BRITISH STANDARD

BS EN
14608:2004

Windows — Determination of the resistance to racking

The European Standard EN 14608:2004 has the status of a British Standard

ICS 91.060.50

BSI
British Standards

National foreword

This British Standard is the official English language version of EN 14608:2004.

The UK participation in its preparation was entrusted by Technical Committee B/538, Doors, windows, shutters, hardware and curtain walling, to Subcommittee B/538/1, Windows, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the *BSI Catalogue* under the section entitled "International Standards Correspondence Index", or by using the "Search" facility of the *BSI Electronic Catalogue* or of British Standards Online.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 16 June 2004

Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 9 and a back cover.

The BSI copyright notice displayed in this document indicates when the document was last issued.

Amendments issued since publication

Amd. No.	Date	Comments

ISBN 0 580 43941 0

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 14608

June 2004

ICS 91.060.50

English version

Windows - Determination of the resistance to racking

Fenetrês - Détermination de la résistance à une charge verticale (contreventement)

Fenster - Ermittlung der Widerstandsfähigkeit gegen Lasten in der Flügelebene (Racking)

This European Standard was approved by CEN on 1 September 2003.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of 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.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Ref. No. EN 14608:2004: E

Contents

1 Scope 4
2 Normative references 4
3 Terms and definitions 4
4 Apparatus 4
5 Test specimen 4
6 Conditioning and preparation of the test specimen 5
6.1 Conditioning 5
6.2 Preparation 5
7 Procedure 5
8 Expression of results 5
9 Test report 5
Annex A (normative) **Figures** 6

Foreword

This document (EN 14608:2004) 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 December 2004, and conflicting national standards shall be withdrawn at the latest by December 2004.

It is part of a series of standards for windows.

This document supersedes 8.2.2 Racking of EN 107:1980.

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 the United Kingdom.

1 Scope

This European Standard specifies the determination of resistance to racking of an open casement or sash expressed as loads and the resulting maximum and residual deformations.

This European Standard applies to the opening modes specified in Figure A.1 to Figure A.6 and included in EN 12519.

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 12519, Windows and pedestrian doors – Terminology.

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 12519 apply, together with the following:

3.1
racking
static load applied in the plane of the casement or sash

4 Apparatus

A surrounding substantial steel frame with movable steel supports[1)] into which the sub-frames containing test specimens of various dimensions can be mounted.

Means for the application of forces with an accuracy of 5 % uniformly and without shock.

An analogue or digital measuring instrument for determining measurements with an accuracy of 0,1 mm.

5 Test specimen

The test specimen shall be supplied in a fully operable condition. It shall be suitable for fixing into the surrounding frame in accordance with the manufacturer's published recommendations or standardised instructions.

1) A suitable frame would, for example, be of such stiffness that the mid span deflection of any member of the frame does not exceed 1/500 of its unsupported length under the action of a force of 1 kN applied at any point or direction perpendicular to the length of that member.

6 Conditioning and preparation of the test specimen

6.1 Conditioning

Storage and testing shall be carried out in a non-destructive environment within the ranges of 10 °C to 30 °C and 25 % to 75 % relative humidity.

6.2 Preparation

Remove all transport blocks, bracings, packaging and protective wrappings from the test specimen.

The test specimen shall be mounted level, square and without visible twist resulting from the use of fixing devices.

7 Procedure

When carrying out the test (see Figure A.7) the following shall be taken into account.

Having disengaged any restricting devices, open and close the test specimen five times before the test to its maximum extent or 90°, whichever is greater.

For windows with more than a single leaf the first test shall be to the main leaf.

When testing multi-function windows such as those that tilt and turn, each function shall be tested separately. The most common usage shall be tested first (e. g. tilt before turn).

In the case of sliding sashes, block one lower corner edge to prevent sliding when the load is applied.

To take up any slack in hinges or pivots, if fitted, apply a pre-load of 10 % of the maximum test load or a minimum of 20 N according to Figures A.1 to A.6. Remove the pre-load and measure the deformation (a_0).

