SLOVENSKI STANDARD
SIST EN 15649-4:2010

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Plavajoči pripomočki za prosti čas, ki se uporabljajo na vodi in v njej - 4. del: Dodatne posebne varnostne zahteve in preskusne metode za pripomočke razreda B

Floating leisure articles for use on and in the water - Part 4: Additional specific safety requirements and test methods for Class B devices

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

Articles de loisirs flottants à utiliser sur ou dans l'eau - Partie 4: Exigences de sécurité et méthodes d'essai com-plémentaires propres aux dispositifs de classe B

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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

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Foreword

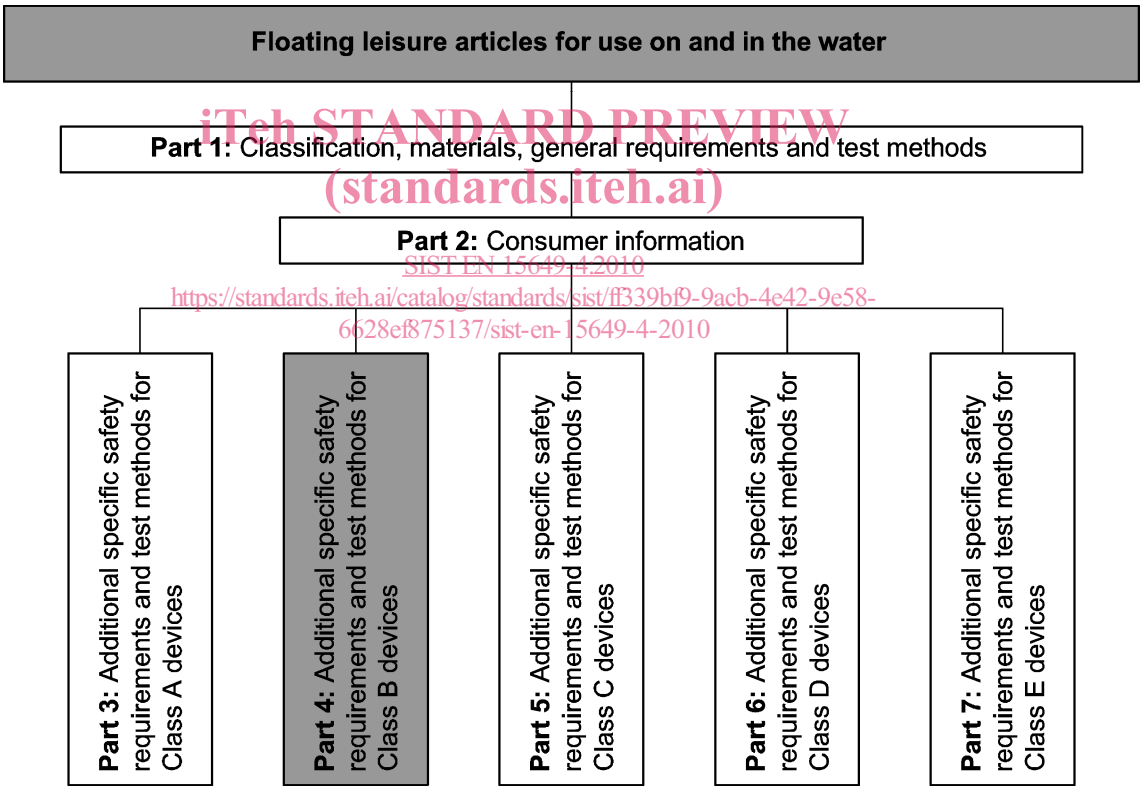
This document (EN 15649-4:2010) has been prepared by Technical Committee CEN/TC 136 “Sports, playground and other recreational facilities and equipment”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by July 2010, and conflicting national standards shall be withdrawn at the latest by July 2010.

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 mandate given to CEN by the European Commission.

This European Standard is one of a series consisting of seven standards dealing with floating leisure articles for use on and in the water.



Compliance of a product to this standard requires that the relevant specific part and additionally the EN 15649-1 and EN 15649-2 are met. If a product includes multiple use related to several classes it should meet the requirements of all these classes.

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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

Class B devices are marketed and used for the purpose of activities in the water. In distinction to other floating devices they are characterised 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 reach from passive floating to actions like wave surfing, tubing, balancing, swinging, etc. The devices are linked with the identified risks given in Table 1.

Standardisation 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 are 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 should be applied.

It should be noted that this standard 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.

Children testing

See Annex A and EN 15649-1:2009, 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 expenses 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.

