International Standard

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Second edition
2024-10

Floating leisure articles for use on and in the water —

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

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

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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 document 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).

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This document was prepared by Technical Committee ISO/TC 83, *Sports and other recreational facilities and equipment*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 136, *Sports, playground and other recreational facilities and equipment,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 25649-5:2017), which has been technically revised.

The main changes are as follows:

— update of the introduction;

— update of Clauses 2, 3, 5 and 8;

— addition of requirements and test methods in 4.3.5 regarding foot and finger entrapments;

— update of Annex B.

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

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document applies to floating leisure articles for dynamic use of Class C (see Figure 1 for distinction between Classes C1, C2 and C3 products). Examples of Class C products can be seen in informative Annex C.

Most technical requirements in this document are 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. This document also addresses safety requirements concerning towing ropes.

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.

This document also includes requirements on comprehensive consumer information, including a set of non-verbal communication gestures.

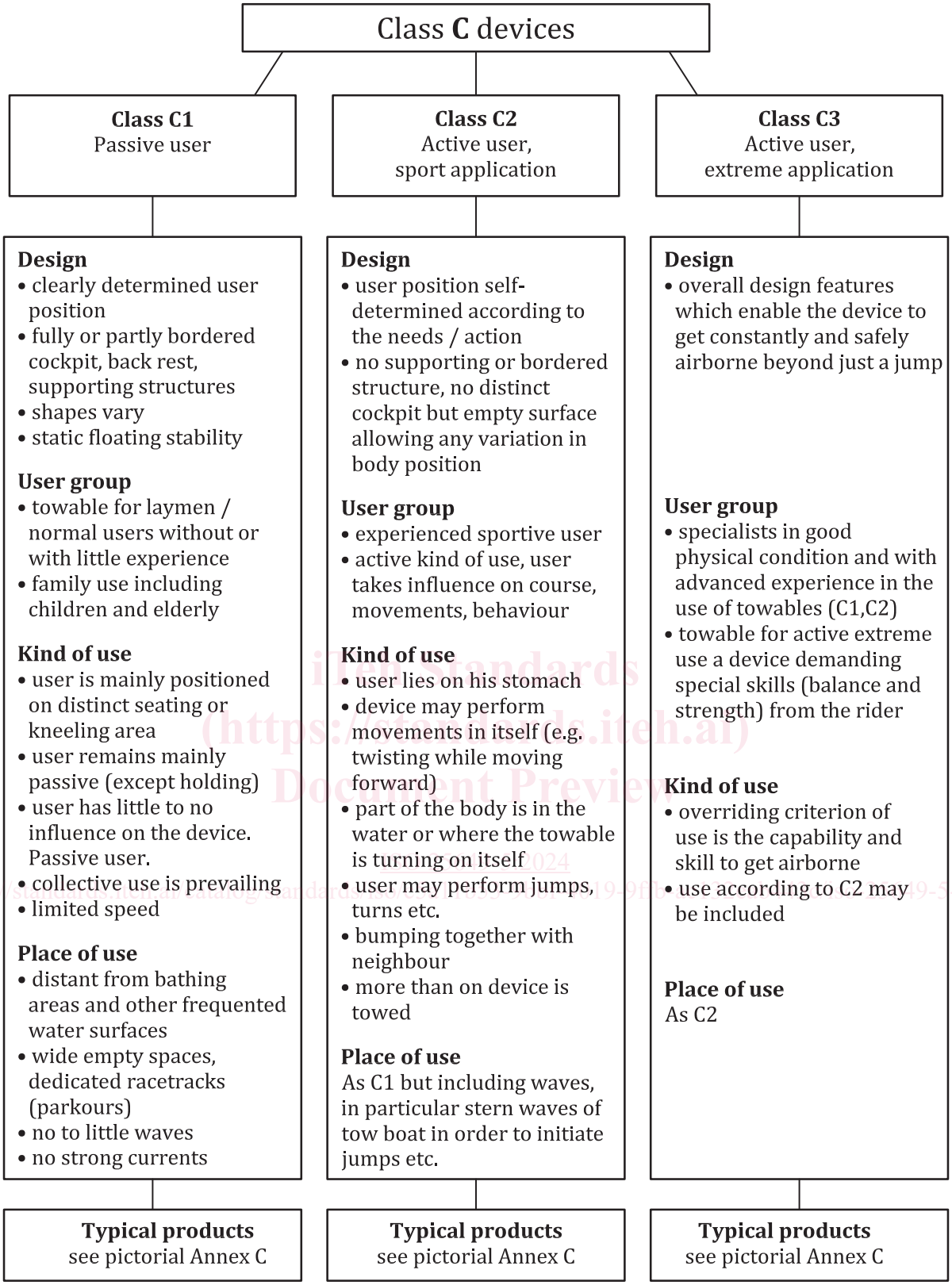

Figure 1 — Interior structure of Class C devices

The risk assessment for this document 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 with 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 or 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 approximate-ly maximum 60 cm sitting height; kneeling, lying; standing	Use by non-swim-mers; 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 or entanglement; nose dive; use of rumps	DROWNING	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 qualifica-tions and capabilities

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 specifies additional specific safety requirements and test methods for Class C floating leisure articles for use on and in the water regardless whether the buoyancy is achieved by inflation or inherent buoyant material.

This document is applicable for Class C floating leisure articles as specified in ISO 25649-1:2024, Table 1.

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:

— 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 25649-1:2024, *Floating leisure articles for use on and in the water — Part 1: Classification, materials, general requirements and test methods*

ISO 25649-2:2024, *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 terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
