

DRAFT INTERNATIONAL STANDARD

ISO/DIS 18527-3

ISO/TC 94/SC 6

Secretariat: BSI

Voting begins on:
2019-08-14

Voting terminates on:
2019-11-06

Eye and face protection for sports use —

Part 3:

Requirements and test methods for eyewear intended to be used for surface swimming

Protection des yeux et du visage à usage sportif —

Partie 3: Lunettes de natation

ICS: 13.340.20; 97.220.30; 97.220.40

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
<https://standards.iteh.ai/catalog/standards/sist/9e182-a95-2bec-43ab-84b0-dd056f76b124/iso-dis-18527-3>

THIS DOCUMENT IS A DRAFT CIRCULATED FOR COMMENT AND APPROVAL. IT IS THEREFORE SUBJECT TO CHANGE AND MAY NOT BE REFERRED TO AS AN INTERNATIONAL STANDARD UNTIL PUBLISHED AS SUCH.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.

This document is circulated as received from the committee secretariat.



Reference number
ISO/DIS 18527-3:2019(E)

© ISO 2019

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
<https://standards.iteh.ai/catalog/standards/sist/9e182a95-2bec-43ab-84b0-dd056f76b124/iso-dis-18527-3>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2019

All rights reserved. Unless otherwise specified, or required in the context of its implementation, 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
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

	Page
Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 General requirements for eyewear	3
4.1 Physiological compatibility.....	3
4.2 Construction and adjustment.....	4
4.3 Cleaning and/or disinfection.....	4
4.4 Lens material and surface quality.....	4
4.5 Headform(s).....	4
4.6 Resistance to corrosion.....	4
4.7 Retention by headband (Sit and fit).....	4
4.8 Mandatory and optional requirements.....	4
5 Transmittance of the lenses	5
5.1 General.....	5
5.2 Transmittance and filter categories.....	5
5.3 General transmittance requirements.....	5
5.3.1 Uniformity of luminous transmittance and transmittance matching.....	5
5.3.2 Variations due to thickness variations.....	6
5.4 Special transmittance requirements.....	6
5.4.1 Photochromic lenses.....	6
5.4.2 Polarizing lenses.....	6
5.5 Claimed solar absorption/transmittance properties (optional).....	6
5.5.1 General.....	6
5.5.2 Solar blue-light absorption/transmittance.....	6
5.5.3 Solar UV absorption/transmittance.....	6
5.5.4 Antireflective coated lenses (optional).....	7
5.5.5 Reduced reflection coated lenses (optional).....	7
6 Scattered light	7
7 Refractive power and prismatic power	7
7.1 Non-prescription nominally plano or afocal lenses.....	7
7.1.1 Refractive power.....	7
7.1.2 Spatial deviation.....	8
7.1.3 Prism imbalance.....	8
7.2 Non-prescription mass-produced powered lenses.....	8
7.3 Prescription lenses.....	9
7.3.1 Spherical and cylindrical power.....	9
7.3.2 Prismatic power of unmounted lenses.....	9
7.3.3 Prism imbalance for mounted prescription lenses.....	9
8 Mechanical strength	9
8.1 General.....	9
8.2 Failure criteria after impact.....	9
9 Other requirements for lenses	10
9.1 Minimum optical aperture.....	10
9.1.1 Recreational and competitive use.....	10
9.1.2 Specialist competitive use (optional).....	10
9.2 Field of view.....	10
9.3 Temporal flange lenses.....	10
9.4 Resistance to fogging (Optional).....	10
9.4.1 Pre-conditioning.....	10

9.4.2	Testing	11
10	Other requirements	11
10.1	Leakage	11
10.2	Compressive strength of eyewear	11
10.3	Adhesion of water seal to eyecup	11
10.4	Headband	11
10.4.1	Adjustment	11
10.4.2	Resistance to slipping	11
10.4.3	Resistance to breaking	11
10.5	Nosebridge strap	11
11	Test methods	12
11.1	Leakage	12
11.1.1	Apparatus	12
11.1.2	Procedure	13
11.1.3	Report	14
11.2	Compressive strength of eyewear	14
11.2.1	Apparatus	14
11.2.2	Procedure	14
11.2.3	Test report	14
11.3	Adhesion of a foam-style water seal to the lens	14
11.3.1	Apparatus	14
11.3.2	Procedure	15
11.3.3	Test report	15
11.4	Slip resistance of the headband	15
11.4.1	Apparatus	15
11.4.2	Procedure	15
11.4.3	Test report	16
11.5	Method for determining the strength of the headband	16
11.5.1	Apparatus	16
11.5.2	Procedure	16
11.5.3	Test report	16
11.6	Method for determination of the tensile strength and slip resistance of the nosebridge strap	16
11.6.1	Apparatus	16
11.6.2	Procedure	16
11.6.3	Test report	17
12	Labelling and information to be supplied by the manufacturer	17
12.1	Complete eyewear	17
12.2	Mandatory markings on swimming eyewear	17
12.3	Information to be supplied by the manufacturer with each eyewear	17
12.4	Additional information to be available from the manufacturer	19
13	Selection of test samples	19
13.1	General	19
13.2	Preparation and conditioning of test samples	20
Annex A (informative) Selection and use of swimming eyewear		21
Annex B (informative) Types of eyewear		22

