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SIST EN 747-2:2012+A1:2015

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EUROPEAN STANDARD

EN 747-2:2012+A1

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English Version

Furniture - Bunk beds and high beds - Part 2: Test methods

Meubles - Lits superposés et lits surélevés - Partie 2:
Méthodes d'essaiMöbel - Etagenbetten und Hochbetten - Teil 2:
Prüfverfahren

This European Standard was approved by CEN on 8 March 2012 and includes Amendment 1 approved by CEN on 16 April 2015.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Contents

Page

Foreword.....	3
Introduction	4
1 Scope	5
2 Normative references	5
3 General test conditions	5
3.1 Preliminary preparation	5
3.2 Application of forces	6
3.3 Tolerances	6
4 Test equipment	6
4.1 General.....	6
4.2 Measuring cones.....	6
4.3 Bed base impactor.....	7
4.3.1 Bed base impactor (see Figure 2)	7
4.3.2 Springs.....	7
4.3.3 Striking surface.....	8
4.4 Loading pads.....	8
4.5 Test mattress.....	8
4.6 Test mass	9
4.7 Stops	9
4.8 Floor surface	9
4.9 Tread impactor.....	9
4.10 Template for V-shaped openings.....	10
5 Test procedures	10
5.1 Inspection before testing	10
5.2 Inspection of product	10
5.3 Measurements.....	10
5.3.1 Holes, gaps and openings	10
5.3.2 V and irregular shaped holes, gaps and openings	11
5.4 Strength tests.....	13
5.4.1 Positioning of the bed	13
5.4.2 Static load on safety barriers	13
5.4.3 Upwards and downwards static load on bed base	14
5.4.4 Impact test on bed base.....	14
5.4.5 Durability test on bed base.....	15
5.5 Durability test of frame and fastenings	15
5.6 Ladders or other means of access	16
5.6.1 Vertical static load on treads.....	16
5.6.2 Horizontal static loads on treads	16
5.6.3 Durability of treads	17
5.6.4 Tread impact test	17
5.7 Stability test.....	18
5.8 Fastening of the upper bed to the lower bed	18
6 Test report	18

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 747-2:2012+A1:2015](https://standards.iteh.ai/catalog/standards/sist/1250934f-be96-4413-a442-aface42d1573/sist-en-747-2-2012a1-2015)

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Foreword

This document (EN 747-2:2012+A1:2015) 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 November 2015, and conflicting national standards shall be withdrawn at the latest by November 2015.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document includes Amendment 1, approved by CEN on 2015-04-16.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 and A1.

This document supersedes A1 EN 747-2:2012 A1.

A1 *deleted text* A1

EN 747 is divided into the following parts:

- EN 747-1, *Furniture — Bunk beds and high beds — Part 1: Safety, strength and durability requirements;*
- EN 747-2, *Furniture — Bunk beds and high beds — Part 2: Test methods.*

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

EN 747-2:2012+A1:2015 (E)**Introduction**

This part of EN 747 describes a number of tests consisting of the application, to various parts of bunk beds and high beds, of loads or forces applied by one adult occupant per bed during normal functional use. It also deals with misuses that can be reasonably expected to occur.

The tests are designed to evaluate properties without regard for materials, design/construction or manufacturing processes.

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SIST EN 747-2:2012+A1:2015
<https://standards.iteh.ai/catalog/standards/sist/1250934f-be96-4413-a442-aface42d1573/sist-en-747-2-2012a1-2015>

1 Scope

This European Standard specifies test methods for the safety, strength and durability of bunk beds and high beds for domestic and non-domestic use. The loads and forces in the strength and durability tests apply to beds with an internal length greater than 140 cm and a maximum bed base width of 120 cm.

The tests are designed to be applied to a bed that is fully assembled and ready for use.

The applicable safety requirements are given in EN 747-1.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 747-1:2012+A1:2015 ^{A1}, *Furniture — Bunk beds and high beds — Part 1: Safety, strength and durability requirements*

ISO 2439:2008, *Flexible cellular polymeric materials - Determination of hardness (indentation technique)* (ISO 2439:2008)

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3 General test conditions (standards.iteh.ai)

3.1 Preliminary preparation

SIST EN 747-2:2012+A1:2015

For furniture that includes hygroscopic materials, at least one week in normal indoor conditions shall have elapsed between manufacturing (or assembly) and testing.

