



**SLOVENSKI STANDARD**  
**SIST EN 13561:2004+A1:2009**  
**01-maj-2009**

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External blinds - Performance requirements including safety

Markisen - Leistungs- und Sicherheitsanforderungen

Stores extérieurs - Exigences de performance, y compris la sécurité

Ta slovenski standard je istoveten z: **EN 13561:2004+A1:2008**

[SIST EN 13561:2004+A1:2009](https://standards.iteh.ai/catalog/standards/sist/da18825e-68fc-4fc7-9b14-140d3f495755/sist-en-13561-2004a1-2009)

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91.060.50      Vrata in okna      Doors and windows

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 13561:2004+A1**

October 2008

ICS 91.060.50

Supersedes EN 13561:2004

English Version

## External blinds - Performance requirements including safety

Stores extérieurs - Exigences de performance, y compris la  
sécurité

Markisen - Leistungs- und Sicherheitsanforderungen

This European Standard was approved by CEN on 9 February 2004 and includes Amendment 1 approved by CEN on 18 August 2008.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Management Centre or to any CEN member.

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 Management Centre has the same status as the official versions.

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

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## Foreword

This document (EN 13561:2004+A1:2008) 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of an identical text or by endorsement, at the latest by April 2009, and conflicting national standards shall be withdrawn at the latest by December 2009.

NOTE Annex ZB is applicable until December 28th, 2009 and Annex ZC is applicable from December 29th, 2009.

This document supersedes EN 13561:2004.

This document includes Amendment 1, approved by CEN on 2008-08-18.

The start and finish of text introduced or altered by amendment is indicated in the text by tags  $\boxed{A_1}$   $\boxed{A_1}$ .

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

$\boxed{A_1}$  For relationship with EU Directive(s), see informative Annexes ZA, ZB and ZC which are integral parts of this document.  $\boxed{A_1}$

This European Standard is a part of a series of standards dealing with blinds and shutters for buildings as defined in EN 12216.

This European Standard specifies the requirements for external blinds, the levels of performances and where applicable, the associated classes.

It is completed by test standards as well as by standards referring to specific performance requirements.

The annexes A and B are normative.

This document includes a Bibliography.

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.

**EN 13561:2004+A1:2008 (E)****Introduction**

The performances given in this European Standard which illustrate suitability for use, are required for every type of external blind (intrinsic performances).

Other performances are only required as a complement (specific performances) and result in specific products. Some of them are described in European Standards (e.g. EN 1522, EN 1523). Others are described in prEN 14500 and prEN 14501 in the process of preparation and deal with important subjects such as thermal comfort, i.e.:

- solar factor;
- shading factor;
- direct solar transmittance;
- secondary heat transfer factor;
- solar radiation reduction factor.

and visual comfort, i.e.:

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- light control;
- night privacy;
- visual contact with the outside; [SIST EN 13561:2004+A1:2009  
https://standards.iteh.ai/catalog/standards/sist/da18825e-68fc-4fc7-9b14-140d3f495755/sist-en-13561-2004a1-2009](https://standards.iteh.ai/catalog/standards/sist/da18825e-68fc-4fc7-9b14-140d3f495755/sist-en-13561-2004a1-2009)
- glare control;
- rendering of colours.

NOTE Health and Safety regulations require that the workplace receives as much natural light as is reasonably practical (see EU Directive 89/654/EEC) and protection of operators working with VDV screens against glare control and reflected light (see EU Directive 87/391/EEC).

The list of these documents is given in the Bibliography.

With the aim of clarifying the intentions of the standard and avoiding doubts when reading it, following assumptions were made related to power operated products while producing it:

- Negotiations occur between the manufacturer and the purchaser concerning particular conditions for use and places for use such as for nursery schools or for buildings for disabled people which need specific risk analysis;
- The risk analysis carried out in this European Standard and the significant hazards listed in annex B suppose a normal use or normally predictable use e.g. which excludes deliberate and conscious risks taken by the user (see Interpretative Document “Safety in use” of EU Construction Products Directive).

## 1 Scope

This European Standard specifies the performance requirements which external blinds shall fulfil when fitted to a building. It deals also with the significant hazards for construction, transport, installation, operation and maintenance of the external blinds (see list of significant machine hazards in annex B).

