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Vrata, okna, obešene fasade, mreže in polkna - Protivlomna odpornost - Preskusna metoda za ugotavljanje odpornosti proti dinamičnim obremenitvam

Pedestrian doorsets, windows, curtain walling, grilles and shutters - Burglar resistance - Test method for the determination of resistance under dynamic loading

Türen, Fenster, Vorhangfassaden, Gitterelemente und Abschlüsse - Einbruchhemmung - Prüfverfahren für die Ermittlung der Widerstandsfähigkeit unter dynamischer Belastung

Blocs-portes pour piétons, fenêtres, façades rideaux, grilles et fermetures - Résistance à l'effraction - Méthode d'essai pour la détermination de la résistance à la charge dynamique

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This European Standard was approved by CEN on 2 December 2010 and includes Amendment approved by CEN on 17 November 2015.

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COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 1629:2011+A1:2015) 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of an identical text or by endorsement, at the latest by June 2016, and conflicting national standards shall be withdrawn at the latest by June 2016.

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 includes Amendment 1 approved by CEN on 2015-11-17.

This document supersedes [A1] EN 1629:2011 [A1].

The start and finish of text introduced or altered by amendment is indicated in the text by tags [A1] [A1].

This European Standard is one of a series of standards for burglar resistant pedestrian doorsets, windows, curtain walling, grilles and shutters. The other standards in the series are:

— EN 1627:2011, *Pedestrian doorsets, windows, curtain walling, grilles and shutters – Burglar resistance – Requirements and classification*;

— [A1] EN 1628:2011+A1:2015 [A1], *Pedestrian doorsets, windows, curtain walling, grilles and shutters – Burglar resistance – Test method for the determination of resistance under static loading*;

— [A1] EN 1630:2011+A1:2015 [A1], *Pedestrian doorsets, windows, curtain walling, grilles and shutters – Burglar resistance – Test method for the determination of resistance to manual burglary attempts*.

This standard is a revision of, and supersedes [A1] EN 1629:2011 [A1]. The last two other standards in this series are revisions of, and supersede [A1] EN 1628:2011 [A1] and [A1] EN 1630:2011 [A1] respectively.

This revision incorporates grilles and curtain walling in the range of application.

The test described in this standard is intended to simulate physical attacks, e.g. shoulder charge, kicking.

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.

1 Scope

This European Standard specifies a test method for the determination of resistance to dynamic loading in order to assess the burglar resistant properties of pedestrian doorsets, windows, curtain walling, grilles and shutters. It is applicable to the following means of opening: Turning, tilting, folding, turn-tilting, top or bottom hung, sliding (horizontally and vertically) and rolling as well as fixed constructions.

There are two aspects to the burglar resistance performance of construction products, their normal resistance to forced operation and their ability to remain fixed to the building. Due to the limitation of reproducing the fixing methods and building construction in a laboratory environment this aspect is not fully covered by the standard. This is particularly true with products built into a building. The performance of the fixed part of the product is evaluated using a standard sub frame. It is the manufacturer´s responsibility to ensure that guidance on the fixing of the product is contained in the mounting instructions and that this guidance is suitable for the burglar resistance class claimed for the product. As with the other referenced standards this specification uses a standard sub frame and the product is mounted according to the manufacturer´s instructions. The fixing method to be considered is detailed in Annex A of EN 1627:2011. This test method does not evaluate the performance of the fixing to the building.

This European Standard does not apply to doors, gates and barriers, intended for installation in areas in the reach of persons, and for which the main intended uses are giving safe access for goods and vehicles accompanied or driven by persons in industrial, commercial or residential premises, as covered by EN 13241-1.

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 356:1999, *Glass in building — Security glazing — Testing and classification of resistance against manual attack*

EN 1303:2005, *Building hardware — Cylinders for locks — Requirements and test methods*

EN 1627:2011, *Pedestrian doorsets, windows, curtain walling, grilles and shutters — Burglar resistance — Requirements and classification*

〚A1〛 EN 1628:2011+A1:2015 〈A1〉, *Pedestrian doorsets, windows, curtain walling, grilles and shutters — Burglar resistance — Test method for the determination of resistance under static loading*

〚A1〛 EN 1630:2011+A1:2015 〈A1〉, *Pedestrian doorsets, windows, curtain walling, grilles and shutters — Burglar resistance — Test method for the determination of resistance to manual burglary attempts*

EN 1906:2010, *Building hardware — Lever handles and knob furniture — Requirements and test methods*

EN 12209:2003, *Building hardware — Locks and latches — Mechanically operated locks, latches and locking plates - Requirements and test methods*

EN 12600:2002, *Glass in building — Pendulum test — Impact test method and classification for flat glass*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1627:2011 and the following apply.

