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Plavajoļ i pripomoļ ki za uļ enje plavanja - 3. del: Varnostne zahteve in preskusne metode za plavajoļ e sedeģe, ki se obleļ ejo

Buoyant aids for swimming instruction - Part 3: Safety requirements and test methods for swim seats to be worn

Auftriebshilfen für das Schwimmenlernen - Teil 3: Sicherheitstechnische Anforderungen und Prüfverfahren für Schwimmsitze, die am Körper getragen werden

Aides a la flottabilité pour l'apprentissage de la natation - Partie 3 : Exigences de sécurité et méthodes d'essai relatives aux dispositifs dans lesquels l'enfant est placé : Sieges flottants

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Foreword

This document (EN 13138-3:2007) 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 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of an identical text or by endorsement, at the latest by April 2008, and conflicting national standards shall be withdrawn at the latest by April 2008.

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 supersedes EN 13138-3:2003.

Annex K provides details of significant technical changes between this European Standard and the previous edition.

This European Standard is one of a series consisting of three standards dealing with buoyant devices for swimming instructions for the various stages of the learning process.

EN 13138-1, *Buoyant aids for swimming instruction – Part 1: Part 1: Safety requirements and test methods for buoyant aids to be worn*

EN 13138-2, *Buoyant aids for swimming instruction – Part 2: Safety requirements and test methods for buoyant aids to be held*

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

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, 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

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

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

— acquiring skills in standard swimming strokes;

— developing special swimming strokes and techniques.

Buoyant devices for swimming instructions (in brief: swimming device(s)) are intended to assist persons (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 whilst 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 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. It is however essential that swim seats allow immediate escape in case of capsizing. Therefore the use of these devices is recommended to water out of standing depth of the user.

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.

The bulk storage of some sorts 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 are not included in the 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 swimming devices varies considerably and for this reason, the standard for swimming devices has been prepared in three 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 for special training purposes.

Part 1 of the standard

is 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.

Part 2 of the standard

is for devices that are held either in the hands, by the body or between the legs (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 the standard

deals 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 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 improve the in-water stability and minimise the entrapment risk 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. Shallow water is likely increase the risk of capsizing and to hinder or block the escape from the seat in case of emergency.

1 Scope

This European Standard specifies safety requirements for design, sizing, materials, strength and in-water performance as well as provisions for marking and the information supplied by the manufacturer for swim seats to be worn. It also specifies the relevant test methods.

This European Standard covers class A buoyancy devices in which children are seated. These devices are only intended for children aged up to 36 months with a body mass less than or equal to 18 kg.

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

EN 71-3, *Safety of toys — Part 3: Migration of certain elements*

EN 20105-A02, *Textiles — Tests for colour fastness — Part A02: Grey scale for assessing change in colour (ISO 105-A02:1993)*

EN ISO 105-E03:1996, *Textiles — Tests for colour fastness — Part E03: Colour fastness to chlorinated water (swimming-pool water) (ISO 105-E03:1994)*

EN ISO 105-E04, *Textiles — Tests for colour fastness — Part E04: Colour fastness to perspiration (ISO 105-E04:1994)*

EN ISO 105-X12, *Textiles — Tests for colour fastness — Part X12: Color fastness to rubbing (ISO 105-X12:2001)*

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.

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 filled with air or gas

3.3
buoyant 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

3.6
class A device
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 and movement through it. 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.

3.7
class B device
buoyant swimming device intended 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 in the hands, by the body or between the legs and to assist with swimming strokes and/or improving specific elements associated with swimming techniques

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 positive buoyancy

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

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

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. Swim seats provide safety for the user but do not guarantee protection against drowning

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

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

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

3.16
assessment panel
group of three people from an accredited and notified 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 a horizontal and stable position in the water to assist the user to improve swimming techniques

3.18
pull buoy
buoyant device to be held between the legs to maintain the legs in a horizontal position in the water to assist the user to improve swimming techniques

4 Classification

4.1 General

Buoyant swimming devices shall be classified according to Table 1:

Table 1 — Classification of buoyant devices

Class	Description
A	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 and movement through it. 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 securely attached to the body and to introduce the active user to the range of swimming strokes.
C	Device intended to be held in the hands, by the body or between the legs and to assist with swimming strokes and/or improving specific elements associated with swimming techniques.

4.2 Categorisation

The requirements given in Table 2 were chosen to ensure compliance between swim seat sizes and manikin in all relevant test procedures.

Table 2 — Values for categorisation

Age years	Mass (equivalent to age)[a]	Minimum buoyancy N	Manikin
≤ 1	≤ 11 kg	100	I
> 1 to 2	> 11 to 15 kg	120	II
> 2 to 3	> 15 to 18 kg	140	III

[a] For categorisation, marking and use priority shall be given to the values representing the body mass, age groups have been added for rough orientation (See 8.2, Figure 1).

