BRITISH STANDARD

BS EN
14183:2003

Step stools

The European Standard EN 14183:2003 has the status of a British Standard

ICS 97.145

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National foreword

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 14183

December 2003

ICS 97.145

English version

Step stools

Escabeaux

Tritte

This European Standard was approved by CEN on 14 November 2003.

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Foreword

This document (EN 14183:2003) 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of an identical text or by endorsement, at the latest by June 2004, and conflicting national standards shall be withdrawn at the latest by June 2004.

Note A revision of this standard is intended, taking into account the results of the revision of EN 131.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies the requirements for step stools, stairtype steps and dometype steps stools. This includes design characteristics, dimensions, materials, performance requirements, test methods and the declaration of suitability of use. The standard excludes ladders and stepladders as defined by EN 131-1:1993.

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

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 Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 719, *Welding coordination — Tasks and responsibilities.*

EN 729-1, *Quality requirements for welding — Fusion welding of metallic materials — Part 1: Guidelines for selection and use.*

EN 729-2, *Quality requirements for welding — Fusion welding of metallic materials — Part 2: Comprehensive quality requirements.*

EN 729-3, *Quality requirements for welding — Fusion welding of metallic materials — Part 3: Standard quality requirements.*

EN 729-4, *Quality requirements for welding — Fusion welding of metallic materials — Part 4: Elementary quality requirements.*

EN 12526, *Castors and wheels — Vocabulary, recommended symbols and multilingual dictionary.*

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions given in EN 12526 for castors and wheels and the following apply.

3.1
step stool
stool with a seat or platform designed for sitting and standing on which also incorporates one or more steps

3.2
stair type steps
structure with deep steps and shallow climbing angle

3.3
dome type step stool
structure ascendable from two or more sides with a platform and with or without an intermediate step

3.4
components of step stools

3.4.1
step
climbing support

3.4.2
platform/seat
uppermost support for standing/sitting on

3.4.3
accending leg
ascendable side of a step stool

3.4.4
supporting leg
side of a step stool that cannot be ascended

4 Functional dimensions, designations, requirements

4.1 General

The drawings are examples only and products need not correspond. However, dimensions are binding. Step stools shall only be fitted with steps that are uniformly spaced to within a tolerance of $\pm$ 2 mm.

If the top surface is less than 240 mm $\times$ 400 mm, the step stool or stair type steps with a height of more than 750 mm shall have a handrail.

All types of products covered by this standard may be fitted with castors and wheels.

Table 1 — Nomenclature and symbols

Symbols	A	Step stool with fixed legs
	B	Step stool with folding legs that are braced when in use
	C	Stair type steps
	D	Step stool with fold-out steps
	E	Step stool with pull-out steps
	F	Dome type step stool
Quantities	h	Height from the floor to the top surface of the platform or seat
	a	Height from the floor to the top surface of the lowest step and between the top surfaces of subsequent steps, platform or seat
	b_1	Width of platform or seat
	b_2	Width across the outer edges of legs at floor level
	b_3	Width of each step
	b_5	Depth of platform or seat
	b_6	Depth across the outer edges of the legs at floor level
	b_7	Depth of all steps
	b_8	Depth of stair type step stools
	α	Angle between the horizontal and the leading edges of all climbing supports.
	β	Angle between the horizontal and an imaginary line drawn between the rear edge of the rear legs at floor level and the rear edge of the platform or seat.

Table 2 — Functional dimensions for all types of step stools

Dimensions in millimetres

	h	a	b_1	b_2	b_3	b_5	b_6	b_7	b_8	α	β
min.	—	—	300	$b_1 + 0{,}1\ h$	250	200	$b_5 + 0{,}1\ h$	80	150	45°	45°
max.	1 000[a]	250	—	—	—	600	—	—	—	70°[b]	87°

[a] 500 mm for dome type step stools
[b] 80° for heights ≤ 500 mm

4.2 Step stool with fixed or folding legs

There shall be no gap between the projection of the steps to the ground (see Figure 1b).

