SLOVENSKI STANDARD
SIST EN 15649-1:2010

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Plavajoļ i pripomoļ ki za prosti ļ as, ki se uporabljajo na vodi in v njej - 1. del: Razvrstitev, materiali, sploġne zahteve in preskusne metode

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

Schwimmende Freizeitartikel zum Gebrauch auf und im Wasser - Teil 1: Klassifikation, Werkstoffe, allgemeine Anforderungen und Prüfverfahren

Articles de loisirs flottants a utiliser sur ou dans l'eau - Partie 1: Classification, matériaux, exigences et méthodes d'essai générales

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

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

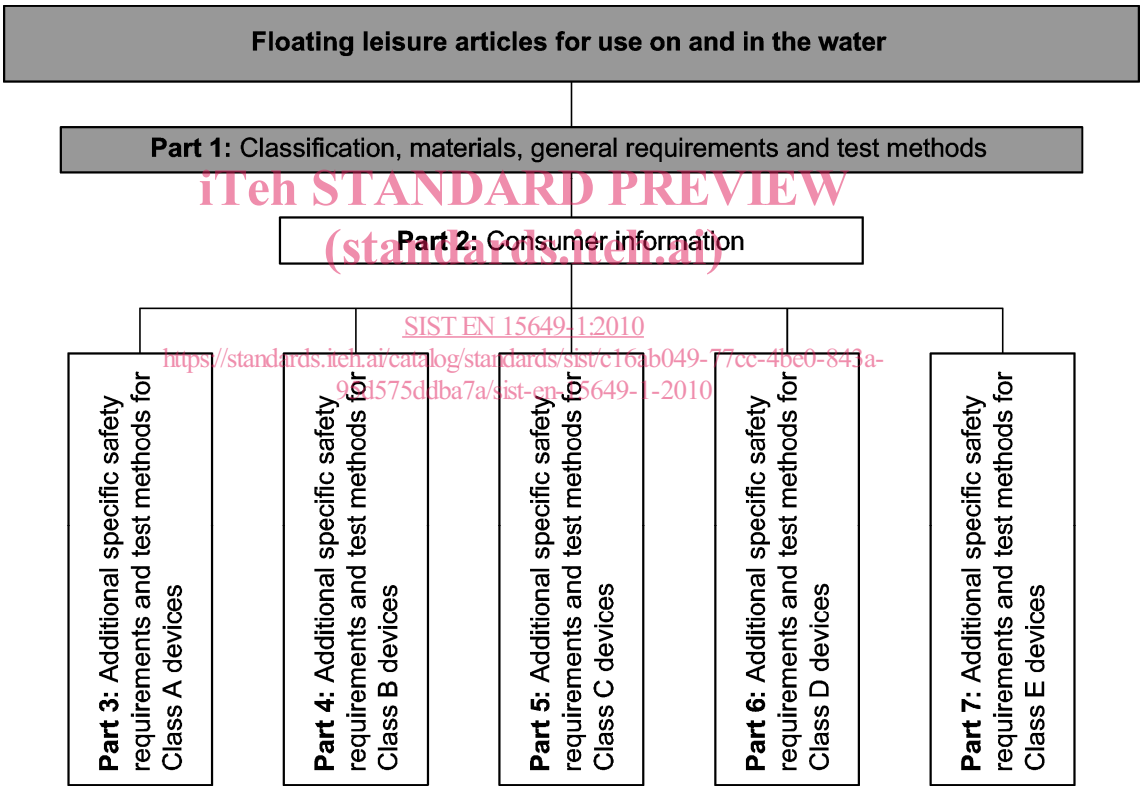
This document (EN 15649-1:2009) has been prepared by Technical Committee CEN/TC 136 “Sports, playground and other recreational facilities and equipment”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by May 2010, and conflicting national standards shall be withdrawn at the latest by May 2010.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 a mandate given to CEN by the European Commission and the European Free Trade Association.