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 on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 94, *Personal safety – Protective clothing and equipment*, Subcommittee SC 6 *Eye and face protection*.

A list of all parts in the ISO 18527- series can be found on the ISO website.

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

Introduction

This family of documents 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 in the ISO 16321- series. Eye protectors for specific sports are mostly dealt with by the ISO 18527- series.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Full standard:
<https://standards.iteh.ai/catalog/standards/sist/9e182a95-2bec-43ab-84b0-dd056f76b124/iso-dis-18527-3>

Eye and face protection for sports use —

Part 3:

Requirements and test methods for eyewear intended to be used for surface swimming

1 Scope

This document specifies requirements and test methods for eyewear intended for surface swimming only. It contains requirements for eyewear for both recreational and specialist competitive swimming. It deals with materials, construction, optical properties and test methods.

Requirements for the labelling and marking of swimming eyewear and for information to be supplied by the manufacturer are also specified.

Eyewear intended for surface swimming conforming to the requirements of this standard are suitable for surface use and shallow diving only, e.g. from the edge of a pool, and are not suitable for wear when diving from a high board.

This standard applies to eyewear that include:

- a) non-prescription nominally plano or afocal lenses,
- b) non-prescription mass-produced corrective lenses, and
- c) prescription lenses.

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 4007:2018, *Personal protective equipment — Eye and face protection — Vocabulary*

ISO 8980-1:2017, *Ophthalmic optics — Uncut finished spectacle lenses — Part 1: Specifications for single-vision and multifocal lenses*

ISO 8980-2:2017, *Ophthalmic optics — Uncut finished spectacle lenses — Part 2: Specifications for power-variation lenses*

ISO 11664-2:2007, *Colorimetry — Part 2: CIE standard illuminants*

ISO 12312-1:2013 + A1:2015, *Eye and face protection — Sunglasses and related eyewear — Part 1: Sunglasses for general use*

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

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

1) Under preparation (Stage at the time of publication ISO/FDIS 18526-1)

2) Under preparation (Stage at the time of publication ISO/FDIS 18526-2)

ISO 18526-3:—³⁾, *Eye and face protection – Test Methods – Part 3: Physical and mechanical properties*

ISO 18526-4:—⁴⁾, *Eye and face protection – Test Methods – Part 4: Headforms*

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

3 Terms and definitions

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

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO online browsing platform: available at <http://www.iso.org/obp>

3.1 swimming goggles

eyewear having individual cup-type flat or curved sheet plano lenses or corrective lenses and designed for surface swimming only

3.2 swimming mask

eyewear (with one-piece or separate lenses) intended for surface swimming with a single *water seal* or *water gasket* (3.4) on the perimeter of the frame that does not cover the nostrils

3.3 eyecup

part of the eyewear surrounding the lens or lenses, generally with the *water seal* (3.4) incorporated

Note 1 to entry: Some eyewear designed for competitive use may not have a *water seal* (3.4).

3.4 water seal water cushion water gasket

sealing material typically made of a soft or semi-rigid material attached or adhered to the *eyecup* (3.3) to assist sealing between the face and the eyewear

3.5 nosebridge strap

part of the product that connects the *eyecups* (3.3) or frame

Note 1 to entry: Some products have a nosebridge strap that is one-piece with the frame and, as a consequence, is not adjustable. Some products have a separate nosebridge strap and *eyecups* and this may be adjustable.

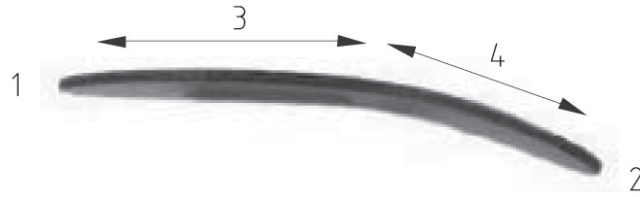
3.6 temporal flange lens

lens that is flat or has a shallow curve across the optical aperture but with a temporal zone angled towards the wearer's face.

