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Eye and face protection — Protection against laser radiation —

Part 1: Requirements and test methods

Protection des yeux et du visage — Protection contre le rayonnement laser —

Partie 1: Exigences et méthodes d'essai

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Contents

Page

Foreword ..... **iv**
Introduction ..... **v**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
4 Requirements for the protector **3**
4.1 Performance requirements 3
4.1.1 Laser pulse and exposure duration 3
4.1.2 Optical density (OD) 4
4.1.3 Transmittance to short pulses 4
4.1.4 Resistance category (RC) 4
4.1.5 Luminous transmittance 4
4.1.6 Dynamic protection 5
4.1.7 Field of view 5
4.1.8 Refractive power of filters and protectors 5
4.2 Construction of protectors 5
4.3 Robustness of protectors 6
4.3.1 Basic requirement 6
4.3.2 Optional requirements 6
4.4 Quality of material and surface of filters 6
4.4.1 Material and surface defects 6
4.4.2 Scattered light 6
4.5 Environmental stability 6
4.5.1 General 6
4.5.2 Filter and protector resistance to heat and humidity 7
4.5.3 Stability to ultraviolet radiation 7
4.5.4 Resistance of filters and frames to ignition by contact with hot surfaces 7
4.6 Marking 8
4.6.1 Marking requirements 8
4.6.2 Marking syntax and examples of marking 9
4.7 Manufacturer's instruction and information 12
4.8 Requirements not mandatory for protectors worn by patients during medical or aesthetic treatment with lasers 13
5 Test methods **13**
5.1 General 13
5.2 Optical density 15
5.3 Transmittance of short pulses 15
5.4 Resistance of filters and frames to laser radiation 15
5.5 Luminous transmittance of filters 17
5.6 Scattered light 17
5.7 Resistance to elevated temperature 17
Bibliography **18**

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 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 94, *Personal safety — Personal protective equipment*, Subcommittee SC 6, *Eye and face protection*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 85, *Eye protective equipment,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement). The document was developed as a joint project with IEC/TC 76, "Optical radiation safety and laser equipment".

This first edition of ISO 19818-1 cancels and replaces the first edition of ISO 6161:1981, which has been technically revised.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document was developed in response to the worldwide stakeholders' demand for minimum requirements and test methods for laser eye and face protectors traded internationally.

Preparation of this document aimed to draw upon the best aspects of these preceding standards, and offer improvements where appropriate. The document was developed by a Joint Working Group involving experts from ISO/TC 94/SC 6 (Eye and Face Protection) and IEC/TC 76 (Optical Radiation Safety and Laser Equipment), to bring together the two aspects of personal protection and laser safety.

In the general context of eye and face protection ISO 4007 gives the terms and definitions. The test methods are given in the ISO 18526 series, while the requirements for occupational eye and face protectors are given in the ISO 16321 series. Eye protectors for specific sports are mostly dealt with by the ISO 18527 series. ISO 19734 is a guidance document for the selection, use and maintenance of eye and face protectors.

A guidance document addressing selection and use of personal eye and face protection against lasers is currently under development and will form a guide to users of protectors described in this document.

NOTE ISO 6161 was published in 1981 but was not widely adopted. The document was four pages in length. No development of that document has taken place since 1981, although comparable regional standards have since been developed (EN 207[5] and EN 208[6] in Europe; ANSI Z136.7[7] in the United States).

Eye and face protection — Protection against laser radiation —

Part 1: Requirements and test methods

1 Scope

This document is applicable to protectors intended to provide protection against accidental exposure to laser radiation within the wavelength range 180 nm to 1 mm. It specifies the requirements, test methods and marking. Protectors intended for adjustment work on lasers are included in the scope of this document and are marked in the same way as other protectors, but selection of appropriate eyewear for a specific application is a choice of the user. Laser protective filters used as viewing windows in laser equipment machinery or incorporated into optical instruments such as operating microscopes and loupes that may be used for deliberate viewing of laser radiation as part of their function are outside the scope of this document.

Laser radiation in the wavelength range below 180 nm is absorbed in air, therefore eye and face protection should not be required.

This document is applicable to devices intended for patient protection during medical laser procedures except for treatment in the periorbital area. Guidance on eye protectors for patients (including those used for periorbital treatment) is given in ISO/TR 22463.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 4007, *Personal protective equipment — Eye and face protection — Vocabulary*

ISO 16321-1:2021, *Eye and face protection for occupational use — Part 1: General requirements*

ISO 16321-2:2021, *Eye and face protection for occupational use — Part 2: Additional requirements for protectors used during welding and related techniques*

ISO 18526-1:2020, *Eye and face protection — Test methods — Part 1: Geometrical optical properties*

ISO 18526-2:2020, *Eye and face protection — Test methods — Part 2: Physical optical properties*

ISO 18526-3:2020, *Eye and face protection — Test methods — Part 3: Physical and mechanical properties*

ISO 18526-4:2020, *Eye and face protection — Test methods — Part 4: Headforms*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4007 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/