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

**Part 7:  
Additional specific safety  
requirements and test methods for  
Class E devices**

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*Articles de loisirs flottants à utiliser sur ou dans l'eau —*

*Partie 7: Exigences de sécurité et méthodes d'essai complémentaires  
propres aux dispositifs de Classe E*

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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](http://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](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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](http://www.iso.org/iso/foreword.html).

ISO 25649-7 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.

## Introduction

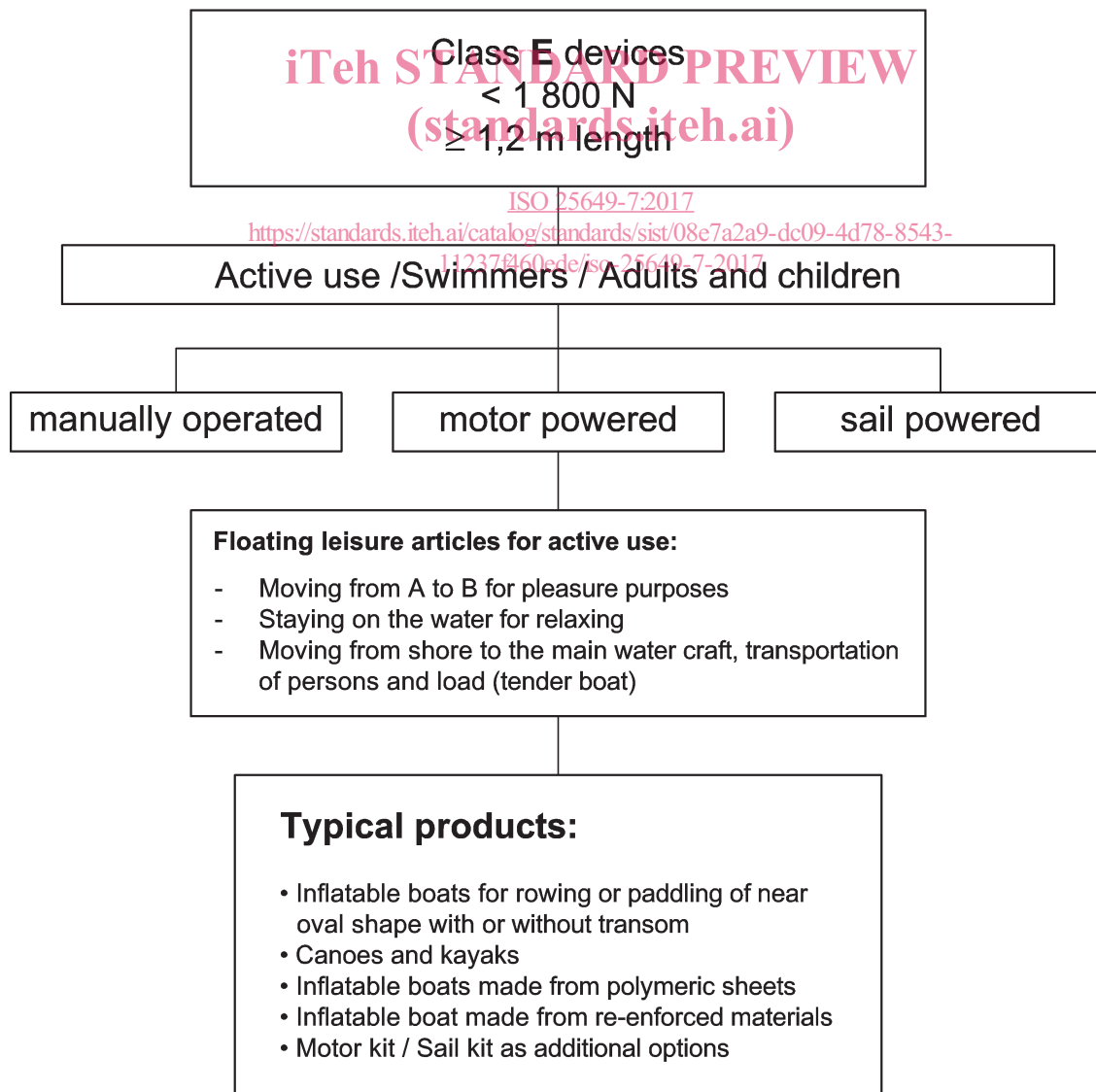
This document is closing the regulatory gap between aquatic toys smaller than 1,2 m on the one hand and inflatable boats providing a buoyancy greater than 1 800 N on the other hand. It includes all kinds of boat propulsion and covers canoes and kayaks as well. The mostly combined safety and performance requirements deal with space per person, load capacity, floating stability, engine power and behaviour after loss of air pressure (failure of an air chamber).

