



# SLOVENSKI STANDARD

## SIST EN 15570:2008

01-september-2008

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Hardware for furniture - Strength and durability of hinges and their components - Hinges pivoting on a vertical axis

Möbelbeschläge - Festigkeit und Dauerhaltbarkeit von Scharnieren und deren Komponenten - Scharniere mit vertikaler Drehachse

Quincaillerie d'ameublement - Résistance mécanique et endurance des charnières et de leurs composants - Charnières pivotant sur un axe vertical

**Ta slovenski standard je istoveten z: EN 15570:2008**

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EUROPEAN STANDARD

EN 15570

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May 2008

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## Hardware for furniture - Strength and durability of hinges and their components - Hinges pivoting on a vertical axis

Quincaillerie d'ameublement - Résistance mécanique et endurance des charnières et de leurs composants - Charnières pivotant sur un axe vertical

Möbelbeschläge - Festigkeit und Dauerhaltbarkeit von Scharnieren und deren Komponenten - Scharniere mit vertikaler Drehachse

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## Foreword

This document (EN 15570:2008) 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of an identical text or by endorsement, at the latest by November 2008, and conflicting national standards shall be withdrawn at the latest by November 2008.

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, 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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EN 15570:2008 (E)

## 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 hinges pivoting on a vertical axis and their components.

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## 1 Scope

This European Standard specifies test methods and requirements for the strength and durability of all types of hinges pivoting on a vertical axis and their components for all fields of application.

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 hinges and the parts used for the attachment, e.g. mounting plates and 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 hinges 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 the influence of heat and humidity are not included.

Annex A (normative): Requirements for product information.

Annex B (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 320:1993, *Fibreboards - Determination of resistance to axial withdrawal of screws*

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

EN ISO 6270-2, *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 apply.

### 3.1

#### catch device

device that keeps or pulls a door 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

#### damper

mechanism which stops the movement of a door gently

**EN 15570:2008 (E)****4 General test conditions****4.1 Preliminary preparation**

The hinges shall be assembled/mounted/adjusted according to the instructions supplied with it.

If mounting, assembly or adjustment 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.

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.

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

NOTE For accelerating the conditioning process, EN ISO 1110:1997 [1] may be used.

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

Before beginning testing, visually inspect the hinges and components thoroughly. Record any defects to eliminate any assumption that they have been caused by the tests. Carry out measurements if 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 deflection of the test door, i.e. it shall be able to move so that it will allow the deflection of the test door during testing.

**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.

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;

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

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

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



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

The accuracy for the positioning of forces shall be  $\pm 5$  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 the 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) fracture of any component or joint;
- b) loosening of any joint intended to be rigid, which can be demonstrated by hand pressure;
- c) deformation or wear of any part or component such that its functioning is impaired;
- d) loosening of any means of fixing components;
- e) any impaired function of a component or part.

### 5 Test apparatus

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#### 5.1 Masses

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

#### 5.2 Test frame

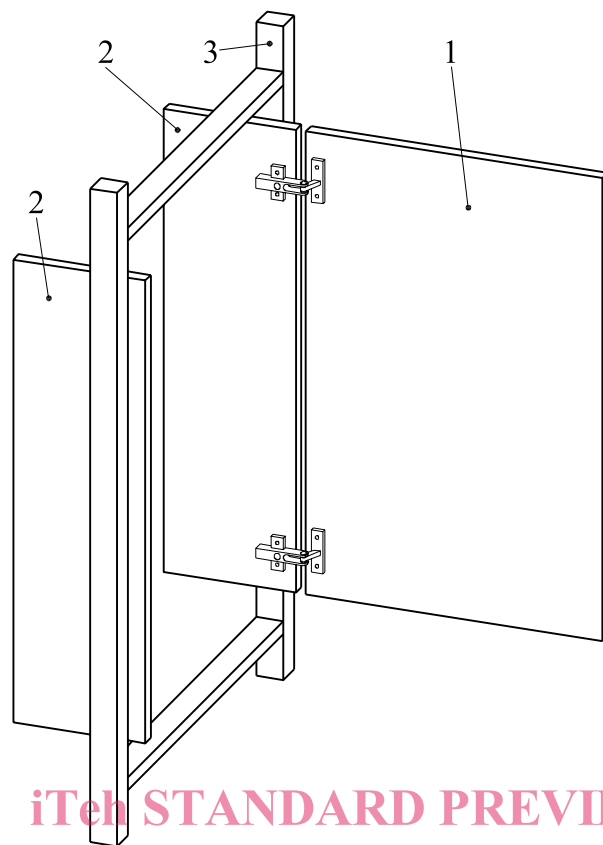
The tests specified in 6.2 and 6.3 shall be carried out in a test frame (see Figure 1), which is so constructed that the deformation under the applied loads is no more than 1 mm.

Hinges for wooden doors shall be mounted on particle board, 5.3, unless otherwise specified.

Hinges for other materials, e.g. glass, metal or plastic shall be mounted according to the manufacturer's instructions.

The position of hinges and components on the door and the test frame as well as the size and weight of the door shall be as specified by the manufacturer, see Annex A.

In cases where the door parameters (e.g. height, width, mass) are not specified by the manufacturer, the tests may be carried out using the standard door sizes specified in Annex B.



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**Key**

- 1 test door
- 2 test sides
- 3 test frame

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**Figure 1 — Test frame and test door**

### 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
Axial withdrawal of screws	EN 320:1993	1 100 ± 100 N
Density	EN 323:1993	0,65 ± 0,05 g/cm <sup>3</sup>

## 6 Test procedures and requirements

### 6.1 General

For the following tests, three sets of hinges shall be used as follows:

The first set shall be used for the first test sequence specified in 6.2.

The second set shall be used for the second test sequence specified in 6.3.

The third set shall be used for the corrosion test specified in 6.4.

All overload and functional tests shall be carried out according to the same column (1, 2 or 3) in Annex B (normative).

### 6.2 Overload tests

#### 6.2.1 Vertical static overload

Load the door as shown in Figure 2 with the mass specified in Annex B. The mass shall be suspended 100 mm from the edge furthest from the hinge.

Open and close the door 10 full cycles (back and forth) from a position 45° from fully closed to a position 10° from fully opened, up to a maximum of 135° from the fully closed position.

Opening and closing can be done by hand using 3 s to 5 s for opening and 3 s to 5 s for closing.

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

The door and/or hinges shall not become detached.