



**SLOVENSKI STANDARD**  
**SIST EN 15939:2012**

**01-februar-2012**

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**Pohištveno okovje - Trdnost in nosilnost stenskih omarič**

Hardware for furniture - Strength and loading capacity of wall attachment devices

Möbelbeschläge - Festigkeit und Tragfähigkeit von Schrankaufhängern

Quincaillerie d'ameublement - Résistance mécanique et capacité de charge des dispositifs de fixation au mur

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**Ta slovenski standard je istoveten z: EN 15939:2011**

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97.140

Pohištvo

Furniture

**SIST EN 15939:2012**

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EUROPEAN STANDARD

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## Hardware for furniture - Strength and loading capacity of wall attachment devices

Quincaillerie d'ameublement - Résistance mécanique et capacité de charge des dispositifs de fixation au mur

Möbelbeschläge - Festigkeit und Tragfähigkeit von Schrankaufhängern

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COMITÉ EUROPÉEN DE NORMALISATION  
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## Contents

Page

Foreword.....	3
1 Scope .....	4
2 Normative references .....	4
3 Terms and definitions .....	5
4 General test condition .....	5
4.1 Preliminary preparation .....	5
4.2 Test equipment .....	5
4.2.1 Test wall.....	5
4.2.2 Particle board properties .....	6
4.2.3 Fibre board properties .....	6
4.2.4 Steel impact plate .....	6
4.2.5 Dowels .....	6
4.2.6 Nails .....	6
4.2.7 Distance devices.....	6
4.2.8 Non-commercial wall part.....	6
4.3 Application of forces .....	7
4.4 Tolerances .....	7
5 Test frame.....	7
6 Test procedures and requirements.....	13
6.1 General.....	13
6.2 Verification of loading capacity.....	14
6.2.1 Requirements.....	14
6.2.2 Static load test .....	14
6.2.3 Impact test .....	15
6.2.4 Door swing test.....	15
6.2.5 Overload test.....	16
6.3 Corrosion resistance.....	16
7 Test report .....	16
Annex A (normative) Product information system .....	17
A.1 General.....	17
A.2 Loading capacity.....	17
A.3 Adjustment systems.....	17
A.4 Corrosion test .....	17
A.5 Mounting instructions .....	17
Annex B (informative) Determination of loading capacity .....	18
B.1 Determination of breaking load.....	18
B.2 Calculation of loading capacity, <i>M</i> .....	19
Bibliography .....	20

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(standards.iteh.ai)

SIST EN 15939:2012

[https://standards.iteh.ai/catalog/standards/sist/49875283-c22f-4632-8807-](https://standards.iteh.ai/catalog/standards/sist/49875283-c22f-4632-8807-753670900da4/sist-en-15939-2012)

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## Foreword

This document (EN 15939:2011) 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 June 2012, and conflicting national standards shall be withdrawn at the latest by June 2012.

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.

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**EN 15939:2011 (E)****1 Scope**

This European Standard specifies test methods for the verification of the loading capacity of all types of wall attachment devices for storage furniture and their components for all fields of application.

It does not apply to devices intended to prevent the overturning of storage furniture.

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

With the exception of the corrosion test in 6.3, the tests are designed to evaluate properties without regard to materials, design/construction or manufacturing processes.

The tests can be applied to the part attached to the furniture alone or to the combination of the part attached to the furniture and the part attached to the wall. The attachment into the wall is not included.

The strength tests are carried out in a test frame with specified properties.

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

With the exception of the corrosion test, ageing and influences of temperature and humidity are not included.

Annex A (normative) includes requirements for product information.

Annex B (informative) includes a method for the determination of loading capacity.

