SLOVENSKI STANDARD
SIST EN 711:2000

01-december-2000

Inland navigation vessels - Railings for decks - Requirements, types

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Fahrzeuge der Binnenschiffahrt - Geländer für Decks - Anforderungen, Bauarten

Bateaux de navigation intérieure - Garde-corps - Exigences, types

Ta slovenski standard je istoveten z: **EN 711:1995**

ICS:

47.020.10	Ladijski trupi in njihovi konstrukcijski elementi	Hulls and their structure elements
47.060	Jezerska in rečna plovila	Inland navigation vessels

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English version

Inland navigation vessels - Railings for decks - Requirements, types

aux de navigation intérieure - Garde-corps
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Fahrzeuge der Binnenschiffahrt - Geländer für Decks - Anforderungen, Bauarten

European Standard was approved by CEN on 1995-01-02. CEN members are bound to comply with the CEN/CENELEC Internal lations which stipulate the conditions for giving this European Standard the status of a national standard without alteration.

o-date lists and bibliographical references concerning such national standards may be obtained on application to Central Secretariat or to any CEN member.

European Standards exist in three official versions (English, French, German). A version in any other language by translation under the responsibility of a CEN member into its own language and notified to the Central etariat has the same status as the official versions.

nembers are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, and, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart,36 B-1050 Brussels

tents

vord

European Standard was prepared by the Technical Committee CEN/TC 15 "Inland navigation vessels" of which ecretariat is held by DIN.

y requirements of this European Standard were worked out in accordance with ISO 3674 and national standards ell as national regulations.

voting brought about applications for A-deviations which are specified in Annex A (informative).

European Standard shall be given the status of a national standard, either by publication of an identical text or ndorsement, at the latest by July 1995, and conflicting national standards shall be withdrawn at the latest by 1995.

rding to the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European lard:

ia, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, ay, Portugal, Spain, Sweden, Switzerland, United Kingdom.

cope

standard is applicable to railings for decks on inland navigation vessels. It lays down design, nsions, strength and test conditions which have to be observed for safety reasons.
e railings provide protection for persons against falling overboard and from one deck to another.

ormative references

European Standard incorporates by dated or undated reference, provisions from other publications. e normative references are cited at the appropriate places in the text and the publications are listed after. For dated references, subsequent amendments to or revisions of any of these incorporated in amendment or revision. For undated references the latest edition of the publication referred to es.

10 220:1993	Plain end steel tubes, welded and seamless; dimensions and masses per unit length
ONORM 156	Shipbuliding steels - Standard and higher tensile grades
1461	Metallic coatings – Hot dip galvanized coatings on fabricated ferrous products – Requirements
1835 : 1980	Short link chain for lifting purposes – Grade M (4) non-calibrated, for chain slings etc.
2232	Round drawn wire for general purpose non-alloy steel wire ropes and for large diameter steel wire ropes – Specifications
2408 : 1985	Steel wire ropes for general purposes – Characteristics
2768-1	General tolerances – Part 1: Tolerances for linear and angular dimensions without individual tolerance indications
3674	Shipbuilding – Inland vessels – Deck rail

efinitions

he purposes of this standard, the following definitons apply:

Railing

1 **Railing in the working area**
nstruction of stanchions, hand rail, intermediate rail and toe rail.

2 **Railing in the passenger area**
nstruction of stanchions, hand rail, intermediate rails and toe rail or of stanchions, hand rail and ork.

Stanchion

vertical part of the railing which serves as connection to the deck.

Hand rail

upper most continuous part of the railing serving as handhold against falling overboard and for ng on.

Intermediate rail

ntinuous part fixed between hand rail and deck to prevent a person from slipping below the hand

Network

nstruction of netting, plate or vertical bars filling up - entirely or to a large extent - the range een hand rail and deck.

Toe rail

ofile fitted to the deck to prevent feet slipping through at the railing.

afety requirements

Design

railing design depends on location as shown in table 1. If there is a coaming (face plate or projecting

plate) in appropriate distance to the place where a railing shall be mounted, a special toe rail is not ssary (see figure 1).