Apply the static test load F according to Figures A.1 to A.6 and measure the deformation (a_1) under the test load. Remove the test load and measure the deformation (a_2).

Apply and remove all loads continuously to avoid dynamic effects. Apply the loads in increments of a maximum of 100 N and over a minimum of 1 s for each increment.

8 Expression of results

Note the loads, together with the maximum ($a_1 – a_0$) and residual ($a_2 – a_0$) deformations measured during the test. Express loads in Newtons (N) to three significant figures and deformations in millimetres (mm) to two significant figures.

9 Test report

The test report shall contain at least the following information:

a) reference to this European Standard;

b) name of the test laboratory;

c) name of the manufacturer and applicant;

d) date of test and test report;

e) all relevant details for identifying the test specimen and apparatus

— type;

— specified dimensions;

— materials;

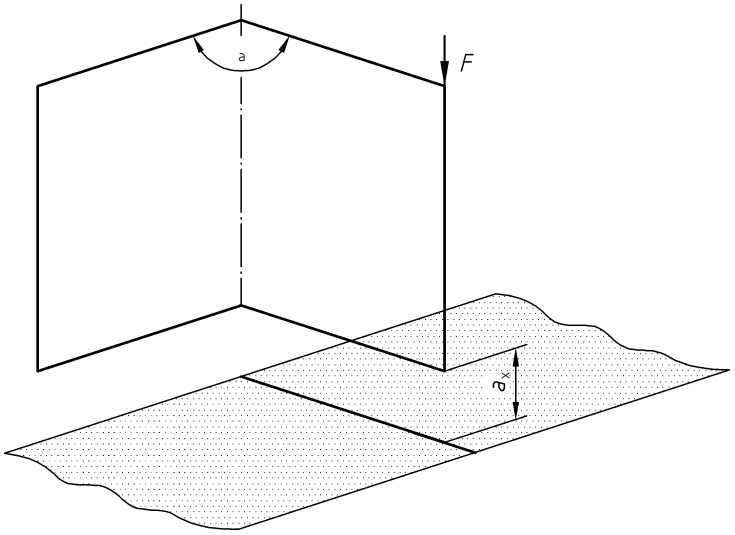
— form and mode of opening;

f) test results;

g) permanent damage to the test specimen.

Annex A
(normative)

