International Standard

ISO 20712-3

Fourth edition

Water safety signs and beach safety flags —

Part 3: Guidance for use

Signaux de sécurité relatifs à l'eau et drapeaux de sécurité pour les plages —

Partie 3: Lignes directrices pour l'utilisation

PROOF/ÉPREUVE

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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 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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For an explanation of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 145, *Graphical symbols*, Subcommittee SC 2, *Safety identification, signs, shapes, symbols and colours*.

This fourth edition cancels and replaces the third edition (ISO 20712-3:2020), which has been technically revised.

The main changes are as follows:

— Clause 8 and Annex E have been deleted, as tsunami specifications have been incorporated in ISO 22578;

— minor editorial changes have been made throughout.

A list of all parts in the ISO 20712 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 reflects good practice in the use of water safety signs and beach safety flags. The figures show examples of the selection and location of water safety signs and beach safety flags designed to provide information about aquatic hazards and the action necessary to avoid those hazards.

A standardized method of signing with the use of appropriate supplementary text throughout the working and public environment assists the process of education and instruction on the meaning of water safety signs and beach safety flags, and the appropriate actions to take. The intention of this document is to ensure a uniformity of application of water safety signs and beach safety flags which leads to increased familiarity, and therefore improved safety, for users, including visitors, and for the general public.

The figures within this document are based on assumptions that some people could be unfamiliar with the features of indoor or outdoor swimming pools or the beach. The figures are not intended to cover every potentially hazardous situation and they should be interpreted as recommendations and not as minimum requirements.

The use of water safety signs and beach safety flags does not replace the need for proper working methods and safety instruction or for training in accident prevention and the actions to be taken in the event of an emergency, or for the provision of lifeguards.

NOTE 1 The statutory regulations of some countries can differ in some respects from the recommendations given in this document.

NOTE 2 Some countries can differ in regard to the recommendations given in this document for the use of the diamond geometric shape for warning signs.

Water safety signs and beach safety flags —

Part 3:
Guidance for use

IMPORTANT — The colours represented in the electronic file of this document can be neither viewed on screen nor printed as true representations. For the purposes of colour matching see ISO 3864-4, which provides colorimetric and photometric properties together with, as a guideline, references from colour order systems.

1 Scope

This document gives guidance for the selection and use of water safety signs as specified in ISO 7010 and beach safety flags as specified in ISO 20712-2 in aquatic environments. It provides guidance on their location, mounting positions, lighting and maintenance. It also provides guidance on the design and location of multiple signs.

This document does not apply to traffic signs for use on the public highway or maritime signalling. It is not applicable to flags for use on firing ranges or to flags used to indicate water quality. It does not cover means of escape signs or their possible illumination.

NOTE This document refers to water safety signs which were originally specified in ISO 20712-1.[1)] These water safety signs have been integrated in ISO 7010, but are not specifically identified as water safety signs.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions 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
beach
area forming a shoreline or sloping bank at the edge of the sea or a river estuary or lake

[SOURCE: ISO 20712-2:2007, 3.1]

3.2
beach safety flag
material that gives a particular safety message by means of a combination of one or more colours and a geometric shape, and is attached by one end to a pole or rope

Note 1 to entry: A flag can have additional support, for example a horizontal support.

1) Cancelled and replaced by ISO 7010.

[SOURCE: ISO 20712-2:2007, 3.2]

3.3
factor of distance
distance factor
z
relationship between the height, *h*, of a sign and the observation distance, *l*, used to determine observation distances of signs

$$z = l/h$$

[SOURCE: ISO 3864-1:2011, 3.2, modified — "distance factor" has been added as an admitted term.]

3.4
multiple sign
two or more *safety signs* (3.7) or associated supplementary information or both on the same carrier

3.5
pool basin
water tank where water-related activities can take place

3.6
pool surround
area around a *pool basin* (3.5) for entry and exit to the pool basin and general circulation space

3.7
safety sign
sign which gives a general safety message, obtained by a combination of a colour and geometric shape and which, by the addition of a graphical symbol, gives a particular safety message

[SOURCE: ISO 3864-1:2011, 3.12]

3.8
sign height
diameter of a circular geometric shape or height of a rectangular or triangular geometric shape of the type of *safety sign* (3.7)

Note 1 to entry: Any outer border to the safety sign is excluded. See ISO 3864-1.

4 Guidance for selection and siting of signs and flags

4.1 Guidance for risk assessment

Selection and use are determined following the results of a risk assessment. The risk assessment should take into account the following specific issues:

a) hazards and associated risks of the aquatic environment;

b) regulations or legislation;

c) operation and management of the aquatic environment;

d) users and their foreseeable behaviour.

In specific situations, other issues will possibly have to be considered in a risk assessment.

NOTE The users could be in unfamiliar environments, not wearing their normal sight-correction lenses or in bare feet.

As the result of the risk assessment, a comprehensive statement of requirements should be prepared and used as the basis for the detailed design and specification for the selection and use of signs and flags.

4.2 Siting

4.2.1 Water safety signs and multiple signs

The siting of water safety signs and multiple signs should allow users to recognize hazards and take appropriate action to avoid them.

The following matters (issues, factors) should be considered:

a) location of hazards and their signage;

b) location of entrances or access to facilities;

c) location of any other signs;

d) location of architectural features, decor, structures, vegetation or people that could conceal or divert attention from signs;

e) lighting level and characteristics under both normal and mains-failure conditions;

f) appropriate supplementary text to water safety signs;

g) appropriate information on multiple signs.