5 Safety requirements

5.1 General

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 all components. These components shall be permanently attached to the swim seat or form an integral, functional part of it in the same way that the entire swim seat cannot be used without all components. Where buoyancy is not inherent, devices shall have residual buoyancy and shall be tested for safety using the dummy test to ensure that the airway is always kept clear of the water.

5.2 Design

5.2.1 Avoidance of similarities to aquatic toys

5.2.1.1 Shape

Design and appearance of swim seats shall not evoke the impression of being an aquatic toy.

Inflatable buoyancy chambers or buoyancy chambers filled by air or inherently buoyant material shall be limited in number and volume to the functional needs of providing sufficient buoyancy and safety. There shall be no toy elements or above water level structures like e.g. animal imitations, car or boat structures or other elements evoking the character of an aquatic toy and no wind catching structures e.g. canopy or sun-shade.

5.2.1.2 Colour/Decorations

For safety reasons these products shall be in high definition colours. Transparent or dull colour materials are not acceptable. It is recommended that the colour range yellow to red orange is most appropriate although two colour devices in green with white are also acceptable. There shall be no colourful printed decorations. Warnings etc. (see 7.2) shall be printed in contrasting colours.

5.2.1.3 Special features

Special features or equipment like handles etc shall not impair the safety of the device. Requirements given in 5.6, in water behaviour, shall be met with and without detachable equipment.

5.2.2 Edges, corners and points

Buoyant swimming devices shall be of a design such that they cannot cause harm to the user. Edges and corners of hard and rigid materials shall be chamfered or rounded.

Round edges or corners shall have a minimum radius of 1 mm and where a chamfer is part of the design, it shall be of $(45 \pm 5)°$ and at least 1 mm in width. There shall be no barbs or other sharp points or features. Testing shall be by measurement and tactile assessment in accordance with Annex F.

5.2.3 Buckles, zippers and other fixings

If buckles, zippers or other detachable fastening devices are used as parts of the entire swim seat system in order to attach or connect functional parts or components, they shall require at least two simultaneous or sequential actions for their release or opening in order to prevent unintended opening or be positioned out of reach of the user and another person whilst the device is in the water. Where one or both of these actions rely on pressure for release, it shall be necessary to apply a force of at least 50 N. Testing shall be in accordance with Annex E. Verification shall be executed by the assessment panel according to Annex F in the context of the relevant opening/closing system.

5.2.4 Small parts

Attached small parts shall withstand a pull of (90 ± 2) N in the direction most likely to cause failure without becoming detached from the device. Parts which can become detached shall not fit wholly into the small parts cylinder, testing of which shall be in accordance with EN 71-1.

5.2.5 Valves and stoppers

Inflatable devices shall be fitted with non-return valves. Stoppers shall be connected to the body of the valve. The protrusion of the valve and stopper shall not exceed 5 mm above the surrounding surface when the device has been inflated.

The non-return valve shall ensure that, with an opened stopper, inflatable devices when tested in accordance with Annex D shall after a period of 2 min retain at least 75 % of their original buoyancy. Testing shall be by inspection and measurement in accordance with the procedures in 5.5.9 of EN ISO 12402-9:2006.

5.3 Sizing

Sizing of swim seats shall be in accordance with the range of body weights and age groups as specified in Table 2. The size of the device shall be indicated on the product (see Clause 7) and by marking the relevant box(es) according to Figure 1 by ticking in a [✓]. The size of the leg holes, when tested in accordance with Annex I, shall not allow the probe to pass through.

5.4 Materials

5.4.1 Thread

To sew load bearing components, only threads manufactured from synthetic materials whose properties correspond to polyester or polyamide fibres shall be used.

5.4.2 Resistance to puncturing

Where buoyant swimming devices incorporate air filled buoyancy chambers, the chambers shall remain airtight when tested in accordance with the procedures given in Annex H.

5.4.3 Resistance of foam and other inherent buoyant material to water absorption

When tested in accordance with the procedures given in 5.5.5 of EN ISO 12402-9:2006, the material sample shall lose no more than 10 % of its original buoyancy. The materials shall be tested using a new and conditioned sample of the inherent buoyant material.

5.4.4 Resistance of foam and other inherent buoyant materials to compression

Buoyant swimming devices manufactured from foam or other inherently buoyant materials shall be capable of withstanding compression and other movements in normal use without sustaining permanent loss of buoyancy. When tested in accordance with 4.8 of EN ISO 12402-7:2006, a new and conditioned sample of the buoyant material not used in other tests shall not lose more than 10 % of its buoyancy.

5.4.5 Migration of certain elements

Swimming devices shall conform to the requirements given in EN 71-3. A new and unconditioned complete device shall be tested.

5.4.6 Resistance to chlorinated salt water

After the complete enhanced conditioning according to the procedures in 6.1, the entire deflated device shall be tested for change in colour and damage. The change in colour shall be tested according to EN 20105-A02