

Specification for

# Surface swimming goggles

ICS 97.220.40

**NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW**

---



# Committees responsible for this British Standard

The preparation of this British Standard was entrusted by Technical Committee SW/136, Sports, playground and other recreational equipment, to Subcommittee SW/136/8, Swimming equipment, upon which the following bodies were represented:

Amateur Swimming Association  
British Rubber Manufacturers' Association Ltd.  
British Toy and Hobby Association  
Consumer Policy Committee of BSI  
Department of Trade and Industry (Consumer Safety Unit, CA Division)  
Diving Trade Association  
Institute of Sport and Recreation Management  
Institute of Trading Standards Administration  
Royal Lifesaving Society  
Royal Society for the Prevention of Accidents  
Sports Council  
Swimming Pool Allied Trades Association Ltd.  
Swimming Teachers' Association

This British Standard, having been prepared under the direction of the Consumer Products and Services Sector Board, was published under the authority of the Standards Board and comes into effect on 15 October 1996

© BSI 1996

## Amendments issued since publication

Amd. No.	Date	Text affected

The following BSI references relate to the work on this standard:  
Committee reference SW/136/8  
Draft for comment 93/313610 DC

ISBN 0 580 25756 8

---

# Contents

	Page
Committees responsible	Inside front cover
Foreword	ii
<hr/>	
<b>Specification</b>	
<b>1</b> Scope	1
<b>2</b> References	1
<b>3</b> Definitions	1
<b>4</b> Safety requirements	1
<b>5</b> Marking	2
<b>6</b> Instructions	2
<hr/>	
<b>Annexes</b>	
<b>A</b> (normative) Methods of test	3
<b>B</b> (informative) General advice on the use of swimming goggles	4
<hr/>	
<b>Figure</b>	
<b>B.1</b> Fitting of swimming goggles	4
<hr/>	
<b>List of references</b>	Inside back cover
<hr/>	

## Foreword

This British Standard has been prepared by Subcommittee SW/136/8, and supersedes BS 5883 : 1980, which is withdrawn.

This revision has been prepared to take into account materials currently used in the manufacture of swimming goggles, which were not considered when the 1980 edition of the standard was prepared.

Swimming goggles conforming to the requirements of this standard are suitable for surface use only and are not to be worn when diving. BS 4532 specifies requirements for snorkels and face masks for underwater use.

**Assessed capability.** Users of this British Standard are advised to consider the desirability of quality system assessment and registration against the appropriate Part of BS EN ISO 9000 by a third party certification body.

Your attention is drawn to the following:

- Council Directive of 21 December 1989 on the approximation of the laws of the Member States relating to personal protective equipment (89/686/EEC); and
- Council Directive 93/95/EEC of 29 October 1993 amending Directive 89/686/EEC on the approximation of the laws of the Member States relating to personal protective equipment (PPE).

**Compliance with this British Standard does not itself confer immunity from legal obligations.**

# Specification

## 1 Scope

This British Standard specifies safety requirements and methods of test for swimming goggles, designed for surface swimming only and intended for use by adults and children.

## 2 References

### 2.1 Normative references

This British Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are made at the appropriate places in the text and the cited publications are listed on the inside back cover. For dated references, only the edition cited applies; any subsequent amendments to or revisions of the cited publication apply to this British Standard only when incorporated in the reference by amendment or revision. For undated references, the latest edition of the cited publication applies, together with any amendments.

### 2.2 Informative references

This British Standard refers to other publications that provide information or guidance. Editions of these publications current at the time of issue of this standard are listed on the inside back cover, but reference should be made to the latest editions.

## 3 Definitions

For the purposes of this British Standard, the following definitions apply.

### 3.1 swimming goggles (goggles)

Goggles having individual cup-type lenses and designed for surface swimming only.

### 3.2 eye cup

The part of the goggles containing the lens and the cup which surrounds it.

### 3.3 cushion/water seal

Cushioning material attached or adhered to the eye cup to assist sealing between the face and the goggles.

NOTE. The cushioning material may be integral or supplied separately.

### 3.4 bridge strap

Part of the product that connects the eye cups.

NOTE. The bridge strap may be an integral or separate item and may be adjustable.

## 4 Safety requirements

### 4.1 General

When measured with appropriate gauges, all components, excluding the seal and head strap, shall be free from exposed edges of radius less than 2 mm.

NOTE. There should be no other features present likely to cause discomfort in wear or injury in use.