Designation of a step stool with fixed legs (A) with three steps:

Step stool EN 14183 — A—3

Designation of a step stool with folding legs that are braced when in use (B) with three steps:

Step stool EN 14183 — B—3

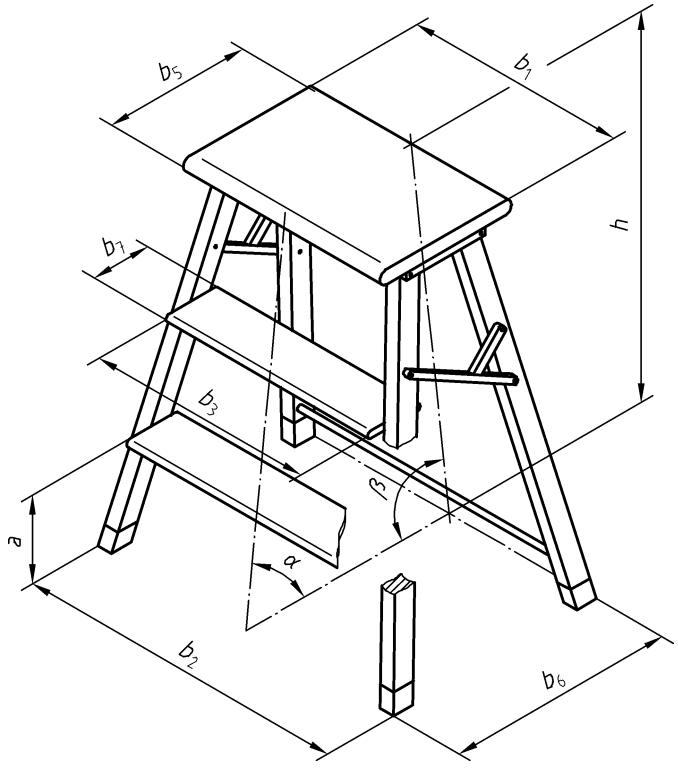


Figure 1a — Step stool with fixed or folding legs

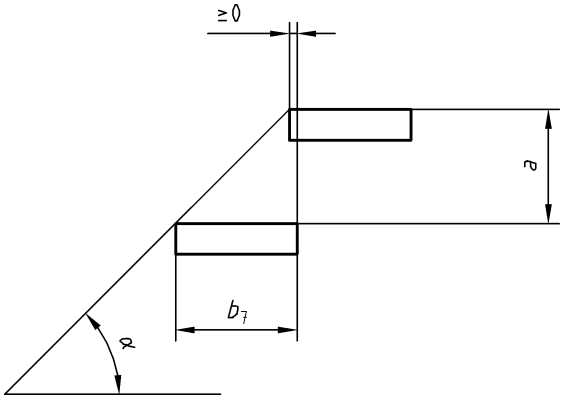


Figure 1b — Overlapping of steps for step stools

4.3 Rigid or folding stair type steps

There shall be a minimum of 150 mm not overlapping distance between the steps (see Figure 2b). Designation of stair type steps (C) with three steps:

