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

**Part 5:
Additional specific safety
requirements and test methods for
Class C devices**

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

*Partie 5: Exigences de sécurité et méthodes d'essai complémentaires
propres aux dispositifs de Classe C*

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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).

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).

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.

ISO 25649-5 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).

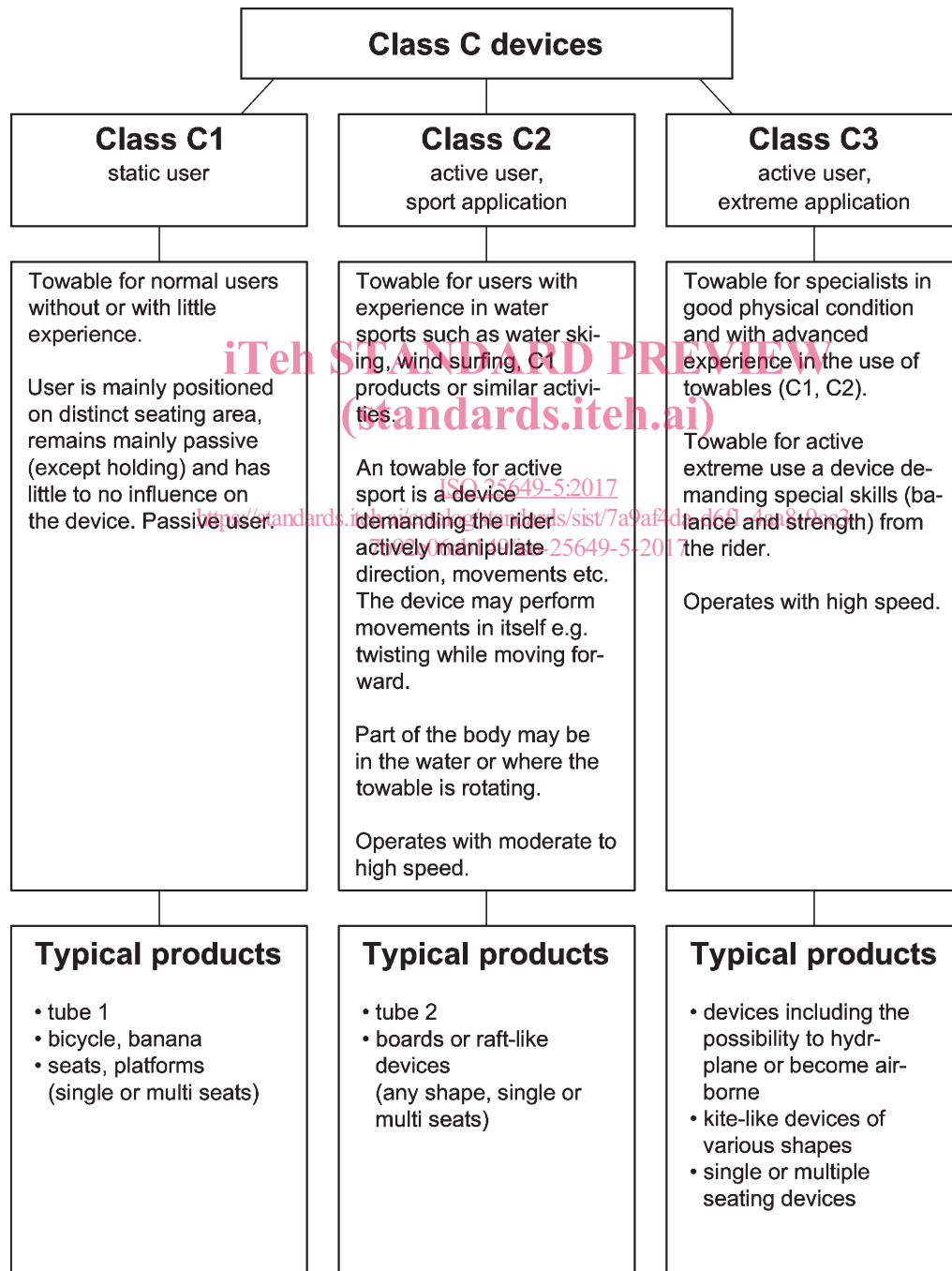
A list of all the parts in the ISO 25649-series can be found on the ISO website.

Introduction

The majority of technical requirements below is derived from the overriding property of the products to provide high speed rides when towed by fast motorboats. Thus space per person and means to hold tight reliably and comfortably and without entrapment or entanglement is an important subject. Safety requirements concerning the towing rope form another content of the document.

Safety and performance of the products are tested by practical tests under all conditions and manoeuvres, including the issue of a quick release in case of an emergency as well as residual buoyancy.