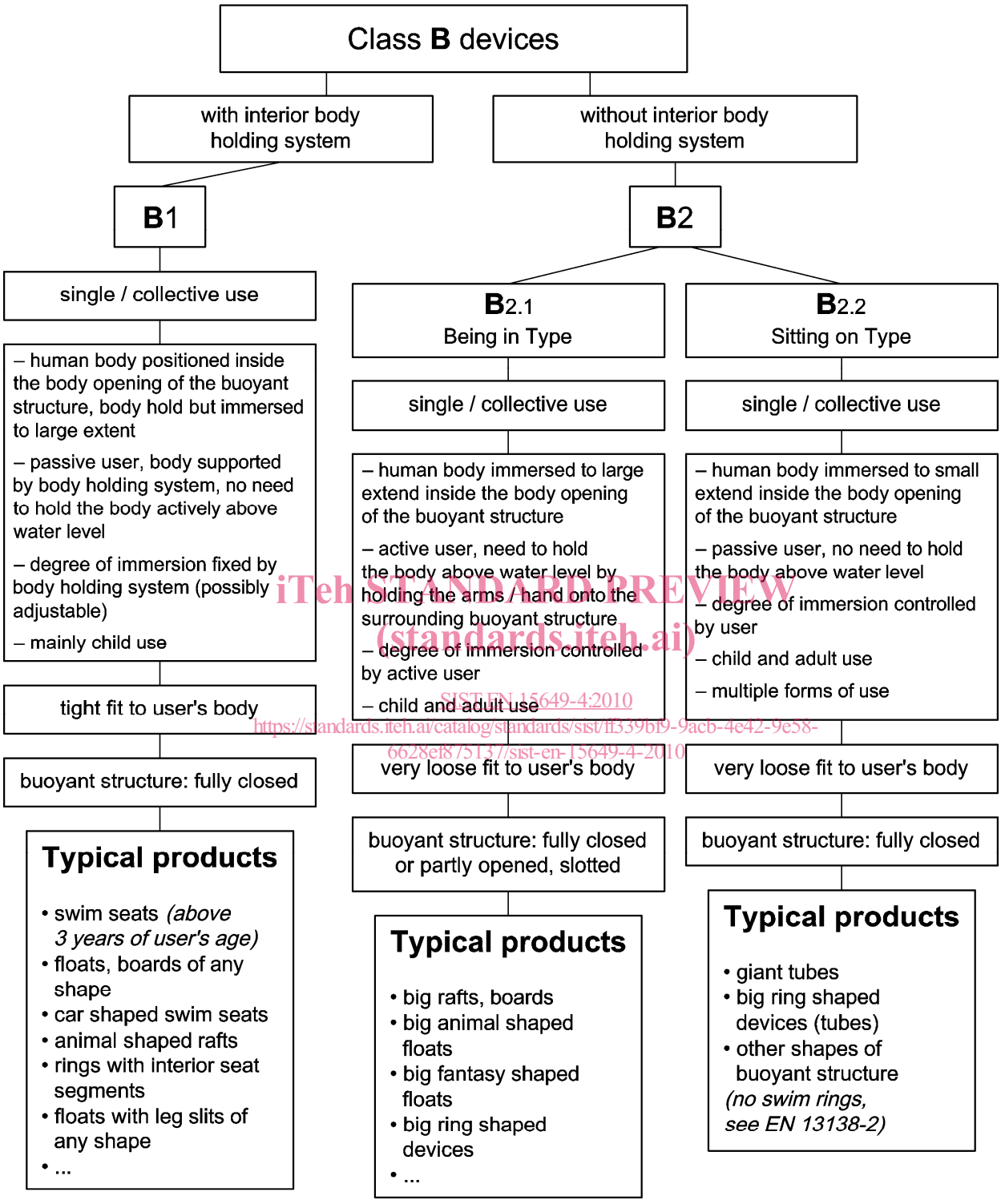
This standard refers amongst others to children as test subjects. The anthropometric requirements related to these test subjects are based on children five years and nine years of age with a body height of 126 cm and 149 cm and a body weight of 25 kg/38 kg. Children of 14 years of age and above can be 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

Interior Structure Class B



NOTE 1 Rings and ring shaped tubes dealt with in this standard 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 dimension is ≥ 1,2 m.

1 Scope

This European Standard 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 EN 15649-1.

This document is applicable with EN 15649-1 and EN 15649-2.

This European Standard is applicable for Class B floating leisure articles for use on and in the water according to EN 15649-1 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 (animal adaptations) 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 (animal, car imitation, etc.);

— 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 referenced documents are indispensable for the application 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 15649-1:2009, *Floating leisure articles for use on and in the water — Part 1: Classification, materials, general requirements and test methods*

EN 15649-2, *Floating leisure articles for use on or in the water — Part 2: Consumer information*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 15649-1:2009 and the following apply.

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

[EN ISO 12402-1:2005, 3.1]

3.3[1)]
device providing static floating stability
product so designed that the user does not need to care about floating stability by his own skills

NOTE One or several users may be safely on or in the device even if the weight is not evenly distributed.

3.4[1)]
device to be balanced by the user
product of which the upright floating depends on user's skill and sense to balance it

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 Swim seats are learning aids and should not be mistaken with aquatic toys as defined in EN 71-1.

[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 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.

