



SLOVENSKI STANDARD

SIST EN 14504:2019

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Plovila za celinske vode - Plavajoči privezi in pontonski mostovi na celinskih vodah - Zahteve, preskusi

Inland navigation vessels - Floating landing stages and floating bridges on inland waters - Requirements, tests

Fahrzeuge der Binnenschifffahrt - Schwimmende Anlegestellen und schwimmende Brücken auf Binnengewässern - Anforderungen, Prüfungen

Bateaux de navigation intérieure - Embarcadères flottants et appontements flottants sur des eaux intérieures - Exigences, essais

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93.140	Gradnja vodnih poti, pristanišč in nasipov	Construction of waterways, ports and dykes
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EUROPEAN STANDARD

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Inland navigation vessels - Floating landing stages and floating bridges on inland waters - Requirements, tests

Bateaux de navigation intérieure - Embarcadères flottants et appontements flottants sur des eaux intérieures - Exigences, essais

Fahrzeuge der Binnenschifffahrt - Schwimmende Anlegestellen und schwimmende Brücken auf Binnengewässern - Anforderungen, Prüfungen

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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EN 14504:2019 (E)**European foreword**

This document (EN 14504:2019) has been prepared by Technical Committee CEN/TC 15 “Inland navigation vessels”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2019, and conflicting national standards shall be withdrawn at the latest by October 2019.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 14504:2016.

The following changes have been made to EN 14504:2016:

- a) the title has been changed;
- b) definitions revised, new definition added;
- c) intact stability clarified (4.3.2);
- d) requirements on railings clarified (5.1);
- e) requirement for climbing equipment added (5.2.2);
- f) requirements for storage spaces clarified (5.6);
- g) requirements for marking (Clause 8) updated according to the changes in 5.2.2 and 5.6;
- h) requirements on Manufacturer's mark (8.4) clarified;
- i) load combinations clarified (A.2);
- j) requirements on live load explained in more detail (A.6);
- k) requirements on hydrodynamic actions explained in more detail (A.7);
- l) mooring line force clarified for the case that the vessel is moored to the shore (A.9);
- m) calculation of wind load clarified (A.11).

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document specifies safety requirements for floating landing stages and floating bridges for passenger transport and their equipment.

Requirements for facilities for supply and waste disposals for vessels using these floating landing stages are not covered by this document.

This document is not applicable to:

- floating landing stages for motor vehicle traffic;
- floating landing stages for recreational craft and inland navigation craft that are not vessels, e.g. floating equipment;
- more severe requirements for floating landing stages used for the transshipment of dangerous goods;
- any gangway required between vessel and floating landing stage;
- specialized floating structures which are not used for passenger traffic or the berthing of vessels.

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.

EN 711, *Inland navigation vessels - Railings for decks and side decks - Requirements, designs and types*

[SIST EN 14504:2019](http://standards.itec.int/catalogue/standards/sist-en-14504-2019)

EN 790, *Inland navigation vessels - Stairs with inclination angles of 45° to 60° - Requirements, types*

<http://standards.itec.int/catalogue/standards/sist-en-14504-2019>

EN 1492-4, *Textile slings – Safety – Part 4: Lifting slings for general service made from natural and man-made fibre ropes*

EN 1990, *Eurocode - Basis of structural design*

EN 13056, *Inland navigation vessels - Stairs with inclination angles of 30° to < 45° - Requirements, types*

EN 13281, *Inland navigation vessels - Safety requirements for walkways and working places*

EN 13411-2, *Terminations for steel wire ropes – Safety – Part 2: Splicing of eyes for wire rope slings*

EN 13574, *Inland navigation vessels - Permanently installed climbing devices with a length not exceeding 5 m*

EN 14144, *Lifebuoys - Requirements, tests*

EN 14145, *HOLDERS for lifebuoys*

EN 60529, *Degrees of protection provided by enclosures (IP Code) (IEC 60529)*

EN ISO 1140, *Fibre ropes - Polyamide - 3-, 4-, 8- and 12-strand ropes (ISO 1140)*

EN ISO 1346, *Fibre ropes - Polypropylene split film, monofilament and multifilament (PP2) and polypropylene high-tenacity multifilament (PP3) - 3-, 4-, 8- and 12-strand ropes (ISO 1346)*

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EN ISO 18422, *Ships and marine technology - Inland navigation vessels - Plate with instructions for rescue, resuscitation and first aid for drowning persons (ISO 18422)*

ISO 8793, *Steel wire ropes - Ferrule-secured eye terminations*

ISO 18421, *Ships and marine technology - Inland navigation vessels - Lifebuoy housings*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1990 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1**floating establishment**

floating construction used for the safe passage of persons on inland waters

Note 1 to entry: A floating establishment is either a floating landing stage or a floating bridge.