Comprehensive consumer information, including a set of non-verbal communication gestures complete the requirement profile of this document.



Risk assessment for entire Part 5 is shown in [Table 1](#).

Table 1 — Introductory risk analysis

Class	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
C (C1, C2, C3)	Tube riders with interior holding facility and closed cockpit; raft riders; board riders; banana riders (all to be towed by motor boats)	Sea shore/ close to shore; lakes, rivers; large space for action is needed	Adolescents; adults; children accompanied by adults (minimum age group)	High speed movement; devices towed by motor boats; other means of propulsion	Users are sitting on or inside the device; elevation from water level about maximum 60 cm sitting height; kneeling, lying; standing	Use by non-swimmers; no use of PFD; excessive speed; improper load distribution/seating position; close vicinity to other users; overload; inadmissible number of passengers	Collision of persons in the case of capsizing; fall from the device; device turning; catapulting out of the device; impact through device; nose dipping; sudden stop; crash down of kite type towables; rupture of the towing rope; entrapment/entanglement; nose dive; use of rumps	DROWN-ING	Age limits; warning notes; quick release; gripping; escape in case of danger; residual buoyancy; use of PFD; length, strength and elasticity of rope; reliability of quick release, user qualifications and capabilities

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Floating leisure articles for use on and in the water —

Part 5:

Additional specific safety requirements and test methods for Class C devices

1 Scope

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

This document is to be applied with ISO 25649-1 and ISO 25649-2.

NOTE 1 Typical products forming class C (see [Annex B](#)):

- tube riders towable with interior holding facility and closed cockpit;
- raft riders towable;
- board riders towable;
- banana type towable.

NOTE 2 Typical places for application: [ISO 25649-5:2017](#)

- distant from bathing areas and other frequented water surfaces, wide empty spaces, dedicated racetracks (parcours);
- no to little waves;
- no strong currents.

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 25649-1, *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 or 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
personal floating device
PFD**

garment or device that, when correctly worn and used in water, will provide the user with a specific amount of buoyancy that will increase the likelihood of survival

[SOURCE: ISO 12402-1:2005, 3.1]

**3.3
application at high speed**

application in which the floating device is towed rapidly through external means of propulsion (motor boat, towing installation, etc.)

Note 1 to entry: In accordance with intended use.

**3.4
means to assist re-embarkation**

means which helps the user to climb back on board of the floatable device from an in-water position regardless whether the buoyant structure is fully inflated or any air chamber is deflated

**3.5
towable**

floating leisure article (inflatable or inherently buoyant) for dynamic use towed by mechanical means

**3.6
rider**

<floating leisure articles> user of the towable positioned on the towed device

**3.7
water craft driver/operator**

person having the responsibility for the towed and the towing device (watercraft or towing device)

**3.8
observer**

<floating leisure articles> additional person observing the towed device in permanent eye contact

**3.9
tow rope**

connection between towing device and the towable

**3.10
towing streamer**

signalisation flag attached to the rear of the towing device according to national rules

**3.11
quick release system**

means to release the towable from the tow rope manually or automatically in case of an emergency by triggering a release mechanism

**3.12
available area**

area on or inside a floating leisure article which can be used unrestrictedly for user accommodation when taking the intended posture(s)

**3.13
multiple use product**

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

3.14**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: Inflatables 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.

4 Safety requirements and test methods**4.1 General**

Construction of a floating leisure article shall be such that it corresponds in terms of design, dimensions, safety, strength and durability for its intended use. The requirements set out in this document were chosen to ensure compliance with these considerations. When floating leisure articles provide buoyancy in several components, then requirements apply to all components. Floating leisure articles of class C shall provide residual buoyancy if one air chamber fails. This residual buoyancy shall maintain the safety of the device even if its function is lost. The following safety requirements are therefore related to:

- design,
- sizing,
- materials,
- strength,
- performance, and
- information.

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Towables of all classes shall be designed in a way that the rider when in the intended position(s) can always at least partially be seen by the observer for communication purposes by and with the observer.

In addition to this document, all requirements of ISO 25649-1 and ISO 25649-2 apply also for class C devices.

ISO 25649-1 and ISO 25649-2 are applicable as general parts. In individual cases, due to the unpredictability, variations and indeterminability of existing and future products, a corresponding choice shall be made.

4.2 Test conditions

If not otherwise stated, all tests shall be carried out at an air temperature of (20 ± 3) °C.

4.3 Design**4.3.1 General**

Design and shape of towables have constituted a certain number of constant types like as described in the introduction. The entire product group of towables is however subject of permanent change in terms of shape and function. For that reason, the space per person requirements shall be applied for in a way to satisfy safety and performance if these parameters depend on distinct body positions for which an available area should be provided. This applies in particular if use by children is included.