BS EN ISO 12312-1:2022+A11:2024

BSI Standards Publication

Eye and face protection — Sunglasses and related eyewear

Part 1: Sunglasses for general use

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National foreword

This British Standard is the UK implementation of EN ISO 12312-1:2022+A11:2024. It is identical to ISO 12312-1:2022. It supersedes BS EN ISO 12312-1:2022, which is withdrawn.

The start and finish of text introduced or altered by amendment A11 is indicated in the text by tags. Tags indicating changes to CEN text carry the number of the CEN amendment. For example, text altered by CEN amendment A11 is indicated by ⟨A11⟩ ⟨A11⟩.

The UK participation in its preparation was entrusted to Technical Committee PH/2, Eye protection.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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For the Northern Ireland market, UK law will continue to implement relevant EU law subject to periodic confirmation. Therefore Annex ZA/ZZ in the European text, and references to EU legislation, are still valid for this market.

UK Government is responsible for legislation. For information on legislation and policies relating to that legislation, consult the relevant pages of www.gov.uk.

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EUROPEAN STANDARD

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English Version

Eye and face protection - Sunglasses and related eyewear - Part 1: Sunglasses for general use (ISO 12312-1:2022)

Protection des yeux et du visage - Lunettes de soleil et articles de lunetterie associés - Partie 1: Lunettes de soleil pour usage général (ISO 12312-1:2022)

Augen- und Gesichtsschutz - Sonnenbrillen und ähnlicher Augenschutz - Teil 1: Sonnenbrillen für den allgemeinen Gebrauch (ISO 12312-1:2022)

This European Standard was approved by CEN on 3 June 2022.

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European foreword

This document (EN ISO 12312-1:2022) has been prepared by Technical Committee ISO/TC 94 "Personal safety -- Personal protective equipment" in collaboration with Technical Committee CEN/TC 85 “Eye protective equipment” the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2023, and conflicting national standards shall be withdrawn at the latest by January 2023.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 12312-1:2013, EN ISO 12312-1:2013/A1:2015.

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For the relationship with EU Directive(s) / Regulation(s), see informative Annex ZA, which is an integral part of this document.

Any feedback and questions on this document should be directed to the users’ national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 12312-1:2022 has been approved by CEN as EN ISO 12312-1:2022 without any modification.

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European foreword to Amendment A11

This document (EN ISO 12312-1:2022/A11:2024) has been prepared by Technical Committee CEN/TC 85 “Eye protective equipment” the secretariat of which is held by AFNOR.

This Amendment to the European Standard EN ISO 12312-1:2022 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2025, and conflicting national standards shall be withdrawn at the latest by March 2025.

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This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZA, which is an integral part of this document.

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A11 Annex ZA
(informative)

Relationship between this European Standard and the essential requirements of Regulation 2016/425 aimed to be covered

This European Standard has been prepared under a Commission's standardization request M/571 to provide one voluntary means of conforming to requirements of Regulation 2016/425.

Once this standard is cited in the Official Journal of the European Union under that Regulation 2016/425 compliance with the normative clauses of this standard given in Table ZA.1 and application of the edition of the normatively referenced standards as given in Table ZA.2 confers, within the limit of the scope of this standard, a presumption of conformity with the corresponding (essential) requirements of that Regulation 2016/425 and associated EFTA regulations.

Table ZA.1 — Correspondence between this European Standard and Annex II of Regulation 2016/425

Essential Requirements of Regulation	Clause(s)/sub-clause(s) of this EN	Remarks/Notes
1.1.1 Ergonomics	4.1; 4.2	
1.1.2 Level and classes of protection	5.2; 5.3.5; 7.1; 7.2; 7.3; 7.6	
1.2.1 Absence of risks and other "inherent" nuisance factors	5.3.2; 5.3.3; 5.3.4.4.6; 6.1; 6.2; 6.3	
1.2.1.1 Suitable constituent materials	4.3	
1.2.1.2 Satisfactory surface condition of all PPE parts in contact with the user	4.1	
1.2.1.3 Maximum permissible user impediment	4.2; 5.3.2; 6.1; 6.2; 6.3	
1.3.2 Lightness and design strength	7.1; 7.2; 7.3; 7.4; 7.5; 7.6; Clause 8; Clause 9; Clause 10; 11.2	
1.4 Manufacturer's instructions and information	12.1; 12.2	
2.3 PPE for the face, eyes, and respiratory system	4.2; 5.3.2; 5.3.3; Clause 6	
2.12 PPE bearing one or more identification marking or indicators directly or indirectly relating to health and safety	12.1; 12.2	
2.14 "Multi risk" PPE	Clause 7; Clause 9	
3.1.1 Impact caused by falling of ejected objects and collision of parts of the body with obstacle	7.1; 7.3; 7.6	Requirement concerning protection against collision of part of the body with

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		obstacle is not covered
3.9.1 Non-ionising radiation	5.2 ,5.3.2, 12.1; 11.1; 11.2; 12.2, Clause 8	

Table ZA.2 — Applicable Standards to confer presumption of conformity as described in this Annex ZA

