



SLOVENSKI STANDARD
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Stavbno okovje - Fitingi za polkna - Zahteve in preskusne metode

Building hardware - Fittings for shutters - Requirements and test methods

Schlösser und Baubeschläge - Beschläge für Fensterläden - Anforderungen und Prüfverfahren

Quincaillerie pour le bâtiment - Ferrures pour volets - Exigences et méthodes d'essai

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English Version

Building hardware - Fittings for shutters - Requirements and test methods

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Schlösser und Baubeschläge - Beschläge für Fensterläden
- Anforderungen und Prüfverfahren

This European Standard was approved by CEN on 23 August 2007.

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

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Foreword

This document (EN 14648:2007) has been prepared by Technical Committee CEN/TC 33 "Doors, windows, shutters, building hardware and curtain walling", the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by April 2008, and conflicting national standards shall be withdrawn at the latest by April 2008.

This European Standard is one of a series of European Standards dedicated to building hardware products.

A full contribution to the preparation of this European Standard has been made by the European manufacturers' organization "ARGE" and National Standards Bodies.

The performance tests incorporated in this European Standard are considered reproducible and as such will provide a consistent and objective assessment of the performance of these products throughout CEN Member States.

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 United Kingdom.

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Introduction

This European Standard is a graded product standard. The hardware is tested on a standardized test frame. The standard test frame is intended to eliminate any inconsistency of results that may arise through the variability between different types of installation and materials that are used for the production of shutters.

This European Standard is only applicable to hardware that connects side-hung shutter sashes either directly or indirectly to a superstructure. It does not take account of any aids or measures which are used to assemble individual shutter components. Furthermore, it does not take account of any aids used for the installation of shutter hardware on the structure of a building.

Where possible, test methods have been unified so that a wide range of shutter types and hardware can be accommodated. In particular

- a) sizes and mass of moving shutter sashes,
- b) frequency and total number of test cycles and
- c) range of operations of the movable shutter sash during each test cycle.

The fixing devices used during testing vary according to the different materials used in the construction of shutters. For this reason shutter hardware under test may be securely fixed to the test apparatus by mechanical means that may differ from those normally used on shutters.

The type and grade of hardware and the effectiveness of methods of fixing can be verified by testing in accordance with relevant performance standards for complete shutter assemblies. Typical shutter assemblies and hinge arrangements are depicted in Annex A.

NOTE The test methods in this standard include overload tests which ensure that such safety related devices have a margin of strength in excess of that required for normal operation, even if after such tests the shutter no longer functions normally.

1 Scope

This European Standard specifies performance requirements for the strength and durability of hardware for the operation of movable shutter sashes including requirements and test methods.

This European Standard is applicable to hardware for side-hung and top-hung shutters comprising one or more shutter sashes. The requirements and test methods of this European Standard are applicable to the following:

- shapes and dimensions of sash hinges, double-sashed shutter hinges and frame hinges
- shapes and dimensions of frame hinges and sash hinges with arrest function

Only the corrosion requirements of 4.7 are applicable to double-sash shutter latches, locking-rods, decorative corner-brackets, handles, stops without automatic arrest function, central hinges, shutter catches with automatic arrest function and other hardware components for window and door shutters.

NOTE 1 The sashes of side-hung shutters may have additional projecting shutter-inserts. The hardware for these projecting shutter-inserts is not covered by the scope of this European Standard.

NOTE 2 If due to the hardware fixing type or the dead weight of the described test shutter, this can not be used, a corresponding system sash with the same dimensions (800 mm wide × 1 400 mm high) can be tested.

This is particularly valid for hardware used exclusively in a complete modular system from a systems manufacturer (consisting of the hardware components, frame profiles and panel units as well as the necessary fixing materials).

NOTE 3 Tower bolts and locking-rods should conform to EN 12051.

NOTE 4 Fixings used to attach hardware to shutters are not covered by this European Standard.

To allow a choice of items from a single source, so-called "product group" of elements may be nominated by the manufacturer. The single components may be called "product group" components, if these are approved by accredited test authorities commissioned to test, based upon the comparable features; for example hinge features with regard to material, thickness, hole diameter and pin diameter.

Where test results for the weakest element of a product group are valid the rest of the product group need not be tested. It is a test laboratory's right to accept or reject a product for assessment within a product group or to request further test specimens.

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 1670, *Building hardware — Corrosion resistance — Requirements and test methods*

EN 12216:2002, *Shutters, external blinds, internal blinds — Terminology, glossary and definitions*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12216:2002 and the following apply.