3.8
integral part of the device
part of the device without which the system or component does not function and can therefore not arbitrarily be used or omitted

3.9
multiple use product
any product that is intended to be used for more than one purpose (jumping, resting, climbing, etc.)

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1) In accordance with intended use.

3.10
inherent buoyant material
non-crosslinked (closed-cell) foam or other materials enclosed in (a) sealed compartment(s) in the hull which have a specific weight less than fresh water

NOTE Inflatable made of inherent buoyant material is a buoyant structure (hull) achieving all or parts of its intended shape and buoyancy from soft foam, hard foam or sealed chambers filled with air, gas or granules.

4 Safety requirements and test methods

4.1 General

Construction of Class B devices shall be such that it corresponds in terms of design, dimensions, safety, strength and durability for its intended use. The requirements set out in EN 15649-1 were chosen to ensure compliance with these considerations. Where class B devices are provided in several components, the requirements apply to all components. These components shall be permanently attached if the contribute indispensably to safety and performance.

With regard to general material and design requirements Class B devices shall meet the requirements set out in EN 15649-1 as far as applicable.

In individual cases, due to the unpredictability, valence and indeterminability of existing and future concrete products, a corresponding choice shall be made by the test house.

4.2 Sizing

4.2.1 Sizing of B1 devices, fit to user's body and test probes

4.2.1.1 Requirements

The child's torso and thighs shall be represented by test probes representing the anthropometrically relevant hundredth percentile, male body dimensions of the labelled age/weight group. The probes shall slip easily through the body or leg openings respectively (see Figure 1).

Sizing of class B1 devices shall be in accordance with the range of body weights and age groups as specified in Table 2 (sizing safety information symbols see EN 15649-2).

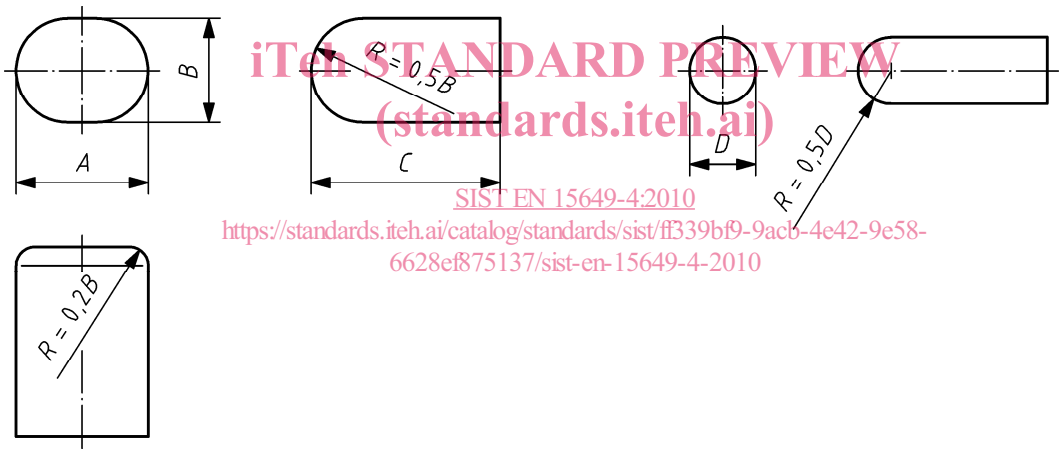
Table 2 — Minimum dimensions for interior body openings

Body weight kg	Age range years	Torso probe dimensions A[a] × B[a] × C[a] mm × mm × mm	Thigh probe diameter D[a b] mm (mm)
22 to 25	4 to 5	260 × 210 × 400	140 (168[c])
28 to 34	6 to 8	310 × 240 × 450	160 (192[c])
38 to 48	9 to 11	330 × 250 × 500	185 (222[c])
54 to 61	12 to 13	350 × 260 × 550	220 (264[c])
69 and above	14 and above	The 14 year child user may be represented by the human adult test subject 4 as specified in EN 15649-1:2009, 5.6. Test subjects above 14 years of age see at the same place Table 2.	

a 95th percentile, male, oldest child of age range.

b Cylindrical probe of appropriate length, 95th percentile, female, diameter value outside the brackets.

c Anthropometric data + 20 % safety margin (applicable test value).



Key
A, B, C Torso probe dimensions, in millimetres (mm)
D Thigh probe diameter, in millimetres (mm)
R Radius, in millimetres (mm)

NOTE Material: wood or similar rigid materials, e.g. Styrofoam.

Figure 1 — Test probes for torso and thighs

The interior size of the device corresponds to the relevant body weight as specified in Table 1. This size (designated user(s)) shall be labelled on the product and on the packaging. It shall comprise the body weight by applying safety information symbols: "user's body weight range" and "size designation for interior size". The safety information symbols: "risk of getting entrapped if size is not appropriate" and "avoid entrapment ensure loose fit" of EN 15649-2 shall be applied additionally.

4.2.1.2 Test method

Application of torso and leg probes, check whether the required safety information symbols have been applied by visual verification.