



ISO 25649-1

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

Part 1:
**Classification, materials, general
requirements and test methods**

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

*Partie 1: Classification, matériaux, exigences et méthodes d'essai
générales*

**Second edition
2024-10**

This is a preview of ISO 25649-1:2024. [Click here to purchase the full version from the ANSI store.](#)



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This second edition cancels and replaces the first edition (ISO 25649-1:2017), which has been technically revised.

The main changes are as follows:

- update of the introduction;
- update of [Clause 2](#);
- in [Table 1](#), Class E^b, deletion of the exclusion indicated in footnote a) in the classification for “Not an aquatic toy”);
- addition of the new [4.2](#) for device with or without added component;
- modification of [Figure 1](#);
- measurements in [Figure 6](#) and [Figure 7](#) updated to include buoyancy aid;
- in [5.5.2](#), modification of the maximum body weight for Subject 1 – male;
- in [5.12.2.1](#), modification of the test procedure;
- update of the Bibliography.

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

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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.

Drowning is among the ten leading causes of death of children and young people in the world. Due to the absence of precise data, there is no information on the relation between drowning accidents and the involvement of certain products. Such links can only be shown for a limited number of products among the wide range of products related to water activities. Consumer protection needs to rely on conclusions by risk analysis, experience and analogy to known cases. Considerations based on probability and the precautionary principle are also important in addressing the problem. Beyond the statistical deficiencies, relations between certain products and an increased risk of drowning are plausible. A risk analysis (see [Table 1](#)) shows in ISO 25649-3 to ISO 25649-7 what the partial and final risks are.

Until now, standardization has addressed the risks through a wide series of standards aiming at the protection against drowning and at covering products used in leisure activities on and in the water. There are standards covering the relevant products for activities such as playing in the water, water sports, boating, diving, learning to swim and even the emergency devices as buoyancy aids and life jackets. Beyond these traditional activities and products, there is an increasing tendency for creating and marketing new products. These aim to increase pleasure and entertainment on the water but also to increase speed, action and thrill with new activities such as “tubing” or “white water rafting”. Some new products are traditional core products that have been partially modified, some are derived from traditional products but have been further developed into something new. Additionally, there is a clear trend to bring formerly land-based playground equipment on the water. The use of the word “amphibiation” is justified as in many cases the original function of the product is maintained, i.e. the product can be used both on land and water. Typical examples for amphibiated products are modifications of inflatable boats into bathing rafts or the further development of the earlier swim-ring into a flotation seat. Other examples are inflatable trampolines, climbing installations on the water and inflatable floating armchairs and sun loungers including a mini bar and sun shade. This trend is clear and likely to continue.

The nature of these new products provides an equal or even higher risk potential than the original core products. In parallel, the number of these products override the number of core products. In cases of collective use, the frequency of use is considerably increased, which in turn increases the likelihood of accidents, including drownings. Drowning is the final risk of the activities related to the mentioned products. Other somewhat lesser evils – partial risks – are likely to happen independently or in combination with the final risk.

With regard to safety-related standardization, an evident discrepancy emerges between the core products and the huge number of new products forming what the experts call the “grey zone”. Standardization in the past has focused on the core products, while “grey zone products” have not been considered and investigated, thus remaining excluded from the scopes of related standards. A systematic risk analysis or an investigation of the role of these new products in drowning accidents was never made. This has changed in recent times, with the triggering incident being the swim seat case, involving aquatic toys and related products and negligence. Today, what matters more than a disturbing gap in the series of existing standards, is the presence of several coincidences:

- 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 the same areas where such products are used (rivers, lakes, pools, bathing beaches);
- the risks can be easily identified and partly proven, and the increase in numbers and frequencies of accidents were already mentioned.

0.2 Equal risk, equal requirement

Safety-related standardization covering products used in leisure activities on and in the water aims at:

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- closing the standardization gap (i.e. completeness);
- setting clear boundaries between the product areas in order to avoid incorrect certification (e.g. unjustified CE-Mark);
- avoiding individually established testing procedures by the various test houses in the absence of a unified technical rule.

0.3 Risks and need for prevention

The following are considerations around the risks and the need for prevention.

- Relevance of drowning is proven (age groups, places, partly product involvement).
- The increase in the frequency of use and in the number of products likely contributes to accidents.
- 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 minimize this.
- Positive contribution to the basic problem of parental supervision is needed and claimed with regard to children activities, but is often weak, not existing or neglected.
- Safety provided by a product design that ensures the highest possible level of technical security does not exempt parental supervision for young children.
- There is a trend 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.
- There is a need for prevention.

0.4 Body entrapment, human tests subjects and USA anthropometric data

This document includes test procedures based on human test subjects. The anthropometric data for the worst-case human test subject – the heaviest and biggest person representing the 95th percentile of a population – have been derived from European body measurement data. The international worst-case regarding body dimensions is constituted by the USA-population. The 95 % body weight for the USA population needs to be increased from 90 kg to 110 kg and the Body Mass Index (BMI) should be specified between 35 and 40. This corresponds to a body height of 170 cm to 175 cm. Accordingly, the rigid test probe needs to be modified.