



**SLOVENSKI STANDARD**  
**SIST EN 16122:2012**  
**01-november-2012**

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**Shranjevalno pohištvo za domačo in javno uporabo - Preskusne metode za ugotavljanje trdnosti, trajnosti in stabilnosti**

Domestic and non-domestic storage furniture - Test methods for the determination of strength, durability and stability

Behältnismöbel für den Wohn- und Nicht-Wohnbereich - Prüfverfahren zur Bestimmung der Festigkeit, Dauerhaltbarkeit und Standsicherheit

Meubles de rangement à usage domestique et collectif - Méthode d'essai pour la détermination de la résistance, la durabilité et la stabilité

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EUROPEAN STANDARD

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## Domestic and non-domestic storage furniture - Test methods for the determination of strength, durability and stability

Meubles de rangement à usage domestique et collectif -  
Méthode d'essai pour la détermination de la résistance, la  
durabilité et la stabilité

Behältnismöbel für den Wohn- und Nicht-Wohnbereich -  
Prüfverfahren zur Bestimmung der Festigkeit,  
Dauerhaltbarkeit und Standsicherheit

This European Standard was approved by CEN on 9 June 2012.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

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## Foreword

This document (EN 16122:2012) 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of an identical text or by endorsement, at the latest by January 2013, and conflicting national standards shall be withdrawn at the latest by January 2013.

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.

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.

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## 1 Scope

This European Standard specifies tests methods for the determination of strength, durability and stability for all types of domestic and non-domestic storage furniture including domestic kitchen furniture.

It does not apply to office, industrial, catering equipment and retail storage, nor to industrial storage lockers.

Strength and durability tests do not assess the structure of the building (for example the strength of wall hanging cabinets); rather, they include only the cabinets and the parts used for attachment. The wall and the wall attachments are not included.

Requirements for safety, strength and durability can be found in other European Standards.

Assessment of the effects of ageing, degradation and flammability is not included.

Annex A (normative) contains details of test equipment for the slam open/shut testing of extension elements.

## 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.

ISO 7619-2:2010, *Rubber, vulcanized or thermoplastic — Determination of indentation hardness — Part 2: IRHD pocket meter method*

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## 3 Terms and definitions

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

### 3.1

#### catch device

device which keeps or pulls a component in place but does not require a second action in order to release it

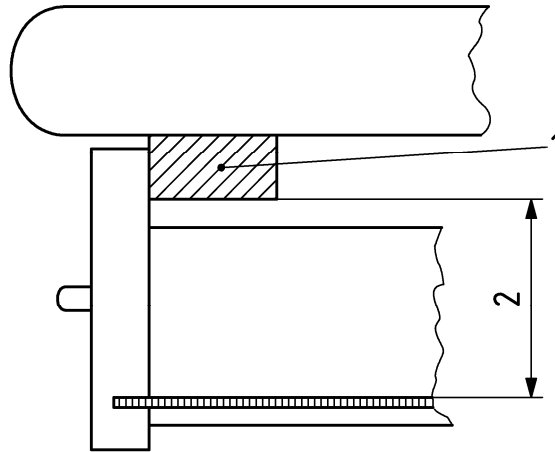
EXAMPLE A magnetic catch or a self-closing-mechanism.

### 3.2

#### clear height

unobstructed height above the top of the bottom surface, or the structure of the unit

Note 1 to entry: For example, the top of the extension element below and the lower edge of the extension element above. See Figure 1.

**Key**

- 1 structure of the unit
- 2 clear height  $H$

**Figure 1 — Clear height****3.3 damper mechanism**

mechanism which gently brings the component to a stop

**3.4 extension element**

components that can be pulled out and pushed in

EXAMPLE Drawers, suspended pocket files, keyboard trays.

**3.5 flap**

horizontally hinged door, which opens upwards or downwards

**3.6 free standing unit**

unit not intended to be attached to a load bearing structure

**3.7 interlock**

device which restrains the opening of more than one extension element at a time

**3.8 latching mechanism**

mechanism which retains an extension element or a door in the closed position and which requires a second action to release it and may require a key or a combination in order to activate it

**3.9 locking mechanism**

mechanism that limits access to the interior of a unit or a storage element and that requires a key or a combination in order to activate it or to make it possible to activate it

**3.10 stay**

hardware component usually used to hold a flap or door in the open position



**3.11****top hanging unit**

unit intended to be entirely supported by the ceiling

**3.12****wall-, panel- and screen-hanging unit**

unit intended to be supported by a wall, panel or screen

**3.13****tray**

storage element that is designed, under normal use, to be removed from the storage unit and used independently

**3.14****levelling device**

adjustable device intended to keep the item of furniture perpendicular to the floor

EXAMPLE Adjustable feet or similar.

**4 General test conditions****4.1 Preliminary preparation**

The unit(s)/component(s) shall be tested as delivered. The unit(s)/component(s) shall be assembled and/or configured according to the instructions supplied. Unless otherwise stated, 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 needs to be changed in order to produce the worst-case conditions, this shall be recorded in the test report.

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Levelling devices shall be set as near as possible to 5 mm from the fully open position whilst ensuring the unit is perpendicular to the floor.