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 requirements of the relevant specific part and, additionally, the requirements of EN 15649-1 and EN 15649-2 have to be met. If a product includes multiple use related to several classes, it has to meet the requirements of all these classes.

Annex A is normative.

Annex B and Annex C are informative.

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 United Kingdom.

0 Introduction

0.1 Motives, problems, risk assessment, methods

Investigations in statistical data related to drowning accidents and near-drownings create a new awareness about the enormous relevance of drownings in many countries. In particular, during the child age period drowning is the second most fatal accident. Due to a lack of exactness of the available statistical data, they do not reveal details concerning the relation between drowning accidents and the involvement of certain products. Such links can be shown only for segments of the wide range of water activities related products. Consumer protection has to rely on conclusions by risk analysis, experience and analogy to known cases. Considerations based on probability and the precautionary principle is the second access to the problem. That applies in particular for the product group "Floating leisure articles for use on and in the water" as this group is constituted here and now as a market segment to be addressed by standardisation for safety reasons. Beyond the statistical deficiencies, relations between certain products and an increased risk of drowning are plausible. A risk analysis undertaken by WG 13 shows what the partial and final risks are.

Until now, standardisation has addressed the risks through a wide series of standards aiming at the protection against drowning and covering a number of products used in leisure activities on and in the water. There are standards covering the relevant products for activities like playing in the water, water sports, boating, diving, learning to swim and even the emergency devices as buoyancy aids and live jackets. Beyond these typical and traditional activities and products, there is a new tendency for the creation and marketing of more and more new products. They are all aiming to increase pleasure and entertainment on the water but also more speed, action and thrill as far as the new adventurous activities as "tubing", "white water rafting" etc. is concerned. The new products are partly modified traditional core products or they are derived from them and further developed to something new. Additionally, there is a clear trend to bring more and more formerly land based playground equipment on the water. The term "amphibiation" is justified as in many cases the original function of the product is maintained, i.e. they can be used both ways. Typical examples for the first mentioned kind of new products are modifications of inflatable boats into a bathing raft in fantasy shape or the further development of the earlier swim-ring into a flotation seat. Examples for "amphibians" exist in inflatable trampolines, climbing installations being put on the water for action and fun. Inflatable floating armchairs and sun loungers including the mini bar and sun shade rather serve for more comfort and relaxation when bathing. This trend is clear and very likely to continue.

It can be shown that the nature of these new products provide an equal or even higher risk potential than the original core products. In parallel, the number of these products override the number of the core products. In cases of collective use, the frequency of use is considerably increased which in turn increases the likelihood of accidents — drownings. Drowning is the final risk of the mentioned product related activities, there are other somewhat lesser evils — partial risks — which are likely to happen too independently or in combination with the final risk.

Having in mind the existing safety related standardisation, an evident discrepancy emerges. Standardisation in the past was focused on the core products and has neglected the huge amount of products forming the so called "grey zone". We always were aware of this fact, but the "grey zone" was so disturbingly complicated and never really considered and investigated. The triggering incident to change this was the swim seat case, its interaction with aquatic toys and all the many related products mentioned above. The fact of negligence highlights the reason. It was due to this inconsistency, variety and complexity that these products were usually excluded from the scopes of related standards. Experts involved in this standardisation work therefore invented the term "grey zone products". A systematic risk analysis or an investigation in drowning accidents was never made. What matters today is not so much the fact of a disturbing gap in the series of existing standards but the knowledge that there is a number of coincidences:

— all in all the main user groups of these products are children and adolescents who in turn are the main victims of drowning;

— the main areas where drowning happens are identical with the areas of use for such products (rivers, lakes, pools, bathing beaches);

— the risks can be easily identified partly proven, the increase in numbers and frequencies were already mentioned.

0.2 Equal risk, equal requirement

— Equality of risks shall lead to an equality of technical rules (risk-/rule-alignment);

— closing the standardisation gap, completeness;

— setting of clear boundaries between the product areas in order to avoid incorrect certification (e.g. unjustified CE-Mark), "standard jumping" including escape from tougher standards into weaker ones, contributing to overcome the problems of an extremely wide and vague definition of aquatic toys in the toy directive (88/378/EEC) and the distinction of shallow and deep water as dividing criterion;

— avoidance of individually established testing procedures by the various test houses in the absence of a unified technical rule.