3.1
attack side
side of the test specimen defined by the applicant as the side exposed to attack

3.2
non-attack side
side of the test specimen defined by the applicant as the side not exposed to attack

3.3
test specimen
complete, fully functioning construction product as detailed in the scope of this standard

3.4
sub-frame
surrounding frame into which the test specimen is mounted in accordance with the manufacturer's instructions

3.5
test rig
surrounding substantial steel frame with movable steel supports into which the sub-frames containing test specimens of various dimensions can be mounted

3.6
impacting unit
impactor suspended by means of a suitable steel cable, as a pendulum of fixed length, with a release hook and height regulating device

3.7
impactor
body used to strike the test specimen

3.8
impact point
position on the surface of the test specimen where the dynamic load is applied

4 Apparatus

4.1 Test rig

The test rig consisting of a rigid steel frame with movable steel supports into which test specimens of various dimensions can be mounted is shown in Annex A, Figure A.1. The stiffness of the rig shall be such that a 15 kN force applied to any of the defined points and normal to the plane of the frame will not cause a deflection of more than 5 mm and shall not affect the results of the test. The test rig shall not impede the execution of the test.

4.2 Pendulum impactor

The pendulum impactor, conforming to EN 12600:2002, is listed with individual components in Table 1 and pictured in Annex A, Figure A.3. The impactor shall consist of two pneumatic tyres (type 3.50-R8 4PR[1)]) inflated to a pressure of 0,35 MPa ± 0,02 MPa with round section and flat longitudinal tread and shall be suspended by means of a suitable steel cable giving a minimum pendulum length of 1000 mm ± 10 mm, with a release hook and height regulating device. The tyres shall be fitted to the rims (type 250-8) of wheels that carry two steel weights of equal mass. The weights shall be dimensioned so that the total mass of the impactor is 50 kg ± 0,1 kg (excluding the steel cable and release hook) and the weights do not have any contact with the test specimen during the impact. The drop height shall be the vertical height through which the centre of gravity of the impactor falls, with a tolerance of ± 10 mm. The impactor support point shall allow the impactor to strike the test specimen at all relevant points. The complete pendulum impactor unit shall be adjustable and may be installed either on the test rig, as shown in Annex A, Figure A.1, or as an independent unit, as shown in Annex A, Figures A.2 and A.3.

4.3 Suspension system

The suspension system shall conform to EN 12600:2002.

4.4 Sub-frame

The sub-frame shall simulate the support given to the product when installed into a building, and shall be taken into consideration in the manufacturer´s installation instructions. It shall typically consist of the following:

a) for group 1 to group 4 products a rectangular metal tube 120 mm x 120 mm x 5 mm or a rectangular timber frame 100 mm x 50 mm;

b) additionally for group 3 products and group 4 products a steel tube 40 mm x 40 mm x 3 mm and a base plate of 8 mm steel, consisting of several segments which shall be removable for the purposes of loading, if necessary.

4.5 Measuring equipment

The measuring equipment consists of the following:

a) suitable device for measuring the drop height;

b) equipment for determining temperature and relative humidity;

c) gap gauge D, as shown in Figure A.14 of ▌A1⟩ EN 1628:2011+A1:2015 ⟨A1▌.

The dimensions of the gap gauge shall have a tolerance of ± 1 mm.

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1) Tyre 3.50-R8 4PR manufactured by Vredestein can be used for the pendulum test. It can be obtained from Vredestein BV, Ingenieur Schiffstraat 370, NL – 7547 RD Enschede, Nederland or Vredestein GmbH, August-Horch-Strasse 7, D – 56070 Koblenz, Deutschland.

Tyre 3.50-R8 4PR is the trade name of a product supplied by Vredestein BV. This information is given for the convenience of users of this European Standard and does not constitute an endorsement by CEN of the product named. Equivalent products may be used if they can be shown to lead to the same results.

5 Test specimen

5.1 General

The test specimen shall be a functioning product complete with its frames, hardware, guide rails, curtain, tube, roller box and accessories, as appropriate.

The test specimen shall be fixed square and plumb and without twist or bend into a sub-frame. The installation shall be in accordance with the manufacturer's instructions as detailed in Clause 10 of EN 1627:2011, including the method of fixing, packing supports, sealing requirements, etc. (see Annex A, Figures A.4 to A.20b).

NOTE The test may be carried out with the sample mounted in a real wall or building.

For the purposes of this Standard, the test specimen shall be glazed according to the relevant glazing resistance class of EN 356:1999, corresponding to the resistance class of the construction product according to EN 1627:2011, as shown in Table 1 of this Standard.

For the purpose of this test the laminated glass shall be placed on the impact side of the product.

Table 1 — Test sample glazing requirements

Resistance class	Resistance class of glazing according to EN 356
RC 1 N	P4 A
RC 2 N	P4 A
RC 2	P4 A
RC 3	P5 A

Products that use infilling other than glass shall be tested with the intended infill material. The test specimen used in the static test in accordance with [A1] EN 1628:2011+A1:2015 [A1] might also be used for this test.

[A1] Products that are intended to be installed in orientations other than vertical (e.g. roof lights) shall be installed in the vertical orientation for the purpose of this test.

Should the glass break during any tests, the test programme shall proceed with the broken glass in situ. Adhesive film may be applied to the glass to protect the tester. [A1]

5.2 Preparation and examination of the test specimen

The temperature of the test specimen shall be maintained between 15 °C and 30 °C.

