



# SLOVENSKI STANDARD

## SIST EN 16014:2012

01-februar-2012

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### Pohištveno okovje - Trdnost in trajnost mehanizmov za zaklepanje

Hardware for furniture - Strength and durability of locking mechanism

Möbelbeschläge - Festigkeit und Dauerhaltbarkeit von Verschlussmechanismen

Quincaillerie d'ameublement - Résistance mécanique et endurance des mécanismes de verrouillage

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EUROPEAN STANDARD

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## Hardware for furniture - Strength and durability of locking mechanisms

Quincaillerie d'ameublement - Résistance mécanique et endurance des mécanismes de verrouillage

Möbelbeschläge - Festigkeit und Dauerhaltbarkeit von Verschlussmechanismen

This European Standard was approved by CEN on 1 July 2011.

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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 16014:2011) 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of an identical text or by endorsement, at the latest by February 2012, and conflicting national standards shall be withdrawn at the latest by February 2012.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.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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### Introduction

The aim of this European Standard is to provide furniture manufacturers, designers and developers with comparable information regarding the performance of all types of locking mechanisms.

NOTE Examples of typical locking mechanisms are given in CEN/TR 16015.

**EN 16014:2011 (E)****1 Scope**

This European Standard specifies test methods and requirements for the strength and durability of all types of locking mechanisms for furniture and their components for all fields of application.

This European Standard does not apply to latching mechanisms.

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

With the exception of the corrosion test in 6.5, 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 locking mechanisms and their components and the parts used for the attachment, e.g. screws.

The strength and durability tests are carried out in particle board 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 locking mechanisms and their components 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 corrosion, ageing and influences of heat and humidity is not included.

Annex A (normative): Product information system.

Annex B (normative): Test parameters.

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**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 320:2011, *Particleboards and fibreboards - Determination of resistance to axial withdrawal of screws*

EN 323:1993, *Wood-based panels — Determination of density*

EN ISO 6270-2:2005, *Paints and varnishes — Determination of resistance to humidity — Part 2: Procedure for exposing test specimens in condensation-water atmospheres (ISO 6270-2:2005)*

**3 Terms and definitions**

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

**3.1****locking mechanism**

mechanism that limits access to the interior of a unit or a storage element

NOTE It requires a key or a combination in order to activate it or to make it possible to activate it.

[ISO 7170:2005 and EN 14074:2004]

**3.2****latch**

mechanism which retains an extension element or a door in the closed position

NOTE It requires a second action in order to release it.

**3.3****stop**

part of hardware in the cabinet which works together with the locking hook

[CEN/TR 16015:2010, 2.5.1]

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

The locking mechanism shall be assembled/mounted according to the instructions supplied with it.

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. 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 locks, 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.

Locking mechanisms 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 7 days before testing.

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 far as possible as specified.

Before beginning the testing, visually inspect the lock 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**

The equipment shall not inhibit deformation of the lock, i.e. it shall be able to move so that it can follow the deformation of the lock 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 s and not more than 15 s.

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

**EN 16014:2011 (E)**

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

**4.4 Tolerances (allowed variation from the nominal values)**

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.

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

**4.5 Test sequence**

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.

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 impairment of a component or part.

**5 Test apparatus****5.1 Loading pad**

- Type A: rigid cylinder with a flat face; the diameter of which shall be  $2/3$  of the smallest width or diameter of the lock tested;
- Type B: rigid cylinder,  $(5,0 \pm 0,1) \text{ mm}$  diameter, with a hemispherical face;
- Type C: test bolt identical in shape and form to the part belonging to the locking mechanism.



## 5.2 Test plates

The tests specified in 6.2 and 6.3 shall be carried out in a test plate, which is so constructed that the deformation at the measurement points under the applied load is no more than 1 mm. The test plate shall be at least 50 mm larger than the lock to be tested.

Unless otherwise specified by the manufacturer, the locks shall be mounted on a 19 mm particle board, see 5.3.

## 5.3 Particle board properties

The properties of the particle board shall be as specified in Table 1.