Step stool EN 14183 — C—3

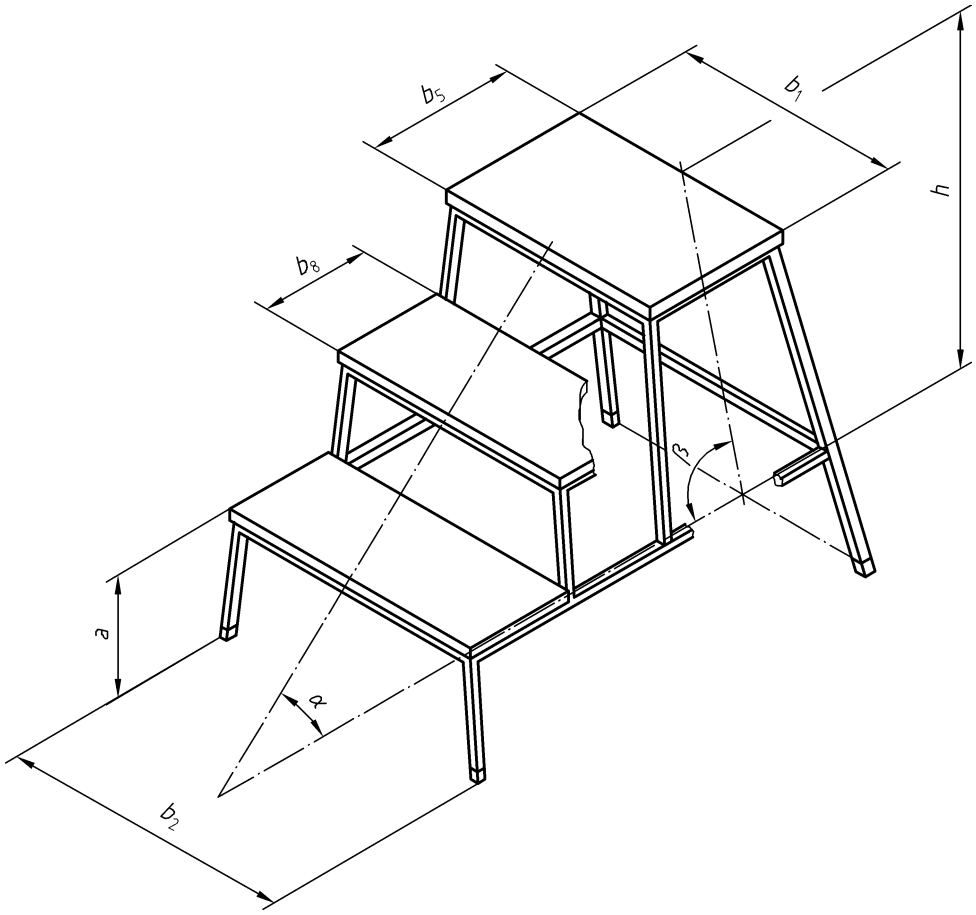


Figure 2a — Stair type steps

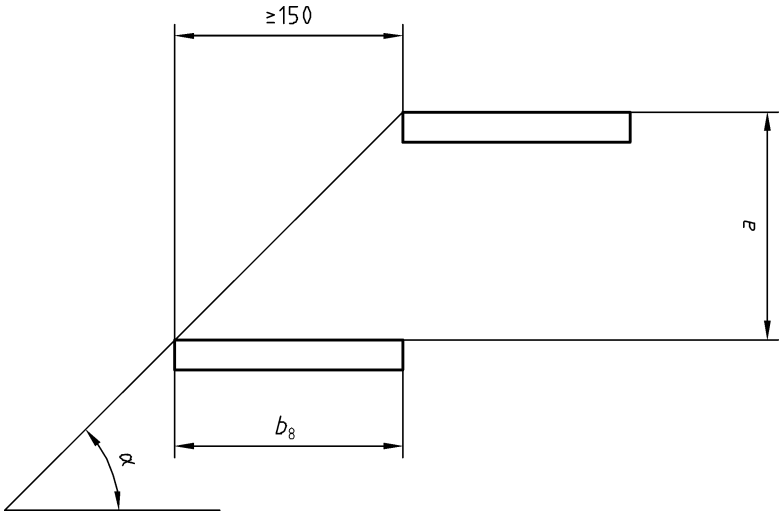


Figure 2b — Overlapping of steps for stair type steps

4.4 Fold-out/pull-out step stool

Designation of a step stool with fold-out steps (D) with three steps:

