AS/NZS IEC 60825.4:2016
IEC 60825-4, Ed. 2.2:2011

AS/NZS IEC 60825.4:2016

Australian/New Zealand Standard™

Safety of laser products

Part 4: Laser guards

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 23 August 2016 and by the New Zealand Standards Approval Board on 17 August 2016.
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Australian Dental Association
Australian Radiation Protection and Nuclear Safety Agency
Defence Materiel Organisation (Australian Government)
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Part 4: Laser guards

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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, to supersede AS/NZS 2211.4:2002.

The objective of this Standard to specify the requirements for laser guards, permanent and temporary (for example, for service), that enclose the process zone of a laser processing machine, and specifications for proprietary laser guards.

This Standard is identical with, and has been reproduced from IEC 60825-4, Ed. 2.2:2011, *Safety of laser products,* Part 4: *Laser guards*. This edition 2.2 incorporates Amendment 1 (2008) and Amendment 2 (2011). The text affected by Amendments 1 and 2 is indicated in the source document by marginal bars.

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

(a) In the source text 'this part of IEC 60825' should read 'this Australian/New Zealand Standard'.

(b) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

Reference to International Standard		*Australian/New Zealand Standard*	
IEC		AS/NZS IEC	
60825	Safety of laser products	60825	Safety of laser products
60825-1	Part 1: Equipment classification and requirements	60825.1	Part 1: Equipment classification and requirements

Only normative references that have been adopted as Australian or Australian/New Zealand Standards have been listed.

The terms 'normative' and 'informative' have been used in this Standard to define the application of the annexes 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

At low levels of irradiance or radiant exposure, the selection of material and thickness for shielding against laser radiation is determined primarily by a need to provide sufficient optical attenuation. However, at higher levels, an additional consideration is the ability of the laser radiation to remove guard material – typically by melting, oxidation or ablation; processes that could lead to laser radiation penetrating a normally opaque material.

IEC 60825-1 deals with basic issues concerning laser guards, including human access, interlocking and labelling, and gives general guidance on the design of protective housings and enclosures for high-power lasers.

This part of IEC 60825 deals with protection against laser radiation only. Hazards from secondary radiation that may arise during material processing are not addressed.

Laser guards may also comply with standards for laser protective eyewear, but such compliance is not necessarily sufficient to satisfy the requirements of this standard.

Where the term “irradiance” is used, the expression “irradiance or radiant exposure, as appropriate” is implied.

NOTES

AUSTRALIAN/NEW ZEALAND STANDARD

Safety of laser products

Part 4:
Laser guards

1 Scope

This part of IEC 60825 specifies the requirements for laser guards, permanent and temporary (for example for service), that enclose the process zone of a laser processing machine, and specifications for proprietary laser guards.

This standard applies to all component parts of a guard including clear (visibly transmitting) screens and viewing windows, panels, laser curtains and walls. Requirements for beam path components, beam stops and those other parts of a protective housing of a laser product which do not enclose the process zone are contained in IEC 60825-1.

In addition this part of IEC 60825 indicates:

a) how to assess and specify the protective properties of a laser guard; and

b) how to select a laser guard.

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.

IEC 60825-1:2007*, Safety of laser products – Part 1: Equipment classification and requirements*

ISO 11553-1:2005, *Safety of machinery – Laser processing machines – 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 and specifications*

ISO 13849-1:2006, *Safety of machinery – Safety-related parts of control systems – Part 1: General principles for design*

ISO 14121-1:2007, *Safety of machinery – Risk assessment – Part 1: Principles*

3 Definitions

For the purpose of this part of IEC 60825, the following definitions apply in addition to the definitions given in IEC 60825-1.