**Table 1 — Particle board properties**

Property	Reference standard	Requirement
Axis withdrawal of screws	EN 320	1 100 N ± 100 N
Density	EN 323	0,65 g/cm <sup>3</sup> ± 0,05 g/cm <sup>3</sup>

## 6 Test procedure and requirements

### 6.1 General

For the following tests, five sets of locking mechanisms shall be used as follows:

- the first set shall be used for the tests specified in 6.2;
- the second set shall be used for the tests specified in 6.3;
- the third set shall be used for the test specified in 6.4.1;
- the fourth set shall be used for the test specified in 6.4.2;
- the fifth set shall be used for the test specified in 6.5.

### 6.2 Overload tests

#### 6.2.1 General

All locking mechanism shall be tested according to all relevant sub-clauses.

The load shall be applied perpendicular to the face of the test plate.

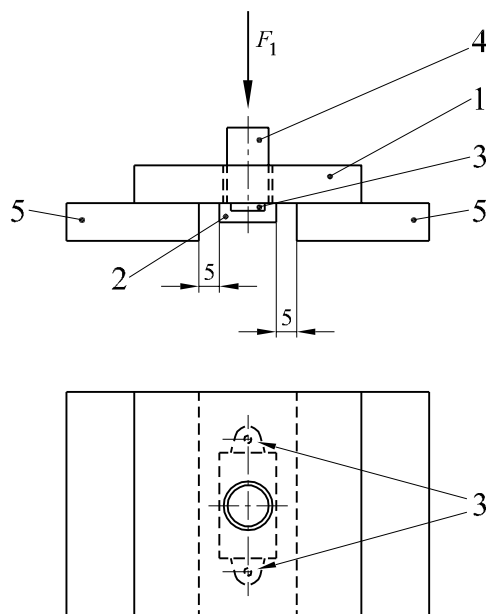
#### 6.2.2 Lock

The overload test shall be carried out as shown in Figure 1 using loading pad A (see 5.1) with the static force  $F_1$  and the cycles specified in Table B.1.

The force shall be applied in the opposite direction of the fixing of the lock.

Carry out inspection and assessment according to 4.6 without the test load.

The locking mechanism or parts of it shall not become detached.

**Key**

- 1 reference particle board
- 2 lock
- 3 fixing
- 4 loading pad
- 5 test plate
- $F_1$  force in N

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**Figure 1 — Example for an overload test of a lock**

**6.2.3 Bolt**

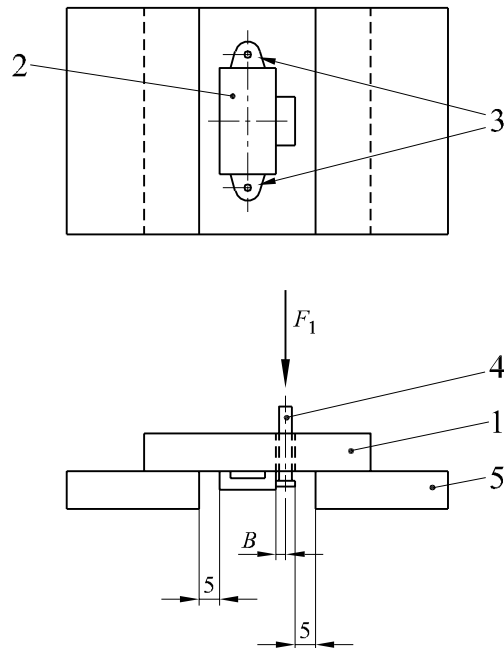
The overload test shall be carried out in the locked position as shown in Figure 2 using loading pad B (see 5.1) with the static force  $F_1$  and the cycles specified in Table B.1.

The force shall be applied in the centre of area of the bolt.

Carry out inspection and assessment according to 4.6 without the test load.

The locking mechanism or parts of it shall not become detached.

Dimensions in mm

**Key**

- 1 reference particle board
- 2 lock
- 3 fixing
- 4 loading pad
- 5 test plate
- B centre area of the bolt
- $F_1$  force in N

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**Figure 2 — Overload test – Bolt**

#### 6.2.4 Shooting bar

The overload test shall be carried out in the locked position as shown in Figure 3 using loading pad B (see 5.1) with the static force  $F_2$  and the cycles specified in Table B.1.

The force shall be applied in the middle of the width of the shooting bar, 5 mm distance from the ends.

If applicable, both ends shall be tested separately.

Carry out inspection and assessment according to 4.6 without the test load.

The locking mechanism or parts of it shall not become detached.