0.3 Risks and need for prevention

— Relevance of drowning is proven (age groups, places, partly product involvement);

— new products increase frequency of use and amount of products likely to contribute to accident;

— theoretical risk analysis shows additional risks below the final risk of drowning;

— plausibility and likelihood of harm to users is evident, so is the probability of adequate safety standards to avoid or minimise this;

— to contribute positively to the basic problem of parental supervision which is needed and claimed with regard to child activities but in many cases weak, not existing or neglected;

— safety by utmost inherent safety by design from the product in addition to this technical safety shall be supplemented through supervision it is recommended for younger children;

— we have to recognise that there are new trends to bring more and more former land based products on the water, as well as trends to adventure activities increasing the thrill of water related leisure activities and entertainment;

— need for prevention.

1 Scope

This European Standard specifies safety requirements and test methods related to materials, safety, performance for classified floating leisure articles for use on and in water in accordance with Clause 4 (see Table 1).

This document (EN 15649-1) is only applicable with EN 15649-2 and the relevant specific parts (EN 15649-3 to EN 15649-7).

NOTE 1 Specific safety requirements are specified in the specific parts EN 15649-3 to EN 15649-7.

NOTE 2 The specific parts can include exclusions from the general requirements specified in this document and/or EN 15649-2.

This standard is not applicable to:

— aquatic toys according to EN 71-1 (use in shallow waters / use under supervision);

— inflatable boats with a buoyancy > 1 800 N according to EN ISO 6185-1, EN ISO 6185-2 and EN ISO 6185-3;

— buoyant aids for swimming instructions according to EN 13138-1, EN 13138-2 and EN 13138-3;

— air mattresses which are not specifically designed or intended for use on the water (e.g. velour bed, self inflating mattress and rubberized cotton air mattress);

— floating seats for angling purposes;

— surf sports type devices (e.g. body boards, surf boards);

— water ski, wakeboard or kite surfing board;

— devices made from rigid materials e.g. wood, aluminium, hard or non-deformable plastic;

— devices which are kept in shape by permanent air flow;

— rings intended for use on water slides;

— wading devices.

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 71-1:2005, *Safety of toys — Part 1: Mechanical and physical properties*

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

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

EN 20105-A02, *Textiles — Tests for colour fastness — Part A02: Grey scale for assessing change in colour (ISO 105-A2:1993)*

EN 20105-A03, *Textiles — Tests for colour fastness — Part A03: Grey scale for assessing staining (ISO 105-A03:1993)*

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-E04:2008)*

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

EN ISO 868, *Plastics and ebonite — Determination of indentation hardness by means of a durometer (Shore hardness) (ISO 868:2003)*

EN ISO 2411, *Rubber- or plastics-coated fabrics — Determination of coating adhesion (ISO 2411:2000)*

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

ISO 554, *Standard atmospheres for conditioning and/or testing — Specifications*

ISO 1817, *Rubber, vulcanized — Determination of the effect of liquids*

ISO 4675, *Rubber- or plastics-coated fabrics — Low-temperature bend test*

ISO 7619-1, *Rubber, vulcanized or thermoplastic — Determination of indentation hardness — Part 1: Durometer method (Shore hardness)*

3 Terms and definitions

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

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

NOTE For the purpose of measuring, the buoyancy of boats (see EN 15649-7) is measured as the volume of any chamber, which forms the inflatable hull including components which are permanently fixed to it. This buoyancy is measured by calculation or water filling and measuring the amount of water.

3.2
inflatable system
components (parts) of a device which contribute to stable floating conditions and/or safety

3.3
component
subgroup of the entire device which contributes to buoyancy, function and safety, integrated or detachable

3.4[1]
static use
use which requires little action with regard to the user

NOTE Product is mainly used for relaxing, sun bathing, laying, sitting, etc.

