BRITISH STANDARD

BS EN
13564-2:2002

Anti-flooding devices for buildings —

Part 2: Test methods

The European Standard EN 13564-2:2002 has the status of a British Standard

ICS 91.140.80

BSI
British Standards

National foreword

This British Standard is the official English language version of EN 13564-2:2002.

EN 13564-2:2002 is a candidate "harmonized" European Standard and fully takes into account the requirements of the European Commission mandate M/118 "Waste water engineering products", given under the EU Construction Products Directive (89/106/EEC), and intended to lead to CE marking. The date of applicability of EN 13564-2:2002 as a "harmonized" European Standard, i.e. the date after which this standard may be used for CE marking purposes, is subject to an announcement in the *Official Journal of the European Communities*.

The Commission in consultation with Member States has agreed a transition period for the co-existence of "harmonized" European Standards and their corresponding national standard(s). It is intended that this period will comprise a period, usually nine months, after the date of availability of the European Standard, during which any required changes to national regulations are to be made, followed by a further period, usually of 12 months, for the implementation of CE marking. At the end of this co-existence period, the national standard(s) will be withdrawn.

EN 13564-2:2002 is the subject of transitional arrangements agreed under the Commission mandate. However, in the UK there are no corresponding national standards.

The UK participation in its preparation was entrusted to Technical Committee B/505, Wastewater engineering, 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 committee 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.

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

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EUROPEAN STANDARD

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English version

Anti-flooding devices for buildings - Part 2: Test methods

Clapets anti-retour pour les bâtiments - Partie 2: Méthodes d'essais

Rückstauverschlüsse für Gebäude - Teil 2: Prüfverfahren

This European Standard was approved by CEN on 9 October 2002.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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

Ref. No. EN 13564-2:2002 E

Contents

Foreword

This document (EN 13564-2:2002) has been prepared by Technical Committee CEN/TC 165 "Wastewater engineering", the secretariat of which is held by DIN.

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 May 2003, and conflicting national standards shall be withdrawn at the latest by May 2003.

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, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This standard specifies test methods for anti-flooding devices for buildings in accordance with EN 13564-1:2002.

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 1253-2, *Gullies for buildings — Part 2: Test methods.*

EN 13564-1:2002, *Anti-flooding devices for buildings — Part 1: Requirements.*

3 Test methods

3.1 Temperature cycling for anti-flooding devices of types 4 and 5

Check that the samples are in directly ex-factory condition. Mount them as defined in clause 9 of EN 13564-1:2002 in accordance with the manufacturer's installation instructions.

Admit water as follows:

1) 10 l/min hot water at (93 ± 2) °C for 60 s;

2) pause for 60 s;

3) 30 l/min cold water at (15 ± 5) °C for 60 s;

4) pause for 60 s.

Repeat this cycle 1 500 times (100 h).

Check to ensure that there is no deformation or change in surface structure of any component impairing the fitness for use.

This test does not apply to anti-flooding devices made of materials not affected by temperature.

3.2 Temperature cycling for anti-flooding devices of types 0 to 3

Connect two lengths of pipe 1 m long each to the inlet and outlet of the sample.

Check that the samples are in directly ex-factory condition. This assembly shall be positioned in accordance with the manufacturer's installation instructions.

Admit water as follows:

1) 10 l/min hot water at (75 ± 2) °C for 60 s;

2) pause 60 s;

3) 30 l/min cold water at (15 ± 5) °C for 60 s;

4) pause 60 s.

Repeat this cycle 600 times (40 h).

Check to ensure that there is no deformation or change in surface texture of any component impairing the fitness for use.

This test does not apply to anti-flooding devices made of materials not affected by temperature.

