BS EN ISO 25649-4:2017

BSI Standards Publication

# Floating leisure articles for use on and in the water

Part 4: Additional specific safety requirements and test methods for Class B devices (ISO 25649-4:2017)

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# National foreword

This British Standard is the UK implementation of EN ISO 25649-4:2017. It is identical to ISO 25649-4:2017. It supersedes BS EN 15649-4:2010+A1:2012, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee SW/136/8, Swimming pools and aquatic equipment.

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

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Published by BSI Standards Limited 2017

ISBN 978 0 580 88117 6

ICS 97.220.40

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 October 2017.

**Amendments/corrigenda issued since publication**

| Date | Text affected |
|---|---|

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EUROPEAN STANDARD

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EUROPÄISCHE NORM

# EN ISO 25649-4

October 2017

ICS 97.220.40

Supersedes EN 15649-4:2010+A1:2012

English Version

# Floating leisure articles for use on and in the water - Part 4: Additional specific safety requirements and test methods for Class B devices (ISO 25649-4:2017)

Articles de loisirs flottants à utiliser sur ou dans l'eau - Partie 4: Exigences de sécurité et méthodes d'essai complémentaires propres aux dispositifs de Classe B (ISO 25649-4:2017)

Schwimmende Freizeitartikel zum Gebrauch auf und im Wasser - Teil 4: Zusätzliche spezifische sicherheitstechnische Anforderungen und Prüfverfahren für Klasse B-Geräte (ISO 25649-4:2017)

This European Standard was approved by CEN on 24 June 2017.

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## European foreword

This document (EN ISO 25649-4:2017) has been prepared by Technical Committee ISO/TC 83 "Sports and other recreational facilities and equipment" in collaboration with Technical Committee CEN/TC 136 "Sports, playground and other recreational facilities and equipment" the secretariat of which is held by DIN.

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 April 2018, and conflicting national standards shall be withdrawn at the latest by April 2018.

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 15649-4:2010+A1:2012.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

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**Endorsement notice**

The text of ISO 25649-4:2017 has been approved by CEN as EN ISO 25649-4:2017 without any modification.



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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).

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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.

ISO 25649-4 was prepared by the European Committee Standardization (CEN) Technical Committee CEN/TC 136, *Sports, playground and other recreational facilities and equipment*, in collaboration with ISO Technical Committee TC 83, *Sports and other recreational facilities and equipment*, in accordance with the agreement on technical cooperation between ISO and CEN (Vienna Agreement).

A list of all the parts in the ISO 25649-series can be found on the ISO website.


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# Introduction

## 0.1 General

Class B devices are marketed and used for the purpose of activities in the water. In distinction to other floating devices they are characterized by a typically partly immersed position of the user inside the device.

In case of Class B1 products, i.e. the swim seat for children above three years of age (36 months), user's position might be such that in case of very young users (non swimmers four years and above) the body is kept afloat und laterally supported by a surrounding inflatable structure which provides a relatively tight fit between user and buoyant structure. This in turn incorporates the potential risk of body entrapment in case of a capsizing.

Class B1-type products for children below three years of age (36 months) are dealt with in EN 13138-3.

The development of new products in this area is progressing. Beyond the classical swim seat rafts for more dynamic action on and in the water different body postures and extended user groups have been developed.

Class B2 products do not provide this kind of support to the user. Even if they have the circumferential buoyant structure in common with the Class B1 products — and thus the entrapment risk if this fit becomes too tight — flotation of the user depends on his ability to hold himself by hands or body inside the very loosely surrounding buoyant structure.

Both classes of products include also adult use. Activities may range from passive floating to actions like wave surfing, tubing, balancing, swinging, etc. The devices are linked with the identified risks given in Table 1.

Standardization is aiming for more safety with regard to all foreseeable uses.

Dealing with a partly intentionally immersed human body leads to the question of loads to be applied for appropriate testing. For the purpose of this standard load resulting from the body weight is set with 75 % of the body weight of the heaviest foreseeable or specified user even when in certain circumstances this immersed body weight may be reduced to roughly 10 %. In cases where the devices can be used for sitting on top (e.g. big rings) the maximum body weight out of the stipulated user group is assessed as adequate.

It should be noted that this document is not related to the one and only technically clearly determined product but to a whole diverse product group including two major design principles B1 and B2 as laid down in the classification, see Clause 4, for Class B floating leisure articles.

## 0.2 Child testing

See Annex A and ISO 25649-1:2017, Clause 4, as alternative. Use of Class B products includes children from four years of age and above. Some essential requirement ensuring safety in use and in dangerous situations which may occur — e.g. a capsize — cannot be simulated and verified via the application of forces or other instrumental procedures but only by practical testing involving human test subjects or test dummies which sufficiently represent the envisaged user groups. Children in testing increase the nearness to real life situation but may lead to subjective results. An increased number of test cycles are an appropriate means to get an average result which makes the subjective test more objective. The application of test dummies reduces the nearness to real life situation but increases reproducibility of testing. Costs and expenses are high in the beginning (production costs) but may pay off in long term in comparison to the expense of repeated provision and operation of human test subjects. The worst alternative is to eliminate certain requirements if they cannot be verified for the reason of lacking either test dummies or human test subjects.

