SLOVENSKI STANDARD
SIST EN 14201:2004

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Rolete in polokna - Odpornost proti ponavljajoļ emu delovanju (mehanske poģkodbe) - Metode preskuģanja

Blinds and shutters - Resistance to repeated operations (mechanical endurance) - Methods of testing

Abschlüsse und Läden - Widerstand gegen wiederholte Bedienungen (mechanische Lebensdauer) - Prüfverfahren

Fermetures pour baies équipées de fenetres, stores intérieurs et stores extérieurs - Résistance aux manoeuvres répétées (endurance mécanique) - Méthodes d'essai

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ICS:

91.060.50	Vrata in okna	Doors and windows

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English version

Blinds and shutters - Resistance to repeated operations (mechanical endurance) - Methods of testing

Fermetures pour baies équipées de fenêtres stores intérieurs et stores extérieurs - Résistance aux manoeuvres répétées (endurance mécanique) - Méthodes d'essai

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This European Standard was approved by CEN on 11 December 2003.

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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 Central Secretariat has the same status as the official versions.

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Foreword

This document (EN 14201:2004) 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of an identical text or by endorsement, at the latest by August 2004, and conflicting national standards shall be withdrawn at the latest by August 2004.

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

The methods of testing are linked to the performances requirements for internal blinds, external blinds and shutters, as specified in prEN 13120, prEN 13561 and prEN 13659.

No existing European Standard is superseded.

Annex A is normative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This European Standard specifies the tests to be carried out to determine the mechanical endurance of products comprising :

— internal blinds,

— external blinds,

— shutters,

according to a defined number of extension/retraction cycles of the curtain and tilting of the laths (for blinds and shutters with tilting laths).

It applies to complete products e.g. those equipped with their hardware and operating mechanisms in normal operating conditions.

Manual override mechanisms for use in case of mechanical breakdown are excluded when they form part of motorized blinds and shutters.

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 12216:2002, *Shutters, external blinds, internal blinds - Terminology, glossary and definitions.*

prEN 13120:1997, *Internal blinds - Performance requirements.*

EN 13527:1999*, Shutters and blinds - Measurement of operating force - Test methods.*

prEN 13561:1999, *External blinds - Performance requirements including safety.*

prEN 13659:1999, *Shutters – Performance requirements including safety.*

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 12216:2002, prEN 13120:1997, prEN 13561:1999, prEN 13659:1999 and the following apply.

3.1
override operation
manual operation available on power operated shutters and blinds in the case of power failure

3.2
reference velocity
according to the product :
— speed of the operating mechanism :
- speed of rotation in the case of rotation of the operating mechanism, expressed in rpm ;
- linear speed in the case of one direction or endless operation of the operating mechanism, expressed in m/min ;
- speed of rotation of drive for power operated operation, expressed in rpm .

— speed of movement of the closing "edge" of the curtain or the bottom lath or tilting lath in the case of direct operation :
- tangential speed of pivoting products (wing shutter, venetian shutter, lever), expressed in m/min ;
- linear speed for products extending or retracting in a plane (concertina shutter, flat closing concertina shutter, sliding shutter, panel shutter and awning), expressed in m/min.

3.3
effect of inertia
effect obtained with linear operations of the operating mechanism allowing the curtain by its inertia, to complete its travel after stopping the operation before reaching the fully extended or retracted position

3.4
phase (retraction / extension)
movement of the curtain from a fully extended or retracted position to a fully opposing retracted or extended position

3.5
rest time
period of immobilisation between phases and / or cycles

NOTE The rest time is given in second(s).

3.6
retraction / extension cycle
consists of a retraction phase, of an extension phase and of the rest times. The operations of locking and unlocking when these are not automatic are excluded from the cycle

3.7
tilting laths cycle
full cycle of the mechanism for tilting the laths from an extreme position (laths closed) then returning to the extreme position. In the case of operation by monocommand, the tilting lath cycle is included in the cycle of retraction / extension

3.8
drive
motor and other components which control the movement of the curtain

NOTE Examples of components are gears, controls and brakes.

3.9
rated torque
torque assigned to the drive by the manufacturer of the drive

NOTE The torque is expressed in Nm.

3.10
juddering
movement of the curtain in a series of small jerks when the operation is continuous

4 Test conditions

4.1 Definition of test samples

For testing a range, the samples tested are those specified in tests measuring the operating effort in EN 13527: dimensions of the test sample, exit positions of the operating mechanism.

4.2 Test preparation

The sample is set up for the test in its operating position, fully equipped, with all necessary operating mechanisms including handle, guide rails for the curtain, etc., and projection mechanism if exists. This is mounted on the test rig according to the conditions described in 4.2 of EN 13527:1999.

Curtains which can be projected (roller shutter, venetian shutter, etc.) are in the projected position with their projection mechanisms locked or blocked.

If the product cannot be extended or retracted when in the projected position, the manufacturer shall provide a warning.

If fitted, non automatic locks or bolts to secure the curtain are left unlocked or left in place when the locking / unlocking is automatic.

4.3 Test equipment

4.3.1 General

All parts of the test rig and operating mechanisms shall ensure that the curtain and the slats are operated as they would be in reality. They complement the operating mechanisms for test purpose, e g hydraulic, pneumatic or electric motors and linear pistons, or all other mechanisms which are compatible with:

— the operating speeds and rest periods ;

— the mass of the curtain to put into motion ;

— the forces of friction incurred ;

— the operating force ;

— the inertia effect if it occurs in the case of linear operation by the operating mechanism ;

— the duration of the test.

