

AS/NZS ISO 12609.2:2024
ISO 12609-2:2013



Australian/New Zealand Standard™

Eyewear for protection against intense light sources used on humans and animals for cosmetic and medical applications

Part 2: Guidance for use



AS/NZS ISO 12609.2:2024

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Preface

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee SF-006, Eye and Face Protection.

The objective of this document is to give guidance and information to users, manufacturers, suppliers, and safety advisors on the selection and use of eye protectors for intense light source (ILS) equipment used on humans and animals for cosmetic and medical applications against excessive exposure to optical radiation in the spectral range 250 nm to 3 000 nm, with the exception of laser radiation.

This document provides guidance on selection of an eye protector expected to cope with the majority of applications and a more rigorous procedure for determining appropriate eye protection against spectral outputs from ILS equipment.

This document is identical with, and has been reproduced from, ISO 12609-2:2013, *Eyewear for protection against intense light sources used on humans and animals for cosmetic and medical applications — Part 2: Guidance for use*.

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. www.iso.org/directives

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The committee responsible for this document is ISO/TC 94, *Personal safety – Protective clothing and equipment*, Subcommittee SC 6, *Eye and face protection*.

ISO 12609 consists of the following parts, under the general title *Eyewear for protection against intense light sources used on humans and animals for cosmetic and medical applications*:

- *Part 1: Specification for products*
- *Part 2: Guidance for use*

Australian/New Zealand Standard

Eyewear for protection against intense light sources used on humans and animals for cosmetic and medical applications

Part 2: Guidance for use

1 Scope

This International Standard gives guidance and information to users, manufacturers, suppliers, and safety advisors on the selection and use of eye protectors for intense light source (ILS) equipment used on humans and animals for cosmetic and medical applications against excessive exposure to optical radiation in the spectral range 250 nm to 3 000 nm, with the exception of laser radiation.

This International Standard provides guidance on selection of an eye protector expected to cope with the majority of applications and a more rigorous procedure for determining appropriate eye protection against spectral outputs from ILS equipment.

This International Standard is not applicable to eye protectors for use with tanning equipment, ophthalmic instruments, or other medical/cosmetic devices, the safety issues of which are addressed through other European and International Standards.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1

attenuation

decrease in the irradiance or radiant exposure as optical radiation passes through an absorbing or scattering medium

2.2

exposure limit values

ELVs

level of exposure to the eye or skin that is not expected to result in adverse biological effects

2.3

intense light source

ILS

device incorporating one or more non-laser sources of optical radiation of the wavelength range 250 nm to 3 000 nm and intended for creating biological effects in humans and animals

Note 1 to entry: It can operate in continuous or pulsed regime.

2.4

ocular hazard distance

OHD

distance at which the beam irradiance, radiance, or radiant exposure equals the appropriate ocular ELVs

2.5

pulse duration

time increment measured between the half peak (50 %) of power points at the leading and trailing edges of a pulse

2.6

pulse separation

time between the end of one pulse and the onset of the following pulse, measured at the 50 % trailing and leading edges

2.7

skin hazard distance

distance at which the beam irradiance or radiant exposure equals the appropriate skin ELVs

3 Optical radiation hazards

3.1 Risk assessment

3.1.1 The eye is at risk of injury from optical radiation in excess of the exposure limit values (ELVs) (see [Annex A](#)). A comparison of the predicted or measured radiation exposure with the applicable ELVs allows an assessment of a personal workplace exposure to optical radiation.

3.1.2 The risk assessment should include the following.

- a) Determine the ELVs for exposure duration, type of hazard, and emitting device configuration.
- b) Determine the likely exposure level from the ILS taking account of the exposure scenario, e.g. expected use or foreseeable fault conditions.
- c) Compare the likely exposure levels with the ELVs.

3.1.3 If other measures are insufficient or inadequate to control the risk of eye exposure in excess of any applicable ELVs, eye protection should be worn. The appropriate F-#, B-#, and/or filter protection factor should be determined at a distance of 200 mm from the ILS. If such eye protection is not available, a calculation using measured spectrally weighted radiance or irradiance has to be carried out in order to verify the suitability of a specific eyewear for a specific ILS source.

NOTE Personnel who might be at risk include the patient/client, ILS equipment operator, assisting staff, and others.

3.1.4 See [Annex B](#) for a retinal thermal hazard assessment and [Annex C](#) for a worked example calculation.

3.2 Control measures

3.2.1 Any person who is present within the ocular and skin hazard distance should be protected against eye or skin exposure to optical radiation above any applicable ELVs.

3.2.2 The extent of the skin and ocular hazard distance might vary according to the type of ILS equipment used and the optical properties of the output optics attachments.