BRITISH STANDARD

BS EN
12365-2:2003

Building hardware — Gasket and weatherstripping for doors, windows, shutters and curtain walling —

Part 2: Linear compression force test methods

The European Standard EN 12365-2:2003 has the status of a British Standard

ICS 91.060.50; 91.190

National foreword

This British Standard is the official English language version of EN 12365-2:2003.

The UK participation in its preparation was entrusted by Technical Committee B/538, Doors, windows, shutters, hardware and curtain walling, to Subcommittee B/538/4, Building hardware, 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.

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Building hardware - Gasket and weatherstripping for doors, windows, shutters and curtain walling - Part 2: Linear compression force test methods

Quincaillerie pour le bâtiment - Profilés d'étanchéité de vitrage et entre ouvrant et dormant pour portes, fenêtres, fermetures et façades rideaux - Partie 2: Méthodes d'essai pour déterminer la réaction linéique à la déformation

Schlösser und Baubeschläge - Dichtungen und Dichtungenprofile für Fenster, Türen und andere Abschlüsse sowie vorgehängte Fassaden - Teil 2: Linearer Schließdruck, Prüfverfahren

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Ref. No. EN 12365-2:2003 E

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Foreword

This document (EN 12365-2:2003) 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of an identical text or by endorsement, at the latest by March 2004, and conflicting national standards shall be withdrawn at the latest by March 2004.

EN 12365 – Building hardware – Gaskets and weatherstripping, consists of the following parts:

— *Part 1 : Performance requirements and classification;*

— *Part 2 : Linear compression test method;*

— *Part 3 : Deflection recovery test method;*

— *Part 4 : Recovery after accelerated ageing test method.*

This European Standard is one of a series of European Standards for building hardware.

Annexes A, B and C are informative.

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

1 Scope

This European Standard specifies the method to be used to select, prepare condition and test samples of gaskets or weatherstripping, to determine the force required to compress or deflect them by a predetermined amount to their minimum working width, under the conditions laid down for the test.

Examples of determining the working range of typical gaskets and weatherstripping are shown in annex A.

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 this 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 12365-1:2003, *Building hardware — Gaskets and weatherstripping for doors, windows, shutters and curtain walling — Part 1: Perfomance requirements and classification*

prEN 12519:2003, *Windows and doors - Terminology*

3 Terms and definitions

For the purposes of this European Standard the terms and definitions given in EN 12365-1:2003 and prEN 12519:2003 apply.

4 Requirements

4.1 Working range

Examples of determining the working range of typical gaskets and weatherstripping are given in annex A.

Nine grades of working range are identified:

— grade 1: ≤ 1 mm;

— grade 2: > 1 mm to ≤ 2 mm;

— grade 3: > 2 mm to ≤ 4 mm;

— grade 4: > 4 mm to ≤ 6 mm;

— grade 5: > 6 mm to ≤ 8 mm;

— grade 6: > 8 mm to ≤ 10 mm;

— grade 7: > 10 mm to ≤ 15 mm;

— grade 8: > 15 mm to ≤ 30 mm;

— grade 9: > 30 mm.

4.2 Linear compression force

Nine grades of compression force are identified:

— grade 1: ≤ 10 N/m;

— grade 2: > 10 N/m to ≤ 20 N/m;

— grade 3: > 20 N/m to ≤ 50 N/m;

— grade 4: > 50 N/m to ≤ 100 N/m;

— grade 5: > 100 N/m to ≤ 200 N/m;

— grade 6: > 200 N/m to ≤ 500 N/m;

— grade 7: > 500 N/m to ≤ 700 N/m;

— grade 8: > 700 N/m to ≤ 1 000 N/m;

— grade 9: > 1 000 N/m.

5 Test apparatus

A typical test apparatus is shown in annex B, consisting of a support for the gasket or weatherstripping which will allow it to be compressed or deflected in accordance with the users design concept.

The apparatus shall be fitted with a displacement dial gauge to measure the deflection of the test piece to its minimum working width.

A force measuring gauge shall be used to determine the force required to compress the test piece to its minimum working width.

6 Test procedure

6.1 Test measurements

Throughout this test method the following tolerances shall apply, unless otherwise stated:

— compression in millimetres (mm) : ± 0,05 mm;

— force in newtons (N) : better than 1 % of measured value;

— length in millimetres (mm) : ± 0,1 mm;

— temperature in degrees Celsius (°C) : ± 1 °C;

— relative humidity : ± 5 %.