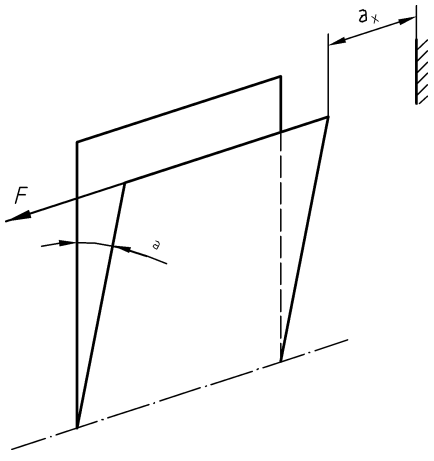
Figures



Key

a 90° or max. opening angle

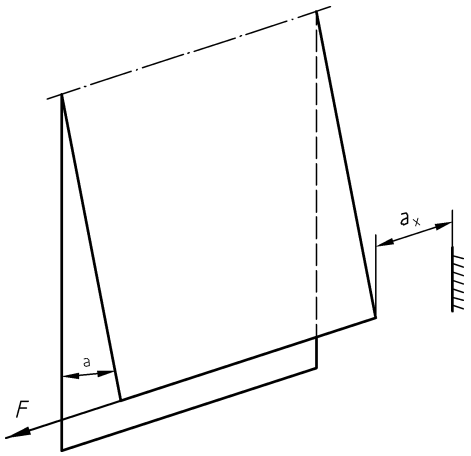
Figure A.1 — Side hung casement



Key

a 90° or max. opening angle

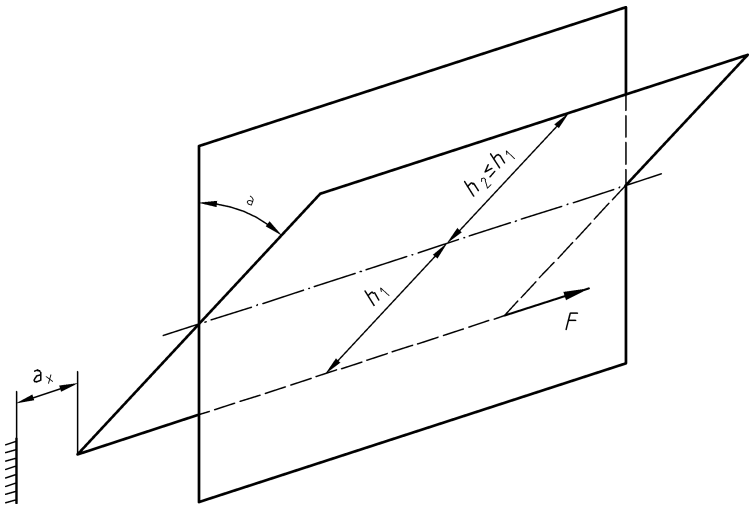
Figure A.2 — Bottom hung casement



Key

a 90° or max. opening angle

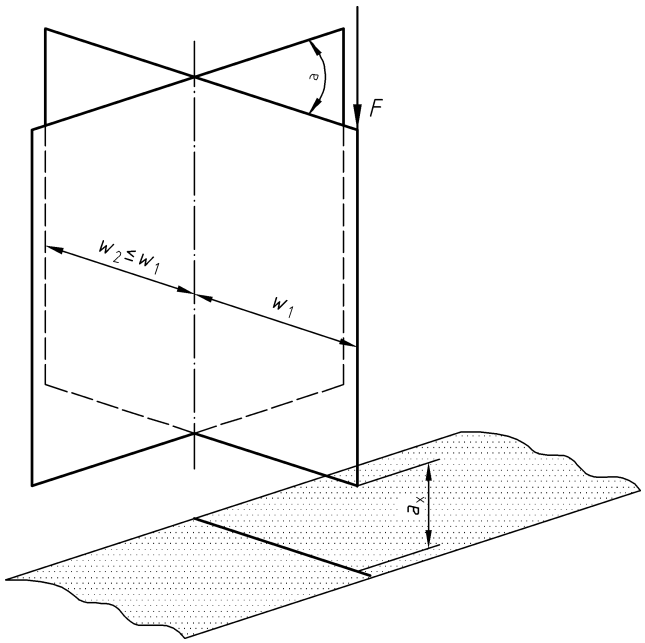
Figure A.3 — Top hung casement



Key

a 90° or max. opening angle

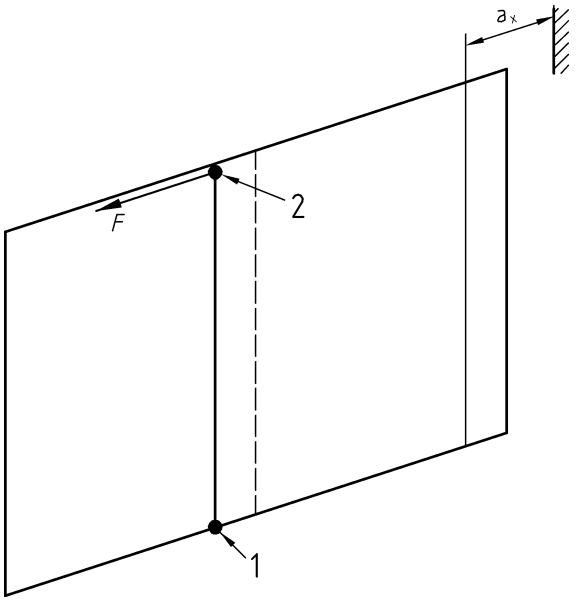
Figure A.4 — Horizontal pivot casement



Key

a 90° or max. opening angle

Figure A.5 — Vertical pivot casement

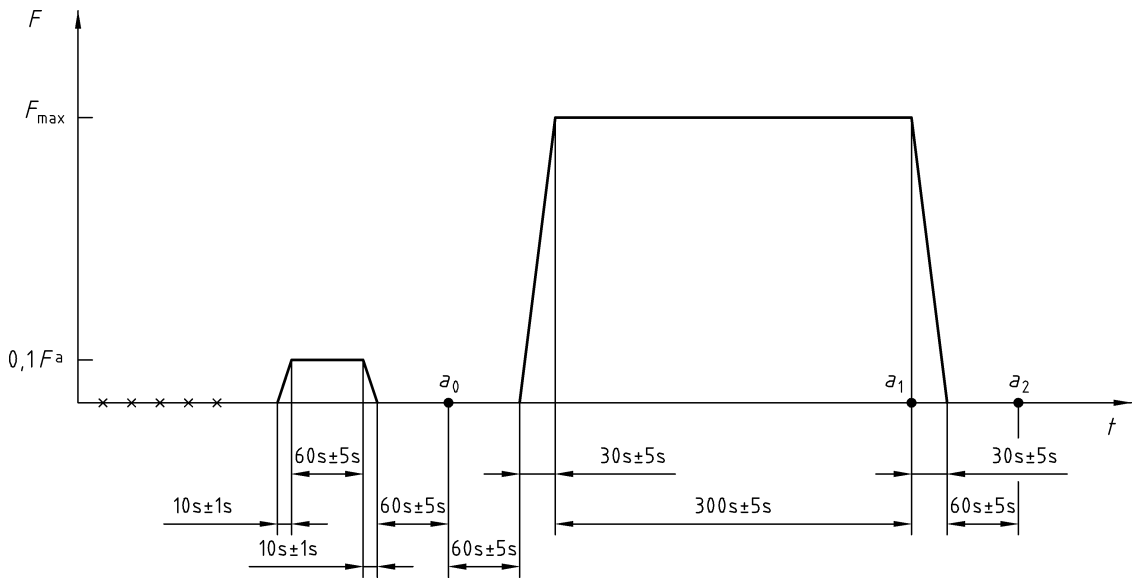


Key

1 Blocked corner

2 Loading point

Figure A.6 — Sliding sash



Key

F_{max} Maximum test load

0,1F^a 0,1 F_{max} or 20 N

t Time

X Opening and closing

O Measurement

a_x Measured values

Figure A.7 — Diagram

BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

Revisions

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using this British Standard would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover. Tel: +44 (0)20 8996 9000. Fax: +44 (0)20 8996 7400.

BSI offers members an individual updating service called PLUS which ensures that subscribers automatically receive the latest editions of standards.

Buying standards

Orders for all BSI, international and foreign standards publications should be addressed to Customer Services. Tel: +44 (0)20 8996 9001. Fax: +44 (0)20 8996 7001. Email: orders@bsi-global.com. Standards are also available from the BSI website at http://www.bsi-global.com.

In response to orders for international standards, it is BSI policy to supply the BSI implementation of those that have been published as British Standards, unless otherwise requested.

Information on standards

BSI provides a wide range of information on national, European and international standards through its Library and its Technical Help to Exporters Service. Various BSI electronic information services are also available which give details on all its products and services. Contact the Information Centre. Tel: +44 (0)20 8996 7111. Fax: +44 (0)20 8996 7048. Email: info@bsi-global.com.

Subscribing members of BSI are kept up to date with standards developments and receive substantial discounts on the purchase price of standards. For details of these and other benefits contact Membership Administration. Tel: +44 (0)20 8996 7002. Fax: +44 (0)20 8996 7001. Email: membership@bsi-global.com.

Information regarding online access to British Standards via British Standards Online can be found at http://www.bsi-global.com/bsonline.

Further information about BSI is available on the BSI website at http://www.bsi-global.com.

Copyright

BSI
389 Chiswick High Road
London
W4 4AL