For all other furniture, at least 48 hours in normal indoor conditions shall have elapsed prior to testing.

The sample shall be tested as delivered. If the sample is a knock-down type, it shall be assembled according to the instructions supplied with it. If the instructions allow for different combinations, the most adverse combination shall be used for each test.

Samples intended to be fastened together in pairs or attached to the structure of a building shall be tested as single, free-standing samples unless the instructions specifically require attachment to another sample or the building structure.

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

Knock-down fittings shall be tightened before testing and shall not be re-tightened throughout the testing procedures.

The tests shall be carried out on the same sample and following the order of the clauses of EN 747-1. If a test cannot be carried out as specified in this standard, e.g. because a loading pad cannot be used for the application of a force due to the design of the product, the test shall be carried out as closely as possible to the specified procedure.

EN 747-2:2012+A1:2015 (E)**3.2 Application of forces**

The test forces in durability and static load tests shall be applied sufficiently slowly to ensure that negligible dynamic load is applied.

The forces in durability tests shall be applied sufficiently slowly to ensure that kinetic heating does not occur.

Unless otherwise specified, static loads shall be maintained for (10 ± 2) s. Unless otherwise specified, durability loads shall be applied for (2 ± 1) s.

3.3 Tolerances

Unless otherwise stated, the following tolerances are applicable to the test equipment:

- all forces shall have an accuracy of $\pm 5\%$ of the nominal force;
- all masses shall have an accuracy of $\pm 1\%$ of the nominal mass;
- all dimensions shall have an accuracy of ± 1 mm of the nominal dimension;
- all angles shall have an accuracy of $\pm 2^\circ$ of the nominal angle.

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

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

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

SIST EN 747-2:2012+A1:2015

<https://standards.iteh.ai/catalog/standards/sist/1250934f-be96-4413-a442-aface42d1573/sist-en-747-2-2012a1-2015>

4 Test equipment**4.1 General**

The test forces may, unless otherwise stated, be applied by any suitable device, as results only depend on correctly applied forces and loads and not on the apparatus.

The equipment shall be capable of following the deformation of the unit/component during testing so that the loads are always applied at specified points and in specified directions.

4.2 Measuring cones

Cones with an angle of $(30 \pm 1)^\circ$ made of plastic or some other hard, smooth material (see Figure 1). There shall be six cones with the diameters 5 mm, 7 mm, 12 mm, 25 mm, 60 mm and 75 mm.

The 5 mm, 7 mm, 25 mm and 75 mm cone diameters shall have tolerances of $(0/-0,1)$ mm.

The 12 mm and 60 mm cone diameters shall have tolerances of $(0/+0,1)$ mm.