The test specimen and sub-frame mounted in the test rig shall be visually examined for damage, defects or other particular conditions of finish, etc. These shall be recorded.

The test specimen shall be closed and locked in the closed condition in accordance with the manufacturer' s instructions.

All locking hardware that can be disengaged from the attack side without the use of a key or tools shall be disengaged during all tests.

Products in resistance class 1 shall additionally be prepared prior to the dynamic loading test by removing all parts on the attack side that can be unscrewed, dismounted or disassembled using the tools described in [A1] EN 1630:2011+A1:2015 [A1], Annex A, tool set A1. Parts shall not be damaged during this procedure. The total time for this preparation procedure shall not exceed 3 min. If the test specimen has been previously subjected to a preparation period of 3 min then it shall not be repeated.

The parts removed during this preparation shall be recorded.

6 Procedure

6.1 Test room climate

The test room temperature shall be maintained between 15 °C and 30 °C.

The relative humidity in the test room shall be between 30 % and 70 %.

6.2 Impact points, directions and test sequence

6.2.1 General

The dynamic loads specified in EN 1627:2011, Table 6 shall be applied at the impact points and in the impact directions given in 6.2.2.1, using the specified impacting unit. The impact direction shall be perpendicular to the plane of the test specimen.

The test sequence shall be as given in Annex B, Figure B.1.

6.2.2 Group 1, Group 2 and Group 3 products

6.2.2.1 General

For Group 1, Group 2 and Group 3 products, the impacts shall be applied once to each corner and three times to the centre of the test specimen. For test specimens without corners (circular), four points shall be selected that are approximately equidistant around the edge of the test specimen. The impact points shall be as described in 6.2.2.2 - 6.2.2.8 and, as shown in Annex A, Figures A.21 to A.29. Test specimen with more than one glazing or infilling smaller than 150 mm x 300 mm (w x h) shall be impacted three times at the centre of the glazed or infilling area. Test specimen with glazing or infillings smaller than 150 mm x 300 mm (w x h) shall not be tested.

As the dynamic test is intended to simulate physical attacks without the use of tools (e.g. shoulder blows or kicks), the impacts shall strike the product on the attack side.

6.2.2.2 Hinged doors, single or double leaf doors and sliding doors

This test shall not be performed on any door leaf or infilling of less than 150 mm width (see Annex A, Figure A.21, dimension A).

If the distance between two adjacent impact points is less than 300 mm (see Annex A, Figure A.21, dimension B), only the mid-point between those impact points shall be tested.

If the door leaf and/or infilling is narrower than 150 mm (see Annex A, Figure A.21, dimension C), the impact shall be omitted.

NOTE The impact is always on the attack side. This test simulates a violent physical attack e.g. shoulder blows or kicks.

6.2.2.3 Double doors

Unless the applicant instructs to the contrary, both doors shall be tested. The applicant may request the test for the double door on one door only, in which case the test shall be applied as for a single-leaf door.

The inside leaf of the double door shall be fully removed to allow a complete dynamic test of the outer door. The outer door shall then be removed and the inside door tested.

The test sequence is shown in Annex A, Figure A.22.

6.2.2.4 Side-hinged windows, sliding windows and pivot windows with one or more casements

The test shall not be performed on infillings of less than 150 mm width (see Annex A, Figure A.23, dimension A).

If the distance between two adjacent impact points is less than 300 mm (see Annex A, Figure A.23, dimension B), only the mid-point between those impact points shall be tested.

One impact shall be applied to each corner of the infilling and three impacts shall be applied to the centre of each infilling.

NOTE The impact is always on the attack side. This test simulates a violent physical attack e.g. shoulder blows or kicks.

6.2.2.5 Single wing shutters

The test shall not be performed on infillings of less than 200 mm width (see Annex A, Figure A.24, dimension A).

If the distance between two adjacent impact points is less than 300 mm (see Annex A, Figure A.24, dimension B), only the mid-point between those impact points shall be tested.

One impact shall be applied to each corner of infilling or leaf and three impacts shall be applied to the centre of each infilling or leaf.

NOTE The impact is always on the attack side. This test simulates a violent physical attack e.g. shoulder blows or kicks.

6.2.2.6 Multi-leaf wing shutters

Multi leaf wing shutters shall first be impacted at the impact points on the meeting edges as shown in Annex A, Figure A.25 (V) and thereafter at the hinges as shown in Annex A, Figure A.25 (B).

All other impact points shall be tested as described in 6.2.2.2.

6.2.2.7 Folding shutters

Multi leaf wing shutters shall first be impacted at the impact points on the meeting edges as shown in Annex A, Figure A.26 (V) and thereafter at the hinges, as shown in Annex A, Figure A.26 (B).

If all hinges are identical then a minimum of four shall be chosen and tested.

All other impact points shall be tested as described in 6.2.2.2.

6.2.2.8 Roller shutters

One impact shall be applied to each corner of the roller curtain and three impacts shall be applied to the centre of the roller curtain. The test sequence is shown in Annex A, Figure A.27.

NOTE The impact is always on the attack side. This test simulates a violent physical attack e.g. shoulder blows or kicks.