It goes without saying that any involvement of human test subjects and thus in particular child testing is accompanied with all necessary precautions, surveillance and safety measures.

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This document refers amongst others to children as test subjects. The anthropometric requirements related to these test subjects are based on children five years and nine years of age with a body height of 126 cm and 149 cm and a body weight of 25 kg/38 kg. Children of 14 years of age and above can be represented by the smallest adult female person representing the fifth percentile of the anthropometric range.

In order to provide in all cases an alternative to child testing the anthropometric data of relevant manikins are specified for optional application in Annex A.

**Table 1 — Introductory risk analysis**

| No. | Typical products | Place of use | Function; range of usage; target/age group | Type of movement/ propulsion | Position of user in regard to the equipment, elevation above water | Predictable misuse | Partial risk related to water environment | Final risk | Protection aims standard/ regulation |
|---|---|---|---|---|---|---|---|---|---|
| **B** (B1, B2) | Floating structures with circumferential buoyancy chambers around user's body, body opening with or without interior body holding system, various body postures | Depending on age group and capability to swim: pool, close to shore, lake, pond | Children; adolescents; large variety with regard to age and use (max. 16 years to 18 years); no infants | Mainly drifting; propulsion only by swimming strokes; third party acting, moving by hand paddling, action in waves for adolescents | In-water position; main parts of body are below the water surface; no elevation above water level, sitting kneeling, standing, laying | Dangerous distance from bank/ shore; use in currents and/or dangerous offshore winds; use by non-swimmers (B2); capsizing (B1); wrong size allocation (user wedged in device); lack of supervision | Capsizing, entrapment, entanglement; capsizing in combination with entrapment can lead to fatal accidents; drifting away through currant or wind | **DROWNING** | Avoidance of entrapment/ entanglement; floating stability; residual buoyancy; warning notes; easy escape in the case of capsizing; adult supervision; suitable sizing system |


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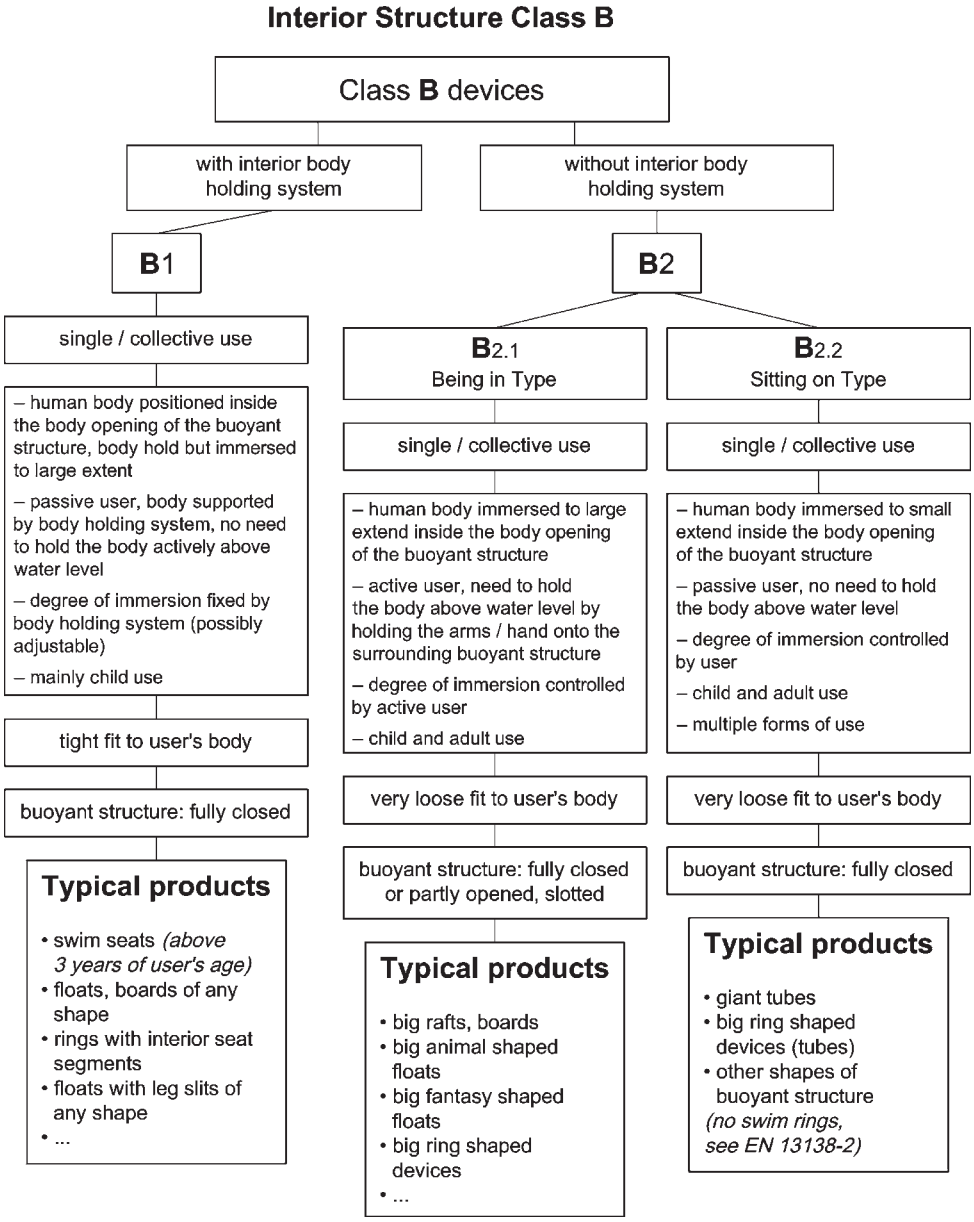


