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Furniture — Mattresses — Test methods for the determination of functional characteristics

Ameublement — Matelas — Méthodes d'essai pour la détermination des caractéristiques fonctionnelles

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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Contents

Page

Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 136, *Furniture*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document does not give any product requirements. Where no requirements document is available the desired functional characteristics should be determined by the specifier.

Furniture — Mattresses — Test methods for the determination of functional characteristics

1 Scope

This document specifies test methods for the determination of the durability, height loss and hardness of mattresses with a height ≥100 mm (and mattress pads when they form a unit with the mattress).

This document applies to adult mattresses for domestic and non-domestic use. It does not apply to water mattresses, air mattresses or standalone mattress pads.

Test methods for the assessment of aging, degradation, fire resistance and electrical functions are not included.

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 1334, *Domestic furniture — Beds and mattresses — Methods of measurement and recommended tolerances*

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
load curve
deflection curve
curves that are obtained by pressing a load pad into the mattress and measuring the associated value of indentation and force simultaneously

3.2
hardness value
H
determined from load/deflection measurement, in N/mm

3.3
firmness rating
H_s
number (1 decimal) on a scale from 1 to 10 which expresses the firmness of a mattress

3.4
height loss
change in the height of a mattress, in mm, as a result of the durability test

3.5
mattress pad
product, comprising a cover and filling(s), or filling material(s) alone, used in conjunction with a mattress or upholstered bed base

Note 1 to entry: This product is not intended to be used separately.

4 General test conditions

4.1 Preliminary preparation

The tests shall be carried out in indoor ambient conditions at a temperature between 15 °C and 25 °C. If during a test the temperature is outside of the range of 15 °C to 25 °C, the maximum and/or minimum temperature shall be recorded in the test report.

All conditioning shall be carried out in a standardised climate of (23 ± 2) °C and (50 ± 5) % relative humidity (RH).

During conditioning and handling, mattresses shall be kept flat and unloaded.

If a test cannot be carried out as specified, e.g. because a loading pad cannot be used for the application of a force due to the design of product, the test shall be carried out as far as possible as specified.

If necessary, mattress pads shall be prevented from moving during testing by a suitable means, e.g. adhesive tape or pins.

If the product information states that the mattress has a soft side and a firm side, both sides shall be tested using separate mattresses.

4.2 Tolerances

Unless otherwise stated the following tolerance are applicable to the test equipment:

a) all forces shall have an accuracy of ±5 % of the nominal force;

b) all masses an accuracy of ±0,5 % of the nominal mass;

c) all dimensions less than 200 mm shall have an accuracy of ±1 mm of the nominal dimension; the other dimensions shall have an accuracy of ±0,5 %;

d) the tolerance for position of loading pads shall be ±5 mm;

e) the tolerance for measuring point shall be ±20 mm.

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

5 Test apparatus

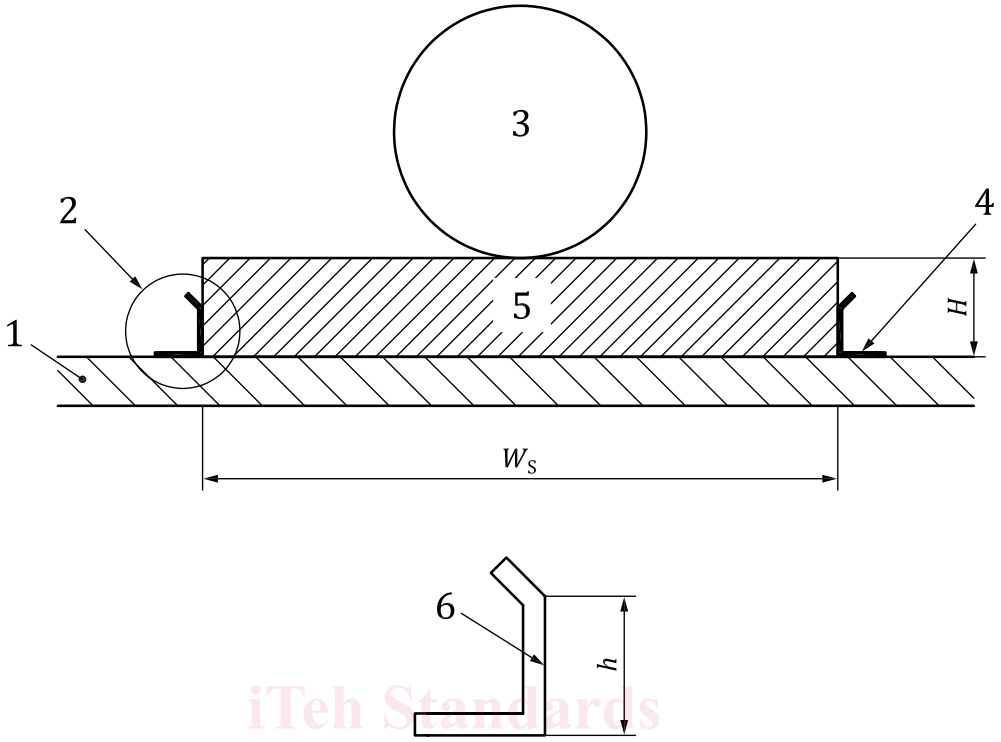
5.1 Standard test bed base for mattresses

Rigid, horizontal, flat and smooth.