The equipment for operation may be an automation reproducing human movements.

4.3.2 Types of operation (reminder)

4.3.2.1 Operation by rotation of the mechanism

— gear with crank handle,

— winch with handle (cord, cable belt, chain),

— wand or rod (specifically for tilting of the laths in the case of an internal blind).

4.3.2.2 Operation of the mechanism producing movement in one direction

— Open operating mechanism:

pull by belt, cord, with or without reel;

— Endless operating mechanism:

pull by cord or chain;

— Direct pull:

pull with hand, wand or rod, lever (only in the case of tilting laths in wing shutters).

4.3.2.3 Power operation

The equipment for operation consists of the drive provided with the product.

4.4 Measuring equipment

— Measuring devices :

- to measure force and torque, accurate to ± 3%,

- to determine widths, accurate to ± 1 mm,

- to measure angles, accurate to ± 2°;

— cycles counter.

5 Principle of the test

5.1. Extension and retraction test

5.1.1 General

Carrying out of the retraction and extension cycles specified for the particular class aimed (or until failure occurs) departing from the fully extended position with the help of suitable test equipment in the conditions described in 5.1.2 to 5.1.5 and complying with the reference velocity and rest times at the end of phases given in 5.3.

5.1.2 Product operated by direct pull and endless mechanism

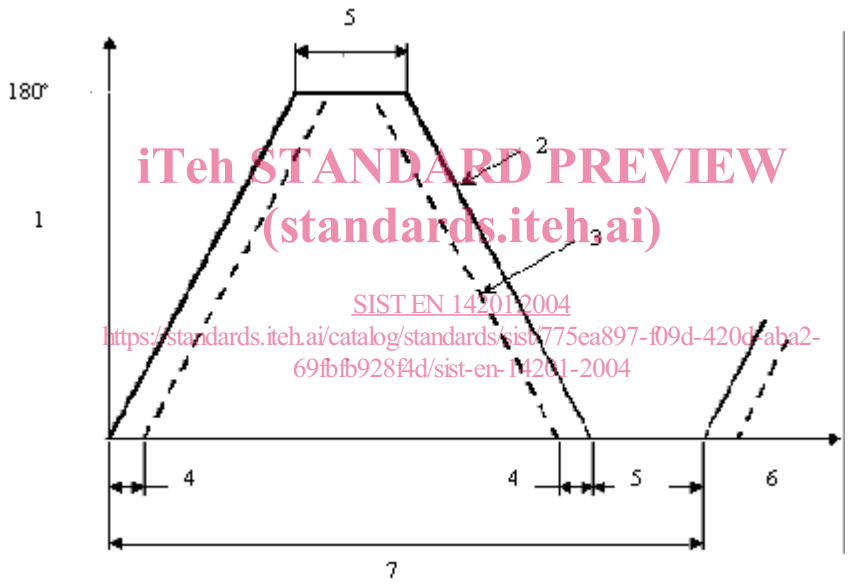
The test equipment stops the movement of the curtain when it reaches a position of 20 mm from the end of the phase allowing the eventual overcoming of the effect of inertia.

When the effect of inertia does not exist (ie. the mass in motion is too weak) the pull stops equally at 20 mm from the end of extension and retraction.

Case of wing shutter (see Figure 1)

Each leaf has a full opening of about 180°, the end of the phase is effectively free at 20 mm.

In the case of two leaves, in retraction, the "closing" leaf is operated first, then the secondary leaf ; when extending the operation is carried out in the reverse order using the 20 mm rule, the timing of the phases being determined to allowing freedom of movement of the two leaves.



Key
1 Opening angle
2 Primary leaf or closing leaf
3 Secondary leaf
4 Timing of phase
5 Rest time
6 Time
7 One cycle

Figure 1 — Operating sequence for double wing shutter

Case of venetian shutter

Operation is carried out panel by panel on the articulation axis between the panel at the extreme edge maintained in the plane of extension and the second panel onto which the others are folded.

5.1.3 Open operating mechanism

In order to take into account the inertia effect, the test equipment is furnished with a mass M applied to the test motor and to the curtain as shown in Figure 2. The same type of belt (or cord) shall be used for operating the curtain (belt 1) and for the reel (belt 2). The mass is calculated according to the following equation :

$$M = \frac{\text{Mass curtain}}{10} + 2 \text{ kg} \qquad (1)$$

NOTE The test described requires the use of a belt longer than that used to operate the curtain.

In the case of use of an inertial reel not activated during the test, the test is carried out with the inertial reel de-activated. The test of the internal reel is carried out separately according to the test method specified in annex A.

Each cycle is made up in the following manner :

— blind or shutter retracted;

— extension phase of the curtain;

- the reel permits a sufficient unrolling of the belt or cord,

- the bottom end stop determines the fully extended position of the curtain and slows down the motor to allow belt 1 to allow about 100 mm more than the necessary travel. At the full extension of the curtain, mass M comes to a rest on an intervening surface or on the ground;

— stop,

— retraction phase of the curtain;

- allow the reel to achieve the accumulation of belt 2,

the top end stop determines the full retraction position of the curtain and delays the stopping of the motor so that the mass raises itself at least 100 mm;

— stop.