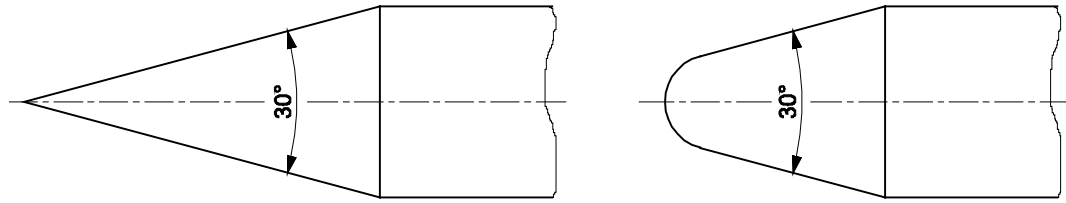


Figure 1 — Examples of measuring cones

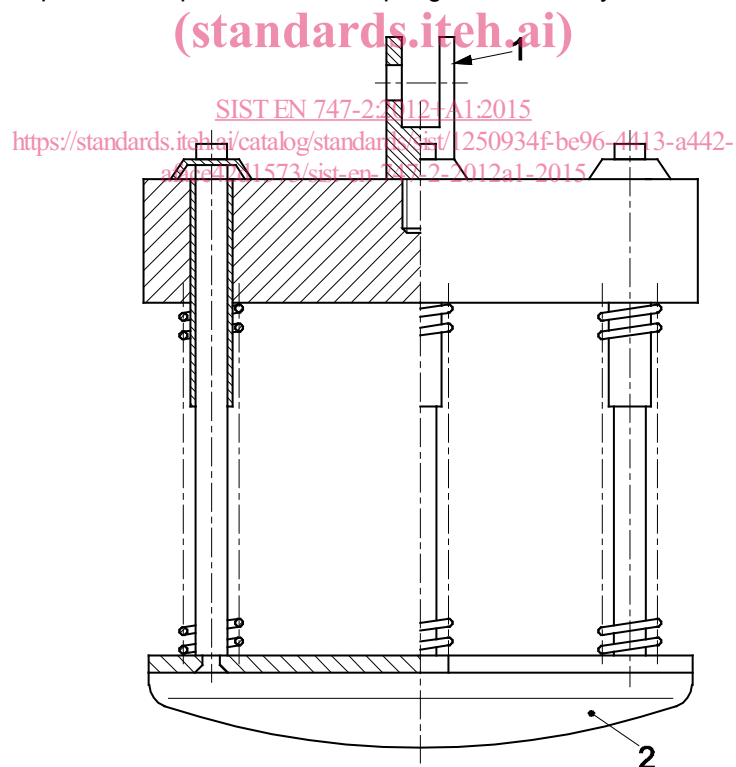
4.3 Bed base impactor

4.3.1 Bed base impactor (see Figure 2)

Approximately 200 mm in diameter, separated from the striking surface by helical compression springs and free to move relative to it on a line perpendicular to the plane of the central area of the striking surface (see Figure 2). The body and associated parts minus the springs shall have a mass of $(17 \pm 0,1)$ kg and the whole apparatus, including mass, springs and striking surface, shall have a mass of $(25 \pm 0,1)$ kg.

4.3.2 Springs

Springs shall be such that the combined spring system has a nominal spring rate of (7 ± 2) N/mm and the total friction resistance of the moving parts is less than 1 N. The spring system shall be compressed to an initial load of $(1\ 040 \pm 5)$ N (measured statically), and the amount of spring compression movement available from the initial compression point to the point where the springs become fully closed shall not be less than 60 mm.



Key

- 1 Connecting part of the lifting device which shall not restrain the free fall
- 2 Striking surface

Figure 2 — Bed base impactor

EN 747-2:2012+A1:2015 (E)

4.3.3 Striking surface

Rigid and circular object, 200 mm in diameter, the face of which has a convex spherical curvature of a 300 mm radius with a 12 mm front edge radius (see Figure 3).

4.4 Loading pads

4.4.1 **Rigid and circular object**, 200 mm in diameter, the face of which has a convex spherical curvature of a 300 mm radius with a 12 mm front edge radius (see Figure 3).

Dimensions in millimetres

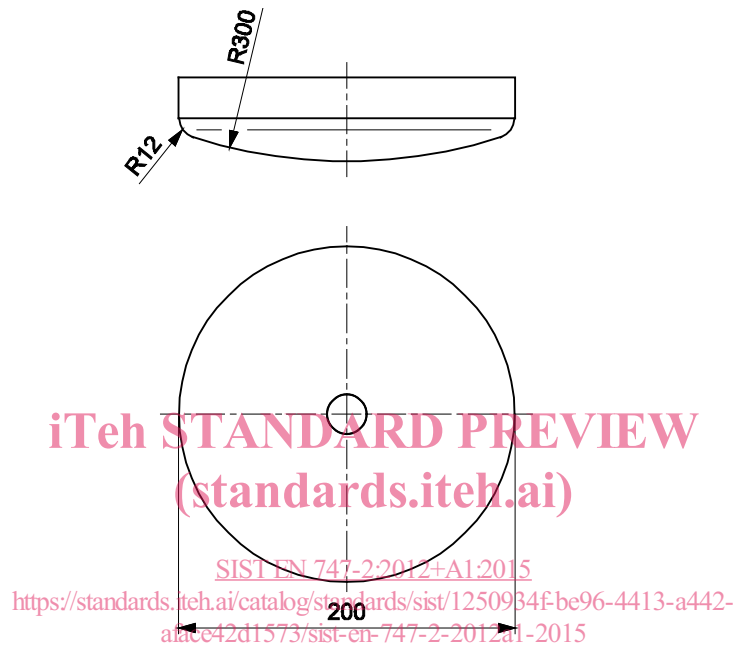


Figure 3 — Loading pad

4.4.2 **Rigid and cylindrical object**, 100 mm in diameter, having a flat, smooth, hard surface and rounded edge with a radius of 12 mm.