NOTE 1 Rings and ring shaped tubes dealt with in this document are in no case swim rings as means to learn to swim (see EN 13138-2) but water leisure articles for hanging in or sitting on.

NOTE 2 The minimum length or width is 1,2 m and the corresponding diameter is ≥1,2 m (see EU guidance document No 7,2014-01,on the application of the directive on the safety of toys used in and on the water).

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# Floating leisure articles for use on and in the water —

# Part 4: Additional specific safety requirements and test methods for Class B devices

## 1 Scope

This document specifies safety requirements and test methods related to materials, safety, performance and consumer information for classified floating leisure articles for use on and in the water according to ISO 25649-1.

This document is to be applied with ISO 25649-1 and ISO 25649-2.

This document is applicable for Class B floating leisure articles for use on and in the water according to ISO 25649-1 regardless whether the buoyancy is achieved by inflation or inherent buoyant material.

Class B devices provide a buoyant structure with one or more body openings into which the user is positioned partly immersed.

NOTE 1 Typical products forming Class B (see Annex B):

— floating rafts with interior body holding system ("swim seats") mostly in circular or square shape, fantasy shape for playing purposes;

— floating fantasy shaped structures with one or more openings to host a child's body, with or without body holding system;

— floating with slits or openings to put legs through any shape;

— floating rings with interior seat segments inside the circular body opening.

NOTE 2 Typical places for application:

— pools;

— protected areas of lakes, ponds;

— protected area sea shore (no offshore winds, no currents).

## 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.

EN 13138-3:2007, *Buoyant aids for swimming instruction — Part 3: Safety requirements and test methods for swim seats to be worn*

EN 13138-4:2007, *Buoyant aids for swimming instruction — Part 4: Test manikin for in water performance testing of buoyant aids to be worn*

ISO 25649-1, *Floating leisure articles for use on and in the water — Part 1: Classification, materials, general requirements and test methods*

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## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 25649-1 and the following apply.

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

— ISO Online browsing platform: available at http://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

**3.1**
**residual buoyancy**
provision of remaining buoyancy in case of a defect of any buoyancy chamber

**3.2**
**buoyant swimming device**
garment or device which, when correctly worn and used in water, will provide the user with a specific amount of buoyancy which will increase the likelihood of survival

[SOURCE: ISO 12402-1:2005, 3.1]

**3.3**
**device providing static floating stability**
product designed in such a way that the user has floating stability without needing their own skills

Note 1 to entry: One or several users can be safely on or in the device even if the weight is not evenly distributed.

Note 2 to entry: In accordance with intended use.

**3.4**
**device to be balanced by the user**
product of which the upright floating depends on user's skill and sense to balance it

Note 1 to entry: In accordance with intended use.

**3.5**
**escape**
easy and complete separation between the user and the device in case of capsizing of the device or system without hindrance through any part or feature of the floating device

**3.6**
**swim seat**
buoyant device intended to introduce the user to the aquatic environment and to build water confidence as a pre-requisite to learning to swim, which provides safety for the user but no guarantied protection against drowning

Note 1 to entry: Swim seats are learning aids and need not be mistaken with aquatic toys as defined in EN 71–1.

[SOURCE: EN 13138-3:2007, 3.13]

**3.7**
**body holding system**
system which is constituted by any means inside the circumferential buoyant structure which supports the users body

Note 1 to entry: The body holding systems enable the user(s) to stay in the partly immersed position without need to hold himself for not slipping through the opening into the water. The body holding system might be designed to allow a sitting, kneeling, standing or lying posture. It might be integrated in the interior opening of the buoyant structure or added as a separable component.


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