



SLOVENSKI STANDARD

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01-junij-2020

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Lestve - 4. del: Lestve z enim ali več pregibi

Ladders - Part 4: Single or multiple hinge-joint ladders

Leitern - Teil 4: Ein- oder Mehrgelenkleitern

Echelles - Partie 4 : Echelles articulées à articulations simple et multiple
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Ta slovenski standard je istoveten z: EN 131-4:2020

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ICS:

97.145 Lestve Ladders

SIST EN 131-4:2020 **en,fr,de**

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EUROPEAN STANDARD

EN 131-4

NORME EUROPÉENNE

EUROPÄISCHE NORM

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English Version

Ladders - Part 4: Single or multiple hinge-joint ladders

Échelles - Partie 4 : Échelles articulées à articulations
simple et multiple

Leitern - Teil 4: Ein- oder Mehrgelenkleitern

This European Standard was approved by CEN on 22 December 2019.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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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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European foreword

This document (EN 131-4:2020) has been prepared by Technical Committee CEN/TC 93 “Ladders”, 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of an identical text or by endorsement, at the latest by September 2020, and conflicting national standards shall be withdrawn at the latest by September 2020.

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 131-4:2007.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of Directive 2001/95/EC.

Compared to EN 131-4:2007 the following modifications have been made:

- a) strength test of the ladder in position of use;
- b) classes “non-professional” and “professional” introduced;
- c) strength test and sliding test of decking component modified.

This document is one of a series about ladders. Other standards of this series are listed in Clause 2 and in the Bibliography.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

EN 131-4:2020 (E)**1 Scope**

This document specifies the requirements, tests and marking of hinged combination ladders with one or several hinge joints.

This document is not applicable to hinge-joints of combination and standing ladders as defined by EN 131-1.

This part of the standard is intended to be used in conjunction with EN 131-1, EN 131-2 and EN 131-3.

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 131-1:2015+A1:2019, *Ladders — Part 1: Terms, types, functional sizes*

EN 131-2:2010+A2:2017, *Ladders — Part 2: Requirements, testing, marking*

EN 131-3, *Ladders — Part 3: Marking and user instructions*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 131-1 and the following apply.

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

— ISO Online browsing platform: available at <https://www.iso.org/obp/ui>

— IEC Electropedia: available at <http://www.electropedia.org/>

3.1**ladder hinged in the longitudinal direction**

ladder with hinge-joints which enable folding (manual or automatic) in the longitudinal direction

Note 1 to entry: Excluding ladders covered in EN 131-1.

3.1.1**ladder with one lockable hinge joint device**

ladder including a hinge-joint device with at least one predetermined lockable position with or without extendable parts

Note 1 to entry: See Figures 1, 2, 3 and 4.

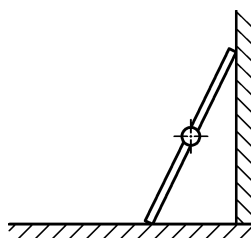


Figure 1 — Position as leaning ladder

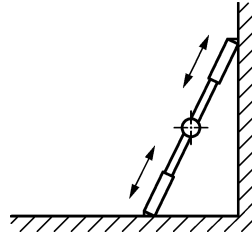


Figure 2 — Position as leaning ladder with extendable legs

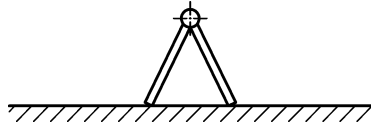


Figure 3 — Position as standing ladder

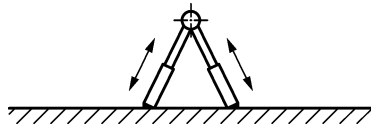


Figure 4 — Position as standing ladder with extendable legs

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3.1.2

ladder with several lockable hinge-joint devices

ladder having several hinge-joint devices with at least one fixed position which can be locked by hinge joint devices at predetermined angles [SIST EN 131-4:2020](#)

[https://standards.iteh.ai/catalog/standards/sist/641cbcd8-6e2b-42de-860c-](https://standards.iteh.ai/catalog/standards/sist/641cbcd8-6e2b-42de-860c-486f2ba6afa4/sist-en-131-4-2020)