6.2 Test samples

6.2.1 General

Wherever possible, the time between forming and testing shall not exceed 3 months. Every care shall be taken to ensure that samples arrive at the Test House in a pristine and fully testable condition.

NOTE This is to ensure that test pieces can be cut from any part of the sample without incurring more than the normal manufacturing variability.

6.2.2 Conditioning

Test samples shall be supplied in a condition truly representative of the standard shape.

Test samples shall be stored in the relaxed state in air at 23 °C ± 2 °C and a relative humidity 45 % to 55 % for not less than 24 h and not more than 6 days, prior to test.

6.3 Preparation of test pieces

Test pieces with a minimum length of 100 mm and a maximum length of 500 mm shall be cut from various positions within the sample submitted for test. Care shall be taken to ensure that the test pieces have a good smooth finish and are free of blemishes or other flaws.

7 Test method

7.1 Temperature and humidity

The standard laboratory temperature shall be either 23 °C or 25 °C, in accordance with national practice. The standard laboratory humidity shall be 45 % relative humidity at 23 °C or 55 % relative humidity at 25 °C.

7.2 Determination of free height

Measure the free height (a) of the test piece, without creating significant deformation, either before or after mounting in the test apparatus.

The free height shall be determined within a limit deviation of ± 0,05 mm.

If any results are beyond the permitted tolerance then new test pieces shall be obtained.

NOTE Suitable non-contact measuring equipment include a shadowgraph, a laser light beam device or a travelling microscope.

7.3 Compression test

Examples of determining the working range of typical gaskets and weatherstripping are given in annex A.

Set the displacement dial gauge linear to zero at the position of free height in order to measure the amount of compression or deflection.

Set the force measurement gauge to zero at the position of free height.

Compress the specimen through its working range to its minimum width (b), at a speed not exceeding 10 mm/min ± 1 mm/min. Remove immediately, the initial force and re-set the apparatus to zero.

Compress the test piece through its working range to its minimum width (b), at a speed not exceeding 10 mm/min ± 1 mm/min. Record the force after it has been maintained for 30 s ± 5 s.

Repeat the above test procedure on three specimens of the same gasket or weatherstripping.

7.4 Expression of results

The results of three tests shall be computed and the average value recorded in N per metre length to an accuracy of one decimal place.

8 Test report

A test report shall be prepared which identifies the specimen(s) and records the performance level achieved together with the details of tests used in the assessment of that performance.

The following information shall be included in the test report:

a) place of test;

b) person or body carrying out the assessment;

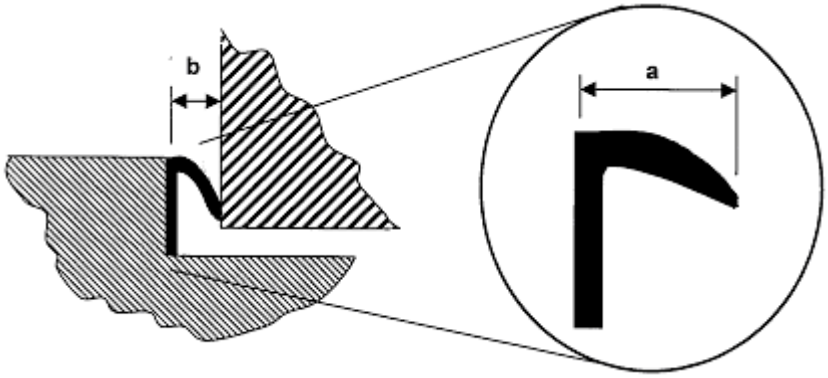
c) product designation according to the manufacturers standard literature;

d) test results and any measurements or observations made at the time of the test;

e) date and signature.

