



NSAI
Standards

Irish Standard
I.S. EN ISO 12311:2013

Personal protective equipment - Test methods for sunglasses and related eyewear (ISO 12311:2013, Corrected version 2014-08-15)

I.S. EN ISO 12311:2013

Incorporating amendments/corrigenda/National Annexes issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.

This document is based on:

EN ISO 12311:2013

Published:

2013-08-07

This document was published under the authority of the NSAI and comes into effect on:

2014-08-14

ICS number:

13.340.20

NOTE: If blank see CEN/CENELEC cover page

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann



Correction Notice

Reference: EN ISO 12311:2013

Title: Personal protective equipment - Test methods for sunglasses and related eyewear (ISO 12311:2013, Corrected version 2014-08-15)

Work Item: 00085076

Brussels, 2014-09-10

please include the following minor editorial correction(s) in the document related to:

the following language version(s) :

- English
- French
- German

for the following procedure :

- PQ/UQ
- Enquiry
- 2nd Enquiry
- Parallel Enquiry
- 2nd Parallel Enquiry
- Formal Vote
- 2nd Formal Vote
- Parallel Formal Vote
- 2nd Parallel Formal Vote
- UAP
- TC Approval
- 2nd TC Approval
- Publication
- Parallel Publication

It has been brought to our attention that this document, issued on 2013-08-07, requires modification.

ISO has published a corrected version of ISO 12311 dated 2014-08-15.

Forewords and title pages have been updated accordingly.

Please find enclosed the updated English and French versions.

We apologise for any inconvenience this may cause.

This page is intentionally left BLANK.

EUROPEAN STANDARD

EN ISO 12311

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 2013

ICS 13.340.20

English Version

Personal protective equipment - Test methods for sunglasses
and related eyewear (ISO 12311:2013, Corrected version 2014-
08-15)

Équipement de protection individuelle - Méthodes d'essai
pour lunettes de soleil et articles de lunetterie associés (ISO
12311:2013, Version corrigée 2014-08-15)

Persönliche Schutzausrüstung - Prüfverfahren für
Sonnenbrillen und ähnlichen Augenschutz (ISO
12311:2013, korrigierte Fassung 2014-08-15)

This European Standard was approved by CEN on 30 June 2013.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

EN ISO 12311:2013 (E)

Contents

Page

Foreword.....	3
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 89/686/EEC.....	4

Foreword

This document (EN ISO 12311:2013) has been prepared by Technical Committee ISO/TC 94 "Personal safety - Protective clothing and 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 February 2014, and conflicting national standards shall be withdrawn at the latest by February 2014.

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

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive.

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

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 12311:2013, Corrected version 2014-08-15 has been approved by CEN as EN ISO 12311:2013 without any modification.

EN ISO 12311:2013 (E)

Annex ZA
(informative)
Relationship between this European Standard and the Essential Requirements of EU Directive 89/686/EEC

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association and supports essential requirements of the EU Directive 89/686/EEC on PPE.

Once this standard is cited in the Official Journal of the European Union under that Directive and has been implemented as a national standard in at least one Member State, compliance with the clauses of this standard, together with the relevant requirements given in the product standards, confers within the limits of the scope of those standards, a presumption of conformity with the corresponding Essential Requirements of that Directive and associated EFTA regulations.

WARNING — Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard

**INTERNATIONAL
STANDARD**

**ISO
12311**

First edition
2013-08-01

Corrected version
2014-08-15

**Personal protective equipment — Test
methods for sunglasses and related
eyewear**

*Équipement de protection individuelle — Méthodes d'essai pour
lunettes de soleil et articles de lunetterie associés*



Reference number
ISO 12311:2013(E)

© ISO 2013

ISO 12311:2013(E)



