SLOVENSKI STANDARD
SIST EN 790:2000

01-december-2000

Inland navigation vessels - Stairs with inclination angles of 45- to 60- - Requirements, types

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

Fahrzeuge der Binnenschiffahrt - Treppen mit Steigungswinkeln von 45° bis 60° - Anforderungen, Bauarten

Bateaux de navigation intérieure - Escaliers à angles d'inclinaison entre 45° et 60° - Exigences, types

Ta slovenski standard je istoveten z: **EN 790:1994**

ICS:

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

SIST EN 790:2000 **en**

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English version

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

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CEN

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

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Foreword

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

CEN/TC 15 has decided to submit the final draft for formal vote by its resolution. The result was positive.

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of an identical text or by endorsement, at the latest by February 1995 and conflicting national standards shall be withdrawn at the latest by February 1995.

According to the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom.

1 Scope

This standard applies to stairs with inclination angles of 45° to 60° used in working areas of inland navigation vessels.

It does not apply to stairs accessible to passengers.

For stairs in the outside area inclination angles up to 55°, for stairs in engine rooms and boiler rooms inclination angles up to 60° are admissible.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standards only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

prEN 711	Inland navigation vessels - Railings for decks - Requirements, types
ISO 2768-1	General tolerances - Part 1: Tolerances for linear and angular dimensions without individual tolerance indications
ISO 5485	Shipbuilding - Inland vessels - Fixed steel deck stairs

3 Definitions

For the purposes of this standard, the following definitions apply:

3.1 Stair
Walkway with steps solidly fixed between two planes.

3.2 Inclination angle
Angle between the pitch line connecting the front edges of the steps and the horizontal lower plane.

3.3 Stair breadth
Clear breadth of the stair measured between the strings.

3.4 Headroom
Vertical distance between the pitch line connecting the front edges of the steps and the fixed components.

3.5 Step
Tread of the stair.

3.6 Space between steps
Vertical distance between the upper edges of successive steps.

3.7 Depth of steps
Distance between the front and rear edges of the steps measured on the tread.

3.8 String
Lateral limitation of the stair supporting the steps.

3.9 Railing
A construction of stanchions, handrail and - if necessary - intermediate rail.

3.10 Height of railing
Vertical distance between the pitch line connecting the front edges of the steps and the upper edge of the hand rail.

3.11 Hand rail
3.11.1 Upper continuous part of a railing running in parallel to the string and serving as a handhold to persons using the stair and protecting them from falling outboard of the railing.

3.11.2 Round section which is fixed at a bulkhead adjacent to the stair, running in parallel to the stairway and serving as handhold.

3.12 Stanchion
Part of the railing connecting hand rail and intermediate rail, if any, to the string.

3.13 Intermediate rail
Continuous part fixed between hand rail and string and protecting persons from falling outboard of the railing.

4 Safety requirements

Safety requirements refer to design, dimensions, strength and manufacture.

4.1 Design

The stairs are not expected to conform to figure 1; compliance is only required in the case of the dimensions specified in clauses 4 to 6.

4.2 Safety dimensions

Dimensions in millimeters.

General tolerances: ISO 2768-c.

Details not specified shall be suitably selected.

Stairs, railings, platforms as well as free spaces in front of and above the stairs have to conform to the specifications as given in tables 1 and 2 and figure 1.

Table 1: Explanation and dimensions

Dimensions in millimetres

Symbol	Explanation	Dimensions
α	Inclination angle of the stair	see table 2
β	Deviation of step inclination from the horizontal line	$0^{\circ}{}_{-1}^{0}$
a	Space between steps	see table 2
b	Depth of steps	
c	Vertical distance between the front edge of the lowest step and the lower plane	$a\ {}^{+20}_{-60}$
d	Horizontal distance between the intersection of the pitch line connecting the front edges of the steps and the upper plane and the front edge of the upper landing	30 max.
e	Horizontal distance between the upper after edge of the uppermost step and the front edge of the upper landing	30 max.
f_1	Stair breadth between the strings	600 min.
f_2	Clear width between the hand rails	600 min.
g	Distance between hand rail and fixed components	60 min.
h	Height of railing	900^{+60}_{0}
i	Vertical distance between the middle of hand rail and the middle of intermediate rail	$\approx h/2$
j	Distance between stanchions measured at hand rail	1 500 max.
k	Headroom	2 000 min.

Table 2 : Dimensions α, a, b

Dimensions in millimeters

Dimensions	Stairs in the outside area and for general use			Stairs for engine rooms and boiler rooms
$\alpha^{1)}$	45°	50°	55°	60°
$a^{2)}$	200^{+30}_{0}	210^{+20}_{-10}	220^{+10}_{-20}	230^{0}_{-30}
b	≥ 230	≥ 200	≥ 175	≥ 150

1) Intermediate values of α are admissible, the values for a and b shall be interpolated.
2) Dimensional deviation for two consecutive steps not be more than ± 2 mm

