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Okna in vrata - Odpornost pri ponavljajočem odpiranju in zapiranju - Preskusna metoda

Windows and doors - Resistance to repeated opening and closing - Test method

Fenster und Türen - Dauerfunktionsprüfung - Prüfverfahren

Fenêtres et portes - Résistance à l'ouverture et fermeture répétée - Méthode d'essai

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Vrata in okna

Doors and windows

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Windows and doors - Resistance to repeated opening and closing - Test method

Fenêtres et portes - Résistance à l'ouverture et fermeture répétée - Méthode d'essai

Fenster und Türen - Dauerfunktionsprüfung - Prüfverfahren

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 33.

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

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prEN 1191:2024 (E)**European foreword**

This document (prEN 1191:2024) 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 document is currently submitted to the CEN Enquiry.

This document will supersede EN 1191:2012.

prEN 1191:2024 includes the following significant technical changes with respect to EN 1191:2012:

- terms and definitions moved from annexes to Clause 3;
- failure criteria incorporated from EN 14600:2005¹;
- self-closing speed for windows (table 2) copied from EN 16034:2014, A.4;
- Definitions reduced to those not present in EN 12519:2018;
- termination criteria incorporated;
- test reports related to building hardware (supporting EN 16035) introduced.

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¹ Withdrawn. Withdrawal effective since 2016-02-02.

Introduction

This document describes one of the test methods that are called up in the product standards for windows and pedestrian doorsets.

The annexes of this document are to be in line with the relevant building hardware standards but they are not direct copies of them.

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1 Scope

This document specifies the method to be used to determine the resistance to repeated opening and closing of windows and pedestrian doorsets when subjected to repeated opening and closing.

It applies to all construction materials and operating systems for any window or pedestrian doorset, including gaskets and building hardware, in normal operating conditions.

The parts concerned in the testing are the frame, the opening component (including any additional moving components e.g. an inactive sash/leaf) and all essential and directly involved building hardware, including operating devices, for example, the handle.

The testing does not include any hardware whose operation is not directly involved in the opening and closing of the moving components: added-on fastening systems such as peg-stays or cabin hooks or bolts, nor, unless specified, any independently installed stops (not connected to the complete assembly) such as a wall or ground-mounted stop.

NOTE 1 The annexes provide more details on the testing procedures that can differ from the main part of this document and are normative:

- Annex A applies to tilt and turn, tilt-first, turn-only, or tilt-only windows and door-height windows;
- Annex B applies to sliding, lift and slide or lift and slide and tilt windows and door-height windows;
- Annex C applies to tilt and slide windows and door-height windows;
- Annex D applies to fold and slide windows and door-height windows;
- Annex E applies to horizontal and vertical pivot windows and door-height windows;
- Annex F applies to vertical sliding windows;
- Annex G applies to side-hung casements and top-hung windows, opening outwards (including reversible windows);
- Annex H applies to side-hung single and double action pedestrian doorsets excluding power operated doors;
- Annex I applies to power-operated (automatic) side-hung single action pedestrian doorsets.

NOTE 2 In this document, the term door-height window is used for windows that are used for the passage of pedestrians, i.e. as a pedestrian doorset.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 179, *Building hardware — Emergency exit devices operated by a lever handle or push pad, for use on escape routes — Requirements and test methods*

EN 1125, *Building hardware — Panic exit devices operated by a horizontal bar, for use on escape routes — Requirements and test methods*

EN 1154:1996,² *Building hardware — Controlled door closing devices — Requirements and test methods*

² As impacted by EN 1154:1996/A1:2002 and EN 1154:1996/A1:2002/AC:2006.