3.1.1**floating landing stage**

floating establishment used for berthing and mooring of vessels and for passenger travel

3.1.2**floating bridge**

floating establishment without berth, used solely for passenger traffic and not for berthing or mooring vessels

3.2**floating body**

one or more fixed buoyancy bodies with a traffic area and/or a connecting bridge support

3.3**buoyancy body**

body capable of floating that either:

- consists of waterproof air chambers, or
- is completely filled with a closed-pore material

3.4**connecting bridge**

movable walkway between floating body and shore

3.5**anchorage for the floating establishment**

device by which the floating establishment is secured to its berth

3.6**pier anchor**

spacer for floating body

3.7**freeboard**

distance between the plane of maximum draught (waterline) and a parallel plane passing through the lowest point of the upper edge of the buoyancy body

3.8**residual freeboard**

distance between the plane of maximum draught (waterline) and a parallel plane passing through the lowest point of the upper edge of the buoyancy body in the event of leak

3.9**safety distance**

distance between waterline and lowest point of buoyancy body with air chambers that is no longer watertight

3.10**residual safety distance**

distance between the waterline and the lowest point of a buoyancy body with air chambers that is no longer watertight in the event of a leak

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3.11**maximum draught level**

draught of the floating establishment at the sum of the maximum actions

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4 General requirements**4.1 Components**

The floating establishment shall consist of floating body, connecting bridge and anchorage.

4.2 Strength

The strength of the components of floating establishments shall be fixed taking into account the actions described in Annex A.

The strength shall be tested as specified in 7.2.

4.3 Buoyancy and stability**4.3.1 General**

In combination with the following proof of buoyancy and stability, for floating establishments the actions in accordance with Annex A shall have a partial safety coefficient of $\gamma_F = 1,0$.

EN 14504:2019 (E)**4.3.2 Intact stability**

At maximum draught level, a

- freeboard of at least 0,15 m,
- safety distance of at least 0,30 m, and
- heeling angle of no more than 10°

shall be maintained.

In addition, the metacentric height for floating establishments under option A (see 4.4) under impacts as per A.5 to A.7 and A.11 shall be at least 0,15 m. For these structures, heeling motions caused by the vessel's movement or by the mooring equipment as well as open areas of liquid, which occur during the operation of the floating establishment, shall also be taken into consideration.

Intact stability shall be tested as specified in 7.3.1.

4.3.3 Damaged stability

It shall be ensured that the floating establishment will neither sink nor capsize in the case, that one air chamber is damaged. In this case, a residual freeboard and a residual safety distance each of not less than 10 cm shall be maintained; if greater residual safety distances or residual freeboards are required by the specifics of the waterway, these shall be taken into account.

Free surfaces of liquids that can occur during operation shall also be taken into account.

If all buoyancy bodies are completely filled with a material according to 4.5.4, proof of leak stability may be omitted.

Damage stability shall be tested as specified in 7.3.2.

4.4 Anchorages for floating establishments

Floating establishments shall be anchored in their positions to prevent them from being torn loose or being displaced by currents, wind, waves, fluctuations in water level or the draught or wash of passing vessels or possible special loads. In the case of floating landing stages, the influence of berthing ships shall also be taken into consideration. The functioning capability of the anchoring of the floating establishment shall also be proven for the case that the floating body of the floating establishment springs a leak.

Anchorage for the floating establishment shall comply with one of the following two options:

- a) Option A: the floating establishment shall be secured to the land by means of:
- 1) chains,
 - 2) steel wire ropes,
 - 3) fibre ropes as per EN ISO 1140 or EN ISO 1346,
 - 4) a pier anchor of appropriate strength and length, or
 - 5) the connecting bridge.