It applies to all external blinds as well as similar products whatever their design and nature of the materials used, as follows and defined in EN 12216:

- folding arm awning, trellis arm awning, pivot arm awning, slide arm awning, vertical roller awning, marquisolette, façade awning, skylight awning, conservatory awning, Dutch awning, insect screen;
- solar screen.

This European Standard does not cover the wind resistance of fixed nor semi-fixed products, e.g. Dutch awnings, fixed or mobile and solar screen. They are not exempt from wind resistance requirements although no test methods have been established at the present time.

The products covered by this European Standard may be operated manually, with or without compensating springs or by means of electric motors (power operated products).

This document is not applicable to external blinds which are manufactured before the date of publication of this document.

**A1**) Noise aspects are not treated in the standard because this is not considered a safety issue. **A1**

## 2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 1050:1996, Safety of machinery – Principles for risk assessment.

EN 1070:1998, Safety of machinery – Terminology.

EN 1670, Building hardware – Corrosion resistance – Requirements and test methods.

EN 1932, External blinds and shutters – Resistance to wind loads – Method of testing.

EN 1933, Exterior blinds – Resistance to load due to water accumulation – Test method.

EN 12045, Shutters and blinds power operated – Safety in use – Measurement of the transmitted force.

EN 12194, Shutters, external and internal blinds – Misuse – Test methods.

EN 12216:2002, Shutters, external blinds, internal blinds – Terminology, glossary and definitions.

EN 13125, Shutters and blinds – Additional thermal resistance – Allocation of a class of air permeability to a product.

EN 13527, Shutters and blinds – Measurement of operating force – Test methods.

EN 14201, Blinds and shutters – Resistance to repeated operations (mechanical endurance) – Methods of testing.

**EN 13561:2004+A1:2008 (E)**

EN 20105-A02, Textiles – Tests for colour fastness – Part A02: Grey scale for assessing change in colour (ISO 105-A02:1993).

EN 20139, Textiles – Standard atmospheres for conditioning and testing (ISO 139:1973).

EN 20811, Textiles – Determination of resistance to water penetration – Hydrostatic pressure test.

EN 60335-1, Household and similar electrical appliances – Safety – Part 1: General requirements (IEC 60335-1:2001, modified).

EN 60335-2-97, Safety of household and similar electrical appliances – Part 2-97: Particular requirements for drives for rolling shutters, awnings, blinds and similar equipment (IEC 60335-2-97:1998, modified).

EN 61310-1, Safety of machinery – Indication, marking and actuation – Part 1: Requirements for visual, auditory and tactile signals (IEC 61310-1:1995).

EN ISO 105-B04, Textiles – Tests for colour fastness – Part B04: Colour fastness to artificial weathering – Xenon arc fading lamp test (ISO 105-B04:1994).

EN ISO 1421, Rubber- or plastic-coated fabrics – Determination of tensile strength and elongation at break (ISO 1421:1998).

EN ISO 10077-1, Thermal performance of windows, doors and shutters – Calculation of thermal transmittance – Part 1: Simplified method (ISO 10077-1:2000).

EN ISO 12100-2:2003, Safety of machinery – Basic concepts, general principles for design – Part 2: Technical principles (ISO 12100-2:2003).

ISO 9227, Corrosion tests in artificial atmospheres – Salt spray tests.

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**3 Terms and definitions**

For the purposes of this European Standard, the terms and definitions in EN 1070:1998 and EN 12216:2002 and the following apply.

- 3.1  
intrinsic performance**  
overall performances of the blind regardless of its application as opposed to specific performance
- 3.2  
specific performance**  
performance which may be additional and complementary to the intrinsic performances and refers to a specific product (for example thermic, etc.)
- 3.3  
curtain**  
part of the product which is set in motion by the operating mechanism and ensures its function
- 3.4  
extension/retraction**  
movement of the curtain resulting in an increase/decrease in the surface area covered
- 3.5  
opening/closing**  
terms used to describe the increase in light (opening) or reduction of light (closing) in an extended position for products with laths, slats or louvres which can be tilted or adjusted



**3.6****rough operation**

sharp action on the operating mechanism or directly on the curtain, resulting in excessive speed at the beginning and a sudden stop at the end

NOTE Rough operation is only possible if the moving part has significant inertia (mass and speed).

