions

For the purposes of this International Standard, the definitions given in ISO/TR 12100-1 and IEC 825-1 and the following definitions apply.

3.1 machine: Assembly of linked parts or components, at least one of which moves, with the appropriate actuators, control and power circuits, etc., joined together for a specific application, in particular for the processing, treatment, moving or packaging of material. [ISO/TR 12100]

3.2 laser processing machine: Machine in which (an) embedded laser(s) provide(s) sufficient energy/power to melt, evaporate, or cause a phase transition in at least a part of the workpiece, and which machine has the functional and safety completeness to be ready-to-use.

3.3 (preventive) maintenance: Performance of those adjustments or procedures specified in user information, which are intended to be performed by the user for the purpose of assuring the intended performance of the product.