



SLOVENSKI STANDARD

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Zunanja senčila in polkna - Odpornost proti obremenitvam z vetrom - Preskusna metoda in merila učinkovitosti

External blinds and shutters - Resistance to wind loads - Method of testing and performance criteria

Abschlüsse und Markisen - Widerstand gegen Windlast - Prüfverfahren und Nachweiskriterien

Fermetures pour baies équipées de fenêtres et stores extérieurs - Résistance aux charges de vent - Méthodes d'essai et critères de performance

Ta slovenski standard je istoveten z: EN 1932:2013

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91.060.50 Vrata in okna Doors and windows

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EUROPEAN STANDARD
NORME EUROPÉENNE
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EN 1932

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ICS 91.060.50

Supersedes EN 1932:2001

English Version

**External blinds and shutters - Resistance to wind loads - Method
of testing and performance criteria**

Fermetures pour baies équipées de fenêtres et stores
extérieurs - Résistance aux charges de vent - Méthodes
d'essai et critères de performance

Abschlüsse und Markisen - Widerstand gegen Windlast -
Prüfverfahren und Nachweiskriterien

This European Standard was approved by CEN on 14 December 2012.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (EN 1932:2013) 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of an identical text or by endorsement, at the latest by December 2013, and conflicting national standards shall be withdrawn at the latest by 2014-12-10.

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.

This document supersedes EN 1932:2001.

The main changes incorporated in this revision are:

- A complete editorial review of the document has been carried out.
- Pergola awnings have been added in accordance with the modification of the scope of EN 13561.
- The possibility to apply a uniformly distributed load with a mattress has been added for some products (e.g. Awnings with lateral guiderail with fabric running into the lateral rails without tension system).
- The test method for External Venetian Blinds has been changed: the bar test has been replaced by a test with a pneumatic device.

This document is part of a series of standards dealing with external blinds and shutters fitted to buildings as defined in EN 12216.

The tests defined in this standard conventionally reproduce the positive and negative pressures due to the wind applied to external blinds and shutters.

Under these conditions, these tests allows the verification that external blinds and shutters as a whole fulfil the requirements specified in EN 13561 and EN 13659, namely:

- no unacceptable visual defects appears;
- the suitability for use is maintained;
- the safety of users is maintained.

This European Standard is one of a package of inter-related European Standards with a common date of withdrawal (dow) fixed on December 2013:

- EN 1932, *External blinds and shutters — Resistance to wind loads — Method of testing and performance criteria*;
- EN 13330, *Shutters — Hard body impact and prevention of access — Test methods*;
- EN 13561, *External blinds and awnings — Performance requirements including safety*;
- EN 13659, *Shutters and external venetian blinds — Performance requirements including safety*.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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EN 1932:2013 (E)

1 Scope

The European Standard specifies the test methods to evaluate the wind resistance of external blinds and shutters to be fitted to buildings, in front of windows, doors or façades and delivered as a complete unit.

This European Standard applies to:

- shutters: roller shutter, external venetian blind, wing shutter, venetian shutter, concertina shutter, flat closing concertina shutter and sliding panel shutter (including those with projection systems);
- external blinds: folding arm awning, trellis arm awning, pivot arm awning, marquisolette, vertical awning, façade awning, conservatory awning, roof window awning, Pergola awning and insect screen

whatever the nature of the constituent materials, under normal operating conditions and installed in compliance with the manufacturer's installations instructions.

This European Standard does not cover non retractable shutters, external blinds and awnings such as Dutch awnings and brise-soleil as well as the structural part of Pergolas.

NOTE The wind resistance of such products can be evaluated by calculations.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

EN 13561, *External blinds and awnings — Performance requirements including safety*
<https://standards.iteh.ai/catalog/standards/sist/9c867904-64a0-47ce-9899-1416df61c591/sist-en-1932-2013>

EN 13659, *Shutters and external venetian blinds — Performance requirements including safety*

EN 14500, *Blinds and shutters — Thermal and visual comfort — Test and calculation methods*

EN ISO 2439, *Flexible cellular polymeric materials — Determination of hardness (indentation technique) (ISO 2439)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12216, EN 13561 and EN 13659 and the following apply.