3.3 Watertightness

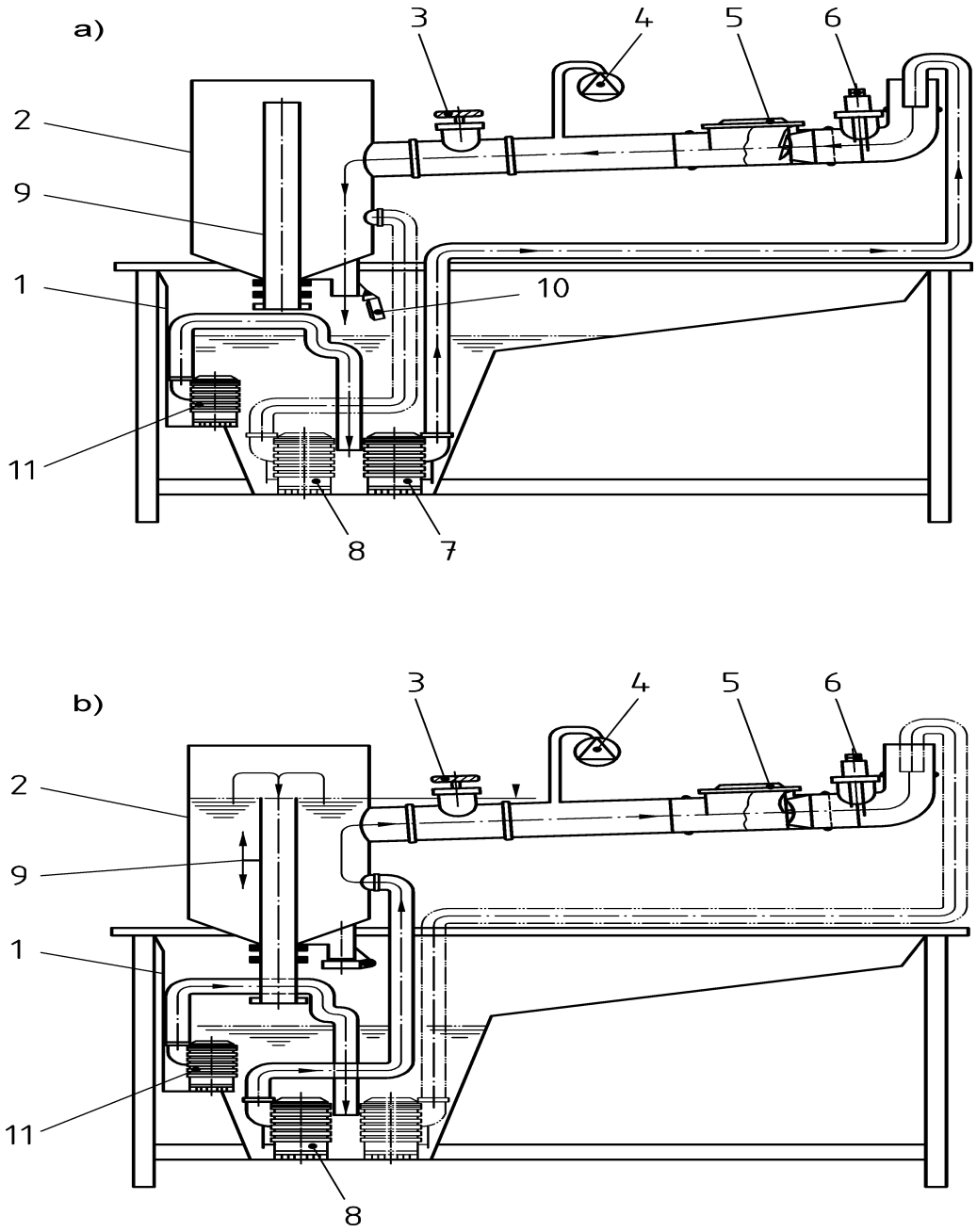
Check the watertightness of the body of anti-flooding devices of types 0 to 3 by closing the inlet and outlet and submitting the assembly to a hydraulic pressure of 50 kPa for 5 min.

Anti-flooding devices of types 4 and 5 shall be tested in accordance with EN 1253-2.
No leakage shall be observed.

3.4 Effectiveness

3.4.1 Test arrangement

The test arrangement according to Figure 1 shall be used for tests in accordance with 3.4.2 and 3.4.3.



a) test arrangement for inflow condition – testing to 1 kPa
b) test arrangement for backflow condition – testing to 50 kPa

Key

1 Reservoir for test medium, (150 ± 10) l
2 Reservoir for creating backflow conditions
3 Gate valve
4 Pressure tapping for 50 kPa pressure test
5 Sample
6 Electrodes/measuring device for indicating leakage (500 cm^3)
7 Pump for inflow
8 Pump for backflow
9 Overflow for backflow level (1 kPa)
10 Control valve
11 Mixer pump

Figure 1 — Test arrangement

3.4.2 Long-term test for all types of anti-flooding devices

3.4.2.1 Samples

Three samples shall be tested, one of which shall also have passed the tests in accordance with 3.1 or 3.2 as applicable.

3.4.2.2 Test medium

To prepare the test medium the following ingredients shall be added to (150 ± 10) l of water:

¾ 300 ml of plastic particles with a density at least of 1,3 g/cm^3 and sieve size of 2 mm to 5 mm;

¾ 750 small shreds of leatherette, absorbent and capable of swelling, with size of about 15 mm × 15 mm × 1 mm when dry;

¾ 450 plastic sticks with thickness of (4 ± 0,2) mm, length of (15 ± 1) mm and a density of least of 1,3 g/cm^3;

¾ 450 plastic sticks with thickness of (4 ± 0,2) mm, length of (15 ± 1) mm and density of 0,90 g/cm^3 to 0,95 g/cm^3;

¾ 60 g lenticular wax granules of diameter of up to about 10 mm;

¾ 900 g of peat without additives dried at 105 °C for 24 h.