5.2 Side support profile

The mattress shall be prevented from moving during durability test by two side support profiles as illustrated in Figure 1. The internal distance between the supports (W_s) shall be equal to the width of the mattress measured according to EN 1334, ±10 mm. The height of the support profiles (h) shall

not exceed one third of the mattress thickness (H), measured according to EN 1334. The length of the support profiles shall be at least equal to the length of the test unit.



Key

1	standard test bed base	4	side support profile
2	side support profiles	5	mattress
3	roller	6	enlargement of side support profiles (2)
H	height of mattress	h	height of support profiles
W_s	distance between supports		

Figure 1 — Side support profile

5.3 Standard table/test board (measuring)

Horizontal, flat and smooth surface, large enough to fully support the mattress in any measuring position. At the loading position, the deflection shall not exceed 1 mm under 1 000 N load. The overall flatness tolerance of the test board shall be 2 mm/1 000 mm.

5.4 Loading pad

Rigid circular object 355 mm in diameter the face of which has a convex spherical curvature of (800 ± 20) mm radius with a 20 mm front edge radius (see Figure 2).

The loading pad shall have a smooth surface and shall be mounted to the loading system of the test machine (5.5) by a ball joint as close as possible to the indenter surface (see Figure 2).

Dimensions in millimetres

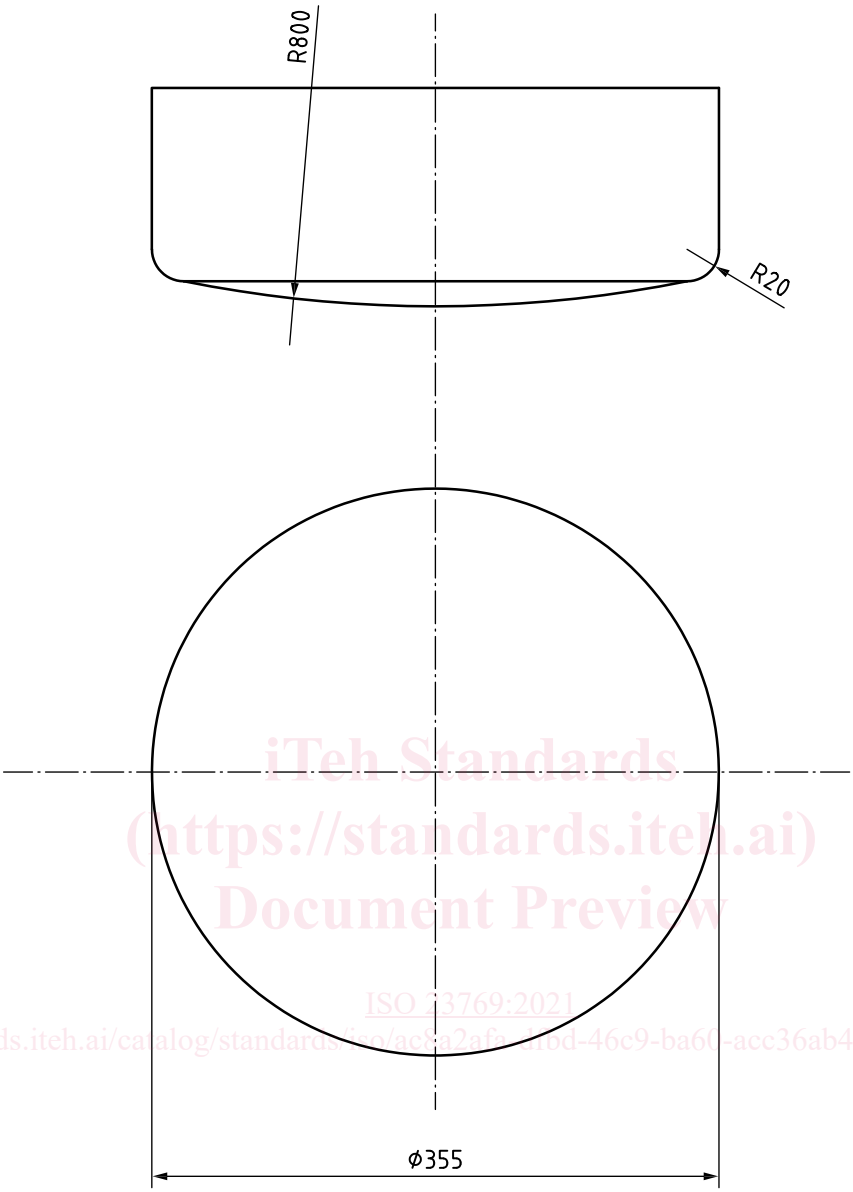


Figure 2 — Loading pad

5.5 Equipment for recording the load/deflection curves

The equipment for recording the load/deflection curves shall be loading pad (5.4) and a testing machine capable of applying a vertical downward load up to 1 000 N.

The travel speed for both loading and unloading shall be (90 ± 5) mm/min.

Load and height with reference to a fixed datum shall be measured.

The accuracy of the height measuring system shall be ±0,5 mm or better.

The accuracy of the load measuring system shall be ±1 % of the max load (1 000 N) or better.

The equipment shall be so that horizontal forces do not influence the measurement.