Annex A
(informative)

Examples of determining the working range of typical gaskets and weatherstripping



Key

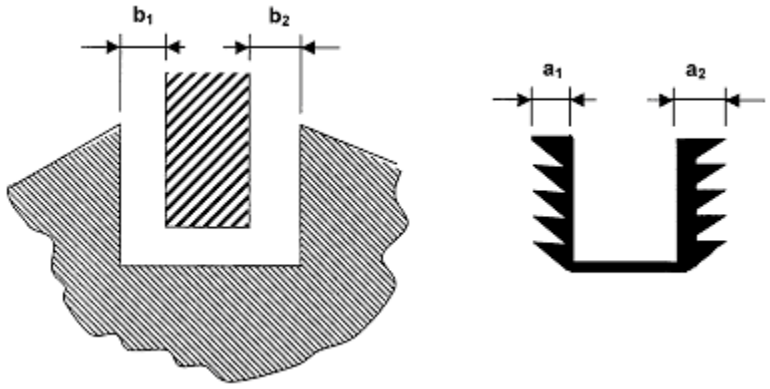
a	Free height
b	Minimum width
W_r	Working range

$W_r = (a - b)$

(a) Typical product application

(b) Typical weatherstripping

Figure A.1 — Working range for weatherstripping



Key

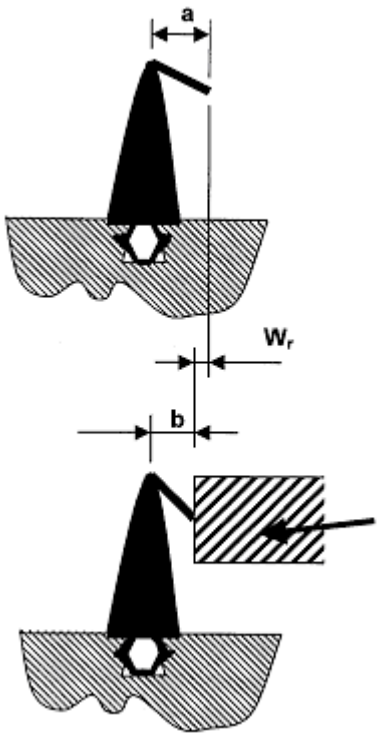
a_1 and a_2	Free height
b_1 and b_2	Minimum width
c	infilling
W_r	Working range