Table 1: Usual railing types

Application	Design		Figure (simplified)	Material		Construc-tional notes
	Sym-bol	Railing		Hand rail	Inter-med-iate rail	
General in working area	C	fixed [2]		Metal sec-tion	Metal section	Stanchions solidly con-nected to the deck
At deck edge where a solid rail is an obst-acle to cargo handling	CT	tiltable		Wire rope Chain	Wire rope Chain	
To prevent people falling out-board of the railing	CD	deta-chable		Wire rope Chain	Wire rope Chain	Depending on position, connectors fixed to the coam-ing or to the deck
General in passenger area	PF	fixed [2]		Metal sec-tion	Net-ting Plate a. o.	Stanchions solidly con-nected to the deck
	PG				Metal section	
	PZ				Metal section	

gs of design C and CT are shown with a toe rail, railing of design CD is represented with a coaming.
ailing is considered to be fixed even if it is tiltable in segments or detachable in special working conditions.
essary, with mounted wooden or plastic profile.
wer part of railing PZ shall be secured up to half the length by nettings, canvas or other appropriate measures to nt children slipping outboard of the railing.

Safety dimensions

ensions in mm
eral tolerances: ISO 2768-c
ils not indicated are to be suitably selected.
ensions complying with figure 1 and table 2.

Working area		Passenger area	
	Toe rail		
	A: Profile	Netting, plate	Grid
	B: Coaming	Integrated bulwark	Intermediate rails

Figure 1: Dimensional specification for railings (examples)

Table 2: Safety dimensions for railings

Working area		Passenger area	
Railing fixed, tiltable, detachable		Railing fixed mm	
a_1	450 ± 25	a_2	230 max.
b	–	b	120 max.
c	–	c	50 max.
e	2000 max. [1] 3000 max.	e	2000 max.
f_1	50 bis 80	f_1	50 bis 80
f_2	50 min.	f_2	50 min.
	100 max.		100 max.

h	900^{+50}_{0}	*h*	1000 min.
[1]) When using chains as hand rail or intermediate rail			

ination to the specifications of figure 1 and table 2:

Distance between intermediate rail and deck for types C, CD, CT
Clear distance between intermediate rails and between intermediate rail and hand rail, deck or coaming
Clear distance between the vertical bars or clear distance between network and hand rail or stanchion
Clear distance between network and deck for types PF and PG or between lower edge of toe rail and deck for type PZ
Space between railing stanchions
Distance between upper edge of toe rail and deck
Distance between upper edge of coaming and deck
Distance between inner edge of toe rail or coaming and inner edge of the stanchion
Height of railing

Strength requirements

ble 3, calculation load and admissible deflections for stanchions, hand rails, intermediate rails and ork are specified which have to be taken into account for strength testing.

Table 3: Strength requirements for railings

se in	Design		Test load at right angles to railing		Max. deflection without permanent deformation mm	
	Sym-bol	Railing			horizontal	vertical
Working area	C	fixed [2])	Hand rail	500 N/m	50 [1])	
			Intermediate rail	500 N/m	50 [1])	
	CT CD	tiltable, detachable	Stanchion	500 N	50	–
			Hand rail	200 N [1])	200 [1])	
			Intermediate rail	200 N [1])	200 [1])	
Passenger area	PF PG PZ	fixed [2])	Hand rail	1000 N/m	25 [1])	
			Network	1000 N/m²	25 [1])	–
			Intermediate rail	500 N/m	25 [1])	

In the centre between two stanchions
A simultaneous load application on hand rail and intermediate rail or hand rail and intermediate rails or nettings need not be considered for calculation of the strength of the stanchions

Manufacture

1 The railing shall be free from sharp edges or protusions which are liable to cause injuries.

2 Railings of types CT, CD shall be constructed in such a way that there is no risk of stumbling
e area of connectors, stanchions and ropes when railings are tilted or detached.
cial attention is to be paid to a constant tension of ropes.
d rail and intermediate rail shall be tensionable in such a way that deflection will not exceed
mm when a force of 200 N is acting between two stanchions.

3 Water drainage from deck must be ensured even if there are toe rails or coamings.

4 Stanchions can be suitably reinforced in the lower range, e.g. by pressed tubes or round steel

5 Stanchions of railings of type CD shall be protected against unintentional detachment.

Materials

Choice of materials

ain materials have not been specified.
ngth requirements according to table 3 shall be observed.

Example of railing made of steel

l profiles specified in table 4 can be used for stanchions, hand rails and intermediate rails. If these
nsions and material qualities are selected, a special strength calculation is not necessary. For
r material qualities (e.g. steel of lower strength, aluminium) table 4 does not apply.