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Eye and face protection for occupational use —

Part 1: General requirements

Protection des yeux et du visage à usage professionnel —

Partie 1: Exigences générales

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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 (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 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).

This document cancels and replaces ISO 4849:1981, ISO 4851:1979, ISO 4852:1978 and ISO 4856:1982.

A list of all parts in the ISO 16321 series can be found on the ISO website.

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.

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Introduction

The family of documents comprised of the ISO 16321 series, the ISO 18526 series and the ISO 18527 series was developed in response to the worldwide stakeholders' demand for minimum requirements and test methods for eye and face protectors traded internationally. ISO 4007 gives the terms and definitions for all the various product types. 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. A guidance document, ISO 19734, for the selection, use and maintenance of eye and face protectors is under preparation.

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Eye and face protection for occupational use —

Part 1: General requirements

1 Scope

This document specifies general requirements for eye and face protectors. These protectors are intended to provide protection for the eyes and faces of persons against one or more common occupational hazards such as impacts from flying particles and fragments, optical radiation, dusts, splashing liquids, molten metals, heat, flame, hot solids, harmful gases, vapours and aerosols.

Additional requirements for eye and face protectors used during welding and related techniques and for mesh protectors are given in ISO 16321-2 and ISO 16321-3, respectively.

This document applies to:

— all plano as well as corrective and prescription lensed protectors and components;

— those eye and face protectors used for occupational-type tasks that are performed similarly to an occupation, e.g. "do-it-yourself";

— those eye and face protectors used in educational establishments.

This document does not apply to:

— protectors specifically intended for protection against only solar radiation and used in non-occupational environments for which the ISO 12312 series applies;

— protectors for medically prescribed applications (not occupational), e.g. eye protection for severe dry eye, tints prescribed for medical conditions;

— patient eye protectors during diagnosis or treatment (e.g. ISO/TR 22463);

— protectors for use during medical or e.g. aesthetic applications, e.g. intense light sources (ILS) for which the ISO 12609 series applies;

— protectors specifically intended for sports for which the ISO 18527 series applies;

— laser protectors;

— face protectors intended for live-working to protect against short-circuit electric arcs for which IEC 62819 applies;

— protectors intended to protect against ionizing radiation, e.g. X-rays, for which IEC 61331-3 applies.

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/CIE 11664-1, *Colorimetry — Part 1: CIE standard colorimetric observers*

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ISO 11664-2, *Colorimetry — Part 2: CIE standard illuminants*

ISO 12312-1:2013, *Eye and face protection — Sunglasses and related eyewear — Part 1: Sunglasses for general use*

ISO 16034:2002, *Ophthalmic optics — Specifications for single-vision ready-to-wear near- vision spectacles*

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

ISO 16321-3:2021, *Eye and face protection for occupational use — Part 3: Additional requirements for mesh protectors*

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, *Eye and face protection — Test methods — Part 4: Headforms*

ISO 21987:2017, *Ophthalmic optics — Mounted spectacle lenses*

ISO 80079-36:2016, *Explosive atmospheres — Part 36: Non-electrical equipment for explosive atmospheres — Basic method and requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4007 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/

4 General requirements for protectors

4.1 Ambient temperatures

Protectors[1)] described in this document are intended for use at normal ambient temperatures (23 ± 5) °C. In order to ensure that critical aspects of protection are not compromised due to temperatures towards the extremes of the normal range of occupational environments from (−5 ± 2) °C to (+55 ± 2) °C, physical and mechanical requirements at extremes of temperature are included (sometimes optionally) in this document. These physical and mechanical requirements can also be provided by manufacturers for validation of claims for protection at temperatures below (−5 ± 2) °C and/or above (+55 ± 2) °C.

4.2 Physiological compatibility

Protectors shall be designed and manufactured in such a way that, when used under the conditions and for the purposes intended, they will not compromise the health or safety of the wearer. The risks posed by substances leaking or evaporating from the protector that can come into prolonged contact with the wearer, shall be reduced by the manufacturer to within the limits of any applicable regulatory requirement.

1) For the purposes of this document, "protector" is used as a general term for eye and/or face protectors such as, but not limited to, spectacles, goggles, face shields and eye shields.

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