3.1

test pressure

p

pressure exerted on the external or internal face of the test sample which represents the differential pressure (difference in pressure between the two faces) exerted by the wind on the external blind/awning or the shutter

3.2

nominal pressure

p_N

test pressure under which the test sample does not sustain deformation or deterioration detrimental to its correct operation

3.3

safety pressure

p_s

test pressure under which no deterioration which may be dangerous for the persons is observed

Note 1 to entry: p_N and p_S are defined in the classification specified in EN 13561 and EN 13659.

3.4

nominal load

F_N

load applied to the test sample allowing the reproduction of the effects due to the uniform nominal pressure p_N exerted on the test sample

3.5

safety load

F_S

load applied to the test sample allowing the reproduction of the effects due to the uniform safety pressure p_S exerted on the test sample

4 Test conditions

4.1 General

The tests shall be carried out with the maximum dimensions defined by the manufacturer with the exception of External Venetian Blinds (see 8.2.3) in the most unfavourable configuration for each product type (see 4.2). The test results obtained can then be applied to all more favourable configurations and to all smaller dimensions in the particular product design.

NOTE For example, for the same dimensions, a conservatory awning with relieving rollers could be considered a better configuration than without relieving rollers, for the same product design.

4.2 Dimensions of test samples

4.2.1 General

The dimensional technical limits are the maximum dimensions for the width and height (L_{max} and H_{max}) associated with the maximum surface area (S_{max}) specified by the manufacturer.

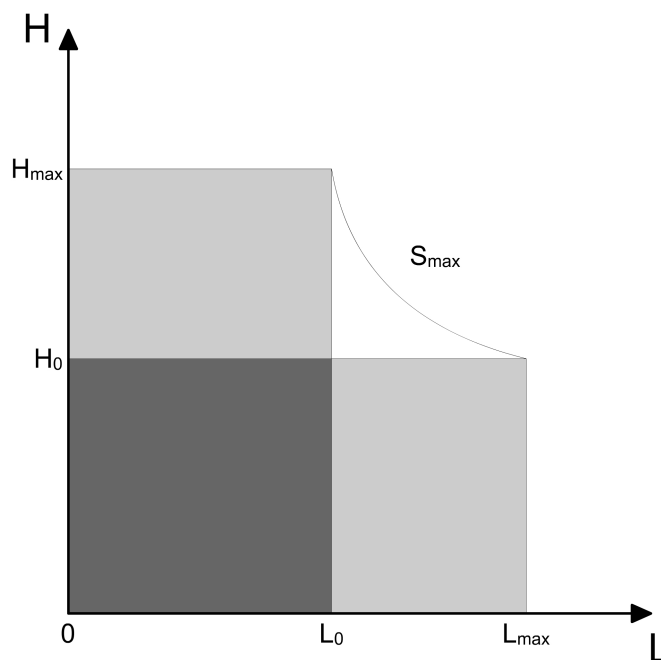


Figure 1 — Dimensions of test samples

To be representative of a range, the samples submitted for test shall be of the following dimensions (see Figure 1):

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- the maximum width associated with the greatest height achievable with this width ($L_{\max} \times H_0$), and
- the maximum height associated with the greatest width achievable with this height ($L_0 \times H_{\max}$),

the two tests being necessary for a same range.

In the case of folding and trellis arm awnings, the maximum width for one pair of arms is the basis of the test.

4.2.2 Characterisation of height H

In the case of awnings, H is the distance between the axis of the roller tube and the extremity of the front or bottom bar (see Figure 2 and Figure 3).

In the case the projection of the awning is made of two parts (e.g. for marquisolette), the height H is the sum of the vertical and the projected part: $H = H_1 + H_2$ (see Figure 3).

In the case of roller shutters and external venetian blinds, H is the height of the visible part of the curtain including the bottom lath (see Figure 4 and Figure 5).

In the case of others shutters, H is the height of the curtain.

In the case of conservatory blind with relieving roller(s), the height to be considered is either the distance between the roller tube and the first relieving roller, or between two relieving rollers, or between the last relieving rollers and the front profile, whichever is the maximum distance.

4.2.3 Characterisation of width L

In the case of awnings, L is the width of the fabric.

In the case of shutters, L is the visible width of the curtain.

