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Furniture - Beds - Requirements for safety, strength and durability

Möbel - Betten - Anforderungen an die Sicherheit,
Festigkeit und Dauerhaltbarkeit

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Contents	Page
European foreword.....	3
1 Scope	4
2 Normative references	4
3 Terms and definitions	4
4 Test procedures and tolerances	5
4.1 General.....	5
4.2 Sequence of testing.....	5
4.3 Tolerances.....	5
5 Test apparatus	6
5.1 Adult test mattress.....	6
5.2 Test dummy.....	6
6 Safety requirements	8
6.1 General requirements.....	8
6.2 Holes in tubular/rigid components.....	8
6.3 Shear and compression points.....	8
6.3.1 General.....	8
6.3.2 Shear and compression points when setting up and folding.....	8
6.3.3 Shear and compression points under influence of powered mechanisms.....	8
6.3.4 Shear and compression points during use.....	9
6.4 Entanglement hazards.....	9
6.4.1 General.....	9
6.4.2 Requirements.....	9
6.4.3 Test method.....	10
6.5 Durability of electrically operated bed mechanism.....	10
6.5.1 Requirement.....	10
6.5.2 Functional assessment.....	10
6.5.3 Test method.....	11
6.6 Stability, strength and durability.....	11
6.6.1 General.....	11
6.6.2 Safety requirements.....	14
7 Information for use	14
8 Test report	14
Annex A (normative) Test methods for finger entrapment and shear and compression	15
Annex B (informative) Rationale	21
Bibliography	22

European foreword

This document (prEN 1725:2022) has been prepared by Technical Committee CEN/TC 207 “Furniture”, the secretariat of which is held by UNI.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 1725:1998.

In comparison with the previous edition, the following technical modifications have been made:

- addition of horizontal test methods;
- addition of test method for durability of electrically operated bed mechanism;
- reference to the test methods of ISO 19833:2018;
- introduction of requirements for guest beds;
- introduction of requirement for non-domestic use;
- introduction of information for use;
- addition of requirements for strength and durability.

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1 Scope

This document specifies requirements on safety, strength and durability for all types of fully assembled beds used by adults in domestic and non-domestic environments including their components, such as bed frames, bed bases, mattresses and mattress pads (when they form a unit with the mattress) and, when supplied with the bed base, mattresses and mattress pads.

The tests are based on use by persons weighing up to 110 kg.

With the exception of sleeping functions, it does not apply to foldaway beds.

It does not apply to bunk beds, high beds and medical beds where separate European Standards exist, nor does it apply to waterbeds or air beds.

Additional requirements can be applicable to items that have additional functions, e.g. beds with storage features, day beds and convertible sofa beds.

The durability test, 6.6.1, test 11, applies only to electrically operated beds.

This document does not include requirements for resistance to ageing, degradation, flammability or electrical safety.

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 13759:2012, *Furniture - Operating mechanisms for seating and sofa-beds - Test methods*

EN ISO 2439, *Flexible cellular polymeric materials - Determination of hardness (indentation technique) (ISO 2439)*

ISO 19833:2018, *Furniture — Beds — Test methods for the determination of stability, strength and durability*

3 Terms and definitions

For the purposes of this document, the following terms and definitions 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>
- IEC Electropedia: available at <https://www.electropedia.org/>

**3.1
unframed slat base**
bed base consisting of separate slats flexibly held together normally by means of textile, rubber or plastic tape

[SOURCE: ISO 19833:2018, 3.1, modified — Note 1 to entry deleted.]

**3.2
framed base**
bed base consisting of slats, springs, etc. which are connected to a structural frame system

[SOURCE: ISO 19833:2018, 3.2, modified — Note 1 to entry deleted.]

3.3

framed sprung mattress

upholstered bed base consisting of springs, topped with fillings, on a rigid frame to be used in a bed frame or freestanding

3.4

divan base

upholstered bed base used without the need of any framework which may be constructed with a spring filling or a solid top and may include drawers or storage facilities

3.5

convertible sofa-bed

item of seating that utilizes a mechanism to convert into a bed

[SOURCE: EN 13759:2012, 2.2]

3.6

side rail

longitudinal member attached to the bed end structure(s) by which the bed base can be supported

3.7

headboards

component of bed that a person can lean against when in bed (e.g. while reading)

3.8

footboards

component of bed opposite to headboard

3.9

guest bed

bed that is intended to be used on an occasional basis, e.g. a folding bed or a trundle bed which is stored underneath the main bed when not in use

4 Test procedures and tolerances

4.1 General

For all tests referred to in this document, ISO 19833:2018, Clause 4 “General test conditions”, Clause 5 “Test apparatus” and 6.1 “General” apply with the exception of the test mattress.

Unless otherwise specified, the tests shall be carried out according to ISO 19833:2018.

4.2 Sequence of testing

The tests shall be carried out in the same sequence as the clauses are numbered in Table 2 of this document.