**3.7****forced operation**

excessive force exerted on the operating mechanism or directly on the curtain with the aim of causing movement in spite of resistance to the travel of the curtain

**3.8****reversed operation**

extension or retraction of the curtain occurring in the opposite direction to that intended without use of abnormal force

**3.9****winch handle**

operating mechanism consisting of a reel rotated by an operation handle which allows accumulation of a cord, cable or chain

**3.10****gear with crank handle**

operating mechanism consisting of a gear attached to an axle, a drive shaft, an universal joint, a rotating rod and a crank handle

**3.11****one direction movement of the operating mechanism**

operating mechanism operated by a single cord, belt, etc., extension / retraction being effected by relying on gravity or the potential energy stored up during retraction / extension (respectively)

**3.12****endless movement of the operating mechanism**

operating mechanism operated by a loop, movement in one direction extends the curtain (or tilts the laths) and in the reverse retracts the curtain (or tilts the laths) in the opposite direction

**3.13****determination of performance**

means of verification of the performance relating to the corresponding requirement

**4 Wind resistance****4.1 General**

Under the action of wind, resulting in positive or negative pressure, the blind shall not:

- a) under the nominal load  $F_N$ , sustain deformation or deterioration which is detrimental to its correct operation;
- b) under the safety load  $F_S$ , cause safety hazard, e.g. be dislodged from its guiding tracks in the case of guided blinds.

**4.2 Determination**

Shall be in accordance with the test methods specified in EN 1932.

**EN 13561:2004+A1:2008 (E)****4.3 Performance requirement****4.3.1 General**

According to the type of blind, the performance criteria as specified in Tables 1 to 5 shall be met under the action of the nominal load  $F_N$  and the safety load  $F_S$ .

**4.3.2 Nominal load  $F_N$** 

The nominal load  $F_N$  is specified as follows:

$$F_N = \beta \times p \times L \times H \quad (1)$$

where

$L, H$  is the width and height of blind as specified in EN 1932.

$p$  is the threshold value of wind test pressure in  $N/m^2$  corresponding to the class of wind resistance under consideration (see 4.4).

$\beta$  is the conversion of the effect of distributed loading relative to those of test loads. It depends on the type of awning (see Tables 1 to 5).

—  $\beta = 0,5$  in the case of folding arm awning, trellis arm awning, projecting awning and marquisolette (see Tables 1 to 3).

—  $\beta = 1$  in the case of blind with lateral guiderail with or without tension system (see Tables 4 and 5).

**4.3.3 Safety load  $F_S$** 

<https://standards.iteh.ai/catalog/standards/sist/da18825e-68fc-4fc7-9b14-140d3f495755/sist-en-13561-2004a1-2009>

For folding arm awning, trellis arm awning, pivot arm awning and marquisolette, a test shall be carried out using a safety load  $F_S$ , 20 % greater than the nominal load  $F_N$ , and for which no rupture of the product shall occur.

$$F_S = \gamma \times F_N \text{ with } \gamma = 1,20 \quad (2)$$

The value  $\gamma$  of 1,20 is judged to be representative of the extra load that the product shall be able to support between the appearance of allowable residual deformations (under the nominal load) and the risk of breaking. It takes into consideration that a retractable external blind is not supposed to be extended permanently and shall be retracted if the wind speed becomes higher than the value stated in the technical instructions of the manufacturer corresponding to the class of wind resistance of the blind.

Tables 1 to 5 give, for the different blinds, the sequences of loading and the corresponding performances criteria required.