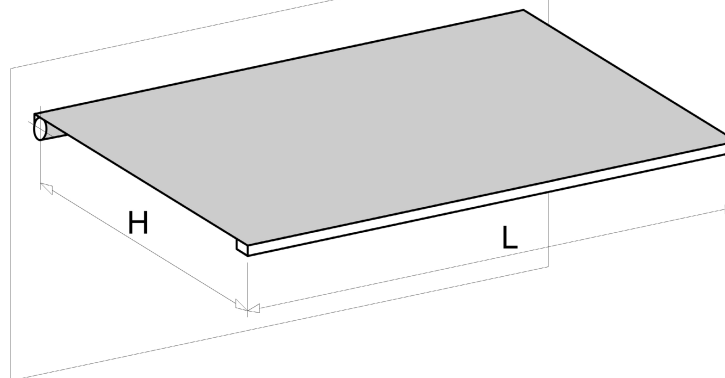


Figure 2 — Dimensions — Example of folding arm awning

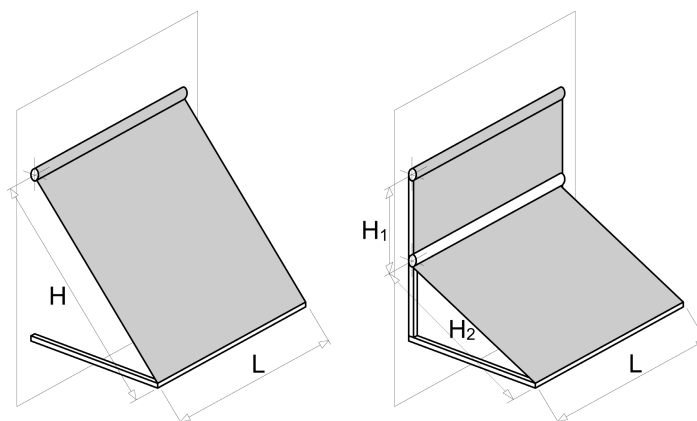


Figure 3 — Dimensions — Example of projection awning and marquiselette

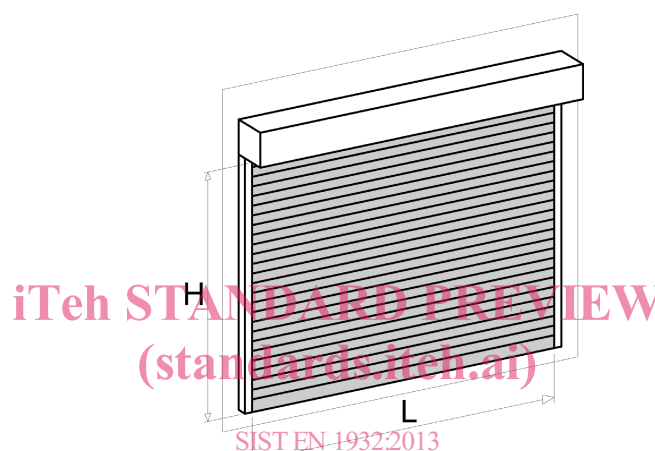


Figure 4 — Dimensions — Example of roller shutter

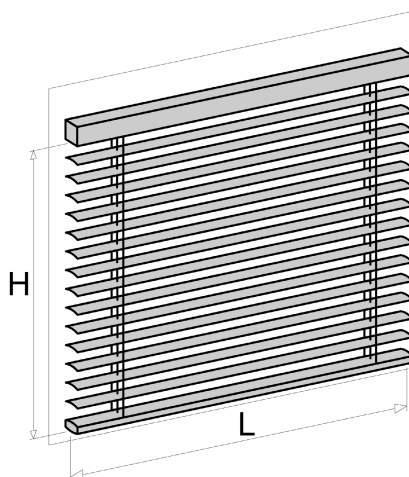


Figure 5 — Dimensions — Example of External venetian blind

4.3 Positioning of test samples

The test samples shall be fixed on a rigid frame by their brackets according to the manufacturer's installation instructions.

4.4 Laboratory conditions

The tests are carried out at room temperature of $23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$.