3.1

tower bolt

device for securing or helping to secure a shutter in the closed position, comprising a guided member, operable by hand from the protected side only, either directly using a knob or slide, or indirectly using a lever handle or rack and pinion mechanism

3.2

decorative corner-bracket

usually flat strip material used to reinforce the rigidity of shutter corners

3.3

central hinge

hinge to join two shutter sashes

3.4

locking-rod

locking device with a continuous, single locking rod with locking mechanisms (for example hooks) at both ends used to lock the shutter in the closed position

3.5

shutter handle

device used to facilitate easier manual opening and closing of the shutter

3.6

frame hinge

part of the hinge attached to the wall of a building or to the support frame on to which the sash hinge is placed (also known as a shutter frame-hinge)

3.7

sash hinge

counterpart to the frame hinge that is fixed to the shutter and which rests on top of the frame hinge and enables a rotary motion between the opened and closed position

3.8

double-sash shutter latch

bar element used to keep shutters closed, usually operated from inside only

3.9

shutter for windows and doors

product that consists of one or several shutter sashes, which turn and/or fold and/or can be slid to be opened

3.10

shutter catch

device mounted on the external face of a building to retain a shutter in the open position

3.11

shutter end-stop

device that provides the shutter with an end-stop to limit the closing movement, to enable parallel positioning of the shutter to the window or the door in the locked position

3.12**shutter buffer**

device which is usually attached to the shutter and absorbs the striking impact of the shutter against the wall during the opening movement

3.13**double-sashed shutter hinge**

sash hinge with an additional pivot location situated along the overall length. Used to combine an additional side-hung shutter sash with the first sash, whereby both shutter sashes hang from the same frame hinges

3.14**frame hinges and sash hinges with arrest function**

assembly of frame and sash hinge with an integrated or retrofittable device, which holds the shutter in the opened position without using shutter catches

3.15**projecting shutter**

shutter which can be projected externally and which has an integrated movable, top-hung, panel

4 Classification**4.1 General**

For the purpose of this European Standard, shutter hardware shall be classified in accordance with the six digit coding system specified in 4.2 to 4.7 as follows:

1	2	3	4	5	6
Category of use	Durability	Mass	Fire resistance	Safety in use	Corrosion resistance

4.2 Category of use (first digit)

No marking is required for the category of use.

4.3 Durability (second digit)

Two grades are identified where grade 2 is the lowest:

- Grade 2: 7 000 cycles;
- Grade 3: 10 000 cycles.

4.4 Mass (third digit)

The third digit indicates the maximum mass of the test shutter in accordance with 5.4.

For example:

Hardware for a shutter with maximum 20 kg mass is denoted as **020**.

4.5 Fire resistance (fourth digit)

One grade is identified:

- Grade 0: no fire resistance.

4.6 Safety in use (fifth digit)

NOTE The Construction Products Directives require shutter hardware to conform to the Essential Requirements of safety in use. Therefore only one grade is identified.

- Grade 1: the product shall conform to 5.6.

4.7 Corrosion resistance (sixth digit)

The hardware shall conform to 5.7.

4.8 Example of classification of shutter hardware

EXAMPLE

1	2	3	4	5	6
-	3	040	0	1	4

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The example denotes hardware for shutters with:

- 1st digit Category of use - (no requirements);
- 2nd digit Durability Grade 3 (10 000 cycles);
- 3rd digit Mass 40 kg;
- 4th digit Fire resistance Grade 0 (no requirements);
- 5th digit Safety in use Grade 1;
- 6th digit Corrosion resistance Grade 4.

5 Requirements

5.1 Dangerous substances

Materials in products shall not release any dangerous substances in excess of the maximum levels specified in European material standards.

NOTE National regulations may also apply to the emission of dangerous substances.

5.2 Category of use (first digit)

No marking is required for the category of use.

5.3 Durability (second digit)

All durability tests shall be in accordance with Clause 7.

The following grades shall be applied in the durability tests:

- Grade 2: 7 000 cycles (+ 1 %);
- Grade 3: 10 000 cycles (+ 1 %).

The maximum shutter position deviations shall not exceed the dimensions specified in Annex B, (Figure B.1).

The positional deviation of Z = 5 mm max. and X+Y = 6 mm max. (sum of both positional deviations).

5.4 Mass (third digit)

The mass of the test shutter shall be in accordance with the maximum sash dimensions determined by the manufacturer.

The range for the mass begins at 10 kg and increases in steps of 5 kg without restriction. The result is an unlimited number of mass grades, whereby 010 is the lowest (refer to Table 1).

Table 1 — Grades for the test mass of shutter hardware

Grade	010	015	020	025	030	035	040	045	050	055	060	...
Mass (kg)	10	15	20	25	30	35	40	45	50	55	60	...

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5.5 Fire resistance (fourth digit)

No marking is required for the category of use.

5.6 Safety in use (fifth digit)

5.6.1 General

Overload tests shall be applied in accordance with 7.4. Failure of this test will comprise failure of the whole test.

5.6.2 Overload test with increased opening velocity

After the overload, test with an increased velocity of $1,5_0^{+0,2}$ m/s, reaching the opening position in accordance with 7.4.1:

- test shutter shall not fall down;
- shutter shall continue to be held securely by the hinges;
- shutter does not have to function anymore.