### 4.2 Projections

When subjected to visual and tactile examination, the sealing face, including the strap lug where this is incorporated into the sealing face, shall be free from projections that would cause discomfort to the wearer.

### 4.3 Material components

No metal parts shall be used.

NOTE. Materials used in parts that come into contact with the skin should not affect the skin adversely.

### 4.4 Lenses

#### 4.4.1 General

For afocal lenses the front surface shall be plane (i.e. zero power) and for prescription lenses:

- a) minus power lenses shall be of plane/concave form with the front surface plane; and
- b) plus power lenses shall be such that the front surface does not exceed 4 dioptres unless clinically required by a registered optician.

NOTE. 4 dioptres is the limit specified in BS 7394 : Part 1 for ready-to-wear near-vision spectacles.

Tolerances shall be as given in BS 2738 : Part 1.

#### 4.4.2 Impact strength

When tested in accordance with A.1, lenses shall not fracture or crack.

If the lens and cup are moulded in one piece, the cup shall not fracture or crack when tested in accordance with A.1.

#### 4.4.3 Defects

When examined visually by the naked eye, lenses shall be free from material defects such as bubbles, striations, inclusions, or opacity or any surface defects such as scratches, mould marks, drawing striae.

NOTE 1. A description of defects sometimes found in glass and plastics used for lenses is given in appendix C of BS 2092.

NOTE 2. Goggles should give adequate peripheral vision to the wearer.

The minimum optical aperture on the horizontal centre line shall be as follows:

- a) for adults' goggles : 36 mm; and
- b) for children's goggles : 30 mm.

#### 4.4.4 Leakage

When tested in accordance with **A.2** the eye cups shall not leak.

#### 4.5 Compressive strength of eye cup

When tested in accordance with **A.3** goggles shall not fracture or splinter.

#### 4.6 Water seal

##### 4.6.1 Configuration

The form of the cushion/water seal shall be such as to cover the eye cup and to overlap the outside periphery by a minimum of 1 mm.

NOTE. A seal between the goggles (eye cup) and the face should be created either by the shape of the eye cup or by use of a soft cushioning material.

##### 4.6.2 Adhesion of eye seal to eye cup

When tested in accordance with the method in **A.4**, no part of the water seal shall become detached from the eye cup.

#### 4.7 Head strap

##### 4.7.1 General

The head strap shall be adjustable in length so as to permit adjustment of tension to that sufficient to hold the goggles in position.

##### 4.7.2 Material

The head strap shall be made from an elastic material, or shall include a portion of elastic material, to assist in providing a seal around the eyes.

##### 4.7.3 Resistance to slipping

When tested in accordance with **A.5**, the amount of slippage of the head strap through the fastening device shall not exceed 3 mm.

#### 4.8 Bridge strap

If the bridge strap is supplied as a separate item it shall be adjustable in length.

NOTE 1. This is to allow correct fitting around the nose.

When tested in accordance with **A.6** the bridge strap shall neither break nor slip through its retainer.

## 5 Marking

Each pair of goggles shall be marked with the following information:

- a) the number of this British Standard, i.e. BS 5883 : 1996<sup>1)</sup>
- b) the name, trademark or other means of identification of the manufacturer or supplier.

## 6 Instructions

Instructions for use shall be provided with each pair of goggles, either on the packaging or as a separate instruction sheet. These instructions shall include information on the following:

- a) adjustment to head strap and bridge strap;
- b) fitting and removal of goggles;
- c) eye safety warning;
- d) an indication as to whether goggles are for children or adults;
- e) a statement that the goggles are 'FOR SURFACE USE ONLY'; and
- f) if the water seal and eye cup are provided separately, the method of attachment.

NOTE. An example of instructions for fitting, adjustment and removal is given in annex B.

---

<sup>1)</sup> Marking BS 5883 : 1996 on or in relation to a product represents a manufacturer's declaration of conformity, i.e. a claim by or on behalf of the manufacturer that the product meets the requirements of the standard. The accuracy of the claim is solely the claimant's responsibility. Such a declaration is not to be confused with third party certification of conformity, which may also be desirable.

# Annexes

## Annex A (normative)

### Methods of test

#### A.1 Method for determination of the impact strength of the lens

##### A.1.1 Apparatus

**A.1.1.1** *Headform*<sup>2)</sup> conforming to clause 17 of BS EN 168.

**A.1.1.2** *Guide device* enabling a 22 mm diameter steel ball of mass 44 g to be dropped onto a specified point on the lens.