Step stool EN 14183 — D—3

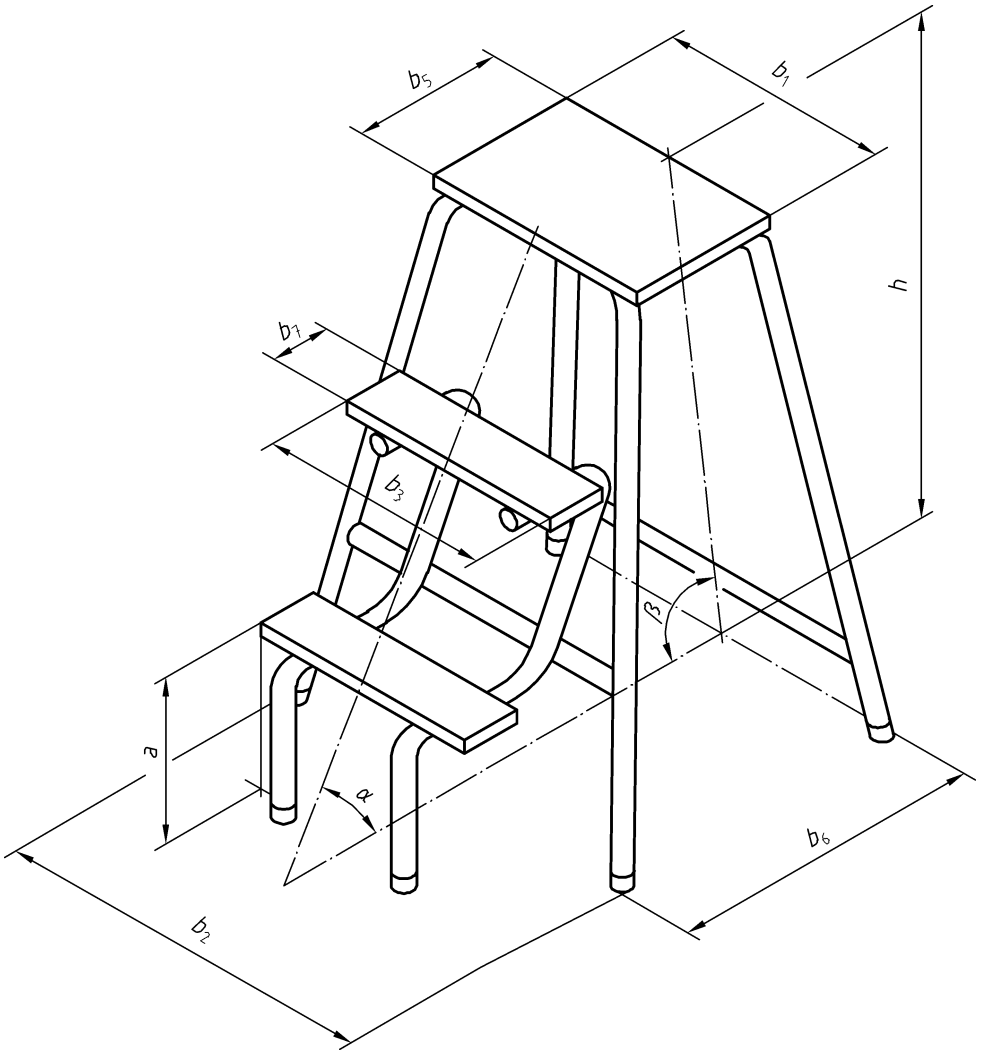


Figure 3 — Step stool with fold-out steps

Designation of a step stool with pull-out steps (E) with three steps:

