
Pohištveno okovje – Trdnost in trajnost izvlečnih elementov in njihovih delov

Hardware for furniture - Strength and durability of extension elements and their components

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English Version

Hardware for furniture - Strength and durability of extension elements and their components

Möbelbeschläge - Festigkeit und Dauerhaltbarkeit von
Auszügen und deren Komponenten

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Foreword

This document (prEN 15338:2005) 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.

Introduction

The aim of this European Standard is to provide furniture manufacturers, designers and developers with comparable information regarding the performance of extension elements and drawers.

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1 Scope

This European Standard specifies test methods and requirements for the strength and durability of all types of extension elements and their components for all fields of application, except table extensions.

The tests consist of the application of loads, forces and velocities simulating normal functional use, as well as misuse, that might reasonably be expected to occur.

With the exception of the corrosion test in clause 6.4, the tests are designed to evaluate properties without regard to materials, design/construction or manufacturing processes.

The strength and durability tests only relate to the extension elements and the parts used for the attachment, e.g. screws.

The strength and durability tests are carried out in a test frame with specified properties. The test results can only be used as a guide to the performance of a piece of furniture.

The test results are only valid for the extension element tested. These results may be used to represent the performance of production models provided that the tested model is representative of the production model.

Ageing and influences of heat and humidity is not included.

Annex A (normative): Requirements for product information.

Annex B (normative): Apparatus for the slam open and shut tests.

Annex C (normative): Loads and cycles.

2 Normative references

The following referenced documents are indispensable for the application 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 320, *Fibreboards; determination of resistance to axial withdrawal of screws*

EN 323, *Wood-based panels; determination of density*

prEN ISO 6270-4:2003, *Paints and varnishes — Determination of resistance to humidity — Part 4: Condensation-water test atmospheres (ISO/DIS 6270-4:2003)*

EN ISO 1110, *Plastics — Polyamides — Accelerated conditioning of test specimens (ISO 1110:1995)*

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply:

3.1

catch device

device, which keeps or pulls an extension element in place, but does not require a second action in order to release it, e.g. a magnetic catch or a self-closing or self-opening mechanism

3.2

extension element

components that can be pulled out and pushed in, e.g. drawers, suspended pocket files, keyboard trays

3.3

loading capacity

the mass M in Kg, as specified by the manufacturer, for which the extension element will fulfil the strength and durability requirements. The loading capacity includes the load bearing structure and load in/on the extension element but excludes the mass of separate extension element parts attached to the test frame. In other EN standards, this is referred to as total mass

3.4

damper

a mechanism which gently brings the extension element to a stop

4 General test conditions

4.1 Preliminary preparation

The extension element shall be assembled/mounted according to the instructions supplied with it. The most adverse configuration shall be used for each test.

If mounting or assembly instructions are not supplied, the mounting or assembly method shall be recorded in the test report. Fittings shall be tightened before testing and shall not be re-tightened unless specifically required in the manufacturer's instructions. If the configuration must be changed to produce the worst-case conditions, this shall be recorded in the test report.

For testing a range of related extension elements, only worst case(s) need to be tested.

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.

Extension elements which include structural hardware parts made of hygroscopic plastic materials, e.g. polyamide shall be conditioned at (23 ± 5) °C and a relative humidity of (50 ± 5) % for 7 days before testing.

NOTE For accelerating the conditioning process, EN ISO 1110 may be used.

In the case of designs not addressed in the test procedures, the test shall be carried out as far as possible as described, and deviations from the test procedure recorded in the test report.

Before beginning the testing, visually inspect the extension element thoroughly. Record any defects so that they are not assumed to have been caused by the tests. Carry out measurements when specified.

4.2 Test equipment

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

The equipment shall not inhibit deformation of the extension element, i. e. it shall be able to move so that it can follow the deformation of the extension element 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.

4.3 Application of forces

The forces in the static load tests shall be applied sufficiently slowly to ensure that negligible dynamic force is applied. Unless otherwise specified, each force shall be maintained for not less than 10 and not more than 15 seconds.

The forces in durability tests shall be applied at a rate to ensure that excessive heating does not occur.