residual buoyancy
provision of remaining buoyancy in case of a defect of any buoyancy chamber

3.2
personal floatation device
PFD
garment or device which, when correctly worn and used in water, will provides the user with a specific amount of buoyancy that will increase the likelihood of survival

[SOURCE: ISO 12402-5:2020]

3.3
means of re-embarkation
design feature that facilitates getting back on the floating leisure article from an in-water position, regardless whether the buoyant structure is fully inflated or any chamber is deflated

3.4
towable
floating leisure article (inflatable or inherently buoyant) for dynamic use towed by mechanical means

3.5
rider
user of the *towable* (3.4) positioned on the towed device

3.6
watercraft driver
person having the responsibility for the towed and the towing device (watercraft or towing device)

3.7
observer
additional person watching the *towable* (3.4) and *rider(s)* (3.5) with a clear line of site

3.8
tow rope
connection between towing device and the *towable* (3.4)

3.9
towing streamer
signal flag attached to the rear of the towing device according to relevant requirements

3.10
quick release system
means to release the *towable* (3.4) from the *tow rope* (3.8) manually or automatically in case of an emergency by triggering a release mechanism

3.11
available area
area on or inside a floating leisure article that can be used unrestrictedly for user accommodation when taking the intended posture(s)

3.12
inherent buoyant material
non-crosslinked (closed-cell) foam or other materials enclosed in (a) sealed compartment(s) in the hull that have a specific weight lower than 1 kg/dm^3

Note 1 to entry: Floating leisure articles made from inherent buoyant material are considered buoyant structures (hull) achieving all or parts of their intended shape and buoyancy through soft foam, hard foam or sealed chambers filled with air, gas or granules.

3.13
raft rider
towable (3.4) designed as a floating structure where the *rider* (3.5) is fully or partly enclosed by surrounding walls forming an inner cockpit

3.14
board rider
towable (3.4) designed as a flat open floating structure without walls

Note 1 to entry: Hybrid designs are possible.

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 to its intended use. The requirements set out in this document were chosen to ensure compliance of the above construction. 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;

— information.

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.

Class C products shall be marked with the safety information markings, as specified in ISO 25649-2:2024, Table 8.

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

With regard to design and shape, there is a certain number of constant types of towables, as described in the introduction. The entire product group of towables is however subject to continuous change in terms of shape and function. For that reason, the space-per-person requirements shall be applied in a way that satisfies 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.