SLOVENSKI STANDARD
oSIST prEN 13138-1:2018

01-april-2018

Plavajoči pripomočki za učenje plavanja - 1. del: Varnostne zahteve in preskusne metode za plavajoče pripomočke, ki se oblečejo

Buoyant aids for swimming instruction - Part 1: Safety requirements and test methods for buoyant aids to be worn

Auftriebshilfen für das Schwimmenlernen - Teil 1: Sicherheitstechnische Anforderungen und Prüfverfahren für am Körper getragene Auftriebshilfen

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Aides à la flottabilité pour l'apprentissage de la natation - Partie 1: Exigences de sécurité et méthodes d'essai pour les aides à la flottabilité portées au corps

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ICS:

13.340.70	Rešilni jopiči, vzgonska pomagala in plavajoči pripomočki	Lifejackets, buoyancy aids and floating devices
97.220.40	Oprema za športe na prostem in vodne športe	Outdoor and water sports equipment

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English Version

Buoyant aids for swimming instruction - Part 1: Safety requirements and test methods for buoyant aids to be worn

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 162.

If this draft becomes a European Standard, 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.

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European foreword

This document (prEN 13138-1:2018) has been prepared by Technical Committee CEN/TC 162 “Protective clothing including hand and arm protection and lifejackets”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 13138-1:2014.

Annex K provides details of significant technical changes between this European Standard and the previous edition EN 13138-1:2014.

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(s).

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

EN 13138, *Buoyant aids for swimming instruction,* consists of the following parts dealing with buoyant devices for swimming instructions for the various stages of the learning process:

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— *Part 1: Safety requirements and test methods for buoyant aids to be worn*

— *Part 2: Safety requirements and test methods for buoyant aids to be held*

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— *Part 3: Safety requirements and test methods for swim seats*

— *Part 4: In-water performance testing of buoyant aids to be worn*

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Introduction

The entire process of learning to swim is considered to include two stages:

— getting familiar with the water environment and movements in it;

— acquiring skills in standard swimming strokes.

Buoyant aids for swimming instruction (in brief: swimming device(s)) are intended to assist users (in particular children) to learn to swim. The design and purpose of the devices are related to the above stages.

Swimming devices are intended to give the user positive buoyancy in the water while maintaining the correct body position for swimming. However, it should not be assumed that standard conformity of the devices will by itself eliminate the risk of drowning as this depends also on the behaviour of the user and any supervision.

Although this European Standard sets performance requirements to ensure that swimming devices perform appropriately, it is essential that the devices are used correctly and under constant and close supervision. It is important to ensure that they are securely fitted to the appropriate size of user and that when correctly fitted, they cannot become displaced. Swim seats however should allow immediate escape in case of capsizing. Therefore the use of these devices is recommended to be restricted to water out of standing depth of the user.

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The highest degree of protection against drowning can only be achieved by using lifejackets. It is essential that there is a clear distinction between devices intended to preserve life and those which are intended only to assist buoyancy for the user when learning to swim. As swimming devices are not life preservers, they should only be used in swimming pools and other situations free from current, tides and waves.

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The bulk storage of some types of swimming devices could, under certain conditions, result in a potential fire hazard. The perceived risk of such a hazard was evaluated against the actual risk to the user from materials treated with certain known toxic fire retardant chemicals. However, the fire hazard is less of a problem to the user than the risk associated with the swimming devices being put in the mouth, especially by children. For this reason, flammability requirements do not apply to this European Standard.

For the above reasons and to differentiate these devices from aquatic toys, advisory safety measures, including marking, warning notices and user instructions are included in this standard.

The range both of the design and function of buoyant aids for swimming instruction varies considerably and for this reason, the standard for swimming devices has been prepared in four parts, namely devices that are intended to allow the user to become familiar with water (passive user), devices that are worn (active user) and those devices that are held by the user to improve swimming strokes.

Part 1 of this European Standard is only for devices that are securely attached to the body (class B devices = for an active user). They are intended to introduce the user to the range of swimming strokes. This part 1 of prEN 13138 is applicable only in connection with part 4 of prEN 13138.

Part 2 of this European Standard is for devices that are held either in the hands or by the body (class C devices = for an active user) and are intended to assist with improving specific elements of the swimming stroke. For adult beginners or more advanced users they can also be used for further stages of the process to learn to swim.

Part 3 of this European Standard deals only with swim seats to assist children up to 36 months in their first attempts to learn to swim (i.e. to get familiar with the —in-water-environment) and moving through it). The child is positioned inside the buoyant structure, which provides buoyancy and lateral

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support to the body, thereby keeping the child's head above water level (class A devices = for a passive user).

Swim seats allow young children to experience the water environment and being moved through it. Movements of lower limbs and arms are possible. The use of swim seats does however not replicate any form of a correct swimming stroke.