The forces may be replaced by masses. The relation $10 \text{ N} = 1 \text{ kg}$ may be used for this purpose.

4.4 Tolerances

Unless otherwise stated, the following tolerances are applicable:

Forces: $\pm 5 \%$ of the nominal force;

Velocities: $\pm 5 \%$ of the nominal velocity;

Masses: $\pm 1 \%$ of the nominal mass;

Dimensions: $\pm 1 \text{ mm}$ of the nominal dimension;

Angles: $\pm 2^\circ$ of the nominal angle;

The accuracy for the positioning of loading pads shall be $\pm 5 \text{ mm}$.

4.5 Sequence of testing

The tests shall be carried out in the same sequence as the clauses are numbered in this standard. If the clause sequence is not followed, the sequence shall be recorded in the test report.

4.6 Inspection and assessment of results

Before and after completion of each test, carry out the inspection as specified, after using adjustment devices, if available.

Before any measurements are taken, the loaded extension shall be moved 10 times over the total extension length.

Record any changes that have taken place since the initial inspection. The inspection shall include at least the following:

- a) the fracture of any component or joint;
- b) the loosening of any joint intended to be rigid, which can be demonstrated by hand pressure;
- c) the deformation or wear of any part or component such that its functioning is impaired;
- d) the loosening of any means of fixing components;
- e) any impaired function of a component or part.

5 Test apparatus

5.1 Loading pad

Rigid disc 100 mm in diameter (or 50 mm to be used in limited space), with a flat face and a 12 mm front edge blend radius.

5.2 Apparatus for slam-shut/open tests

Two examples for suitable apparatus as well as calibration instructions are given in annex B.

5.3 Masses

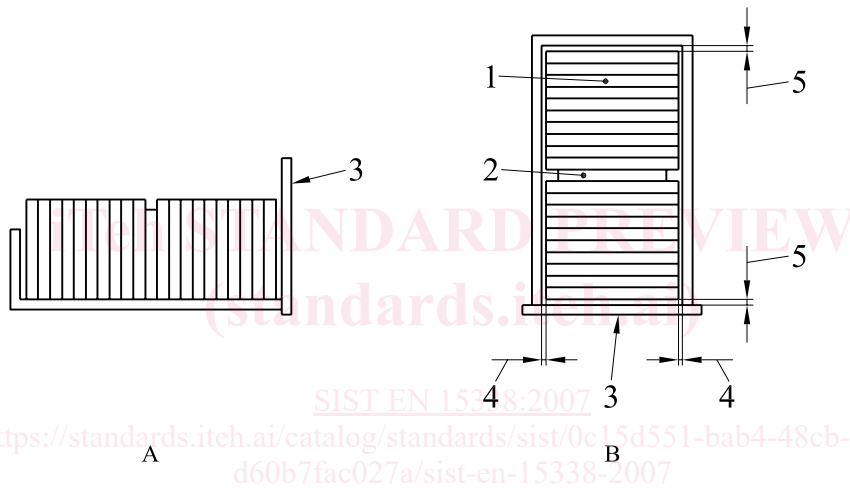
Masses shall be designed so that they do not reinforce the structure or re-distribute the stresses.

5.4 Glass marbles

Marbles made of solid glass with 10 mm to 15 mm diameter. They shall be in a flexible bag large enough to allow them to move in the bag during the test.

5.5 Loads for filing pockets

Suspended filing pockets shall be loaded with typing paper or an equivalent alternative as shown in Figure 1.



Key

- 1 typing paper
- 2 spacing material (for example polystyrene)
- 3 front of extension element
- 4 air gap
(Note: Will be determined by the size of the paper)
- 5 air gap 25mm ± 6 mm
- A side view
- B top view

Figure 1 — Loading of suspended filing pockets with typing paper

5.6 Test frame

The tests specified in clause 6.2 and 6.3 shall be carried out in a test frame (Figure 2, which is so constructed that the deformation under the applied load is no more than 1 mm).

Unless otherwise specified by the manufacturer, the extensions shall be mounted on particle board sides, see clauses 5.7.

The distance between the outer surfaces of the particle board shall be specified by the manufacturer. If it is not specified, the distance (Figure 2, key 11) shall be (590 ± 10) mm.