**2 Normative references**

[SIST EN 15939:2012](https://standards.iteh.ai/catalog/standards/sist/49875283-c22f-4b32-8807-753f70900d4d/sist-en-15939-2012)

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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 310, *Wood-based panels — Determination of modulus of elasticity in bending and of bending strength*

EN 319, *Particleboards and fibreboards — Determination of tensile strength perpendicular to the plane of the board*

EN 320, *Particleboards and fibreboards — Determination of resistance to axial withdrawal of screws*

EN 323, *Wood-based panels — Determination of density*

EN 10025-2:2004, *Hot rolled products of structural steels — Part 2: Technical delivery conditions for non-alloy structural steels*

EN 10230-1, *Steel wire nails — Part 1: Loose nails for general applications*

EN 10305-5, *Steel tubes for precision applications — Technical delivery conditions — Part 5: Welded cold sized square and rectangular tubes*

EN ISO 6270-2, *Paints and varnishes — Determination of resistance to humidity — Part 2: Procedure for exposing test specimens in condensation-water atmospheres*

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

### 3 Terms and definitions

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

#### 3.1

##### loading capacity

*M*

mass in kg, as specified by the manufacturer, for which one wall attachment device will fulfil the strength requirements specified in this standard

NOTE A test method for the determination of the loading capacity is described in Annex B (informative).

#### 3.2

##### wall attachment device

device including the component that is attached to the cabinet (e.g. suspension bracket) and the component that is attached to the wall (e.g. hook, rail)

#### 3.3

##### non-commercial wall part

piece of test equipment specified in 4.2.8

### 4 General test condition

#### 4.1 Preliminary preparation

The wall attachment device(s) shall be mounted according to the instructions supplied with them. The most adverse configuration shall be used and the mounting or assembly method shall be recorded in the test report.

If mounting or assembly instructions are not supplied, the most adverse configuration shall be used and the mounting or assembly method shall be recorded in the test report.

The fixing to the wall shall be of such strength that the test result is not influenced.

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

For testing a range of related wall attachment devices, 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.

Wall attachment devices which include structural hardware parts made of hygroscopic plastic materials, e.g. polyamide shall be conditioned at  $(23 \pm 5)$  °C and a relative humidity of  $(50 \pm 5)$  % for at least seven days before testing.

Before beginning the testing, visually inspect the wall hanging device(s) 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

##### 4.2.1 Test wall

A rigid, vertical and flat surface which is so constructed that the deformation under the applied load is no more than 1 mm.

## EN 15939:2011 (E)

## 4.2.2 Particle board properties

The properties of the particle board shall be as specified in Table 1. The thickness tolerance shall be  $\pm 0,3$  mm.

Table 1 — Particle board properties

Property	Referenced standard	Requirement
Axial withdrawal of screws	EN 320	(1 100 $\pm$ 100) N
Density	EN 323	(0,65 $\pm$ 0,05) g/cm <sup>3</sup>

## 4.2.3 Fibre board properties

The properties of the fibre board shall be as specified in Table 2. The thickness shall be 3,2 mm  $\pm$  0,3 mm.

Table 2 — Fibreboard properties

Property	Reference standard	Requirement
Cross tensile strength	EN 319	> 0,5 N/mm <sup>2</sup>
Bending strength	EN 310	> 30 N/mm <sup>2</sup>

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## 4.2.4 Steel impact plate

A 1,7 kg steel impact plate 200 mm  $\times$  109 mm  $\times$  10 mm faced with a 3 mm thick layer of rubber with a hardness of (85  $\pm$  10) IRHD according to ISO 7619-2 <https://standards.iteh.ai/standards/sist/49875283-c22f-4b32-8807-753b70900da4/sist-en-15939-2012>

## 4.2.5 Dowels

Round dowels with a diameter of (8  $\pm$  0,1) mm, 30 mm in length, made of beech without any grooves.

## 4.2.6 Nails

2 mm  $\times$  30 mm steel wire nails according to EN 10230-1.

## 4.2.7 Distance devices

50 mm  $\times$  50 mm with a smooth melamine surface.

NOTE Usually a piece of melamine faced particleboard is used.

## 4.2.8 Non-commercial wall part

The non-commercial wall part (see Figure 1) shall be milled out of steel EN 10025-2:2004 – S235JR.