EN 1158:1997,³ *Building hardware — Door coordinator devices — Requirements and test methods*

EN 1634-1:2014+A1:2018, *Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware — Part 1: Fire resistance test for door and shutter assemblies and openable windows*

EN 1634-3, *Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware — Part 3: Smoke control test for door and shutter assemblies*

EN 12046-1, *Operating forces — Test method — Part 1: Windows*

EN 12046-2, *Operating forces — Test method — Part 2: Doors*

EN 12217, *Doors — Operating forces — Requirements and classification*

EN 12400, *Windows and pedestrian doors — Mechanical durability — Requirements and classification*

EN 12519:2018, *Windows and pedestrian doors — Terminology*

EN 13115:2020, *Windows - Classification of mechanical properties — Racking, torsion and operating forces*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12519 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp/>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

moving component

window sash or door leaf which is moved, opened or closed

3.2

active moving component

leaf of a multi-leafed window or door, intended to be moved first to provide opening

3.3

inactive moving component

leaf of a multi-leafed window or door, intended to be moved after the active leaf

3.4

mode of operation

motion of the moving component as either translatory or rotary

Note 1 to entry: Some hardware systems allow for a combination of several modes of operation, for example, Tilt and turn windows or folding windows which combine rotary and translatory operations.

³ As impacted by EN 1158:1997/A1:2002 and EN 1158:1997/A1:2002/AC:2006.

prEN 1191:2024 (E)**3.5****main mode of operation**

intended principal type of operation and distance or angular travel as specified by the manufacturer

Note 1 to entry: Windows or pedestrian doorsets can feature multiple main modes of operation, such as tilting and sliding.

3.6**minor mode of operation**

secondary type of operation intended for occasional use

Note 1 to entry: Operating the moving component for cleaning or maintenance purposes is not considered a main or minor mode of operation.

3.7**cleaning or maintenance mode of operation**

additional type of operation not in everyday use

3.8**cycle**

series of operations

Note 1 to entry: Involving opening a moving component, including releasing any fastening systems, moving open to the open position, returning to the closed position and re-engaging any fastening systems. The cycle can consist of several modes of operation that might be tested separately or combined.

Note 2 to entry: For example, a tilt and slide window can be tested in a cycle combining the tilting and sliding operations or it can be tested separately by carrying out the tilt cycles first and then the sliding cycles.

3.9**part cycle**

series of operations applicable to a single mode of operation and/or limited distance or angular travel

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3.10**number of cycles**

quantity of cycles completed applied to the cycle or part cycle accordingly

3.11**operating device**

building hardware component, for example, the window or door handle, enabling the user to operate the fastening system and/or the moving component

3.12**fastening system**

building hardware component or set that keeps the moving component in the closed and fastened position, i.e. latched and/or locked and/or electric systems

3.13**closing edge**

outermost edge of the moving component furthest from the axis of rotation

3.14**reference velocity**

<translatory operation> actual velocity of the moving components

3.15**reference velocity**

<rotary operation> velocity of the closing edge

3.16**rest time**

time in seconds of a stationary period for the following:

- between one change of direction of operation;
- between the completion of a moving component's operation and the subsequent fastening system's operation;
- between the completion of a fastening system's operation and the subsequent moving component's operation;
- between two cycles

3.17**power operated pedestrian doorset and window**

doorset for pedestrian passage only or a window with one or more moving components that is moved, at least in one direction, by an external energy supply (e.g. electrically) instead of manual or stored mechanical energy

3.18**positive control**

sash operation via the hardware that enables the sash to be manoeuvred from the closed position into the tilted position, and from the tilted position into the closed position

Note 1 to entry: The sliding position can also be reached by means of operating the hardware.

3.19**lifting action**

action in which the active sash is raised from the lowered position into the lifted position via the hardware

Note 1 to entry: During this action the sash can be moved a limited distance away from the frame in the direction of the opening position.

3.20**closed**

characteristic when the movable parts rest in or at the fixed part in a way in which they may be fastened (latched and/or locked)

[SOURCE: EN 12519:2018, 2.7]

3.21**locked**

characteristic when the movable part is further restrained in the closed position by additional operations (of e.g. handle, key, automatic device(s) or electronic device(s)) to engage integrated locking devices (e.g. nutbolts or deadbolts) which will affect the product's characteristics

[SOURCE: EN 12519:2018, 3.40]

prEN 1191:2024 (E)**3.22****open tilt position**

position in which the opening edge of the sash is held in the final tilt position by means of the projecting mechanism

3.23**sliding position**

position in which the active sash can be moved linearly to the side ('in-line'), i.e. translatory operation

Note 1 to entry: Windows or door-height windows with a lifting function are lifted.