Illustration of a stair inclined at 45°

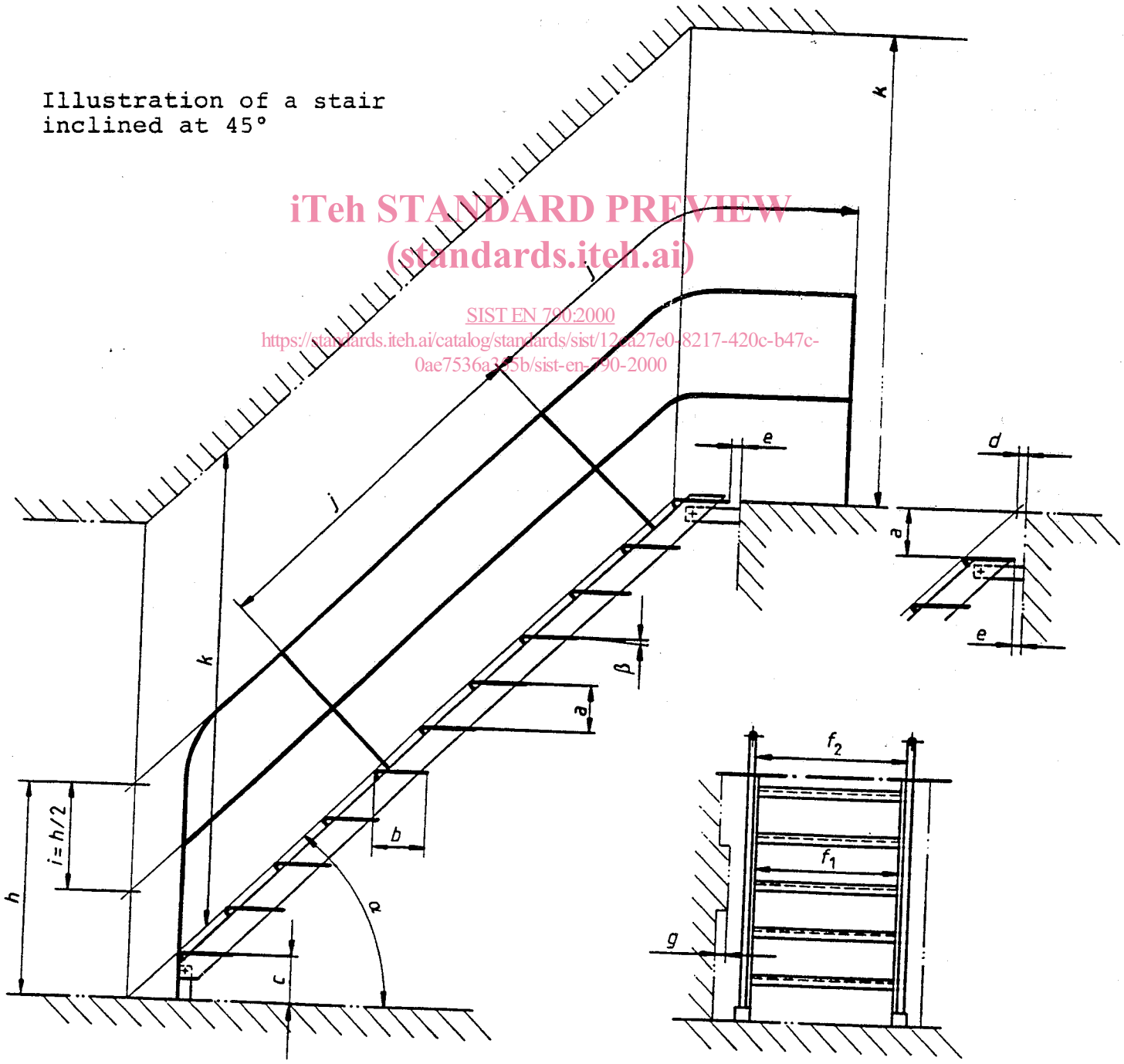

Figure 1: Coordination of dimensions for stairs and railings

4.3 Safety specifications

4.3.1 Space between steps

The space between steps is to be the same for all steps of a stair.

The uppermost step of a stair shall be at the same horizontal level as the adjacent landing or shall end one normal step underneath.

The distance between the lowest step and the floor may differ from the selected space between steps *a* by +20 mm to -50 mm.

4.3.2 Landings/platforms adjacent to stairs

In front of stairs there shall be a tread of at least 0,80 m depth and of at least the breadth of the stair.

Platforms adjacent to stairs shall be provided with railings in accordance with prEN 711 at both sides of the walkway.

If possible, coamings at platforms or the adjacent landing shall be scalloped in the walkway up to the height of the proximate step.

4.3.3 Safety of treads

Steps and platforms shall have a non-slip surface. Steps shall be designed in such a way that they can be easily cleaned and that water cannot accumulate.

4.3.4 Hand rails/railings

Stairs with up to three steps shall have a handhold at one side.

Stairs with more than three steps shall be provided with railings or hand rails at both sides.

Railings of stairs with an inclination angle not exceeding 55° shall have an intermediate rail in the middle of the railing height.

Hand rails or railings shall be continuous for the full length of the stairway. At their upper ends they shall be suitably connected to structures or other continuous railings. At their lower ends hand rails and railings shall extend to the vertical line above the outermost point of the string.

Hand rails shall be designed in such a way that their connectors do not hinder the continuous movement of the hands. Their distance from adjacent structure shall be at least 60 mm. Their ends shall be arranged in such a way that injuries are prevented and damage to clothes is avoided.