##### A.1.2 Procedure

Place the goggles on the headform in the position corresponding to normal use. Tilt the headform so that the lens to be impacted is horizontal.

Adjust the guide so that the 22 mm diameter steel ball of mass 44 g will strike the centre of the lens, and the distance between the lower end of the guide and the lens is  $50 \text{ mm} \pm 10 \text{ mm}$ .

Release the steel ball from a height of  $1.3 \pm_{0.03}^0 \text{ m}$  above the lens.

NOTE. This drop height will provide an impact speed of 5.1 m/s.

##### A.1.3 Test report

Examine the lens visually and record and report any fracturing or cracking.

#### A.2 Method for the determination of leakage from the eye cup

Support the goggles horizontally face downwards above a clean sheet of white blotting paper. Pour sufficient ink-stained water into the eye cups to give a depth of 5 mm.

After 1 h examine the blotting paper for ink.

Record and report whether ink can be detected.

#### A.3 Method for the determination of the compressive strength of the eye cup

##### A.3.1 Apparatus

**A.3.1.1** *Steel support*, capable of supporting the goggles as follows:

- a) flat with the outer face of the eye cups facing upwards; and
- b) on edge.

**A.3.1.2** *Circular steel plate*, with diameter 50 mm  $\pm$  2 mm, thickness 15 mm  $\pm$  1 mm, covered by a 2 mm thick coating of shore A hardness  $75 \pm 5$ .

**A.3.1.3** *Weights*, or other means of applying a force of 588 N  $\pm$  2 N, using the circular steel support (**A.3.1.2**), to the eye cup.

##### A.3.2 Procedure

###### A.3.2.1 Flat with eye cups facing upwards

Place the goggles in the steel support (**A.3.1.1**) flat with the outer face of the eye cups facing upwards. Apply a compression force (**A.3.1.3**) of 588 N  $\pm$  2 N through the circular steel plate (**A.3.1.2**) to the eye cup for 1 min  $\pm$  5 s.

Repeat the procedure for the second eye cup.

###### A.3.2.2 Goggles on edge

Place the goggles in the steel support (**A.3.1.1**) on edge.

Apply a compression force (**A.3.1.3**) of 588 N  $\pm$  2 N through the circular steel plate (**A.3.1.2**) to the edge of the eye cup for 1 min  $\pm$  5 s.

Repeat the procedure for the second eye cup.

##### A.3.3 Test report

Examine the lens visually and report any fracturing or splintering.

#### A.4 Method for determination of the adhesion of the water seal to the lens

Weight the lens and water seal assembly and submerge it in a tank of still, potable water, maintained at 30 °C  $\pm$  2 °C. Leave the assembly submerged for 24 h  $\pm$  4 h.

Remove the assembly from the water and apply a tensile force of 2 N  $\pm$  0.5 N to the water seal, in a direction perpendicular to the eye cup.

Record and report any detachment of the water seal from the eye cup.

#### A.5 Method for determination of slip resistance of the headstrap

**A.5.1** Using a waterproof ink, make two marks on the head strap at the points where it enters the fastening devices.

**A.5.2** Immerse the goggles in still, potable water, maintained at 30 °C  $\pm$  2 °C, and ensure that all parts are fully wet. Remove the goggles from the water and fit them on a headform<sup>2)</sup>, stretching the headstrap over the headform to simulate putting on the goggles in normal use.

After 30 s, remove the goggles from the headform by sliding them up and off. Record any displacement, in mm, of the marks from where the headstrap enters the fastening devices.

**A.5.3** Repeat the procedure in **A.5.2** a further five times.

**A.5.4** Report any mean displacement, in mm, of the marks from where the headstrap enters the fastening devices.

<sup>2)</sup> For information on the availability of the headform, write to Customer Information, BSI, 389 Chiswick High Road, London W4 4AL.

### A.6 Method for determination of the tensile strength and slip resistance of the bridge strap

Adjust the bridge to its greatest length, if it is adjustable. Wet the bridge strap and retaining devices of the goggles. With the goggles maintained in the normal wearing position in relation to the bridge strap, apply a tensile load of  $10 \text{ N} \pm 0.5 \text{ N}$  to the bridge strap, in a direction laterally along the axis of the strap.

Record any failure of the bridge strap or retainers and any slippage of the bridge strap through the retainers.

## Annex B (informative)

### General advice on the use of swimming goggles

#### B.1 Fit

##### B.1.1 General

To ensure the goggles fit well, adjustment of the head strap and bridge strap will be necessary.