Step stool EN 14183 — E—3

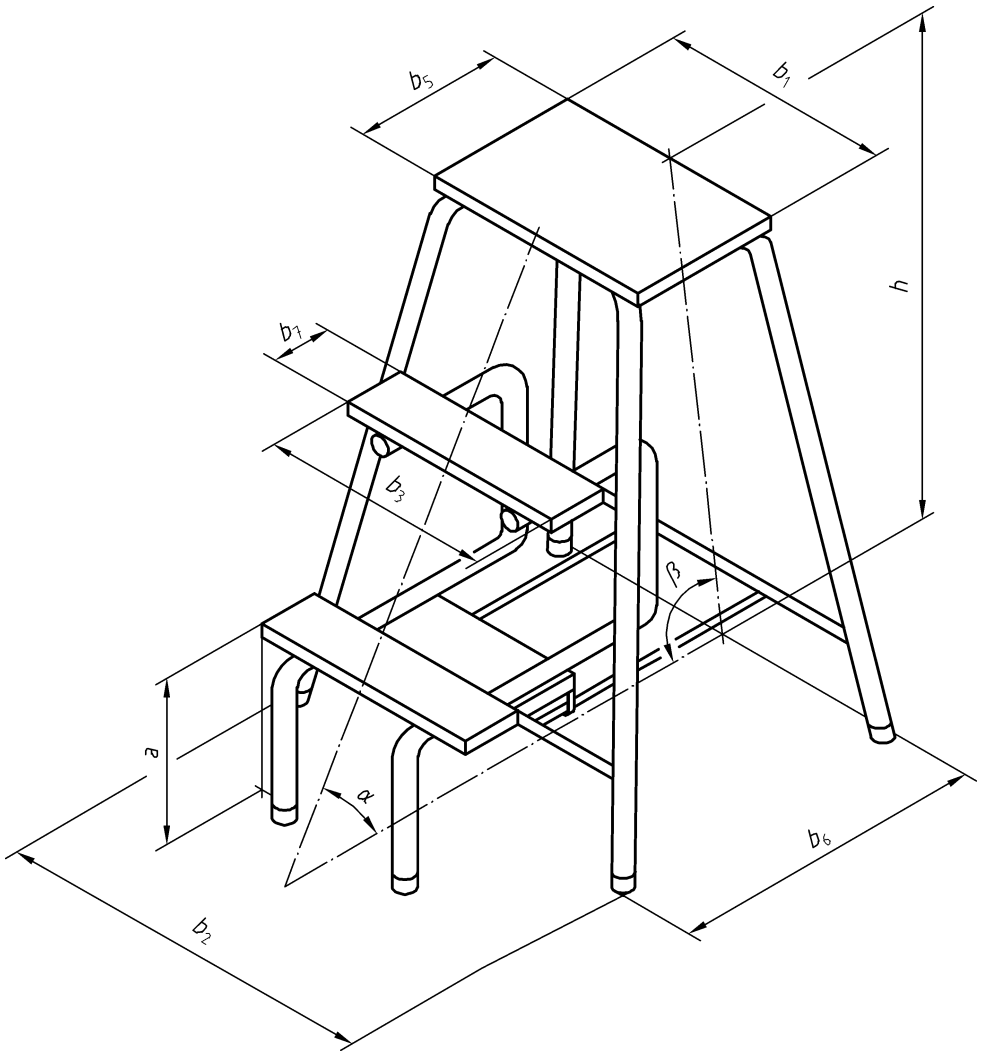


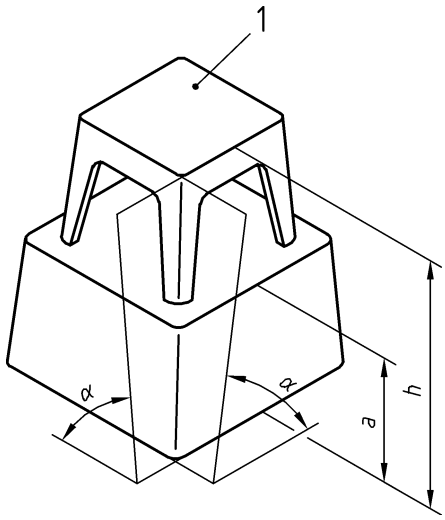
Figure 4 — Step stool with pull-out steps

4.5 Dome type step stool

The platform shall have a minimum area of 600 cm^2 and shall include a square of 200 mm $\times$ 200 mm.

Designation of a dome type step stool (F):

Step stool EN 14183 — F



Key
1 Top platform

Figure 5 — Dome type step stool

5 Additional requirements

5.1 Materials

5.1.1 General

The requirements for materials only apply to load-bearing components.

5.1.2 Plastic

When using plastic materials, ageing and temperature resistance have to be taken into account.

Glass-fibre reinforced plastics shall be protected against penetration of water and dirt. The surface shall be smooth. The fibres shall be embedded.

5.1.3 Steel

Parts made of steel shall have a thickness of at least 0,90 mm.

5.1.4 Aluminium

Parts made of aluminium shall have a thickness of at least 1,20 mm.

5.2 Steps and platforms

Top surfaces of steps and platforms shall have resistance against slipping.

The contact surface of the coverings shall adhere firmly to the steps.

Steps and platforms shall be firmly and durably connected to the stiles.

When loaded as specified in 6.2, the platform and the steps shall show no signs of damage, such as fractures, or cracks.

5.3 Slip resistance

5.3.1 Feet or bottom end of stiles

Feet or bottom ends of stiles shall be soled with a slip resistant material (e. g. rubber). Requirements of 5.3 are considered to be met if successfully tested according to 6.3.

5.3.2 Rollers and wheels

Where rollers or wheels are fitted, step stools and rigid steps shall be designed so as to prevent any accidental displacement when loaded. Rollers shall either be automatically locked or automatically disabled once the step stool or rigid steps are loaded.

5.4 Opening restraint and compression security devices

Step stools and stair type steps shall be prevented from unintended folding when deployed for use.

5.5 Design

Finger traps (shearing points) shall be avoided as far as possible.

All connections shall be durable and have a strength corresponding to the strain. The connections shall be designed in a manner that arising notch tensions remain low.

Screws and nuts shall be secured against self-acting slackening, e. g. by means of safety devices with a blocking effect or being positive.

Welding of joints is permitted if welding procedures and welding personnel are suitable. EN 719 and EN 729-1 to EN 729-4 shall be observed.

5.6 Surface finish

In order to avoid injuries, accessible edges, corners, and protruding parts shall be free of burrs, chamfered or rounded.

Metal parts susceptible to corrosion shall be protected by means of a paint coating or other coating. Under normal conditions aluminium alloy products are not likely to corrode and need no protection.

If wooden parts are coated, the coating shall be transparent and permeable to water vapour.

5.7 Hinges (turning points)

Hinges shall connect the legs of the step stool durably. Hinges shall be designed in such a manner that no abutment of the step stool parts over the hinges is formed during use of the step stool.