Note 1 to entry: See Figures 5 to 8. [486f2ba6afa4/sist-en-131-4-2020](#)

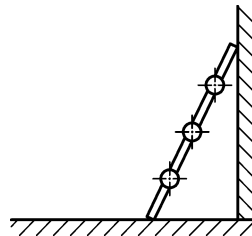


Figure 5 — Position as leaning ladder

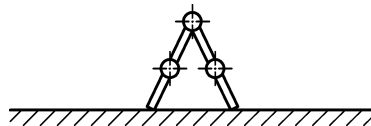


Figure 6 — Position as standing ladder

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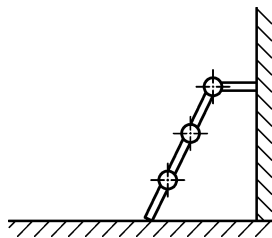


Figure 7 — Position as Stand-off ladder

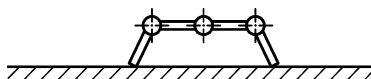


Figure 8 — Position as Platform

3.2 ladder hinged in the lateral direction

ladder having several hinge-joints enabling it to be folded laterally

Note 1 to entry: The hinge-joints can be located between the legs and the steps. The steps themselves can be equipped with hinge-joints.

Note 2 to entry: See Figure 9.



Figure 9 — Ladder hinged in the lateral direction

3.3 decking component

single or multiple element forming a standing surface enabling the use of a multiple hinge-joint ladder in the “platform” position

3.3.1 reference level

upper surface of the decking component, including the anti-skid surface

3.3.2 decking component height

h_3
height above ground of the reference level

3.3.3 overhang

l_{10}
length of the decking component after the last support point

4 Functional dimensions

4.1 General

Dimensions are given in EN 131-1.

If these ladders can be used as leaning ladders, then functional dimensions for leaning ladders shall apply.

If these ladders can be used as standing ladders the functional dimensions for two-piece combination ladders shall apply.

The inner width b_1 shall be measured as shown in Figure 10.

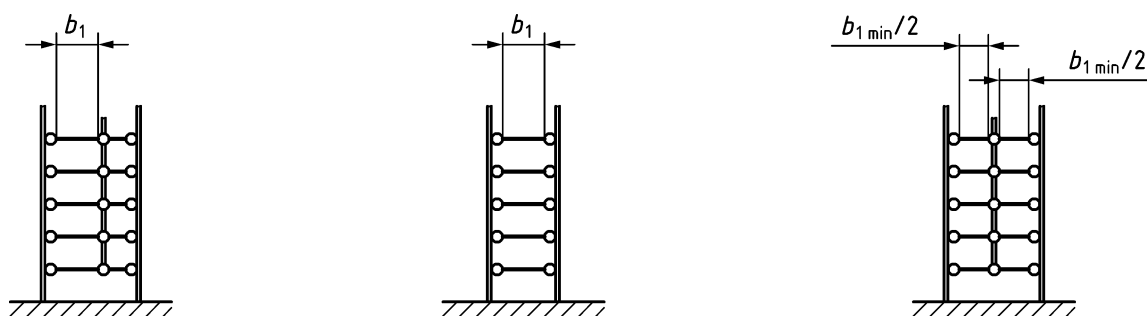


Figure 10 – Dimension b_1

4.2 Hinged ladders in “platform position”

Table 1 – Functional dimensions

	h_3 mm	l_{10} mm	α^a	α^b
min.	–	–	65°	65°
max.	1 000	50	75°	70°
a For rung ladders. b For step ladders.				

If the decking component fits within the stiles the gap shall be no more than 5 mm (see Figure 11). If the decking component fits across the stiles, the overhang shall be no more than 25 mm on each side. The platform shall be centred at ± 10 mm in relation to the longitudinal axis of the ladder. Where decking components consist of multiple elements, they shall be assembled such that a person cannot fall through them.