A combination of tests may be necessary to cover the properties of multifunction components; e.g. a receding door shall be tested both as a sliding door and as a pivoted door.

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

Except for the deflection of shelves (see below), 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.

The test for deflection of shelves (6.1.4), except metal, stone and glass shelves, shall be carried out at a relative humidity of 45 % to 55 %. If during a test the relative humidity is outside this range, the maximum and/or minimum shall be recorded in the test report.

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 a product, the test shall be carried out as closely as possible to that specified.

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

During testing, the unit shall be placed on the floor and levelled, unless otherwise specified.

All tests specified for a particular component shall be carried out on the same sample.

**EN 16122:2012 (E)****4.2 Application of forces**

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

The test forces in durability tests shall be applied at a rate to ensure that excessive heating does not occur. Unless otherwise specified, each test force shall be maintained for  $(2 \pm 1)$  s.

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

**4.3 Tolerances**

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

- 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 and impact plates shall be  $\pm 5 \text{ mm}$ .

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

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**4.4 Prevention of movement during test**

If a freestanding unit tends to overbalance during the tests specified in Clauses 6 and 7, load the unit until this tendency stops, unless otherwise specified.

If a freestanding unit tends to slide during the tests specified in Clauses 6 and 7, with the exception of subclauses 6.4.2 and 6.4.3, the unit shall be restrained by stops (5.3).

**4.5 Loading**

Unless otherwise specified, all storage components, which are not subject to testing, shall be uniformly loaded with the specified load(s).

**5 Test equipment and apparatus**

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

The equipment shall not inhibit 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, so that the loads are always applied at the specified points and in the specified directions.

**5.1 Floor surface**, which is a rigid, horizontal and flat surface.

For the strength of structure and underframe (6.4.1), the surface shall be smooth high-pressure plastics laminate.

For the drop test (6.4.2), the floor shall be faced with a 3 mm thick layer of rubber with a hardness of  $(85 \pm 10)$  IRHD according to ISO 7619-2:2010.

**5.2 Wall surface**, which is a rigid, vertical and flat surface.

**5.3 Stops.**

Devices to prevent the article from sliding but not tilting, not higher than 12 mm, except in cases where the design of the unit necessitates the use of higher stops, in which case the lowest stop that will prevent the item from moving shall be used.

**5.4 Loading pad**, which is a rigid disc 100 mm in diameter, with a flat face and a 12 mm front edge blend radius.

Where space prevents the use of a 100 mm diameter loading pad, a 50 mm diameter loading pad with similar properties may be used.

**5.5 Apparatus for slam shut/open of extension elements.**

Two examples for suitable apparatus as well as calibration instructions are given in Annex A.

**5.6 Masses.**

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

NOTE For the deflection of shelves (6.1.4), steel masses with a length of 85 mm, a width of 50 mm, a thickness of 30 mm and a mass of 1 000 g are suitable.

**5.7 Glass marbles**, which shall be 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.

**5.8 Loads for filing pockets.**

Suspended filing pockets shall be loaded with typing paper or an equivalent alternative as shown in Figure 19.

**5.9 Steel impact plates**, which are 200 mm in length, with one surface faced with a 3 mm thick layer of rubber with a hardness of  $(85 \pm 10)$  IRHD according to ISO 7619-2:2010.

Other properties of steel impact plates are as defined in Table 1.

**Table 1 — Steel impact plates**

Plate parameter	Unit	Plate no. 1	Plate no. 2
Mass (excluding rubber)	kg	1,7	2,5
Approximate width	mm	109	160
Approximate thickness	mm	10	10
Length	mm	200	200

**5.10 Obstacles for castor durability tests**, two steel strips 50 mm wide and 2 mm high with the edges having a radius of 2 mm, 500 mm apart and parallel on the floor surface and perpendicular to the test direction.

**EN 16122:2012 (E)****6 Test procedures for non-movable parts****6.1 Shelves****6.1.1 General**

Where shelves are structurally interconnected (other than at their ends), all the shelves shall be equally loaded.

For units with an indeterminate number of shelves, unless otherwise specified, divide the internal height of the unit, in millimetres, by 200 and take the nearest integer. This number, minus one, shall then be the number of shelves to be fitted.

**6.1.2 Shelf retention test – horizontal outward force**

Apply the horizontal, outwards force specified to the middle of the front edge of the shelf.

**6.1.3 Shelf retention test – vertical downward force**

By means of the 50 mm diameter loading pad (5.4), apply the vertical downwards force specified to a point 25 mm in from the front edge of the shelf at the position most likely to cause failure.

**6.1.4 Deflection of shelves**

Testing of the deflection of shelves, which are not made of metal, glass or stone, shall be carried out in a controlled humidity atmosphere (see 4.1). (standards.iteh.ai)

Place the shelf on its supports in the unit.