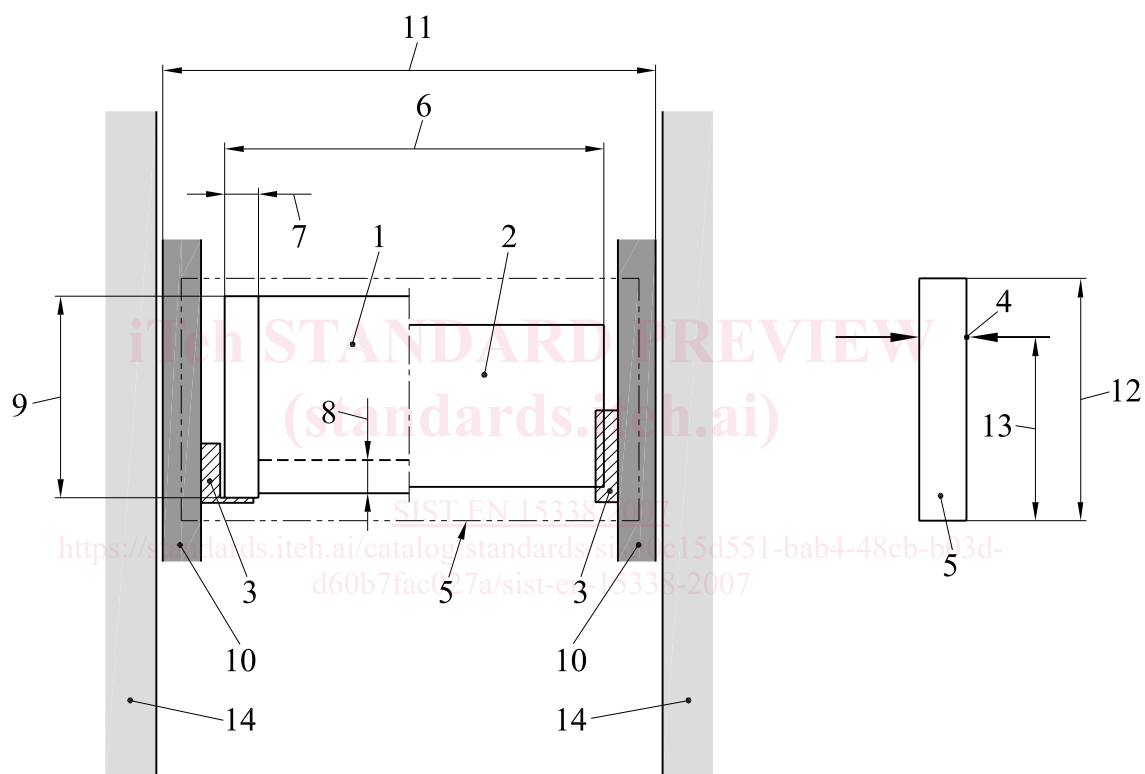
Option 1: The height to the force application point shall be specified by the manufacturer. In cases where this is not specified, the height shall be either 65 mm, 350 mm or 650 mm (Figure 2). The front shall be 50 mm higher than the force application point.

Option 2: The max. height of the front shall be specified by the manufacturer. The force application point shall be 50 mm below the top of the front.

Option 3: The height of the front shall be 300 mm. The force application point shall be 50 mm below the top of the front.

NOTE A decision regarding the three options above shall be taken during the enquiry.

In cases where the extensions do not include a drawer, this shall, unless otherwise specified by the manufacturer, be made of 16 mm particle board, see clauses 5.7.



Key

- 1 test drawer of particle board
- 2 extension element (alternative)
- 3 extension slides
- 4 force application point, opening and closing (Annex A)
- 5 front, 16 mm particle board
- 6 "drawer" width
- 7 "drawer" sides, 16 mm particle board
- 8 "drawer" bottom, 16 mm particle board
- 9 "drawer" height
- 10 sides, 16 mm particle board
- 11 distance between the outer surfaces
- 12 front height
- 13 height to force application point, opening and closing (Annex A)
- 14 test frame

Figure 2 — Test frame