Swim seats complying with this standard provide a stable, floating position for a child sitting in the swim seat and avoids entrapment in case of capsizing. Children in swim seats do however require very close parental supervision. Overload beyond specified body weight, breaking waves and violent external forces are remaining risks that can cause capsizing. Use of these devices in water that is of the child‘s standing depth will increase the risk of capsizing and will hinder or block the escape from the seat in case of emergency.

Part 4 of this European Standard deals with in-water performance testing for class B devices and provides objective methods of measuring the lifting and turning capacity of a swimming device by applying test manikins of various sizes. It is applicable only in connection with part 1.

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1 Scope

This European Standard specifies safety requirements for construction, performance, sizing, marking and information supplied by the manufacturer for swimming aids intended to assist beginners with movement through the water while learning to swim or while learning part of a swimming stroke. It also gives methods of test for verification of these requirements.

This part 1 of prEN 13138 applies only to devices that are designed to be worn, to be securely attached to the body and which have either inherent buoyancy or can be inflated. It only applies to Class B devices intended to introduce the user to the range of swimming strokes. It does not apply to Class A or Class C devices, to pull buoys, swim rings, lifebuoys, buoyancy aids, lifejackets or aquatic toys.

This document (prEN13138-1:2018) applies only in connection with prEN 13138-4:2018.

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.

EN 71-1, *Safety of toys — Part 1: Mechanical and physical properties*

prEN 13138-4:2018, *Buoyant aids for swimming instruction — Part 4: In-water performance testing of buoyant aids for swimming instructions to be worn*

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EN 20105-A02, *Textiles — Tests for colour fastness — Part A02: Grey scale for assessing change in colour (ISO 105-A02)*

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EN ISO 105-E03:2010, *Textiles — Tests for colour fastness — Part E03: Colour fastness to chlorinated water (swimming-pool water) (ISO 105-E03:2010)*

EN ISO 105-E04, *Textiles — Tests for colour fastness — Part E04: Colour fastness to perspiration (ISO 105-E04)*

EN ISO 105-X12, *Textiles — Tests for colour fastness — Part X12: Colour fastness to rubbing (ISO 105-X12)*

EN ISO 3696:1995, *Water for analytical laboratory use — Specification and test methods (ISO 3696:1987)*

EN ISO 12402-7:2006, *Personal flotation devices — Part 7: Materials and components — Safety requirements and test methods (ISO 12402-7:2006)*

EN ISO 12402-9:2006, *Personal flotation devices — Part 9: Test methods (ISO 12402-9:2006)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions 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

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3.1
buoyancy
resultant upthrust of a swimming device when totally submerged in fresh water with its uppermost part just below the water surface

3.2
inherent buoyancy
upthrust provided by material which is less dense than water or by sealed chambers that are not inflatable and are filled with air or gas

3.3
buoyant aid for swimming instruction (in brief "swimming device")
garment or device which when worn or held correctly will provide the buoyancy required to become familiar with movement through the water, assist with learning to swim or to improve swimming strokes

3.4
minimum buoyancy
least buoyancy required by the standard

3.5
original buoyancy
buoyancy provided by the complete device when first tested

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3.6
class A device
buoyant device in which the child is in contact with the water positioned inside the buoyant structure so that it will keep the passive user in a stable floating position where the base of the chin is at or above the surface of the water.

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Note 1 to entry: This device is intended to allow the user to become familiar with the water environment.

3.7
class B device
buoyant swimming device intended to be worn, to be securely attached to the body and to introduce the active user to the range of swimming strokes

3.8
class C device
device intended to be held either in the hands or by the body and to assist with swimming strokes and/or improving specific elements of the strokes

3.9
device to be worn
device having either inherent buoyancy or may be inflated to provide buoyancy and which is securely attached to the body in such a way that it cannot be accidentally removed and so as to provide the user with buoyancy

3.10
device to be held
device held either in the hands or by the body and provides buoyancy whilst it is being held by the user

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3.11
conditioning
process to which the complete device shall be submitted that includes immersion in chlorinated swimming pool water and storage in cold and hot conditions and comprising a number of cycles, to simulate the conditions to which the device is likely to be subjected in normal use and storage

3.12
component
sub-group of the entire device which contributes to either buoyancy, function or safety

3.13
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.

Note 1 to entry: Swim seats provide safety for the user but do not guarantee protection against drowning.

Note 2 to entry: Swim seats are learning aids and should not be mistaken with aquatic toys as defined in EN 71-1.