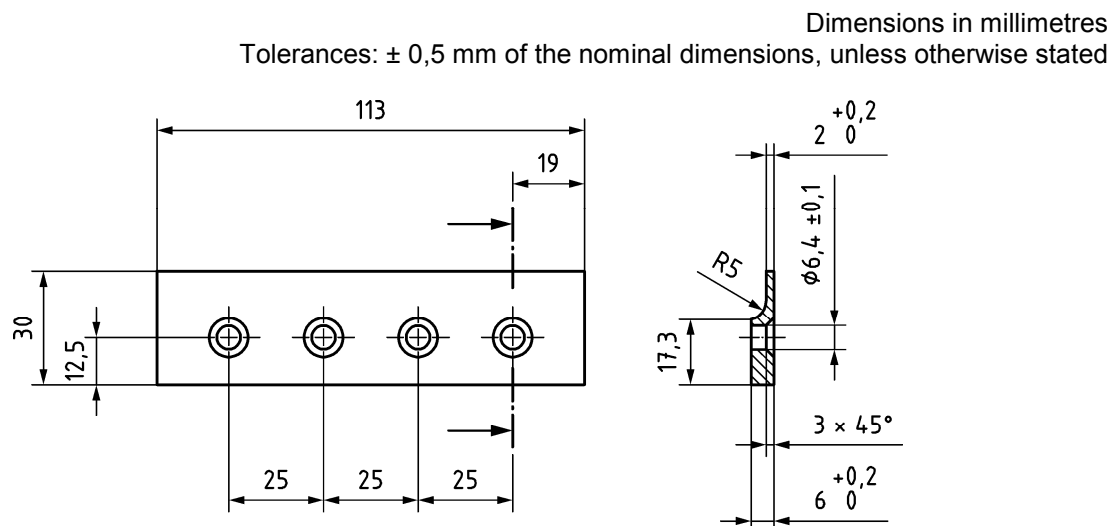


Figure 1 — Non commercial wall part

### 4.3 Application of forces

The forces in the load tests shall be applied sufficiently slowly to ensure that negligible dynamic force is applied.

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

### 4.4 Tolerances

Unless otherwise stated, the following tolerances are applicable:

- Forces:  $\pm 5$  % of the nominal force;
- Masses:  $\pm 1$  % of the nominal mass;
- Dimensions:  $\pm 1$  mm of the nominal dimension;
- Angles:  $\pm 2^\circ$  of the nominal angle.

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

## 5 Test frame

Depending on the type of wall attachment device to be tested, there are two different test frames (A and B), see Figure 2.

The test frames (see Figure 2) shall be made as follows:

- a) the steel frame shall be made of square, hollow components ( $30 \text{ mm} \times 30 \text{ mm} \times 1,5 \text{ mm}$ ) according to EN 10305-5;
- b) the pivoting arm, 600 mm in length, shall be a square, hollow component ( $30 \text{ mm} \times 30 \text{ mm} \times 1,5 \text{ mm}$ ) according to EN 10305-5;
- c) the bottom panel shall be reference particle board, thickness  $22 \text{ mm} \pm 0,3 \text{ mm}$  (see Table 1);

## EN 15939:2011 (E)

- d) the side panels for frame A and B shall be manufactured according to Figure 4 out of reference particle board (see Table 1), thickness  $16 \text{ mm} \pm 0,3 \text{ mm}$ ; they shall be with a groove for the back panel;
- e) the top panels for frame A and B shall be manufactured according to Figure 3 out of reference particle board (see Table 1), thickness  $16 \text{ mm} \pm 0,3 \text{ mm}$ ;
- f) the back panel,  $250 \text{ mm} \times 517 \text{ mm}$ , shall be out of reference fibreboard (see Table 2), thickness  $3,2 \text{ mm} \pm 0,3 \text{ mm}$ .