[1] In accordance with intended use.

3.5[1]
dynamic use
use during which the user is in full action

NOTE Product is mainly used for activities like jumping, climbing, rollicking (horse playing, rocking), sliding, swinging in and out from the water into or onto the inflatable, etc.

3.6 [1]
positional use
product is used within a limited area

NOTE This area is supposed to be in safe proximity to the shore, pool edge, etc.

3.7
means of propulsion
devices used to generate the movements of a manually operated floating article

EXAMPLE Manually operated floating articles could be equipped with a paddle wheel, swing flipper, oar or paddle.

3.8
test panel
group of test subjects

3.9
assessment panel
group of independent experts checking process to establish compliance with the requirements specified in this European Standard

3.10
conditioning
process to which the complete device is submitted prior to testing

3.11
load
human subjects and other items carried on or in an inflatable structure

3.12
floating stability
capability of a non-moving buoyant structure to withstand internal and external forces which tend to capsize it and maintaining a stable floating position

NOTE Internal forces leading to capsizing can result from uneven load distribution, external forces leading to capsizing may result from wind or waves.

3.13
stable floating position
in-water position of a buoyant structure safeguarding upright floating and the on-board position of all passengers in sitting posture but in a position most likely to cause capsizing

3.14
load capacity
value stated by the manufacturer representing the maximum load on a buoyant structure under which a safe floating position is assured

3.15
permanent sealed buoyancy
sealed airtight compartment(s) filled with air, gas or inherent buoyant material

3.16
reinforced material
material which consists of a basic fabric and coated or laminated layer which ensure the air tightness

3.17
permissible maximum working pressure
permissible maximum overpressure indicated by the manufacturer which is measured immediately after the first inflation of the boat using a defined measuring device

NOTE Where the permissible maximum working pressure is given by a range, the upper limiting value is decisive.

3.18
valve
device intended to inflate air chambers, to close the inflated air chambers and to deflate them after use

3.19
screw valve
valve in which the connection of valve body to valve base and the connection between valve body and valve closure (cap, plug) is designed as a threaded connection

3.20
plug valve
valve in which valve base and valve body form a unit and the closed condition is created by a plug inserted into the valve body

3.21
valve with bayonet catch
valve which is joined to the inflatable body by a threaded connection in such manner that the outer skin of the inflatable body is compressed airtight between valve base and valve body

NOTE The valve body is equipped with a non-return device. The valve closure is sealed by a bayonet catch (see Figure B.7) in the valve body (90° turn) so that an additional sealing and protecting function is provided by means of a gasket at the closure. The bayonet catch is also intended for receiving the connector of the inflation device. Contrary to the conically shaped connecting parts of plug valves (frictional connection), this connection provides positive interlocking (see Figure B.2).

3.22
non-return device
valve component in form of an elastic flap, diaphragm, lip, etc. allowing unimpeded (free) air flow into an air chamber, but preventing air discharge even with the valve closure opened

NOTE In this case, the valve closure (cap, plug, etc.) has only an additional sealing function, i.e. protection against soiling.

3.23
valve without non-return device
valve in which the escape of air is unimpeded after removal of the closure (cap, plug)

3.24
valve adapter
device which on account of its conical and/or stepped external design is suitable to provide compatibility of a uniform pump connection with several, different sized valve inner widths and in the case of valves with an anti-blowback device designed in form of a valve lip is capable to force the lip open so that the air inflow is unimpeded

4 Classification and criteria to distinguish floating leisure articles from aquatic toys

Floating leisure articles shall be classified by their intended use, means of propulsion and design as set out in Table 1:

Table 1 — Classification and criteria to distinguish floating leisure articles from aquatic toys