4.2.2 Beach safety flags

The siting of beach safety flags should allow users to recognize hazards and take appropriate action to avoid them.

The following matters (issues, factors) should be considered:

a) nature and location of hazards and their relevant signage;

b) zoning or boundaries of aquatic activities;

c) location of structures, beach furniture or vegetation that could conceal or divert attention from flags;

d) location of flagpoles;

e) appropriate information on multiple signs, such as an explanation of the meaning of flags and the presence or otherwise of a lifeguard service.

5 Water safety signs

5.1 General recommendations for aquatic environments

5.1.1 General

The system designer should identify the locations of the hazards.

Safety signs should conform to ISO 7010. Safety signs should conform with the colorimetric and photometric requirements given in ISO 3864-4.

The required sign height of the safety sign should be determined from the maximum viewing distance under different external illumination conditions and the relevant distance factor, *z*, according to Table A.1.

The following principles should be taken into account when planning water safety signage. Signs should:

a) be sited conspicuously within the normal field of vision;

b) contrast with their surroundings;

NOTE The contrast and conspicuousness can be increased by the provision of an outer border or by mounting on a sign board with a colour contrasting with the surroundings.

c) be visible from any place within the vicinity of the hazard;

d) be sited at the same height throughout the aquatic facility, as far as is reasonable;

e) take precedence over all other signs, with the exception of escape route signing, if applicable;

f) be placed so that they are not a hazard;

g) be placed at sharp changes in depth;

h) be illuminated, if applicable, to ensure that they are visible and legible.

Care should be taken to avoid over-provision of safety signs at one location as this can confuse viewers and result in individual safety messages not being noticed or understood.

5.1.2 Mounting height

The following principles should be applied to assist users of the facilities in predicting the location of successive signs, whether they are mounted on walls, on posts or overhead.

a) Signs should be mounted as close as practicable to the observer's line of sight in the vertical plane. For a standing adult, this will be approximately 5° up or down from a point 1 500 mm above ground level in front of the observer.

b) Signs that are freestanding or mounted overhead should be placed so that they are not a hazard.

c) Where practical, the space in front of the sign should be clear so that people without sight-correction lenses or glasses or with visual impairments are able to approach the sign to reduce their viewing distance.

5.1.3 Lighting

If artificial lighting is provided, effective illumination is required both in normal and in mains-failure conditions.

There are various ways of ensuring the satisfactory illumination of signs.

Some types of lighting, for example low-pressure sodium, do not enable effective colour recognition and are therefore unlikely to be suitable for the illumination of water safety signs.

Where a sign is illuminated by an external artificial light source, the vertical illumination should be a minimum of 100 lx under normal lighting conditions.

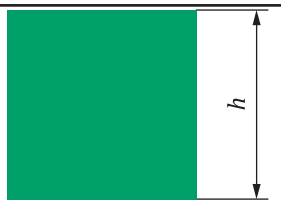
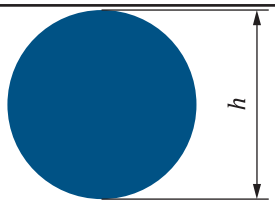
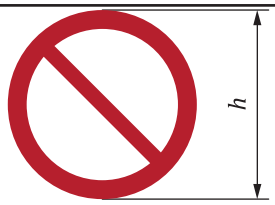
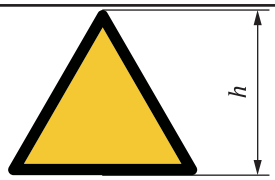
5.1.4 Sign height and maximum viewing distance

A sign should be both visible and legible at the maximum viewing distance.

NOTE 1 The sign height necessary to achieve these criteria will depend on the viewing distance and the illumination of the sign. Measurement of sign height is given in Table 1.

NOTE 2 In external environments, a sign can be made more visible by provision of a larger colour contrasting border or background.

Table 1 — Measurement of sign height

Sign height *h*	Type of sign			
	Safe condition	Mandatory action	Prohibition	Warning
				

The required maximum viewing distance of a sign should be determined by its position within the area and take into account the needs of people with normal sight and people with visual impairments. Distance factors *z* for different illumination conditions and visual acuity are given in Table A.1.

The recommended maximum viewing distance for a particular sign height, *h*, in millimetres (mm), can be calculated from the following formula:

$$l = zh$$

where

l is the required viewing distance, in millimetres (mm);

z is the relevant factor of distance from Table A.1.

Recommended maximum viewing distances for different minimum sign heights under normal/natural illumination are given in Table 2.

Table 2 — Recommended maximum viewing distance for different minimum sign heights under normal/natural illumination

Minimum sign height mm	Maximum viewing distance m	
	Normal visual acuity	Visual acuity 6/60
60	3,6	0,36
80	4,8	0,48
120	7,2	0,72
180	10,8	1,08
240	14,4	1,44

For intermediate viewing distances, the next largest available sign height should be used.

The maximum viewing distances in Table 2 relate to viewing normal to the sign. When a sign is viewed at an angle of α to the normal, the maximum viewing distances are reduced by the multiplying factor $\cos \alpha$.

The relevant viewing distance should be such that the observer is informed of potential hazards and of the safety precautions and/or actions required to avoid the hazard(s) before the observer makes any contact with the hazard(s).

Any variation of the sizes of signs within a facility should be kept to a minimum.

5.1.5 Use of supplementary text

A supplementary text sign will help to ensure that the meaning of the water safety sign is fully understood and may convey additional information. For guidance on supplementary text, see Annex D.