Practical test runs shall prove the manoeuvrability of the boat under various conditions and the adequate motorization.

Comprehensive consumer information related to selection before purchase and during use complete the requirement profile of the document.

This document covers boats of customary construction and design with an overall length from 1,2 m (uninflated, flat) up to 1 800 N buoyancy. Such boats are mostly intended for recreational water activities and for the use by children. However, smaller tender boats such as those used on yachts also fall within this size range and small boats for specific applications (e.g. fishing boats) may also be included. Therefore, irrespective of the main group of users, powered boats and sail boats have also been taken into consideration.

### Interior Structure Class E



For figurative examples see [Annex C](#), [D](#), [E](#) and [F](#).

**Table 1 — Introductory risk analysis**

No.	Typical products	Place of usage	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>E</b> <b>in work programme</b>	Adults and children's boats rowing boats of near oval shape with or without transom canoes, kayaks, tender boats to yachts	Pools; sea, shore/ close to shore; rivers; lakes	Children, adults	Paddling, rowing, sail, engine passive and active use by hand, drifting; third party (towing) ...	Inside the boat	Overload; use by non-swimmers; wave riding	Drifting away; capsizing; entrapment; lack of supervision in case of child use ...	<b>DROWN-ING</b>	This document closes the gap between ISO 6185 and EN 71)

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

## Part 7:

# Additional specific safety requirements and test methods for Class E devices

## 1 Scope

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

This document is applicable with ISO 25649-1 and ISO 25649-2.

Class E devices are intended for use in bathing areas or in protected and safe shore zones.

NOTE 1 Typical products forming Class E (see [Annex E](#)):

- inflatable boats for rowing or paddling of near oval shape with or without transom;
- canoes and kayaks;
- inflatable boats made from plastic sheets or from reinforced materials;
- motor kit/sail kit as additional option.

NOTE 2 Typical places for application of Class E devices:

- moving from A to B for pleasure purposes;
- staying on the water for relaxing;
- moving from shore to the main boat, transportation of persons and load (tender boat).

## 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.

ISO 8665, *Small craft — Marine propulsion reciprocating internal combustion engines — Power measurements and declarations*

ISO 25649-1:2017, *Floating leisure articles for use on and in the water — Part 1: Classification, materials, general requirements and test methods*

ISO 25649-2, *Floating leisure articles for use on and in the water — Part 2: Consumer information*

## 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 inflatable boat**

buoyant structure (hull), achieving all or part of its intended shape and buoyancy by the medium of inflation and intended for the transportation of persons on the water; its design and shape give it the capability to withstand forces and movements arising from various sea conditions

Note 1 to entry: An inflatable boat is considered as an aquatic toy (toy in form of a boat) according to EN 71-1, when

- a) it is intended for use without any propelling means (oars, paddles, motor, sail) and these are also not to be fitted subsequently, and
- b) its overall length is <120 cm and the boat is additionally marked with the following warning note “Caution, to be used only in shallow water and under supervision”.

**3.3 tender**

boat that serves as an auxiliary means in working around a bigger boat but mainly to commute from the boat to shore or other places nearby

Note 1 to entry: In this respect it serves for transport of crew and load. Tenders are propelled by oars, frequently they are equipped with an outboard engine, partly they can be fitted with sails. For stowage reasons tenders are often small in size but robust in material and construction.

**3.4 leisure boat**

boat that serves as a recreational boat, slowly moving around on the water for relaxing, extended bathing, etc

Note 1 to entry: It does not have the purpose of a working boat.

**3.5 inherent buoyant material**

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

Note 1 to entry: Boat made from 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.