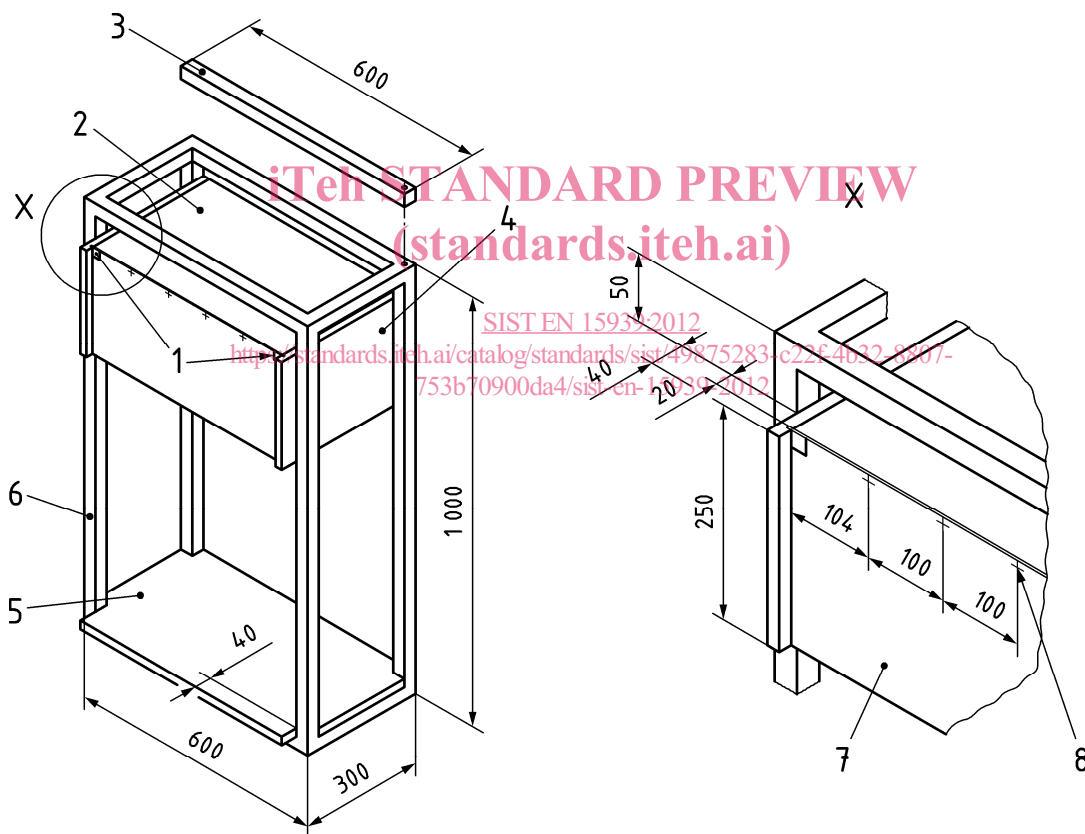
The steel frame shall be welded together all around all cross sections.

The top panel (see Figure 3) shall be jointed to the sides using wooden dowels (4.2.5) without the use of glue.

The side panels (see Figure 4) shall be fixed to the steel frame in a manner so that the deformation of the side panels in relation to the steel frame under the applied load is no more than 1 mm.

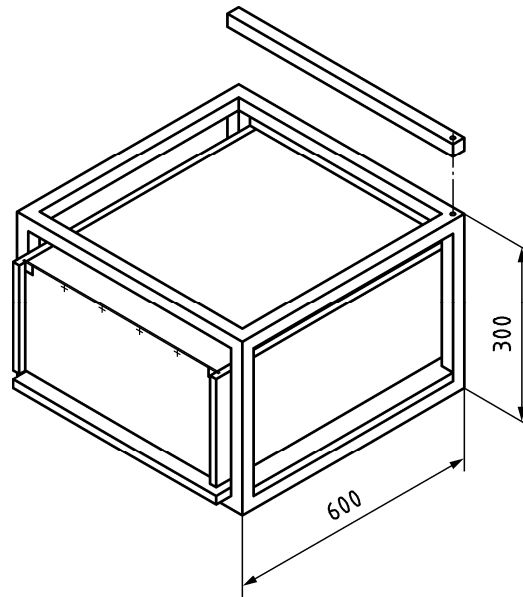
The back panel shall be nailed with nails (4.2.6) every 100 mm (see Figure 2).

Dimensions in millimetres



a) Test frame A (with dimensions  $600 \text{ mm} \times 300 \text{ mm} \times 1\,000 \text{ mm}$ )

Dimensions in millimetres  
Dimensions, keys and witness lines as in Figure 2 a), unless otherwise stated



b) Test frame B (with dimensions 600 mm × 600 mm × 300 mm)

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**Key**

- 1 wall attachment devices
- 2 top panel
- 3 pivoting arm
- 4 side panel
- 5 bottom panel
- 6 test frame according to 5 a)
- 7 back panel
- 8 nail positions

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NOTE Test frame type A – vertical load is dominating; test frame type B – horizontal load is dominating.

**Figure 2 — Test frames A and B, examples with side mounted wall attachment devices**