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Pohištvo - Sedežno pohištvo - Ugotavljanje stabilnosti

Furniture - Seating - Determination of stability

Möbel - Sitzmöbel - Bestimmung der Standsicherheit

Mobilier - Sièges - Détermination de la stabilité

Ta slovenski standard je istoveten z: **EN 1022:2023**

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EUROPEAN STANDARD

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November 2023

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English Version

Furniture - Seating - Determination of stability

Mobilier - Sièges - Détermination de la stabilité

Möbel - Sitzmöbel - Bestimmung der Standsicherheit

This European Standard was approved by CEN on 22 October 2023.

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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 1022:2023) has been prepared by Technical Committee CEN/TC 207 “Furniture”, the secretariat of which is held by UNI.

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of an identical text or by endorsement, at the latest by May 2024, and conflicting national standards shall be withdrawn at the latest by May 2024.

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 1022:2018.

EN 1022:2023 includes the following significant technical changes with respect to EN 1022:2018:

- The scope has been amended to specifically exclude products that require the user to actively affect stability.
- The definition of arm rest has been improved.
- The sideways stability of seating with swivelling arm rest pads has been defined.
- The standard has been aligned with other standards to refer to single column seating, rather than swivelling seating.
- A modified loading point template has been introduced.
- The sideways stability test for seating with raised side edges has been improved.
- Rearwards stability tests for loungers have been introduced.
- The clarification of rearward stability of multi-position reclining seating has been introduced.
- Requirements for single column seating with reclining back rests and foot/leg rests has been added.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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, Türkiye and the United Kingdom.

EN 1022:2023(E)

1 Scope

This document specifies test methods and requirements for the determination of the stability of all types of seating for adults weighing up to 110 kg, without regard to use, materials, design/construction or manufacturing process.

The test methods described can be used for seating for children and heavier adults by modifying test loads and loading points.

This document does not apply to seating for sitting, perching or leaning that requires an action from the user in order to keep the body posture in a stable position.

This document does not apply to children's highchairs, table mounted chairs and bath seats which are covered by other European Standards.

This document contains three Annexes:

Annex A (normative) – Seat loading pad data

Annex B (normative) – Test parameters

Annex C (informative) – Semi-circular section of seat and back loading template

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

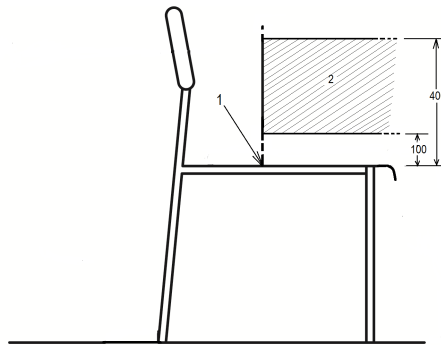
- ISO Online browsing platform: available at <https://www.iso.org/obp/>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1 arm rest

part of the seating able to support the arms of the user when seated, with a height above the seat loading point of at least 100 mm, but not greater at any point in the horizontal plane than 400 mm above the seat loading point, extending horizontally forward at least 175 mm from the back loading point

Note 1 to entry: See Figure 1.

Dimensions in millimetres

**Key**

- 1 seat loading point
- 2 arm rest zone

Figure 1 — Arm rest zone**3.2****back rest**

element that supports the back of the user higher than 100 mm above the height of the seat loading point

3.3**foot rest**

part intended to support the feet of the user which assists the user getting on or off an item of seating

Note 1 to entry: A foot rest can or cannot be permanently attached to the structure of the item of seating.

3.4**leg rest**

extension of the seat area intended to support the legs of the user

Note 1 to entry: A leg rest can or cannot be permanently attached to the structure of the item of seating, and may not be suitable for use as an item of seating itself.