COPYRIGHT PROTECTED DOCUMENT

© ISO 2013

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

	Page
Foreword	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Prerequisites	1
5 General test requirements	2
6 Test methods for assessing the construction and materials	2
6.1 Prior assessment of construction, marking and information.....	2
6.2 Test method for assessment of filter material and surface quality.....	2
7 Test methods for measuring spectrophotometric properties	3
7.1 Measurement of spectral transmittance $\tau(\lambda)$	3
7.2 Measurement of uniformity of luminous transmittance.....	5
7.3 Calculation of ultraviolet transmittance.....	7
7.4 Calculation of solar blue-light transmittance τ_{sb}	9
7.5 Calculation of solar IR transmittance τ_{SIR}	9
7.6 Measurement of absolute spectral reflectance $\rho(\lambda)$	9
7.7 Absolute luminous reflectance ρ_v	10
7.8 Calculation of relative visual attenuation quotient for signal light detection Q_{signal}	11
7.9 Wide angle scatter.....	11
7.10 Polarizing filters.....	14
7.11 Photochromic filters.....	17
8 Test methods for measuring optical properties	19
8.1 Test method for spherical, astigmatic and prismatic refractive powers.....	19
8.2 Test method for the prism imbalance of complete sunglasses or filters covering both eyes.....	23
8.3 Test method for local variations in refractive power.....	25
9 Test methods for mechanical properties	30
9.1 Test method for minimum robustness of filters.....	30
9.2 Test method for impact resistance of filters, strength level 1.....	33
9.3 Test method for impact resistance of sunglasses, strength level 1.....	35
9.4 Test method for impact resistance of sunglasses, strength level 2.....	36
9.5 Test method for impact resistance of sunglasses, strength level 3.....	37
9.6 Test method for frame deformation and filter retention.....	39
9.7 Test method for increased endurance of sunglasses.....	42
9.8 Test method for resistance to solar radiation.....	46
9.9 Test method for resistance to ignition.....	48
9.10 Test for resistance to perspiration of the sunglass frame.....	48
Annex A (normative) Application of uncertainty of measurement	52
Annex B (informative) Sources of uncertainty in spectrophotometry and their estimation and control	54
Annex C (informative) Definitions in summations form	61
Annex D (normative) Product of the energy distribution of Standard Illuminant D65 as specified in ISO 11664-2 and the spectral visibility function of the average human eye for daylight vision as specified in ISO 11664-1	65
Annex E (normative) Spectral functions for the calculation of solar UV and solar blue light transmittance values	66
Annex F (normative) Spectral distribution of solar irradiance in the infrared spectrum for the calculation of the solar infrared transmittance^[7]	68

ISO 12311:2013(E)

Annex G (normative) Reference test headforms	70
Annex H (normative) Spectral distribution of radiation in incandescent signal lights weighted by the sensitivity of the human eye $V(\lambda)$.....	72
Annex I (informative) Spectral distribution of radiation in LED signal lights weighted by the sensitivity of the human eye $V(\lambda)$.....	75
Annex J (normative) Long wavelength pass filter	78
Annex K (informative) Method of variable distance for the calibration of the telescope	82
Annex L (normative) Method to correct transmittance for variations in thickness of the filter	84
Bibliography	85

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

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. 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.

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

This corrected version of ISO 12311:2013 incorporates the following correction:

— the second paragraph of 9.7.3.1 has been added.

Personal protective equipment — Test methods for sunglasses and related eyewear

1 Scope

This International Standard specifies reference test methods for determining the properties of sunglasses given in ISO 12312 (all parts). It is applicable to all sunglasses and related eyewear.

Other test methods may be used if proven to be equivalent.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 37, *Rubber, vulcanized or thermoplastic — Determination of tensile stress-strain properties*

ISO 48, *Rubber, vulcanized or thermoplastic — Determination of hardness (hardness between 10 IRHD and 100 IRHD)*

ISO 1042:1998, *Laboratory glassware — One-mark volumetric flasks*

ISO 3696:1987, *Water for analytical laboratory use — Specification and test methods*

ISO 4007, *Personal protective equipment — Eye and face protection — Vocabulary*

ISO 8596, *Ophthalmic optics — Visual acuity testing — Standard optotype and its presentation*

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

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/IEC Guide 98-3:2008, *Uncertainty of measurement — Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)*

3 Terms and definitions

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

4 Prerequisites

The following parameters shall be specified prior to testing [see ISO 12312 (all parts)]:

- the number of specimens;
- specimen preparation;
- any conditioning prior to testing;
- characteristics to be assessed subjectively (inappropriate);

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
 - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-