3.4.2.3 Test pressure

In order to simulate surcharge a pressure of 1 kPa or 50 kPa shall be achieved for the tests set out in 3.4.2.4 and 3.4.2.5 in accordance with Table 1.

The reference level for test pressure shall be the highest sealing point of the automatic closure device(s).

3.4.2.4 Test procedure for the automatic closure device(s)

For this test, the emergency closure device shall be in the open position.

In order to achieve a good mixture of the test medium the mixer pump shall be run during the whole test cycle.

The test shall comprise 30 test cycles A and 5 test cycles B as described in Table 1. After each 5 test cycles A the test may be interrupted.

The test cycle A shall include the steps 1 to 8, the test cycle B the steps 9 to 18 in the sequence indicated in each case. Gratings, screens, buckets and the like shall be removed before testing. The test will be deemed to have been passed if not more than 500 cm^3 for each cycle of the test medium pass through the automatic closure device.

Table 1 — Procedure for long-term test

Test cycles	Step number	Step	Duration s
Test cycle A to be performed 30 times in succession	1	Introduce flow 5 times - 0,25 l/s for ≤ DN 50 - 0,40 l/s for > DN 50 and < DN 100 – 0,80 l/s for ≥ DN 100	10 for each time
	2	Empty the sample and the adjacent pipeline	—
	3	Fill the pressure vessel to the invert level of discharge type	10
	4	Build-up the backflow pressure of 1 kPa	60
	5	Maintain the backflow pressure of 1 kPa	600
	6	Measure the leakage from steps 4 and 5 together	—
	7	Release backflow pressure	—
	8	Same as item No 2	—
Test cycle B to be performed 5 times in succession	9 to 12	Same as No 1 to 4	—
	13	Close the gate valve	—
	14	Build up the backflow pressure of 50 kPa by means of external pressure feeding via pressure tapping	150
	15	Maintain the backflow pressure of 50 kPa	300
	16	Measure the leakage from steps 14 and 15	—
	17 and 18	Same as No 7 and No 8	—

3.4.2.5 Test procedure for the emergency closure device

For this test, the automatic closure device shall be either removed or held in the open position. The emergency closure device shall be in the closed position.

The emergency closure device shall be subjected to a pressure of 50 kPa three times.

The test shall be deemed to have been passed, if during a period of 30 min not more than 1 000 cm^3 of the test medium passes the closure device.

3.4.2.6 Evaluation of results

The test shall be deemed to have been passed if all three samples meet the requirement of clause 6.1 of EN 13564-1:2002. Otherwise, the test shall be repeated on six further samples and all shall fulfil the requirement.

3.4.3 Textile test for anti-flooding devices of type 3

3.4.3.1 Sample

One sample shall be tested after having passed the tests in accordance with 3.2 and 3.4.2.

3.4.3.2 Test medium

The test medium described in 3.4.3.2 shall be used together with the floor-cloth prepared as follows:

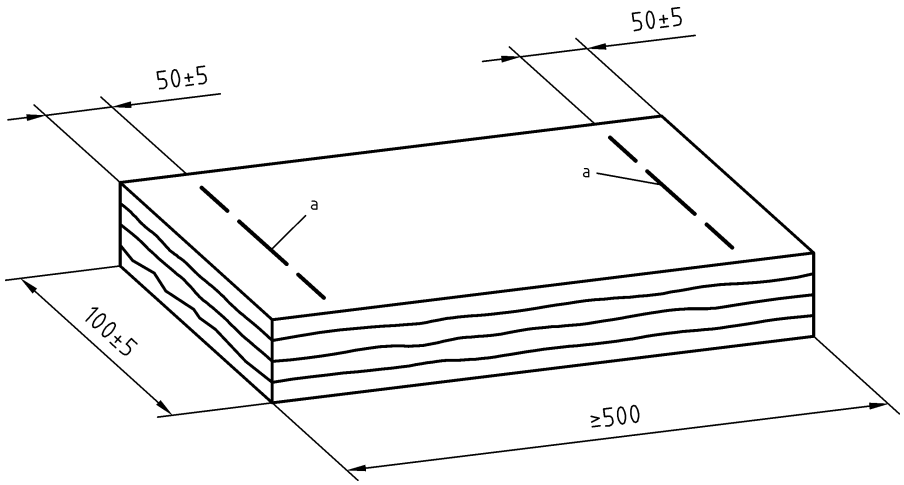
¾ the floor-cloth shall conform the following:

- ¾ dimensions: at least 400 mm × 500 mm;
- ¾ mass when dry: (400 ± 50) g/m²;
- ¾ material: cotton;

¾ cut four strips of (100 ± 5) mm width each and 500 mm long from the floor-cloth perpendicular to the main weaving direction;

¾ lay these strips one upon the other and join them by stapling at both ends as shown in Figure 2;

Dimensions in millimetres



Key

a Stapling

Figure 2 — Strips of floor-cloth

¾ attach a string to both ends of the floor cloth to allow positioning in the anti-flooding device in accordance with Figure 3;

¾ soak the floor cloth in water for 24 h.

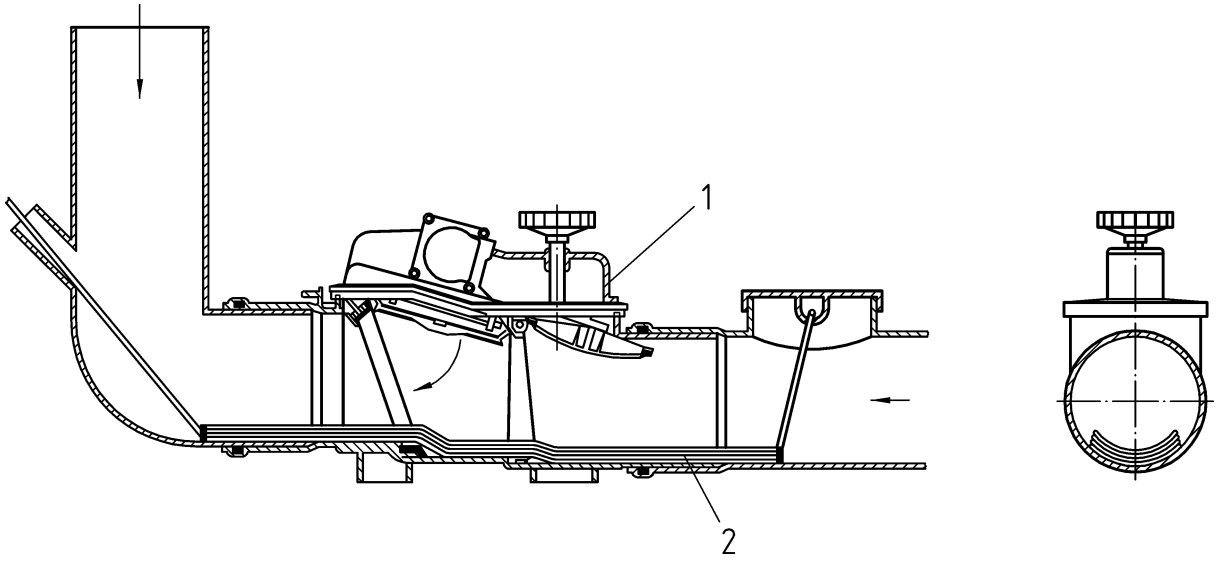
3.4.3.3 Test pressure

For the test, a surcharge shall be simulated so as to produce a test pressure of 50 kPa (see Table 1).

3.4.3.4 Test procedure

For this test, the emergency closure device shall be in the open position.

The floor cloth prepared in accordance with 3.4.3.2 shall be introduced into the anti-flooding device as shown in Figure 3, taking care to position the strips loosely and without tension equidistant about the centreline to the invert and equidistant about the automatic closure device(s).



Key

1 Anti-flooding device (example)
2 Floor-cloth arrangement

Figure 3 — Positioning of the floor-cloth

In order to achieve a good mixture of the test medium the mixer pump shall be run during the whole test cycle.

The test shall comprise 5 cycles B as described in Table 1.

The test shall be deemed to have been passed, if the anti-flooding device meets the requirement specified in clause 6.3 of EN 13564-1:2002. Otherwise, the test shall be repeated on two further samples and all shall fulfill the requirement.

3.4.4 Testing in-situ for all anti-flooding devices

3.4.4.1 General

This test simulates surcharge to confirm the effectiveness of the automatic and emergency closure device(s).

3.4.4.2 Test conditions

The test medium shall be water.

The backflow pressure shall be 1 kPa.

The reference level for test pressure shall be the top edge of the inspection opening.

3.4.4.3 Test procedure

The simulation of backflow shall be carried out in accordance with the manufacturer's maintenance and testing instructions.

The backflow pressure shall be maintained for 10 min.

The test shall be deemed to have been passed if the leakage through the automatic closure device does not exceed 500 cm^3 after having achieved the backflow pressure.

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