Note 1 to entry: See [Figure 1](#)

3) Under preparation (Stage at the time of publication ISO/FDIS 18526-3)

4) Under preparation (Stage at the time of publication ISO/FDIS 18526-4)

**Key**

1	Nasal	3	Optical aperture
2	Temporal	4	Temporal flange

Figure 1 — View from above of an example of a right lens with a temporal flange

4 General requirements for eyewear⁵⁾

4.1 Physiological compatibility

Eyewear 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 eyewear that can come into prolonged contact with the wearer shall be reduced by the manufacturer to within the limits of any applicable regulatory requirement.

Special attention shall be given to substances that are allergenic, carcinogenic, mutagenic or toxic to reproduction.

NOTE 1 Excessive pressure due to a poor fit on the head, chemical irritation or allergy are known to produce reactions. Rare or idiosyncratic reactions to any material are known to occur and the individual wearer is well advised to avoid those types of frame materials.

Substances recommended for cleaning, maintenance or disinfection shall be known to be unlikely to have any adverse effect upon the wearer, when applied in accordance with the instructions given in the information to be supplied by the manufacturer.

Manufacturers / suppliers shall perform an appropriate risk analysis on potentially harmful substances contained in the eyewear that, when the eyewear is used under the conditions and for the purposes intended, the health (and safety) of the wearer shall not be compromised.

The following are examples of documents that represent the appropriate information:

- a) specification of the material(s);
- b) safety data sheets relating to the materials;
- c) information relating to the suitability of the materials for use with food, in medical devices, or other relevant applications and
- d) information relating to toxicological, allergenic, carcinogenic, toxic to reproduction, or mutagenic investigations on the materials.

NOTE 2 Specific national regulations with regard to restriction of certain chemicals need to be observed, for example release of nickel.

⁵⁾ "For the purposes of this document, "eyewear" is used as a general term for masks and goggles used for surface swimming."

4.2 Construction and adjustment

Areas of the eyewear that may, during intended use, come into contact with the wearer shall be free from projections, sharp edges or other features likely to cause discomfort or injury to the wearer.

Any part of the eyewear that can be adjusted or removed by the wearer for the purpose of replacement (in accordance with the instructions given in the information to be supplied by the manufacturer), shall be designed and manufactured to facilitate adjustment, removal and attachment without the use of tools.

Any adjustment system incorporated in the eyewear shall maintain the intended fit for the foreseeable conditions of use.

The test shall be carried out by physical inspection according to ISO 18526-3:—, 6.1.

4.3 Cleaning and/or disinfection

The eyewear shall be cleaned only once according to the cleaning and/or disinfection procedures in the information to be supplied by the manufacturer before being subjected to testing.

4.4 Lens material and surface quality

In a circular area 30 mm diameter centred on the reference point(s) but excluding a marginal area 3 mm wide around the edge of the lens, visor or filter if this overlaps with the circular area, lenses, visors or filters shall be free from defects likely to impair vision in use (such as bubbles, scratches, inclusions, dull spots, pitting, mould marks, scouring, grains, pocking, scaling and undulation) when examined according to ISO 18526-3:—, 6.6. Outside this zone, including on any temporal flange, small isolated material and/or surface defects are acceptable.

4.5 Headform(s)

Unless the manufacturer specifies the headform(s) according to ISO 18526-4 that are compatible with the eyewear, the test methods where headform(s) is/are required shall use the headform 1-M according to ISO 18526-4 as the default.

4.6 Resistance to corrosion

Following the resistance to corrosion test according to ISO 18526-3:—, 6.9, the intended use of all exposed metal parts of the eyewear shall not be affected. No metallic part intended to be in direct contact with the user during intended use shall show signs of corrosion. The test shall be verified by physical inspection according to ISO 18526-3:—, 6.1.

4.7 Retention by headband (Sit and fit)

Eyewear shall sit in the intended position during normal use and shall adapt to the contours of the face. The surfaces in contact with the face shall be made of soft flexible material. The headband shall be designed to be flexible or adjustable and sit securely on the back of the head. The headband assembly shall not cause any discomfort nor exhibit any insecurity when tested in accordance with ISO 18526-3:—, 6.5.

4.8 Mandatory and optional requirements

In this document both optional and mandatory requirements are described. Depending on the intended use and/or the manufacturer's claimed specification, some requirements marked as optional become mandatory.