Dimensions in millimetres

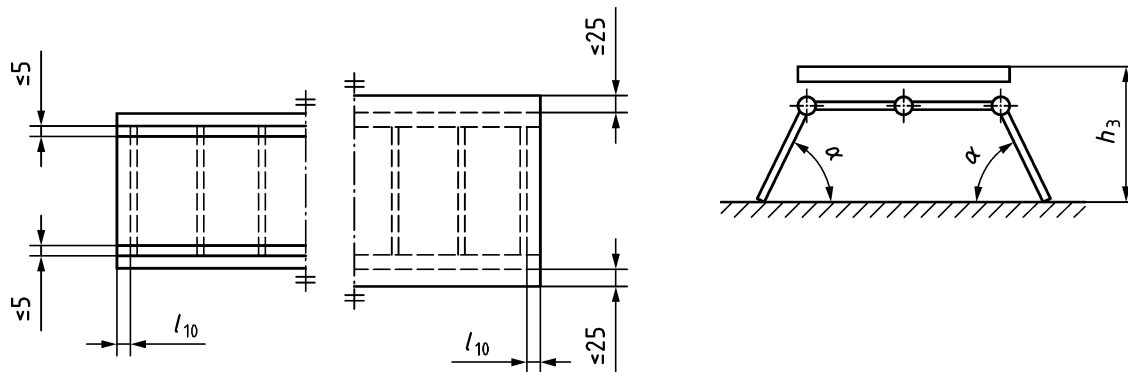


Figure 11 — Hinge-joint ladder in “Platform” position

4.3 Hinged ladders in “stand-off” position

Table 2 — Functional dimensions

	l_2	α
min.	-	65°
max.	1 200 mm	75°

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Figure 12 — Hinged ladder in “stand-off” position

5 Requirements

5.1 General

The requirements are based upon a maximum total load of 150 kg.

Hinge-joint ladders are determined to be used by one person at a time.

5.2 Decking component

If the multiple hinge ladder can be used in a platform position, the decking component shall be delivered with the product. The decking component shall be secured against unintentional movement and shall have a durable slip resistant working surface. It shall be designed so as to be unable to slip and tilt on the ladder.

5.3 Ladder hinged in the longitudinal direction

All hinges should be locked in the position of use except for the centre hinge in the standing ladder position, which may be unlocked. The storage position (folded) is not required to be lockable.

6 Test methods

6.1 General

General provisions, see EN 131-2.

After each of the tests specified in Annex A, the ladder shall remain functional with no fracture or visible cracks. The ladders shall sustain the load without ultimate failure. Permanent deformation is permitted.

After the test, fold the ladder completely to its storage/transportation position and open it again completely. During this movement the locking system shall function without any interference. After the test, the hinges/locking systems shall remain functional in all positions.

6.2 Tests method for hinge ladders

6.2.1 Principle

All the ladders conforming to Clause 3 shall comply with all tests and the requirements specified in Annex A.

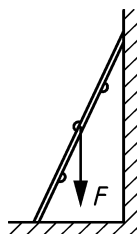
6.2.2 Strength test for ladders with hinges in longitudinal direction

The test shall be carried out on the complete ladder. The test shall be carried out on the maximum extended ladder according to the manufacturers' instruction. Lateral or pole type stabilizers shall not be deployed in this test if the design permits the ladder to be used with the lateral or pole type stabilizers removed or temporarily adjusted as permitted by EN 131-1:2015+A1:2019, 4.2.1, General.

Where the ascendable side cannot be determined by the construction of the product the ladder shall be tested twice. For the second test the ladder shall be rotated 180° about the longitudinal axis. For the test of the second side a new ladder shall be used.

Erect the ladder in its position of use at the maximum extension. Leaning ladders shall be erected at $(65 \pm 0,5)^\circ$ (measured at vertical height of 1 m) with the top resting against a smooth vertical surface and with the base of the ladder restrained where it makes contact with the ground to prevent it slipping. The test load F in Figure 13 from Table 3 shall be applied to the rung or tread nearest the centre of the ladder and at a point 50 mm from the inside of one stile and distributed over a 100 mm of the length of the rung or tread for a period of 1 min. Care should be taken to apply the load smoothly.

Where the test ladder includes a base stabilizer bar then clearance under both stiles of the ladder of a minimum 10 mm shall exist throughout the test, e.g. by putting distance pads under the feet. On completion of the test remove the load and inspect the ladder.



Key

F test load

Figure 13 — Strength test for ladders with hinges in longitudinal direction