Table 1 — Folding and trellis arm awnings — Performance criteria

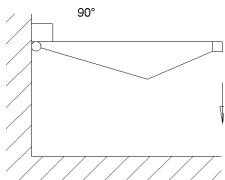
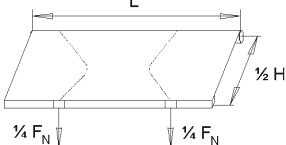
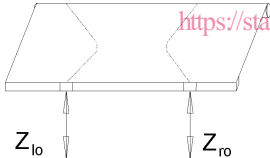
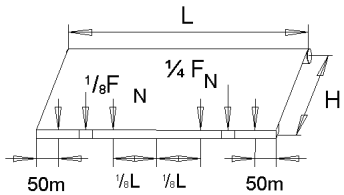
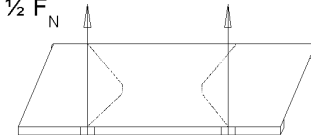
	LOAD $F_N = \beta \times p \times L \times H$ ( $\beta = 0,5$ )	PERFORMANCE CRITERIA		
		Sequences	Appearance	Operation
1	<b>Set in horizontal position</b> (tolerance $\pm 5^\circ$ ) 	—	—	—
2	<b>Extension at <math>\frac{1}{2} H</math> load <math>\frac{1}{2} F_N</math></b>  then load released	—	manual operating effort maintained inside the class	—
3	<b>Extension at H</b> Measure of reference $Z_{l0}$ , $Z_{r0}$ (see Table 2) 	—	—	—
4	<b>Direct nominal load <math>F_N</math></b>  Then load released	residual vertical movement allowed after releasing load $ Z_{l1} - Z_{l0}  \leq 10 \% H$ $ Z_{r1} - Z_{r0}  \leq 10 \% H$ $ (Z_{l1} - Z_{l0}) - (Z_{r1} - Z_{r0})  \leq 1 \% L$	manual operating effort maintained inside the class  for folding arm awning with box, correct closing of box shall be ensured	—
5	<b>Inversed nominal load <math>-F_N</math></b>  Then load released	residual vertical movement allowed after releasing load $ Z_{l2} - Z_{l0}  \leq 10 \% H$ $ Z_{r2} - Z_{r0}  \leq 10 \% H$ $ (Z_{l2} - Z_{l0}) - (Z_{r2} - Z_{r0})  \leq 1 \% L$	manual operating effort maintained inside the class  for folding arm awning with box, correct closing of box shall be ensured	—

Table 1 — Folding and trellis arm awnings — Performance criteria (concluded)

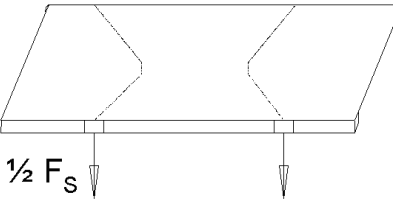
	LOAD	PERFORMANCE CRITERIA		
	Sequences	Appearance	Operation	Safety
6	Safety load $F_S = 1,2 \times F_N$ 	—	—	no rupture

Table 2 — Folding and trellis arm awnings — Measurement of reference for sequence 3

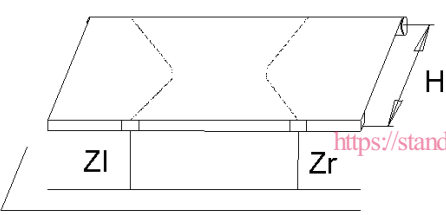
	<p style="text-align: center;"><b>(standards.iteh.ai)</b></p> <p><b>Z1 ; Zr</b>: vertical distances taken from the front profile to the horizontal plane of reference at the connection points</p> <p><b>Z1<sub>0</sub> ; Zr<sub>0</sub></b>: measurement of the reference before loading (sequence 3)</p> <p><b>Z1<sub>1</sub> ; Zr<sub>1</sub></b>: measurement after load is released (sequence 4)</p> <p><b>Z1<sub>2</sub> ; Zr<sub>2</sub></b>: distances measured after load is released (sequence 5)</p>
Plane of reference	