3.14
swim seat system
all integrated components (parts) of a swim seat which contribute to stable floating conditions and to safety during normal use or after an emergency capsizing

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3.15
escape
complete separation between the test dummy and the swim seat in case of a deliberate capsizing of the swim seat or swim seat system

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3.16
assessment panel
group of three people who are appointed by a test house, all of whom are experienced in assessing buoyant swimming devices

3.17
kick board
buoyant device designed to be held in the hands or by the arms in order to support the body in the water to assist the user to improve swimming strokes

3.18
turning-lifting-capacity (TLC)
Turning Lifting Capacity of a swimming device is its capability to turn the user's body into a specified floating angle and to lift him to a level where the body floats at least just on equal level with the water surface or above

Note 1 to entry: It is expressed as angle x between calibrated sinking angle and floating angle achieved by the device.

3.19
sinking angle
angle to which a test manikin is intentionally calibrated when hung on its centre of gravity and completely immersed under water

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4 Classification

Buoyant swimming devices shall be classified according to Table 1.

Table 1 — Classification of buoyant devices

Class	Definition
A	Buoyant device in which the child is in contact with the water positioned inside the buoyant structure. This device is intended to allow the user to become familiar with the water environment. The device will keep the passive user in a stable floating position so that the base of the chin is at or above the surface of the water
B	Buoyant swimming device intended to be worn, to be securely attached to the body and to introduce the active user to the range of swimming strokes.
C	Device intended to be held either in the hands or by the body and to assist with swimming strokes and/or improving specific elements of the strokes

5 Safety Requirements

5.1 General

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Construction of a buoyant swimming device shall be such that it corresponds in terms of design, dimensions, safety, strength and durability for its intended use. The requirements set out were chosen to ensure compliance with these considerations. Where buoyant swimming devices are provided in several components, the requirements apply to each of the components as specified in the relevant paragraphs below.

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Buoyancy may be provided by inherent buoyancy materials, by inflatable chambers or by both. Where buoyancy is not inherent, devices shall have a minimum of two independent chambers safeguarding function.

Class B devices shall provide a stable floating position and prevent the user from sinking even if the air chamber most likely to cause failure has become deflated. Testing shall be in accordance with prEN 13138-4:2018. A device shall be only Class A or Class B or Class C.

These products shall be manufactured in bright colours that are in contrast to the water surface so as to be visible at all times and at any angle when in use. Wholly transparent or materials in any shade of undecorated blue in the visible areas when in use are not acceptable. For garments, these colour requirements apply only to the neck, shoulder and upper chest area.

For safety reasons and to assist in supervising children when in the water, the visible areas of these products when being used shall be clearly visible from the water‘s edge or the poolside when the water is crowded, moving or may not be clear. Where criteria cannot be objectively assessed, they shall be subject to evaluation by the assessment panel.

The assessment panel shall agree, by at least a 2:1 majority or by unanimity, that the device is visible when worn in the water.

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5.2 Conspicuity

5.2.1 Requirement

The above-water area of swimming devices in use shall contrast to all 4 test backgrounds as specified in Annex G. The positive contrast assessment shall be made by at least the majority of the test panel.

NOTE The contrasting appearance can be achieved by the swimming device itself or by any other additional means providing contrast. If contrast is achieved by additional means they need to be securely fixed to the swimming device and withstand a pulling force of 50 N in the direction most likely to cause failure.

5.2.2 Testing

The above water area of the swimming device shall be marked during the performance tests according to prEN 13138-4:2018 and consider the device-manikin-combination most likely to cause failure.

Testing shall be done according to Annex G.

5.3 Buoyancy

5.3.1 Buoyancy characteristics of the complete device

When tested in accordance with the procedures in EN ISO 12402-9:2006, the device shall, with all of its buoyant components, have minimum buoyancy in accordance with Table 2. Where the table shows a dash (-), this is intended to indicate that the device is not appropriate for the type of user.

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Table 2 — Buoyancy characteristics including illustration of class of device

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		Class of buoyant aid for swimming instruction				
Mass range kg	**Age**[a] years	**Minimum buoyancy** N				
		Garment	Collar	Arm bands per pair	Chest belt	Backpack
≤ 11	≤ 1	20	20	20	—	—
> 11 to 15	> 1 to 2	20	20	20	—	—
> 15 to 18	> 2 to 3	20	25	25	20	20
> 18 to 30	> 3 to 6	20	25	25	20	20
> 30 to 60	> 6 to 12	25	30	30	25	25
> 60	> 12	30	40	40	30	30

[a] Age groups are for orientation only. The correlation between the age and the body mass can vary considerably.

5.3.2 Residual buoyancy

Any inflatable device for swimming instruction when tested in accordance with EN ISO 12402-9:2006, 5.5.9, shall, after complete deflation of one chamber, provide no less than 50 % of the minimum buoyancy according to Table 2.

Where buoyancy is not provided by inherently buoyant material the device shall have at least two independent air chambers. Where an inflatable device or component consists of two or more components, after deflating the one chamber most likely to fail in the component, this component shall provide at least 25 % of the total minimum buoyancy for the device set out in Table 2.