SLOVENSKI STANDARD
SIST EN 15828:2011

01-marec-2011

Pohištveno okovje - Trdnost in trajnost odmičnih spon (šarnirjev) in njihovih sestavnih delov - Odmične spone (šarnirji), pregibne v vodoravni osi

Hardware for furniture - Strength and durability of hinges and their components - Stays and hinges pivoting on a horizontal axis

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

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

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97.140	Pohištvo	Furniture

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EUROPEAN STANDARD

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English Version

Hardware for furniture - Strength and durability of hinges and their components - Stays and hinges pivoting on a horizontal axis

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

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Foreword

This document (EN 15828:2010) 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of an identical text or by endorsement, at the latest by April 2011, and conflicting national standards shall be withdrawn at the latest by April 2011.

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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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 and their components.

1 Scope

This European Standard specifies test methods and requirements for the strength and durability of all hinges, stays and systems which include hinges and stays pivoting on a horizontal axis and their components for all fields of application.

It does not apply to systems intended for storage functions.

This standard does not apply to electrically actuated systems.

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 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, *Fibreboards — Determination of resistance to axial withdrawal of screws*

EN 323, *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 which keeps or pulls a flap 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
top hinged flap
flap which opens upwards and which consists of one or more parts

3.3
bottom hinged flap
flap which opens downwards and which consists of one or more parts

3.4
damper
mechanism which stops the movement of a flap gently

3.5
stay
active or passive mechanism which can hold and guide a front, and which may include a braking/opening mechanism and/or a hinge

3.6
flap hinges
active or passive mechanism which can hold and guide a front, and which may include a braking/opening mechanism and/or a stay

4 General test conditions

4.1 Preliminary preparation

The hinges/stays 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 is to 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 ± 5) °C and a relative humidity of (50 ± 5) % for seven days before testing.

NOTE For accelerating the conditioning process, EN ISO 1110 [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 the testing, visually inspect the hinges and components thoroughly. Record any defects so that they are not assumed to 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 flap, i.e. it shall be able to move so that it will allow the deflection of the test flap 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 N = 1 kg shall be used for this purpose.

4.4 Tolerances

Unless otherwise stated, the following tolerances are applicable:

— Forces: ± 5 % of the nominal force;

— Velocities: ± 5 % of the nominal velocity;

— Masses: ± 1 % of the nominal mass;

— Dimensions: ± 1 mm of the nominal dimension;

— Angles: ± 2° of the nominal angle.

The accuracy for the positioning of forces shall be ± 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 completion of each test, carry out the inspection as specified, after removing any loads and 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 impaired function of a component or part.

5 Test apparatus

5.1 Masses

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

5.2 Test frame

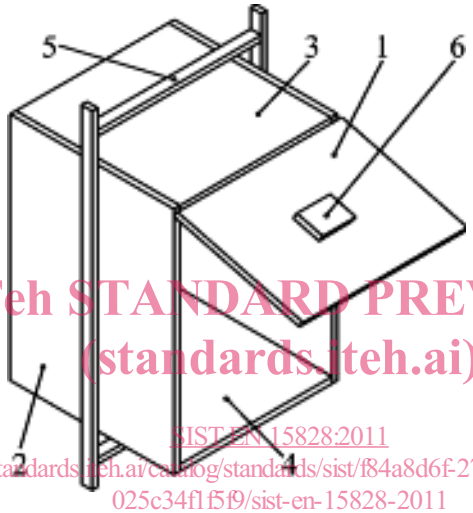
The tests specified in 6.2 and 6.3 shall be carried out in a test frame (see Figures 1 and 2), which is so constructed that the deformation of the test frame under the applied load is no more than 1 mm.

Hinges and stays for wooden flaps shall be mounted on particle board, 5.3, unless otherwise specified.

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

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

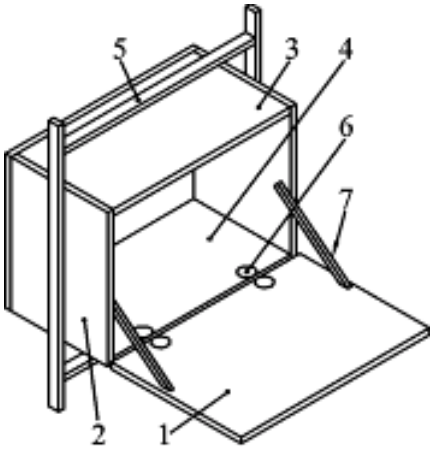
In cases where the flap parameters (e.g. height, width, mass) are not specified by the manufacturer, the tests may be carried out using the standard flap sizes specified in Table B.1 (A, B, C or D).



Key

1 Test flap
2 Test side
3 Test top
4 Test bottom
5 Test frame
6 Additional mass

Figure 1 — Test frame − Top hinged flap



Key

1 Test flap
2 Test side
3 Test top
4 Test bottom
5 Test frame
6 Hinge
7 Stay

Figure 2 — Test frame – Bottom hinged flap

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	(1 100 ± 100) N
Density	EN 323	(0,65 ± 0,05) g/cm³

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).