
Stavbno okovje – Tesnila in tesnilni trakovi za vrata, okna, polkna in obešene fasade – 4. del: Preskusna metoda za ugotavljanje povratnih deformacij po preskusu s pospešenim staranjem

Building hardware - Gasket and weatherstripping for doors, windows, shutters and curtain walling - Part 4: Recovery after accelerated ageing test method

Baubeschläge - Dichtungen und Dichtungenprofile für Fenster, Türen und andere Abschlüsse sowie vorgehängte Fassaden - Teil 4: Langzeitrückstellvermögen, Prüfverfahren

Quincaillerie pour le bâtiment - Profils d'étanchéité de vitrage et entre ouvrant et dormant pour portes, fenêtres, fermetures et façades rideaux - Partie 4: Méthode d'essai pour déterminer la reprise élastique après vieillissement

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91.060.50 Vrata in okna Doors and windows

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EUROPEAN STANDARD
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**Building hardware - Gasket and weatherstripping for doors,
windows, shutters and curtain walling - Part 4: Recovery after
accelerated ageing test method**

Quincaillerie pour le bâtiment - Profilés d'étanchéité de vitrage et entre ouvrant et dormant pour portes, fenêtres, fermetures et façades rideaux - Partie 4: Méthode d'essai pour déterminer la reprise élastique après vieillissement

Baubeschläge - Dichtungen und Dichtungenprofile für Fenster, Türen und andere Abschlüsse sowie vorgehängte Fassaden - Teil 4: Langzeitrückstellvermögen, Prüfverfahren

This European Standard was approved by CEN on 1 August 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 Management Centre 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.



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Foreword

This document (EN 12365-4:2003) 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 Standard is one of a series of European Standards for building hardware.

Annexes A and B 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.

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EN 12365-4:2003 (E)

1 Scope

This Part of this European Standard specifies the method to be used to select, prepare, condition and test samples of typical raw materials, to determine the long term performance of gaskets and weatherstripping under the conditions laid down in the test after ageing at the maximum working temperature.

The test has been devised to cover all likely raw materials.

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: Performance requirements and classification*

EN 12365-2, *Building hardware — Gaskets and weatherstripping for doors, windows, shutters and curtain walling — Part 2: Linear compression force test methods*

EN 12365-3, *Building hardware — Gaskets and weatherstripping for doors, windows, shutters and curtain walling — Part 3: Deflection recovery test method*

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

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ISO 188, *Rubber, vulcanized and thermoplastic — Accelerated ageing and heat resistance tests*

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 Maximum working temperature range

Six ranges of temperature are identified:

- grade 1: 0 °C to +45 °C;
- grade 2: -10 °C to +55 °C;
- grade 3: -20 °C to +85 °C;
- grade 4: -25 °C to +100 °C;
- grade 5: -40 °C to +70 °C;
- grade 6: 0 °C to +200 °C.

4.2 Recovery after accelerated ageing

Seven grades of recovery are identified:

- grade 0: no performance requirement;
- grade 1: > 30 % to 40 %;
- grade 2: > 40 % to 50 %;
- grade 3: > 50 % to 60 %;
- grade 4: > 60 % to 70 %;
- grade 5: > 70 % to 80 %;
- grade 6: > 80 % to 90 %;
- grade 7: > 90 %.

5 Test apparatus

5.1 Compression block

A typical compression block is shown in annex A. The compression block shall consist of a support for two test pieces of standard extrusion, which will allow them to be compressed uniformly to a fixed height of 60 % of the original free height of the specimen i.e. $9 \text{ mm} \pm 0,1 \text{ mm}$ for the standard shape.

[SIST EN 12365-4:2003](#)

5.2 Heating chamber

An electrically heated oven, which complies with the requirements of ISO 188, method A, is required for the test. It shall be capable of being set and maintained at the maximum working temperature of any materials to be tested.

6 Test procedure

6.1 Test measurements

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

- temperature in degrees Celsius (°C) : $\pm 1 \text{ °C}$;
- compression in mm : $\pm 0,05 \text{ mm}$;
- relative humidity : $\pm 5 \text{ %}$.

Times shall be measured using a clock capable of recording a minimum of 576 h (24 days).

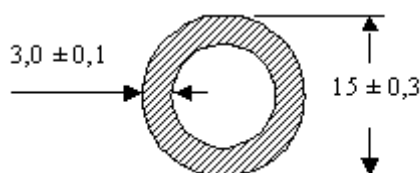
EN 12365-4:2003 (E)**6.2 Test samples****6.2.1 General**

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 Shape and size of test sample

Tubular test samples prepared from the material used in the manufacture of gaskets/ weatherstripping tested to the requirements of prEN 12365-2 and -3, and obtained under conditions that have been shown by experience to give comparable results, shall be supplied in the standard cross section shown in Figure 1.



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Figure 1 — Tubular shape for test samples

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6.2.3 Conditioning

Test samples shall be stored in a relaxed state in air at $23 \text{ °C} \pm 2 \text{ °C}$ and a relative humidity of $50 \% \pm 5 \%$, 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 General**

In this method, test pieces are subjected to the same maximum working temperature as they would in service, to simulate accelerated ageing. Two or more test pieces shall be used in each test.

7.2 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 .

7.3 Determination of free height

Measure the maximum free height of the test piece, perpendicular to the compressing surface, relative to a convenient datum, to a limit deviation of $\pm 0,05$ mm, before commencing the test. Due to possible non-circular inaccuracy, this shall be determined by measuring the outside diameter three times at different positions along the length. This can either be done before mounting the test piece on the test block, or prior to fitting the compression plate.

The average free height (a) shall be calculated and recorded.

NOTE 1 Suitable non-contact measuring equipment includes a shadowgraph, a laser light beam device or a travelling microscope.

Test pieces shall be labelled and marked to indicate the part of the surface which is uppermost.

NOTE 2 Care should be taken to ensure that markings used do not damage the test piece or disappear during heating.

Alternatively, test pieces may be labelled after heating.

7.4 Deflection recovery test

Mount test pieces in a suitable compression block as shown in annex A and compress to a height of $9 \text{ mm} \pm 0,1 \text{ mm}$.

Heat the oven to the maximum temperature of the required grade, load the compression block and maintain the maximum working temperature for $504 \text{ h} \pm 2 \text{ h}$.

Remove the block from the oven and allow cooling at ambient temperature for a minimum of 2 h.

7.5 Re-measure free height

Maintain the test pieces, in a horizontal stress free condition with the working face uppermost, for $22 \text{ h} \begin{smallmatrix} +2 \\ 0 \end{smallmatrix} \text{ h}$.

Measure and record the new free height (a_1), perpendicular to the compressed surface, relative to a convenient datum, to a limit deviation of $\pm 0,05$ mm, using the same equipment and method as 7.3.