With the exception of test no. 10 (EN 13759:2012), Table 2, all tests specified shall be carried out on the same sample.

4.3 Tolerances

Unless otherwise stated, the following tolerances are applicable:

— Forces: ± 5 % of the nominal force.

prEN 1725:2022 (E)

The forces may be replaced by masses. The relationship $10\text{ N} = 1\text{ kg}$ shall be used:

- Masses: $\pm 1\%$ of the nominal mass;
- Dimensions: $\pm 1\text{ mm}$ of the nominal dimension;
- Angles: $\pm 1^\circ$ of the nominal angle.

5 Test apparatus**5.1 Adult test mattress**

In derogation to ISO 19833:2018, 5.5, the following test mattress shall be used:

A foam sheet with a thickness of 100 mm, a bulk density of $(35 \pm 5)\text{ kg/m}^3$ and an indentation hardness index of $(170 \pm 40)\text{ N HA}_{(40\%/30\text{ s})}$ in accordance with EN ISO 2439.

The mattress shall be at least 700 mm \times 700 mm.

The test mattress shall have a cover having the following characteristics:

- composition: 100 % cotton;
- mass per unit area: $(120 \pm 20)\text{ g/m}^2$;
- cover make up: tight fit, but with no restrictions on the foam.

The same part of the test mattress shall not be re-used within 30 min of completing a test. The mattress shall be replaced if damaged, or in any case after 30 complete bed tests, unless it can be demonstrated that the mattress specification has not been degraded.

5.2 Test dummy

For electrically operated functions of beds (see 6.5) occupied during operation the test dummy shown in Figure 1 shall be utilized. The test dummy shall be manufactured from a smooth, rigid material.

The sections shall be connected together via a hinging mechanism that does not inhibit the movement of the dummy sections relative to each other.

The total mass of the dummy including any hinge mechanisms shall be 110 kg.

The weight distribution of the sections of the test dummy shall be in accordance with Table 1:

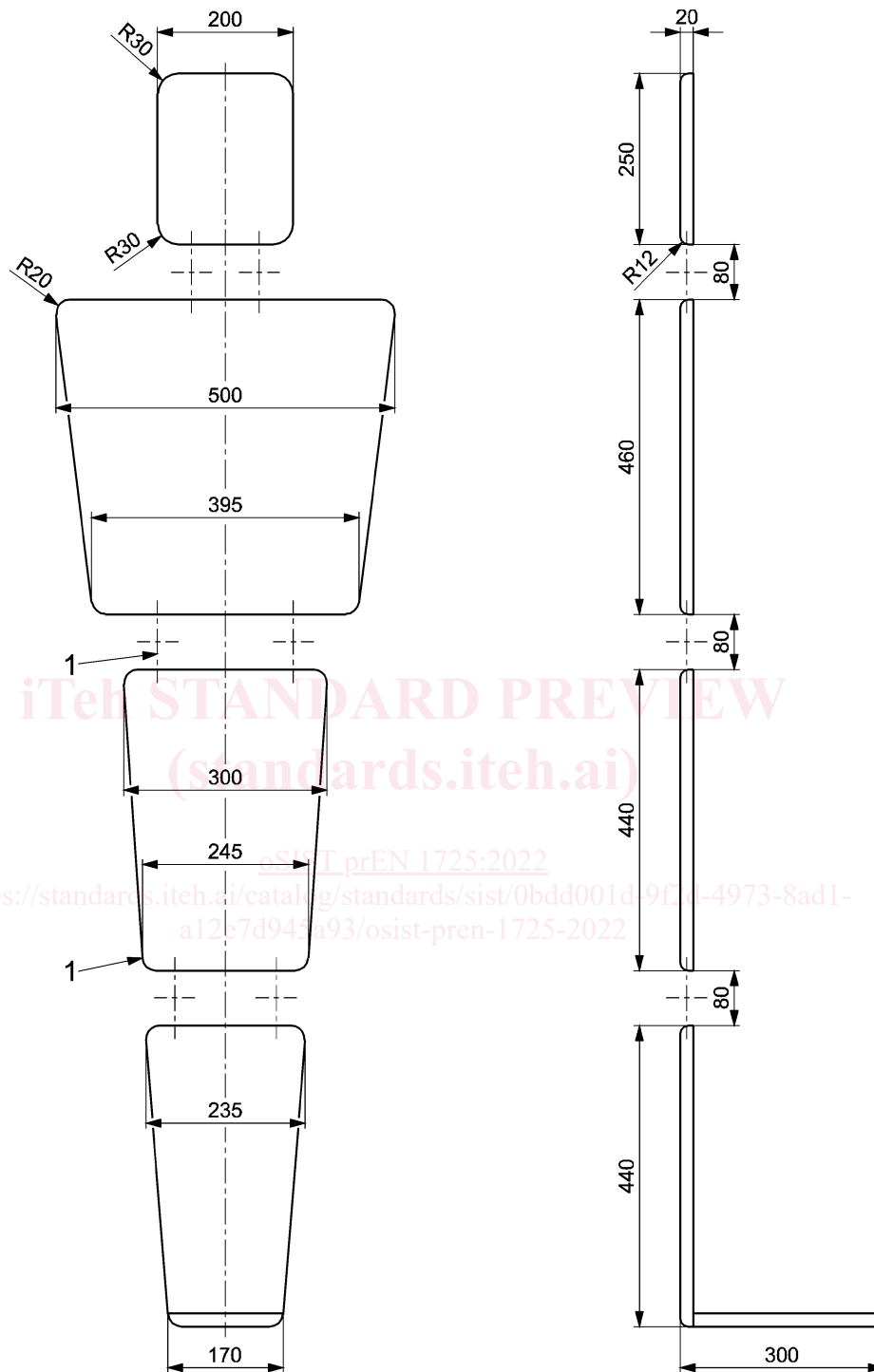
Table 1 — Weight distribution of the sections of the test dummy