##### B.1.2 Head strap

The head strap is used to hold the goggles in place; tighter is not necessarily better as this may cause discomfort and marking around the eyes.

Correct adjustment can be obtained by tensioning the band until a comfortable fit is achieved.

##### B.1.3 Bridge strap

Correct adjustment of the bridge strap is essential for both comfort and a watertight seal.

To avoid water intake, slide the lenses closer together or further apart a notch at a time until the correct fit is obtained.

### B.2 Example of instructions for fitting, adjustment and removal of goggles

See figure B.1.

To clear water or to adjust goggles, take a firm grip on the eye cup and tilt the lower edge of the eye cup slightly away from the face.

To remove goggles, put thumbs under head strap at side of head. Slide thumbs to back of head and lift elastic from back to front of head.

It is recommended that teachers, coaches or mature swimmers demonstrate this method to young children.

**WARNING:** Never pull eye cups away from face as they may spring back and cause eye damage.

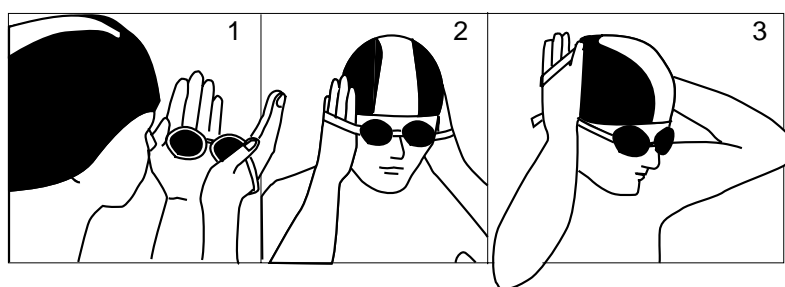


Figure B.1 Fitting of swimming goggles



---

# List of references

## Normative references

### BSI standards publications

BRITISH STANDARDS INSTITUTION, London

- BS 2738 :  
    BS 2738 : Part 1 : 1989
- BS EN 168 : 1995
- Spectacle lenses  
Specification for tolerances on optical properties of mounted  
spectacle lenses*
- Personal eye-protection — Non-optical test methods*

## Informative references

### BSI standards publications

BRITISH STANDARDS INSTITUTION, London

- BS 2092 : 1987
- BS 4532 : 1969
- BS 7394 :  
    BS 7394 : Part 1 : 1991
- BS EN ISO 9000 series<sup>3)</sup>
- Specification for eye-protectors for industrial and non-industrial  
uses*
- Specification for snorkels and face masks*
- Complete spectacles*
- Specification for ready-to-wear near-vision spectacles*
- Quality management and quality assurance standards*

---

<sup>3)</sup> Referred to in the foreword only.

---

# BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

## Revisions

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using this British Standard would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover. Tel: 020 8996 9000. Fax: 020 8996 7400.

BSI offers members an individual updating service called PLUS which ensures that subscribers automatically receive the latest editions of standards.

## Buying standards

Orders for all BSI, international and foreign standards publications should be addressed to Customer Services. Tel: 020 8996 9001. Fax: 020 8996 7001.

In response to orders for international standards, it is BSI policy to supply the BSI implementation of those that have been published as British Standards, unless otherwise requested.

## Information on standards

BSI provides a wide range of information on national, European and international standards through its Library and its Technical Help to Exporters Service. Various BSI electronic information services are also available which give details on all its products and services. Contact the Information Centre. Tel: 020 8996 7111. Fax: 020 8996 7048.

Subscribing members of BSI are kept up to date with standards developments and receive substantial discounts on the purchase price of standards. For details of these and other benefits contact Membership Administration. Tel: 020 8996 7002. Fax: 020 8996 7001.

## Copyright

Copyright subsists in all BSI publications. BSI also holds the copyright, in the UK, of the publications of the international standardization bodies. Except as permitted under the Copyright, Designs and Patents Act 1988 no extract may be reproduced, stored in a retrieval system or transmitted in any form or by any means – electronic, photocopying, recording or otherwise – without prior written permission from BSI.

This does not preclude the free use, in the course of implementing the standard, of necessary details such as symbols, and size, type or grade designations. If these details are to be used for any other purpose than implementation then the prior written permission of BSI must be obtained.

If permission is granted, the terms may include royalty payments or a licensing agreement. Details and advice can be obtained from the Copyright Manager. Tel: 020 8996 7070.

BSI  
389 Chiswick High Road  
London  
W4 4AL