$$W_r = (a_1 + a_2) - (b_1 + b_2)$$

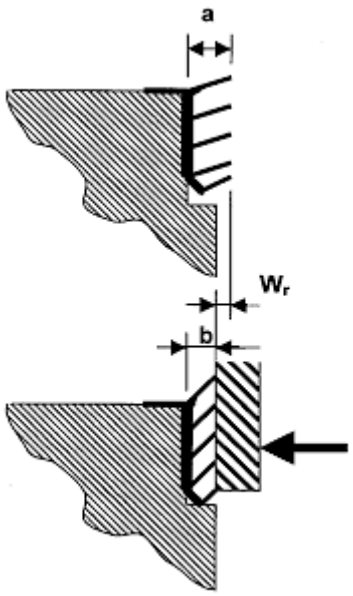
a) Typical product application

b) Typical gasket

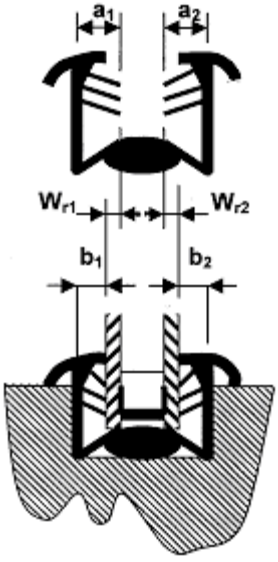
Figure A.2 — Working range for a gasket



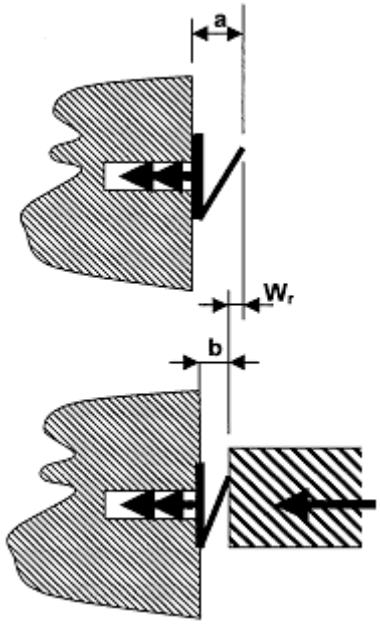
EXAMPLE 1 $W_r = (a - b)$



EXAMPLE 2 $W_r = (a - b)$



EXAMPLE 3 $W_r = (a_1 + a_2) - (b_1 + b_2)$

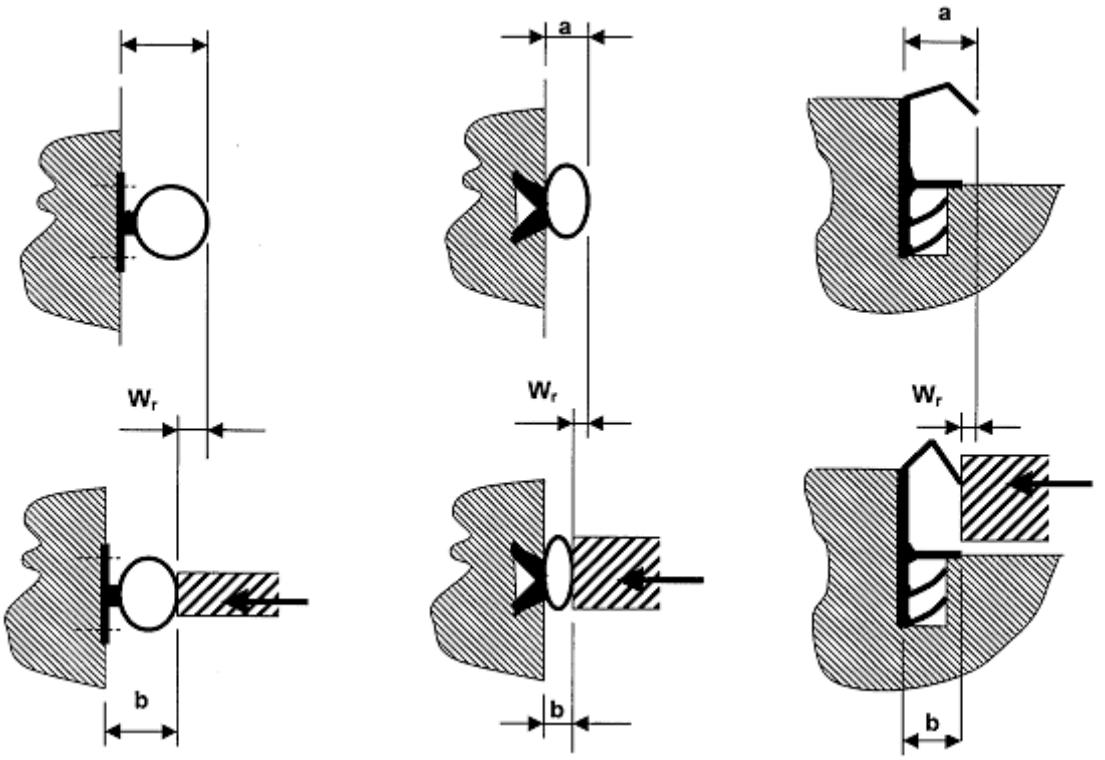


EXAMPLE 4 $W_r = (a - b)$

Key

a, a_1 and a_2	Free height
b, b_1 and b_2	Minimum width
W_r	Working range

Figure A.3 — Typical examples of working range



EXAMPLE 1 $W_r = (a - b)$ EXAMPLE 2 $W_r = (a - b)$ EXAMPLE 3 $W_r = (a - b)$