Test dummy section including appropriate hinge mechanism	Weight distribution
Head	5 kg
Upper body	54 kg + 5 kg ^a
Upper leg	24 kg + 5 kg ^a
Lower leg	17 kg

^a The additional 5 kg shall be added at the geometric centre of the body part.

For the dummy shown in Figure 1, all dimensions shall be subject to a $\pm 2\text{ mm}$ tolerance. All edges and corners in contact with the furniture shall have a 12 mm radius.

Dimensions in millimetres



Key

1 hinge point

Figure 1 — Test dummy

6 Safety requirements

6.1 General requirements

The bed shall be designed so as to minimize the risk of injury to the user.

All parts of the bed with which the user comes into contact during intended use, shall be designed so that physical injury and damage are avoided.

This requirement is met when:

- a) edges which are directly in contact with the user are rounded or chamfered;
- b) all other edges accessible during intended use are free from burrs and/or sharp edges.

Movable and adjustable parts shall be designed so that injuries and inadvertent operation are avoided.

It shall not be possible for any load bearing part of the table to come loose unintentionally.

6.2 Holes in tubular/rigid components

There shall be no holes in the ends of tubular components or holes in rigid components in accessible parts between 8 mm and 12 mm, unless the depth of penetration is less than 10 mm. This requirement is fulfilled if there is no hazard present when tested in accordance with A.1.

6.3 Shear and compression points

6.3.1 General

The requirements contained in 6.3.2, 6.3.3 and 6.3.4 do not apply to electrically actuated furniture which are subject to the requirements of prEN 17684:—¹, 5.3.

6.3.2 Shear and compression points when setting up and folding

Unless 6.3.3 or 6.3.4 are applicable, shear and compression points that are created only during setting up and folding are acceptable, because the user can be assumed to be in control of his/her movements and to be able to cease applying the force immediately upon experiencing pain.

The edges of parts moving relative to each other and creating shear and compression points shall be as specified in 6.1.

6.3.3 Shear and compression points under influence of powered mechanisms

This clause does not apply to shear and compression points generated by electrically operated components which are subject to the requirements of prEN 17684:—¹, 5.3.

With the exception of operation of doors, flaps and extension elements, there shall be no areas where the distance between two accessible parts moving relative to each other can be less than 25 mm, and more than 8 mm in any position during movement that could present a risk of injury to the user, created by parts of the furniture operated by powered mechanisms, e.g. mechanical springs and gas lifts.

This requirement is fulfilled if there is no hazard present when tested in accordance with A.2.1.

¹ Under preparation. Stage at the time of publication: prEN 17684:2022.

6.3.4 Shear and compression points during use

With the exception of operation of doors, flaps and extension elements, there shall be no areas where the distance between two accessible parts moving relative to each other can be less than 18 mm, and more than 8 mm in any position that could present a risk of injury to the user, created by loads applied during normal use.

The loads used for durability tests are considered representative of normal use.

This requirement is fulfilled if there is no hazard present when tested in accordance with A.2.2.

6.4 Entanglement hazards

6.4.1 General

This requirement only applies to beds where a pull, cord or loop is used to lift and close the bed base to access storage areas, and where the pull, cord or loop is 600 mm or more above the floor when the bed base is in the open position.

6.4.2 Requirements

Pulls, cords and similar parts shall have a maximum free length of 220 mm when tested in accordance with 6.3.3.

Where pulls, cords and similar parts are attached to the bed base, or within 80 mm of each other, all single cords shall have a maximum free length of 220 mm and the combined length from one loose end to the end of another loose end shall be a maximum of 360 mm (see Figure 2).

If it is possible to form a loop with cords, ribbons or part used as ties the peripheral dimension shall be a maximum of 360 mm, when tested in accordance with 6.3.3.

Monofilament threads shall not be used.

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