Column 1 Reference in Clause 2	Column 2 International Standard Edition	Column 3 Title	Column 4 Corresponding European Standard Edition
ISO 4007	ISO 4007:2018	Personal protective equipment - Eye and face protection - Vocabulary	EN ISO 4007:2018
ISO 8980-5	ISO 8980-5:2005	Ophthalmic optics - Uncut finished spectacle lenses - Part 5: Minimum requirements for spectacle lens surfaces claimed to be abrasion-resistant	EN ISO 8980-5:2005
ISO 11664-2	ISO/CIE 11664-2:2022 [1]	Colorimetry - Part 2: CIE standard illuminants	EN ISO/CIE 11664-2:2022[2]
ISO 12311	ISO 12311:2023	Personal protective equipment - Test methods for sunglasses and related eyewear	EN ISO 12311:2023
ISO 18526-1	ISO 18526-1:2020	Eye and face protection - Test methods - Part 1: Geometrical optical properties	EN ISO 18526-1:2020
ISO 18526-2	ISO 18526-2:2020	Eye and face protection - Test methods - Part 2: Physical optical properties	EN ISO 18526-2:2020
ISO 18526-3	ISO 18526-3:2020	Eye and face protection - Test methods - Part 3: Physical and mechanical properties	EN ISO 18526-3:2020
ISO 18526-4	ISO 18526-4:2020	Eye and face protection - Test methods - Part 4: Headforms	EN ISO 18526-4:2020
ISO 11381	ISO 11381:2016	Ophthalmic optics - Spectacle frames - Screw threads	EN ISO 11381:2016

[1] please note that ISO 11664-2:2007 has been replaced by ISO/CIE 11664-2:2022

[2] please note that EN ISO 11664-2:2011 has been replaced by EN ISO/CIE 11664-2:2022

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The documents listed in the Column 1 of Table ZA.2, in whole or in part, are normatively referenced in this document, i.e. are indispensable for its application. The achievement of the presumption of conformity is subject to the application of the edition of Standards as listed in Column 4 or, if no European Standard Edition exists, the International Standard Edition given in Column 2 of Table ZA.2.

WARNING 1 — Presumption of conformity stays valid only as long as a reference to this European Standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING 2 — Other Union legislation may be applicable to the product(s) falling within the scope of this standard. 〈A11▌

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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 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).

This second edition cancels and replaces the first edition (ISO 12312-1:2013), including ISO 12312-1:2013/Amd.1:2015, which has been technically revised.

The main changes compared to the previous edition are as follows:

— added a specification for the electro-optical filters;

— replaced the "local variations in refractive power" with the "spatial deviation";

— introduced the activation of photochromic lenses at 5 °C and 35 °C as optional information;

— extended the side protection to children's sunglasses mounting filter category 4 lenses.

A list of all parts in the ISO 12312 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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Eye and face protection — Sunglasses and related eyewear —

Part 1: Sunglasses for general use

1 Scope

This document is applicable to all afocal (plano power) sunglasses and clip-ons for general use, including road use and driving, intended for protection against solar radiation.

Information on the use of sunglass filters is given in Annex A. Requirements for unmounted filters used as replacement or alternative filters are given in Annex C.

This document is not applicable to:

a) eyewear for protection against radiation from artificial light sources;

b) eye protectors intended for specific sports (e.g. ski goggles or other types – see ISO 18527 (all parts));

c) sunglasses that have been medically prescribed for attenuating solar radiation;

d) products intended for direct observation of the sun, such as for viewing a partial or annular solar eclipse, for which ISO 12312-2 applies;

e) products intended for occupational eye protection – see, for example, ISO 16321 (all parts).

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 8980-5, *Ophthalmic optics — Uncut finished spectacle lenses — Part 5: Minimum requirements for spectacle lens surfaces claimed to be abrasion-resistant*

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

ISO 12311:—[1)], *Personal protective equipment — Test methods for sunglasses and related eyewear*

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.

1) In preparation. Stage at the time of publication, ISO/DIS 12311:2022.

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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 https://www.electropedia.org/

3.1
related eyewear
eyewear intended for protection in the same wavelength range as solar radiation but not necessarily originating from the Sun

3.2
electro-optical sunglare filter
electro-optical sunglass filter
filter that varies, by electro-optical means, its luminous transmittance depending upon the illuminance and spectral bands to which it is exposed or by manual control

Note 1 to entry: The change in luminous transmittance may be under automatic or manual control, or a combination. For example, where the luminous transmittances in the faded and darkened states are set manually, and transitions between them automatically. The luminous transmittance of the filter therefore varies within certain limits in response to the illuminance.

3.3
reaction time
t_r
‹electro-optical sunglare filter› response time of an *electro-optical sunglare filter* (3.2) to darken from its luminous transmittance in the *faded state* ($\tau_{v\,0}$) towards its luminous transmittance in the darkened state ($\tau_{v\,1}$) when activated or to fade from its *darkened state* towards its *faded state.*

Note 1 to entry: The reaction time is the time taken for the filter to change its luminous transmittance from the fully darkened or faded state by 90 % of the difference between the luminous transmittances in the faded and darkened states , i.e. from $\tau_{v\,0}$ to $\{\tau_{v\,0} - 0{,}9 \times (\tau_{v\,0} - \tau_{v\,1})\}$ or from $\tau_{v\,1}$ to $\{\tau_{v\,1} + 0{,}9 \times (\tau_{v\,0} - \tau_{v\,1})\}$,

where

$\tau_{v\,0}$ is the luminous transmittance of the lens or filter in the faded state;

$\tau_{v\,1}$ is the luminous transmittance of the lens or filter in the darkened state.

Note 2 to entry: Darkening and fading times may be different.

3.4
absorption ratio
A_R
‹electro-optical sunglare filter› ratio of the luminous transmittance in the faded state to that in the darkened state

Note 1 to entry: The absorption ratio, *AR*, is calculated from the following formula:

$$A_R = \frac{\tau_{v\,0}}{\tau_{v\,1}}$$

where

$\tau_{v\,0}$ is the *luminous transmittance* of the *lens* or *filter* in the faded state;

$\tau_{v\,1}$ is the *luminous transmittance* of the *lens* or *filter* in the darkened state.

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