3.5**load bearing structure**

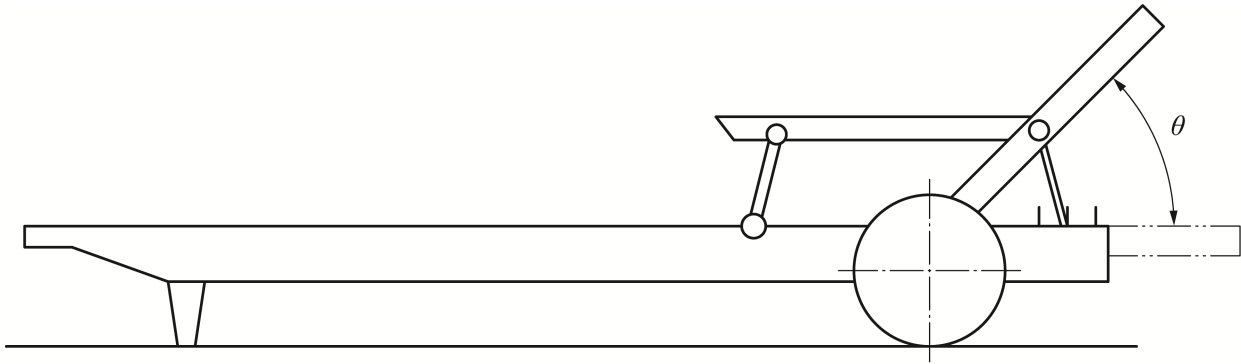
components of the item of seating such as the frame, seat, back and arm supports and suspension which are able to bear forces

3.6**lounger**

item of seating intended for reclined posture with at least one back rest position such that back rest angle is 45 degrees or less to the horizontal, and a leg rest which is an integral part of the product and intended to support the full body weight of a user

Note 1 to entry: See Figure 2.

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**Key**

θ back rest angle

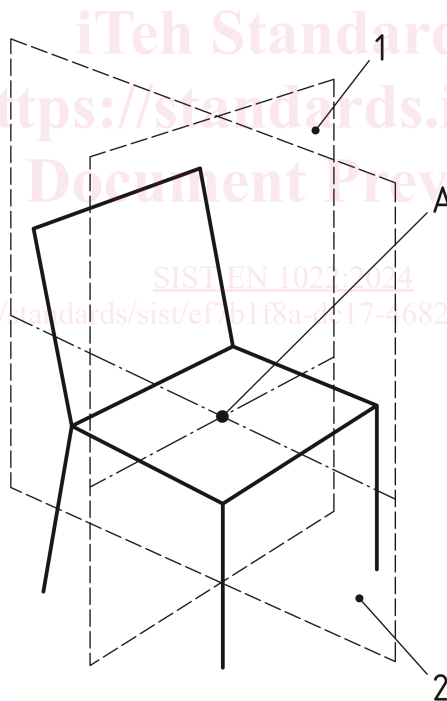
Figure 2 — Example of lounger

3.7**median plane**

vertical plane running from front to rear through the centre of the seat, dividing the item of seating into two parts

Note 1 to entry: In most instances the two parts are symmetrical.

Note 2 to entry: See Figure 3.

**Key**

- 1 transverse plane
- 2 median plane
- A seat loading point

Figure 3 — Transverse and median plane

3.8**overturning**

action where an item of seating pivots to a position beyond which the item continues to fall

3.9**raised side edge**

side edge of the item of seating, higher than 50 mm above the height of the seat loading point

3.10**stability**

ability to withstand forces that tend to cause the loaded seating to overturn

3.11**supporting point**

foot of a leg, castor or glide

3.12**single column seat**

item of seating, whose upper part, which includes the seat, is mounted on a single support with a diameter of up to 120 mm at its narrowest point

3.13**transverse plane**

vertical plane perpendicular to the median plane passing through the seat loading point

Note 1 to entry: See Figure 3.

4 General test conditions**4.1 General**

The furniture shall be tested as delivered. Knock-down furniture shall be assembled according to the instructions supplied with it. Knock-down fittings shall be tightened before testing.

If the furniture can be assembled or combined in different ways, the most adverse configuration shall be used for each test.

Unless otherwise specified by the manufacturer, the sample for test shall be stored in indoor ambient conditions for at least 24 h immediately prior to testing.

The tests shall be carried out at indoor ambient conditions but if during a test the temperature is outside the range 15 °C to 27 °C the maximum and/or minimum temperature shall be recorded in the test report.

4.2 Application of forces

The test forces shall be applied sufficiently slowly to ensure that negligible dynamic load is applied.

Unless otherwise stated, overturning forces shall be maintained for (5 ± 2) seconds.

For rearwards stability tests defined in 7.4.2, 7.4.3, and 7.4.4, the loading discs shall be applied within 60 s and then maintained in position for 60 ± 5 s.

The forces may be replaced by masses. The relationship $10 N = 1 kg$ shall be used.

The weight of the loading pad and any associated equipment shall be considered when applying the test load.