The fastenings shall be secured against deliberate undoing. This requirement is considered to be met if it is not possible to undo the fastenings without the use of a tool.

End connections of steel wire ropes shall be designed as splicers according to EN 13411-2 or by means of aluminium ferrules according to ISO 8793. Textile slings of fibre ropes shall be designed according to EN 1492-4.

- b) Option B: the floating establishment shall be attached to guides or dolphins in accordance with 4.5.3.

4.5 Structural requirements

4.5.1 General

The floating establishment shall be designed so that it can follow all changes in water level during operation.

4.5.2 Freeboard

Taking into account 4.3, for floating landing stages the height difference between the traffic areas of the floating body and the deck of the vessel shall be as small as possible for the berthing vessels expected.

For floating bridges the height of the traffic areas of the floating body shall be selected taking 4.3 into account, so that no waves enter the traffic areas under predictable wind and wave conditions.

4.5.3 Floating bodies

Floating bodies using option B (see 4.4) anchorages shall be fixed so that they cannot twist. The height of the guides or dolphins shall be sufficient dimensioned so that the floating body is not flooded at the maximum water level to be expected or the floating body shall be secured against floating away.

Floating bodies shall have one or more buoyancy bodies, which:

- comprise a total of at least three watertight air chambers, or
- are completely filled with a material according to 4.5.4.

It shall be possible to seal the openings in the air chambers so that they are waterproof.

4.5.4 Materials for filled buoyancy bodies

Materials used to fill the filled buoyancy body shall have closed pores.

The water absorption characteristics of the material shall be taken into consideration during proving.

For buoyancy elements made of expanded polystyrene according to EN 13163, water absorption characteristics according to EN 12087 of max. 5 % by volume are recommended.

These materials shall be resistant against external influences or protected against such influences.

5 Equipment

5.1 Railings, barrier

5.1.1 The walkways on floating landing stages shall be fitted with fixed railings as specified in EN 711 at points where it is possible to fall into the water or to lower-lying levels when a vessel is moored. The railings shall be of types PF or PG.

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In areas provided for the berthing of vessels, the distance between the railings and the outer edge of the floating landing stage shall be at least 0,70 m.

5.1.2 There shall be a barrier at the shore-side access point to the connecting bridge of the floating landing stage if the design of the landing stage does not prevent persons being subjected to any hazards when the vessel is going alongside.

5.1.3 Where a fall into the water or onto lower levels is possible, the traffic areas of floating bridges shall be fitted with Type PF or PG fixed railings according to EN 711.

5.2 Life-saving equipment

5.2.1 The floating establishments shall have at least one information sign providing information on rescuing, reviving and first aid for a drowning person in accordance with EN ISO 18422 and at least every 100 m one lifebuoy as specified in EN 14144 with a 30 m long floating line and holder as specified in EN 14145 or housing according to ISO 18421.

5.2.2 Floating establishments with a height of the traffic areas above the water of more than 0,30 m under dead load shall be equipped with a permanently installed climbing devices according to EN 13574 at both ends and at least in a maximum distance of 30 m.

5.3 Device for mooring vessels

There shall be at least two bollards on the landing stage side of the floating landing stages. Each bollard shall withstand at least a vessel mooring line force as specified in A.9. The tops of the bollards shall be of non skid design and be permanently marked with signal paint.

5.4 Lighting

Lights attached to floating establishment shall not mislead or hinder shipping through dazzling effects or reflections, nor give rise to confusion with waterway signs or impair their effect.

5.5 Electrical equipment

On the exposed deck, the electrical equipment shall have at least IP55 degree of protection and in moist rooms at least IP44 according to EN 60529.

5.6 Storage spaces

If the storing of loads which can influence the stability is foreseen on the deck of the floating body, this shall be taken into consideration under A.6.

Suitable devices shall be provided to secure the objects against falling over, slipping or rolling away.

6 Walkways**6.1 General**

Walkways shall meet the requirements of EN 13281.

Floating establishment constructed for public traffic shall be suitable for use by people with restricted mobility.

If there are accesses to the air chambers of the floating body, they shall have stairs according to EN 790 or EN 13056 or permanently installed climbing devices as specified in EN 13574.

Unavoidable tripping hazards, such as edges of steps, hatch covers etc. shall be marked with signal paint.