Class	Description/Structural design criteria	Not an aquatic toy because:
A[b]	Floating leisure articles intended for quasi-static positional use on the water and position of user upon the buoyant structure. Single and collective use, mainly passive. Normally no mechanical means of propulsion, but possible. Devices may be of design that provides floating stability others do not and have to be balanced by the user. — minimum length over all (uninflated, flat) = 1,2 m. — minimum age above 36 months.	— largest uninflated dimension[a] exceeds 1,2 m when uninflated, due to size product is at risk to be blown into open waters and/or provokes use in deep water; and/or — labelling includes adult use; and/or — product is labelled not to be a toy; and/or — use of product depends on deep water or use in deep water is foreseeable; and/or — product includes a body opening inside a circumferential buoyancy system around the user's body and thus a serious entrapment risk.
B[b]	Floating leisure articles intended for quasi-static use but position of user inside a buoyant structure around the user's body (relatively tight fit). Buoyant structure fully enclosing or with openings. Devices may provide a body holding system or user is expected to hold himself by the upper arms and hands. Body holding system might be an integrated seat, straps or other means of holding regardless of the body posture (sitting, standing, laying, kneeling etc.). User's body is more or less immersed. Normally the upper part (chest upwards) is out of the water. Single or collective / passive or active use. Normally no mechanical means of propulsion but possible. — B2 minimum length: over all (uninflated, flat) = 1,2 m. — B1: use out of user's standing depth. — minimum age / body weight: variable but above 36 months / 18 kg.	— largest uninflated dimension[a] exceeds 1,2 m; and/or — product includes a body opening inside a circumferential buoyancy system around the user's body and thus a serious entrapment risk; and/or — product needs for appropriate use a water depth beyond user's standing depth; and/or — product is labelled not to be a toy; and/or — intended use includes adults (label); and/or — use of product depends on deep water or use in deep water is foreseeable.

Table 1 *(continued)*

Class	Description/Structural Design criteria	Not an aquatic toy because:
C[b]	Floating leisure articles for dynamic use, i.e. application at high speed. Position of user is upon or inside the buoyant structure. There may be a cockpit or seat or other means to give hold to the user. The device is towed behind external means of propulsion. Towing rope fixed to device or held by user. User is required to manage floating stability and safe course behind the towing devices. — C1: static use towable, static user. — C2: active sport use towable, active user, sport application. — C3: active extreme use towable, active user, extreme application. — use beyond user's standing depth. — minimum age variable but above 6 years.	— largest uninflated dimension[a] exceeds 1,2 m when uninflated; and/or — product is towed by non-manual means; and/or — product use exceeds a speed limit of 3 km/h; — intended use includes adult users (via labelling); and/or — product is labelled not to be a toy; and/or — use of product depends on deep water, or use in deep water is foreseeable.
D[b]	Floating leisure articles for passive (resting, relaxing on flat surface) but mainly active use i.e. climbing, jumping (more than 1 m), swinging, rotating and any related activity. No distinct position of user. Single or collective use. No mechanical means of propulsion. Shall be anchored. — minimum length over all (uninflated, flat) = 1,2 m. — minimum age variable but above 36 months.	— largest uninflated dimension[a] exceeds 1,2 m; and/or — product includes usability for jumping and climbing on or to a height of more than 1,0 m; and/or — labelling does not include the warning note according to EN 71 concerning supervision and use in shallow water only; and/or — labelling includes adult use; and/or — use of product depends on deep water or use in deep water is foreseeable.
E[b]	Inflatable boats with buoyancy less than 1 800 N and an overall length of more than 1,2 m. Single and collective use. Position of user inside the buoyant structure (wide cockpit). Propulsion: manually, motor, sail. — minimum length over all (uninflated, flat) = 1,2 m. — minimum age variable but above 36 months.	— largest uninflated dimension[a] exceeds 1,2 m; and/or — product is equipped or intended for mechanical means of propulsion; and/or — labelling does not include the warning note according to EN 71 concerning supervision and use in shallow water only; and/or — labelling includes adult use; and/or — use of product depends on deep water or use in deep water is foreseeable.

[a] Except long thin protrusions as e.g. the neck of a swan shaped inflatable.

[b] For typical products, see risk analysis.