EN 1022:2023(E)**4.3 Tolerances**

Unless otherwise stated the following tolerances are applicable:

- forces: $\pm 5\%$ of the nominal force;
- masses: $\pm 1\%$ of the nominal mass;
- dimensions: all dimensions less than 300 mm shall have a tolerance of ± 1 mm of the nominal dimension, all other dimensions shall have a tolerance of $\pm 0,5\%$ of the nominal dimension;
- angles: $\pm 2^\circ$ of the nominal angle.

The accuracy for the positioning of loading pads shall be ± 5 mm.

For the purposes of uncertainty measurement, test results are not considered to be adversely affected when the above tolerances are met.

5 Test equipment**5.1 General**

The equipment shall not inhibit deformation nor cause unnatural deformation of the unit/component, i.e. it shall be able to move so that it can follow the deformation of the unit/component during testing.

All loading pads shall be capable of pivoting in relation to the direction of the applied force. The pivot point shall be as close as practically possible to the load surface.

If a loading pad tends to slide, use a slip resistant material between the loading device and the item of seating.

Unless otherwise specified, the tests may be applied by any suitable device because results are dependent only upon correctly applied forces and not upon the apparatus.

5.2 Loading point template

Consisting of two shaped members (see Figure 4) fastened together by a pivot at one end. The contours of the shaped surfaces are so devised as to sink into the upholstery. A semi-circular section (Figure 5) is fitted to the seat portion, in such a way that the arc of the semi-circular section is in line with the back template when set to 90° (see Figure 6) and it is 75mm higher in comparison to the seat loading point A to simulate the top of the seat loading pad (see Figure 11). For this purpose, the loading point template, with an additional mass applied at the seat loading point, shall be 20_{-0}^{+1} kg.

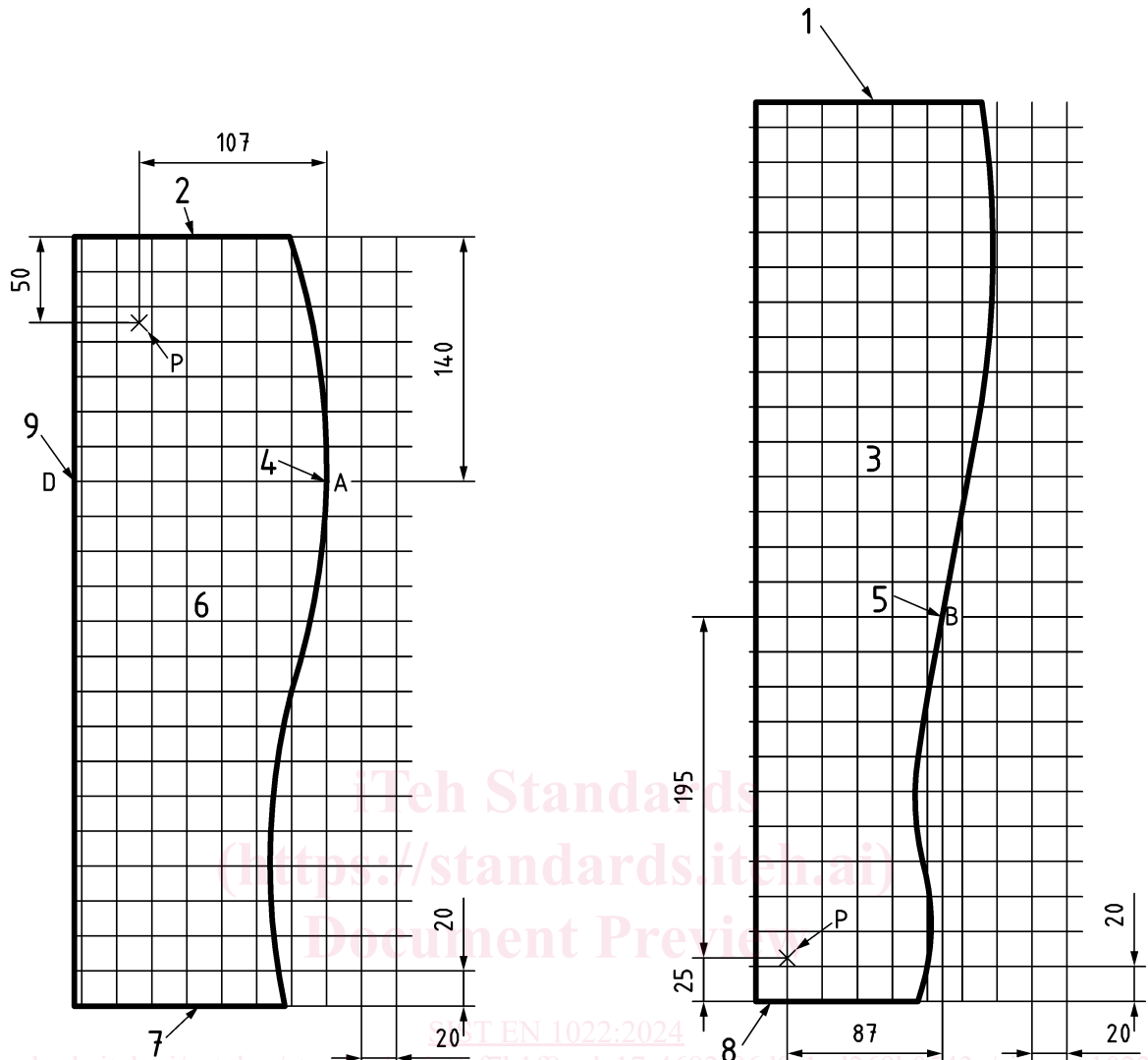
The weight of distribution of different parts of the template is shown in Table 1.