5 Methods of loading

5.1 General

Depending on the type of shutter or external blind tested, different methods of loading are applicable. These are:

- use of suspended weights on specific points of the test specimen with or without a test bar (see 5.2);
- use of a uniformly distributed load over the curtain of the test specimen (see 5.3);
- use of a pneumatic device reproducing a uniformly distributed pressure over the curtain of the test specimen, with or without a plastic film (see 5.4).

The test method(s) applicable is/are specified for each type of shutter and external blind in the relevant clause.

5.2 Method N°1: use of suspended weights

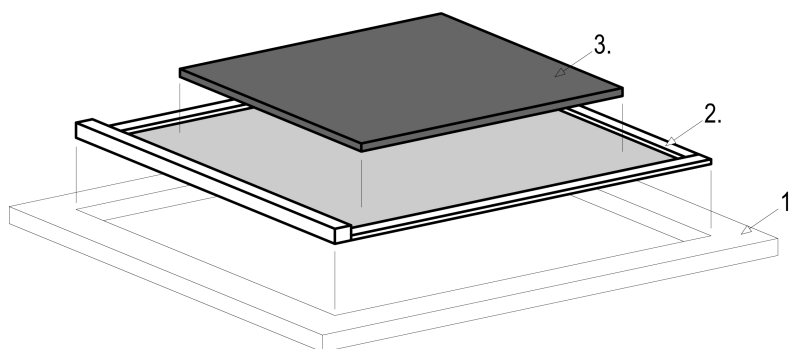
Test loads are obtained by using suspended weights (direct loading) and by using pulleys or another system for which the friction is negligible compared to the applied loads (reverse loading).

If the use of a test bar is required, it shall be at least as rigid as the roller tube of the test specimen.

5.3 Method N°2: use of a uniformly distributed weight

Test loads are obtained by using a mattress of 10 cm of thickness and adding the missing weight, distributed in a uniform way, over the mattress (see Figure 6).

The total weight applied shall be the test load reduced by the weight of the curtain. In the case the missing weight is applied of punctual loads, at least nine loads per m² shall be distributed at regular intervals on the mattress.



Key

1. rigid frame
2. awning
3. mattress

Figure 6 — Example of method of loading N°2 for a guided awning

The mattress width and height shall be 20 cm smaller than the width and the height of the visible part of the curtain in order to avoid blocks to the free movements of the curtain (see Figure 7).

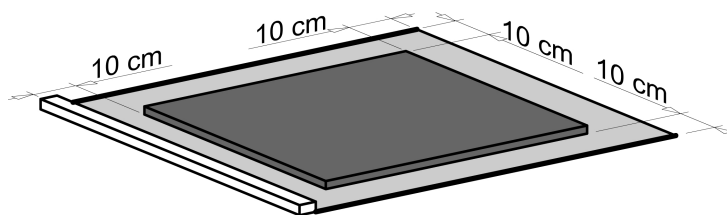


Figure 7 — Dimensions of mattress

The mattress used shall have the following characteristics:

- mass per unit area: $3 \text{ kg/m}^2 \pm 5 \%$,
- mass per unit volume: $30 \text{ kg/m}^3 \pm 2 \text{ kg/m}^3$,
- hardness: $170 \pm 20 \text{ A40}$ according to EN ISO 2439.

5.4 Method N°3: use of a pneumatic device

The test pressures are obtained by using a pneumatic pressure equipment able to withstand the pressure of the class foreseen. The test apparatus shall be as follows (see Annex A):

- a solid wall with a frame allowing installation of the shutter; an opening shall allow the introduction or extraction of air,
- a device applying a controlled air pressure over the shutter,
- with an accuracy of $\pm 5 \%$ of the measured pressure.

If specified, the test pressures may be achieved using an airtight non-elastic film, with a maximum friction coefficient of 0,50, which shall not contribute to the resistance of the test specimen. The film shall be sealed around the edges of the frame, loosely enough so that it will not be fully deployed once the pressure is applied.

In case of External Venetian Blinds, the dimensions of the film shall be determined as follows:

- the height H_f of the film shall fulfil the following condition:

$$H_f \geq H + 1\,250 + 2x$$

- the width L_f of the film shall fulfil the following condition:

$$L_f \geq L + 1\,000 + 2x$$

where

H is the height and L the width of the External Venetian Blind,

x is the distance between the fixing edge of the film and the axis of the curtain (see Figure 8).