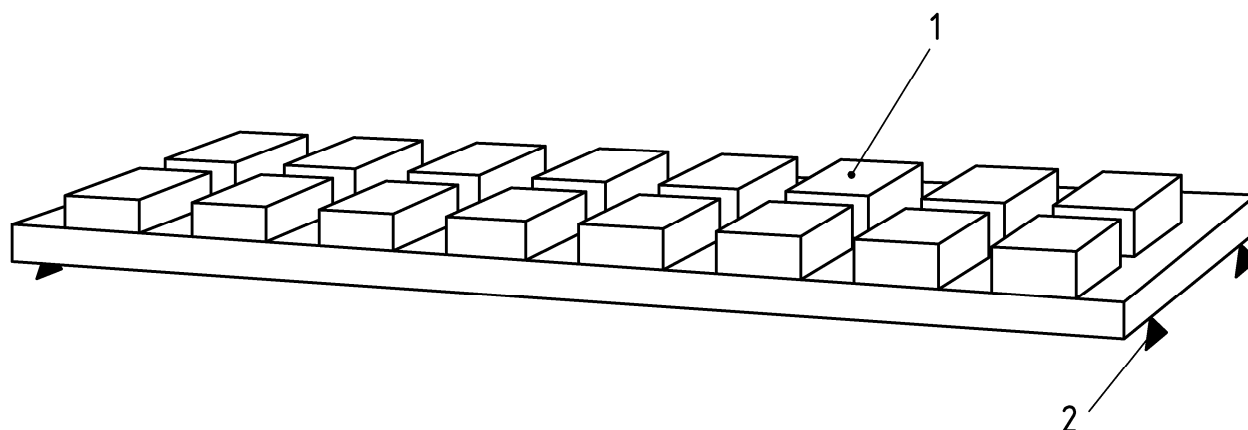
The deflection of the shelf shall be measured at a point 10 mm from the front edge where the deflection is greatest.

The deflection shall be measured to an accuracy of  $\pm 0,1$  mm with reference to a straight line parallel to the front edge drawn between two adjacent supports.

Load the shelf uniformly (see Figure 2) with the load specified and apply for

- one hour for shelves made of metal, glass and stone, and
- one week for all other shelves.

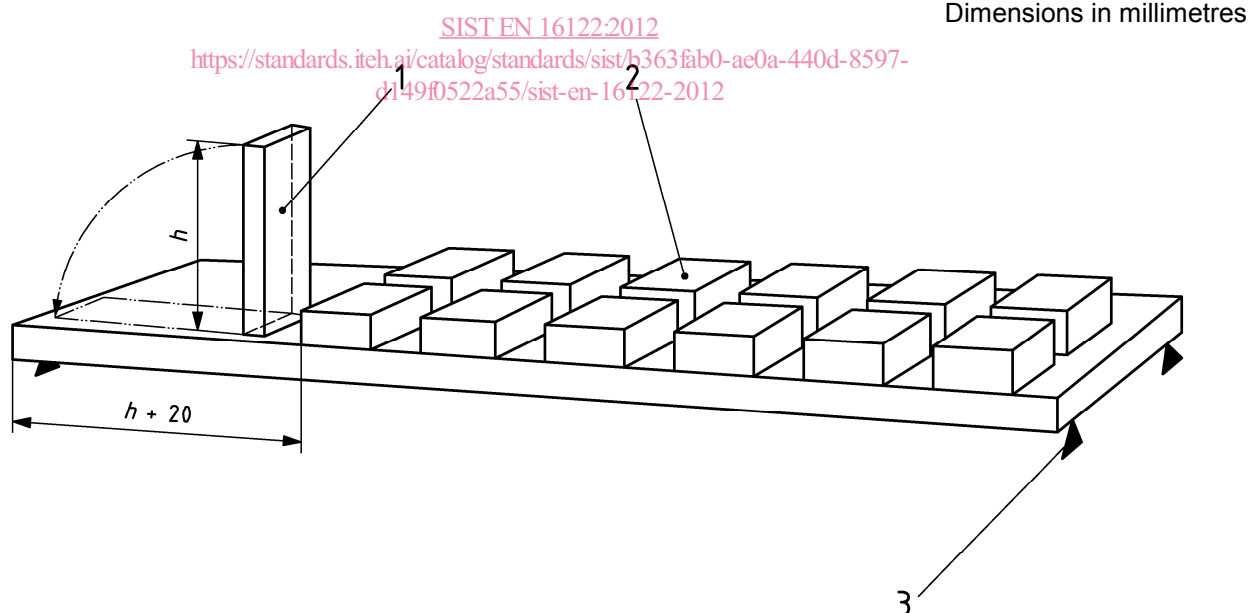
At the same points as specified above, measure and record the deflection under load to an accuracy of  $\pm 0,1$  mm and as a percentage of the distance between the supports.

**Key**

- 1 load
- 2 shelf support

**Figure 2 — Deflection test of shelves****6.1.5 Strength of shelf supports**

Load the shelf uniformly with half the load specified for the deflection of shelf test (6.1.4), except at 220 mm from one support, where the impact plate (5.9) shall be tipped over ten times over the support (see Figure 3). The striking surface of the impact plate (5.9) shall be that faced with rubber. All supports of the shelf shall be tested.

**Key**

- 1 steel impact plate
- 2 load
- 3 shelf support
- h length of impact plate

**Figure 3 — Strength test of shelf supports**