Table 1 — Weight distribution of template components

Mass of the seat portion, including the additional plate (kg)	Mass of the back portion (kg)	Mass of the additional mass (kg)	Total weight (kg)
(2 ± 1)	$(1,7 \pm 0,7)$	$(16 \pm 1,5)$	20_{-0}^{+1}

The apparatus is marked as shown in Figure 6a).

Dimensions in millimetres

**Key**

- | | | | |
|---|------------------------|---|---------------------------------------|
| 1 | top of back portion | 6 | seat portion |
| 2 | rear of seat portion | 7 | front of seat portion |
| 3 | back portion | 8 | bottom of back portion |
| 4 | seat loading point (A) | 9 | loading point for additional load (D) |
| 5 | back loading point (B) | P | pivot point |

Figure 4 — Loading surface curves for loading point template

Dimensions in millimetres

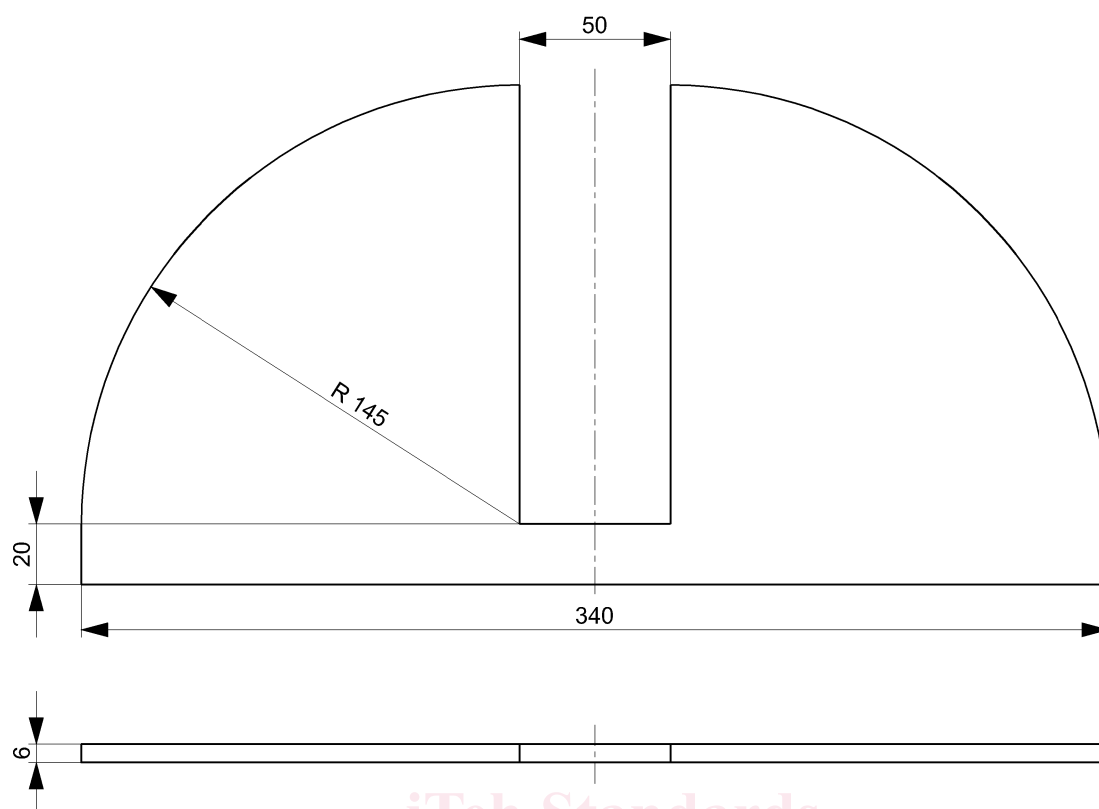
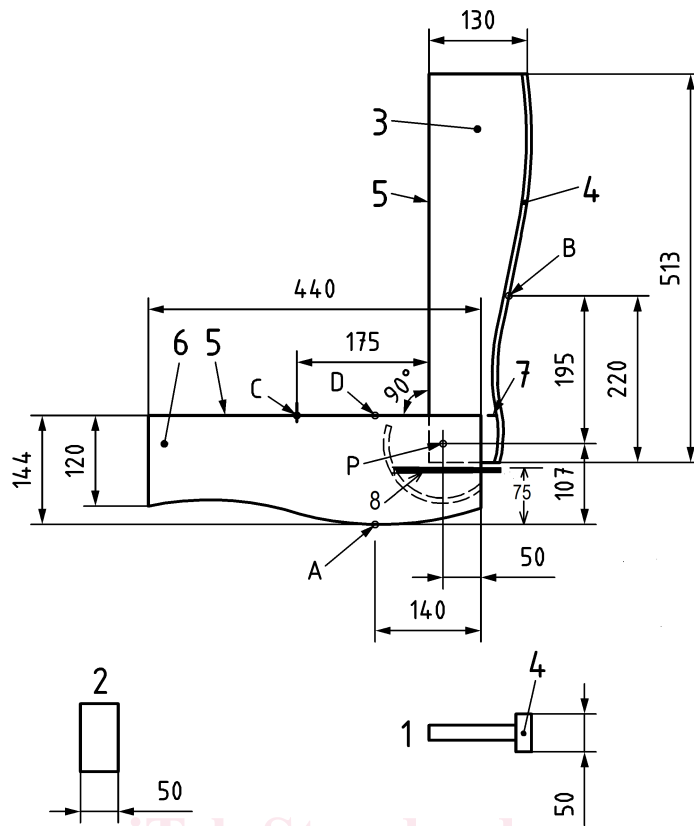