**3.6 inboard area**

internal surface area defined by a vertical plane tangential to the innermost side of the buoyancy tube and perpendicular to the deck

**3.7 inboard length**

length of the cockpit, including the area below any spray cover, measured along the boat centreline between the innermost points of the bow and stern

**3.8 usable seating area**

inboard area, including the area below any spray cover, available for the users to sit on

**3.9 permissible rated load**

maximum loading of the boat by persons, propelling means and other items

**3.10****integrated transom**

rear part of the boat's cockpit normally made by a flat wooden board inseparably integrated in the boats hull on which the motor is clamped by clamp screws

**3.11****motor mount transom**

small board attached to the rear part of the boat via a tube frame and hull fittings by means of separate fixings for the purpose of clamping the motor to it

**3.12****kayak**

boat which is propelled by means of double paddle(s) and user(s) sitting in line in a mid boat position

Note 1 to entry: The width/length-ratio of kayaks is above 1:3. Kayaks can be equipped with sail and motor.

**3.13****canoe**

boat which is propelled by means of a single paddle(s) and user(s) are kneeling or sitting at bow and rear of the boat

Note 1 to entry: The width/length-ratio of canoes is above 1:3. Canoes can be equipped with sail and motor.

**4 Materials**

Boats conforming to this document shall meet the requirements set out in ISO 25649-1:2017, Clause 6.

All materials shall be selected by the manufacturer according to the requirements for shape, dimensions, maximum load, etc. to which the boat is to be subjected and which are resulting from the intended service conditions.

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**5 Construction and functional components of boats****5.1 Conditioning**

All tests shall be performed at a temperature of  $(20 \pm 3)$  °C.

**5.2 Hull integrity****5.2.1 Requirements**

The materials and the method of construction used in the construction of a boat shall be compatible with that of the hull itself. Any load-bearing fittings attached to the boat shall not result in any impairment in air tightness or water integrity, when loaded as described in [5.2.2](#).

**5.2.2 Test method**

Load-bearing fittings shall be loaded in any direction up to breaking point, but not exceeding 1 kN for leisure boats (see 3.4) and 2 kN for tenders (see [3.3](#)). If maximum load is reached, this load shall be maintained for 1 min.

Any cordage used for test purposes shall have a diameter of 8 mm.

## 5.3 Manual lifting and carrying devices

### 5.3.1 Requirements

The boat shall be equipped with a means for portage. There shall be no failure of the carrying device, when tested in accordance with [5.3.2](#).

Where lifting or carrying devices also function as safety ropes or grab handles, they shall also comply with the requirements of [6.6.1](#).

### 5.3.2 Test method

The carrying device shall be gradually loaded with a force of 500 N for 1 min in the appropriate directions.

Any cordage used for test purposes shall have a diameter of 8 mm.

## 5.4 Rowlocks and oars

### 5.4.1 Requirements

#### 5.4.1.1 General

The provision of paddles, rowlocks and oars is not mandatory. The assembly system oar/rowlock shall comply with the requirements given in [5.4.1.2](#) to [5.4.1.5](#).

Exclusions according to [Annex A](#).

#### 5.4.1.2 Abrasion damage

The bearing surfaces of the oars and rowlocks shall be free from any roughness likely to cause excessive wear. All external surfaces of the rowlocks shall be smooth and free from sharp edges and corners.

#### 5.4.1.3 Securing against loss

Rowlocks shall be secured against unintended loosening. Means shall be provided for safe location of at least two oars or paddles when stowed away.

#### 5.4.1.4 Strength of rowlocks

There shall be no structural failure of the rowlocks and/or associated fittings when tested in accordance with [5.4.2.2](#).

#### 5.4.1.5 Strength and performance of rowlocks and oars

When tested in accordance with [7.4](#), there shall be no structural failure or permanent deformation of any component during the test and it shall be clearly demonstrated that the rowlock system is sufficiently rigid for efficient rowing. A minimum unrestricted movement of the oars 60° ahead and 60° astern shall be enabled.

### 5.4.2 Test methods

#### 5.4.2.1 Abrasion damage and prevention of loosening

Visual inspection and performance testing.