Table 3 — Projecting awning and marquisolette — Performance criteria

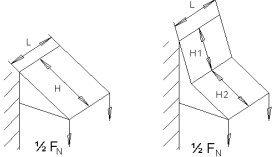
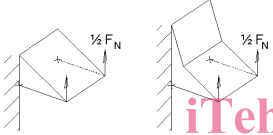
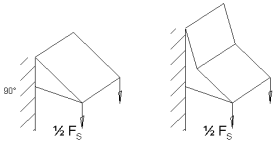
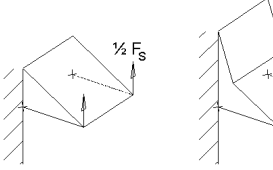
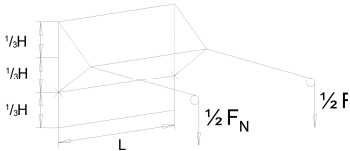
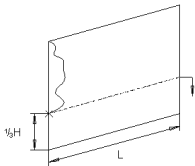
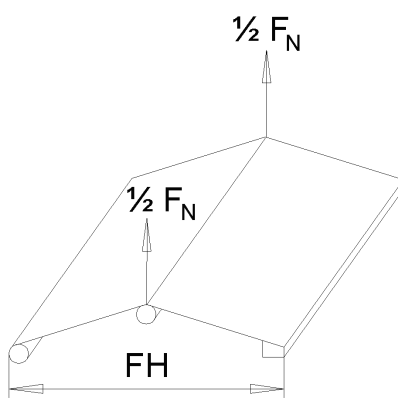
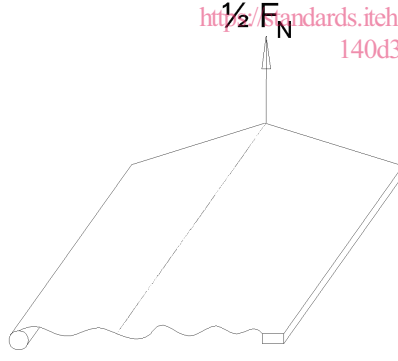
	LOAD	PERFORMANCE CRITERIA		
	$F_N = \beta \times p \times L \times H$ or $F_N = \beta \times p \times L (H1 + H2)$ $(\beta = 0,5)$	Appearance	Operation	Safety
	<b>Sequences</b>			
<b>1</b>	Direct nominal load $F_N$  Then load released	no onset of tearing no localised splitting of seams	manual operating effort maintained inside the class	<hr/>
<b>2</b>	Inverse nominal load $-F_N$ (blinds with obstructed articulation)  Then load released x obstruction	residual movement allowed after release of load $ Zl_2 - Zl_0  \leq 2\% H$ or $2\% H_2$ $ Zr_2 - Zr_0  \leq 2\% H$ or $2\% H_2$ $ (Zl_2 - Zl_0) - (Zr_2 - Zr_0)  \leq 1\% L$	manual operating effort maintained inside the class	<hr/>
<b>3</b>	Direct safety load $F_S = 1,2 \times F_N$ 	<hr/>	<hr/>	no tearing no rupture
<b>4</b>	Inverse safety load (blocked articulation blinds) $-F_S = -1,2 \times F_N$  x obstruction	<hr/>	<hr/>	no tearing no rupture

Table 4 — Blind with lateral guiderail without tension system a — Performance criteria

	LOAD	PERFORMANCE CRITERIA		
	$F_N = \beta \times p \times L \times N$ ( $\beta = 1$ )	Appearance	Operation	Safety
	Sequences			
1	Direct nominal load $F_N$  Then load released x obstruction	no onset of tearing the fabric no rupture of seams no permanent damage to front profile or guiderails	manual operating effort maintained inside the class	the front profile shall not come out of its guiderails
2	Lifting of front profile by $\frac{1}{3} H$ Alternately block one side and release the other side  x obstruction	no onset of tearing the fabric no rupture of seams no permanent damage to front profile or guiderails	manual operating effort maintained inside the class	the front profile shall not come out of its guiderails

<sup>a</sup> Vertical roller blind, conservatory and façade blind.

Table 5 — Blind with lateral guiderail with tension system a — Performance criteria

	LOAD $F_N = \beta \times p \times L \times H$ ( $\beta = 1$ ) H = greatest available height Sequences	PERFORMANCE CRITERIA		
		Appearance	Operation	Safety
1	Direct nominal load $F_N$  Then load released	no onset of tearing no rupture of seams no permanent damage to front profile or guiderails	manual operating effort maintained inside the class no blocking of the moving part in the side guides	the front profile shall not come out of its guiderails
2	Raise test bar with $F_N$ , releasing one end of the test bar alternatively.  Then load released	no onset of tearing no rupture of seams no permanent damage to front profile or guiderails	operation effort maintained inside the class no blocking of the moving part in the side guides	the front profile shall not come out of its guiderails

<sup>a</sup> Facade awning, rooflight awning, verandah awning or conservatory awning.

#### 4.4 Classes of wind resistance

The classes of wind resistance are given by the threshold values of nominal test pressure  $p$ , specified in Table 6;

Table 6 — Classes of wind resistance

Classes	0	1	2	3
Nominal test pressure $p$ (N/m <sup>2</sup> )	< 40	40	70	110
Safety test pressure 1,2 $p$ (N/m <sup>2</sup> )	< 48	48	84	132