Figure 5 — Semi-circular section
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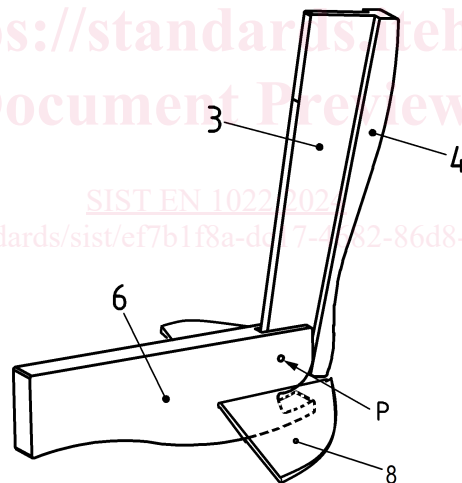
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Dimensions in millimetres



a) Marking of the loading point template



b) Example of loading point template assembly

Key

- | | | | |
|---|---|---|--|
| 1 | typical section of back portion | 8 | semi-circular section |
| 2 | typical section of seat portion | A | seat loading point (all seating except stools) |
| 3 | back portion | B | back loading point (all seating except stools) |
| 4 | flange | C | seat loading point (stools) |
| 5 | straight edge for the determination of seat or back inclination | D | loading point for additional load |
| 6 | seat portion (stools) | P | pivot point |
| 7 | mark to fix 90° | | |

Figure 6 — Loading point template

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So that the template can be positioned easily with the two members at 90° to each other, a line is drawn on the back portion.

5.3 Floor

Horizontal, flat and rigid with a smooth surface.

5.4 Stops

Unless otherwise stated, stops shall be of the minimum height required to prevent sliding and shall not inhibit overturning.

5.5 Stability loading pad

A loading pad as shown in Figure 7. The circular pad may be made of any suitable material (e.g. plastic or wood). The extension piece shall be made of aluminium. Where it is not possible to use the pad with extension piece, a stability loading pad without the extension piece may be used.

The mass of the stability loading pad is not defined but shall be considered during force applications.

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