4.5 Test mattress

Soft polyether foam sheet with a thickness of 100 mm, a bulk density of $(30 \pm 2) \text{ kg/m}^3$, an indentation hardness index of $(170 \pm 20) \text{ N}$ in accordance with A 40 of EN ISO 2439:2008, and with dimensions more or less the same as those of the bed base tested. The test mattress may have a cover, in which case it shall have the following characteristics:

- composition: pure cotton;
- weave in plain: 1/1;
- mass per unit area: 100 g/m^2 to 120 g/m^2 ;
- warp and weft: 20 threads/cm to 30 threads/cm;
- finishing: washed, no finishing agents;
- 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 and the mattress shall be replaced if damaged, or after 20 tests.

4.6 Test mass

A mass of 75 kg distributed over an area of approximately 300 mm x 300 mm or a diameter of approximately 340 mm.

4.7 Stops

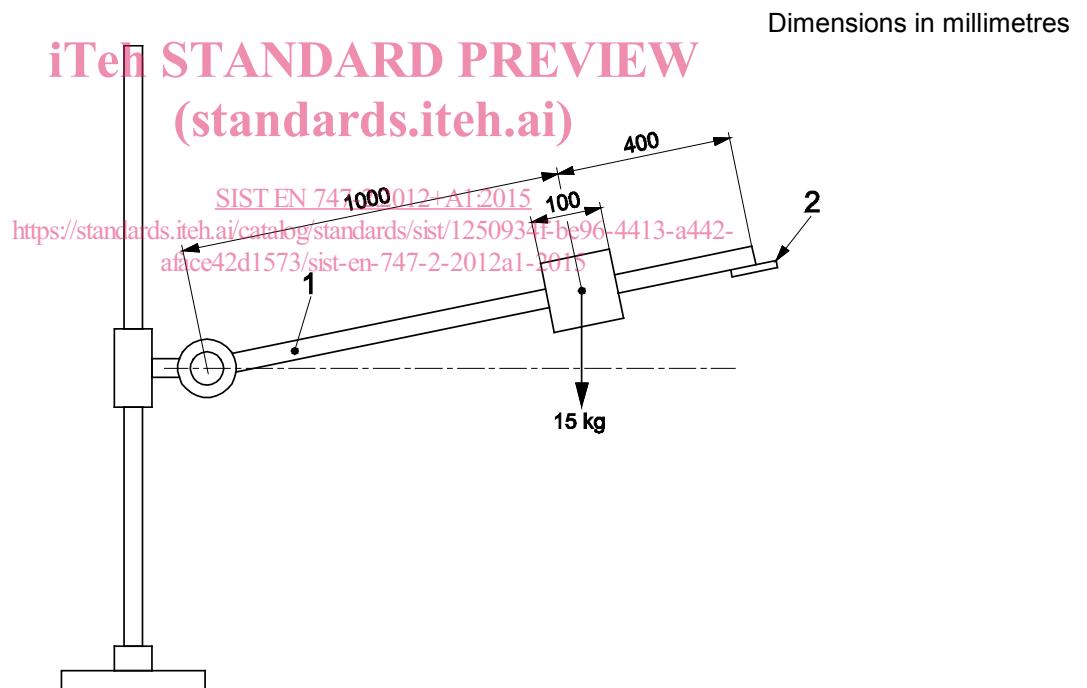
Stops, to prevent the bed from sliding but not tilting, no higher than 12 mm, except in cases where the design of the bed necessitates the use of higher stops, in which case the lowest that will prevent the bed from sliding shall be used.

4.8 Floor surface

Horizontal, rigid, flat and smooth.

4.9 Tread impactor

Apparatus as shown in Figure 4.



Key

- 1 HTS (High Tensile Steel) tube
Outer diameter: 25
Wall thickness: 2
Approximate mass: 1,6 kg
- 2 Impact pad 100 x 100 x 6 steel plate fitting
Total mass: 0,5 kg

Figure 4 — Tread impactor