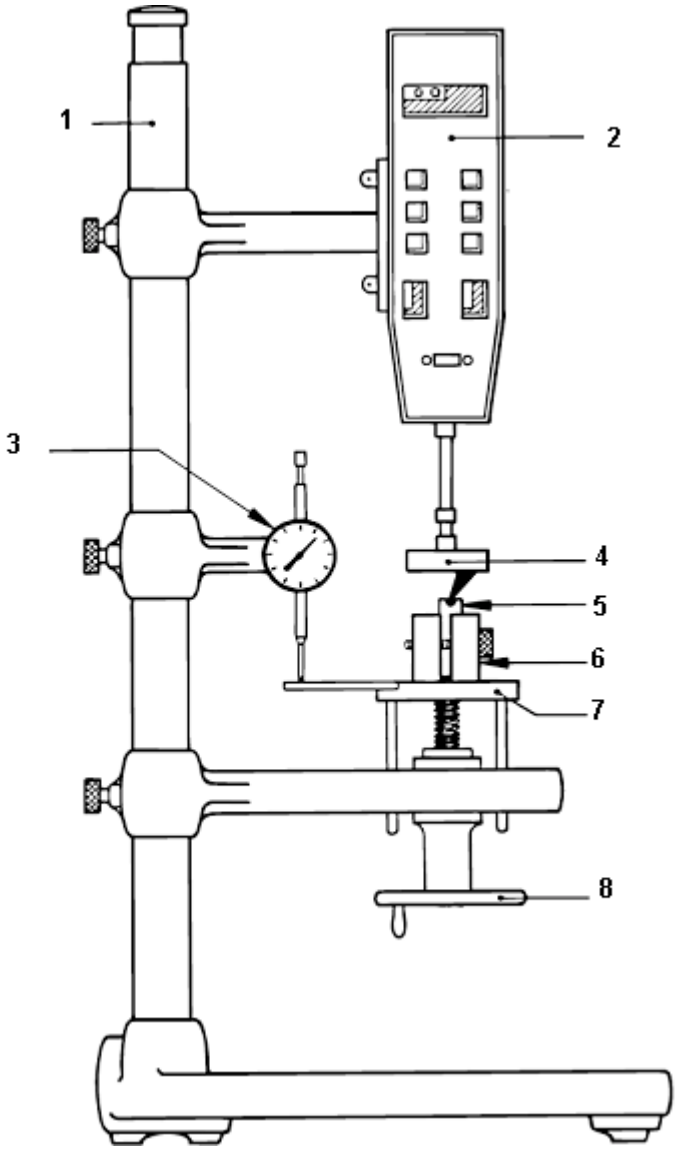
Key

a	Free height
b	Minimum width
W_r	Working range

Figure A.4 — Further examples of working range

Annex B
(informative)

Typical test apparatus



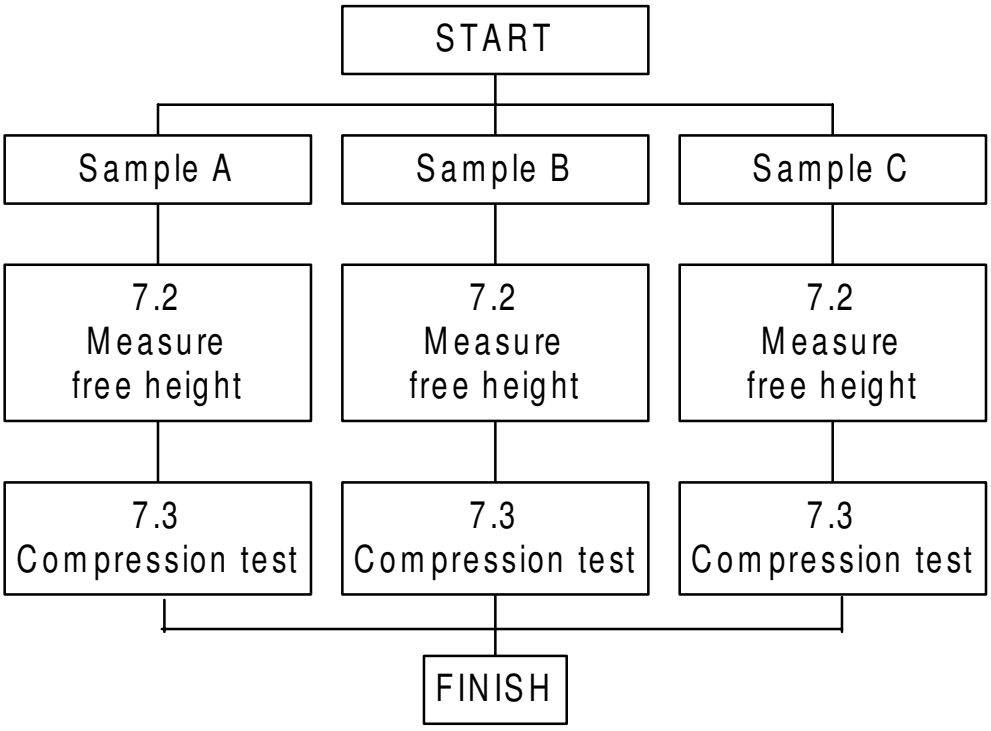
Key

1	Rigid bench stand	5	Test piece
2	Force measurement gauge	6	Test piece location block
3	Displacement dial gauge	7	Moving carrier
4	Force gauge anvil	8	Moving carrier height adjustment wheel

Figure B.1 — Typical test apparatus

Annex C
(informative)

Flow chart of test procedure



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