The hinge pin shall be secured against unintentional loosening. The diameter of steel hinge pins shall not be less than 5,0 mm or screw M 6. Pins of other materials shall have at least the same strength. If the pin has several shearing points (piano hinge) there is no restriction as to the hinge pin diameter.

5.8 Padding

An assembled seat may have padding, which shall not exceed a thickness of 20 mm in an unloaded state.

6 Test methods

6.1 General

An uncertainty of measurement of ± 1,0 mm is permitted for the tests specified in 6.2, 6.3 and 6.4.

6.2 Vertical static load test of steps and platforms

All types of products covered by this standard shall be subjected to this test on each step, platform and seat. The padding of a padded seat shall be removed for this test. The product shall be placed on a firm, flat surface and deployed for use as detailed in the instructions for use. Loading shall be applied centrally and evenly distributed over an area of 100 mm × 100 mm. Firstly apply a pre-load of 200 N for the duration of 1 min. After this remove the pre-load and set measuring equipment to read the resulting position of the surface as a datum. Apply a load of 2 600 N for the duration of 1 min and then remove the load. Measure and record the permanent deflection from the datum. Also measure the width of the surface being tested. Examine and record any cracks or ruptures of materials.

Any permanent deflection of metal or plastic parts shall be max. 0,5 % of the width of the platform or the step . Measurement shall be carried out 1 min after load removal.

6.3 Determination of friction coefficient

Position the product on a 2 mm plain decorative high-pressure laminate (HPL) HPL EN 438-S333. Apply a load F of 125 N to the centre of the bottom step (positioned as in 6.2). Using appropriate measuring equipment measure the minimum horizontal pulling force Z required to overcome friction and cause the product to slide. Measure the weight of the product in Newtons G.

Calculate the coefficient of friction using:

Friction coefficient $\mu = \dfrac{Z}{G + F}$ shall be ≥ 0,20

where

- μ is the friction coefficient
- Z is the horizontal pulling force in Newtons
- G is the weight force of the step stool in Newtons
- F is an additional load of 125 N

Test temperature (20 ± 5) °C.

Duration: 1 min.

Dimensions in millimetres

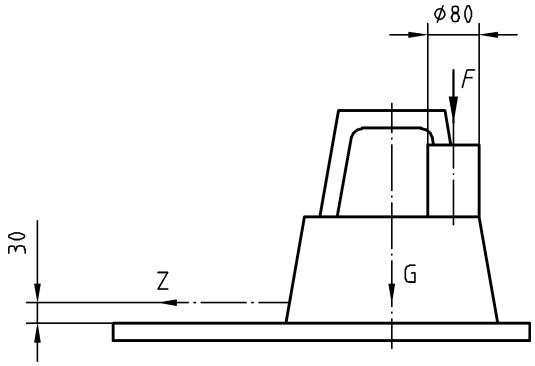


Figure 6 — Determination of friction coefficient using a dome type step stool

6.4 Seat Suitability Test

This test only applies to step stools with padded seats.

To test the seat as suitable for use as a climbing support, place a disc with a mass of 0,1 kg and a diameter of 100 mm on the centre of the seat. Place a cylindrical mass of 2 kg with a diameter of 100 mm on the disc. Measure and record the settlement of the disc due to the 2 kg mass after 1 min. When tested, the settlement shall not exceed 10 mm.

7 Instructions for use

Suitable instructions for use have to be provided by the manufacturer. This shall include the maximum total load of not more than 150 kg.

NOTE A standard for user information for ladders is in preparation as prEN 131-3.

8 Marking

All marking shall be clear and durable and prominently positioned on the product. The marking shall include:

— manufacturer’s declaration of suitability of use. The manufacturer shall advise of any limit of use to which the product is allowed and any environment for which it is unsuitable (e.g. "for indoor use only");

— name of the manufacturer and/or supplier;

— product designation in accordance to clause 4;

— year and month of manufacture and/or serial number;

— maximum total load.

Only products that comply with this standard may be marked “EN 14183”.

Bibliography

EN 131-1, *Ladders — Part 1: Terms, types, functional sizes.*

EN 131-2, *Ladders — Part 2: Requirements, testing, marking.*

prEN 131-3, *Ladders — Part 3: User information, —*[1)].

EN 438-1, *Decorative high-pressure laminates (HPL) — Sheets based on thermosetting resins — Part 1: Specifications (ISO 4586-1:1987, modified).*

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