3.24**open position**

position in which the moving component is in a defined aperture or the maximum opening of the operated window

3.25**reversed position**

position in which the moving component has been rotated past the open position until the internal and external faces of the moving component are inverted

3.26**closed tilt position**

position in which the opening edge of the sash is at the mid-point between the closed position and open position with the sash vertical

3.27**fastened closed position**

(sliding, lift and slide or lift and slide and tilt windows and door-height windows) position in which the active sashes espagnolette-side rests up against the frame and the hardware is locked

Note 1 to entry: Windows or door-height windows with a lifting function are positioned in the lowered position.

Note 2 to entry: See Annex B.

3.28**fastened closed position**

(tilt and slide windows and door-height windows) position in which the active sash lies up against the frame on all sides; the hardware is locked and the window unit is completely closed

Note 1 to entry: See Annex C.

3.29**fastened closed position**

(horizontal or vertical pivot windows and door-height windows) position in which the moving component is resting against the frame or compresses the gaskets on all sides, and the hardware is effectively engaged

Note 1 to entry: See Annex E.

3.30**fastened closed position**

(vertical sliding windows) position in which the opening edge of the sash is in contact with the weather seal, the sash is at the full extent of its closing movement and the fastening system effectively engaged

Note 1 to entry: See Annex F.

3.31

fastened closed position

(side-hung and top-hung windows, opening outwards including reversible windows) position in which the moving component is resting against the frame or compresses the gaskets on all sides, and the hardware is effectively engaged

Note 1 to entry: See Annex G.

3.32

closed position

(power-operated (automatic) side-hung pedestrian doorsets) position in which movable parts rest in or at the fixed part in a way in which they may be fastened (latched and/or locked)

Note 1 to entry: The fastening system, if any, is automatically engaged or locked.

Note 2 to entry: See Annex I.

3.33

limiting restrictor

device intended to limit the movement of a moving component to a predetermined position or positions

3.34

tilt latch

releasable device or devices, that hold the sash in a vertical position when engaged

3.35

door set

building component which is designed and used to close a permanent opening in separating elements and supplied complete with all essential parts from a single source, and for which the main intended use is the access of pedestrians

[SOURCE: EN 12519:2018, 3.15]

3.36

striking plate

plate attached to the frame or the secondary leaf to keep the latch or lock bolts

3.37

door leaf

hinged, pivoted or sliding part within the door frame of a door assembly or door set

[SOURCE: EN 12519:2018, 3.12]

3.38

active leaf

leaf of a multi-leaved hinged or pivoted doorset, intended to be moved first to provide opening

[SOURCE: EN 12519:2018, 3.1]

3.39

passive leaf

leaf of a multi-leaved doorset, intended to be moved after the active leaf

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[SOURCE: EN 12519:2018, 3.47]

3.40**side-hung pedestrian doorset**

hinged or pivoted pedestrian doorsets

3.41**door coordinating device**

mechanism which ensures the correct sequence of closing of double leaf single action pedestrian doorsets with rebated meeting stiles so that the inactive leaf always closes before the active leaf

3.42**carry bar**

component that ensures, in the case of the inactive leaf being operated first, that the active leaf is moved beyond the waiting position and that is installed on double-leaf pedestrian doorsets with rebated meeting stiles in connection with door-coordinating devices

3.43**automatic operator for side-hung pedestrian doors**

unit comprising motor, control system and all other electrical, electronic and mechanical components required to power a side-hung door

4 Test equipment**4.1 Test rig**

The test rig shall be designed and constructed to be capable of adjustment for test specimens and shall be sufficiently rigid to withstand the induced forces without undue deflection.

Alternatively test specimen linked to EN 16034 can be tested in supporting construction as described in EN 1634-1 in order to get a maximum range of direct application.

A sub-frame may be used into which the test specimen is mounted.

4.2 Operating equipment

Motion controlled actuators as hydraulic, pneumatic or electric torque and linear cylinders or any appropriate mechanisms, having features consistent with, shall be used:

- a) the reference velocities to be used;
- b) the mass of the moving component and the friction forces involved;
- c) the applied loads, if relevant, to produce dynamic forces;
- d) the duration of the test.

4.3 Measuring equipment

The following equipment shall be used:

- cycle counter;
- velocity and time measurement equipment accurate to $\pm 5\%$;
- force and mass measuring equipment accurate to $\pm 2\%$;