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Anti-flooding devices for buildings - Part 1: Requirements

Rückstauverschlüsse für Gebäude - Teil 1: Anforderungen

Clapets anti-retour pour les bâtiments - Partie 1.2 : Spécifications

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Rückstauverschlüsse für Gebäude - Teil 1: Anforderungen

This European Standard was approved by CEN on 10 May 2002.

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

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

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Contents

Foreword

This document EN 13564-1:2002 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of an identical text or by endorsement, at the latest by January 2003, and conflicting national standards shall be withdrawn at the latest by April 2004.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative annex ZA, which is an integral part of this document.

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

1 Scope

This European Standard specifies types and requirements for materials, performance, design, construction and marking for factory made anti-flooding devices for faecal and/or non-faecal wastewater for use in drainage systems of buildings operating under gravity in accordance with EN 12056-1.

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).

prEN 274-1, *Waste fittings for sanitary appliances — Part 1: Requirements.*

EN 476, *General requirements for components used in discharge pipes, drains and sewers for gravity systems.*

EN 1253-1, *Gullies for buildings — Part 1: Requirements.*

EN 12056-1, *Gravity drainage systems inside buildings — Part 1: General and performance requirements.*

prEN 13564-2:2001, *Anti-flooding devices for buildings — Part 2: Test methods*.

prEN 13564-3:2001, *Anti-flooding devices for buildings — Part 3: Quality control*.

ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads - Part 1: Dimensions, tolerances and designation*.

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply.

3.1
anti-flooding device
device, installed either directly in the pipework of a drainage system or incorporated in a floor gully intended to protect buildings from internal flooding, i.e. rooms which are below the flood level

3.2
automatic closure device
part of the anti-flooding device which closes the pipeline automatically when backflow occurs

3.3
emergency closure device
part of the anti-flooding device which enables closure of the pipeline by manual or mechanical action

3.4
warning device
device which indicates when the closing action is activated

4 Types of anti-flooding devices

Anti-flooding devices are divided into different types in accordance with their design and intended use as follows:

Type 0: Anti-flooding device for use in horizontal pipes having only an automatic closure device.

Type 1: Anti-flooding device for use in horizontal pipes having an automatic closure device and an emergency closure device, where this emergency closure device may be combined with the automatic closure device.

Type 2: Anti-flooding device for use in horizontal pipes having two automatic closure devices and an emergency closure device, where this emergency closure device may be combined with one of the automatic closure devices.

Type 3: Anti-flooding device for use in horizontal pipes having an automatic closure device actuated by external energy (electrically, pneumatically or other) and an emergency closure being independent of the automatic closure device.

Type 4: Anti-flooding device incorporated in waste fittings or floor gullies having an automatic closure device and an emergency closure device, where this emergency closure device may be combined with the automatic closure device.

Type 5: Anti-flooding device incorporated in waste fittings or floor gullies having two automatic closure devices and an emergency closure device, where this emergency closure device is combined with one of the automatic closure devices.

National regulations for the choice and the application of these types are given in annex A.

5 Materials

When tested in accordance with 3.1 or 3.2 of prEN 13564-2:2001 the materials for anti-flooding devices shall withstand domestic wastewater

— for types 0, 1, 2 and 3 up to a temperature of 75 °C;

— for types 4 and 5 up to a temperature of 93 °C;

Materials which are not inherently corrosion resistant shall be protected accordingly.

6 Performance, design and construction

6.1 General requirements

Anti-flooding devices shall automatically close when backflow occurs, i.e. when or before the pipe is filled, and they shall allow the normal flow to reoccur when backflow ceases.

The automatic closure device shall not impede the flow under low flow conditions. Therefore, it shall open when there is a depth of water on the up-stream side of 50 % of the pipe diameter or a maximum of 50 mm.

Internal surfaces shall be smooth, permitting an unhindered flow of waste water. Steps in invert level shall be limited to 6 mm.

In order to ensure the free operation of the moving parts there shall be a minimum clearance around the circumference of the moving parts and the body of the anti-flooding device of 0,05 × DN of the outlet in mm, and not less than 6 mm for outlets greater than DN 100. Flaps shall not be floated upwards during backflow.

When tested for effectiveness in accordance with 3.4.2.4, 3.4.2.5 and 3.4.4 of prEN 13564-2:2001 the leakage for each individual test cycle (A or B or for the testing in-situ) shall not exceed 0,5 l.

The dimensions of sockets and/or spigots of anti-flooding devices shall be compatible with pipes/fittings of the same nominal diameter in accordance with relevant European Standards. The nominal size of the outlet shall not be smaller than the nominal size of the inlet.

All connections to and from and all joints on the anti-flooding devices shall be designed to be watertight in accordance with the relevant European Standards or in their absence with EN 476.

The moving parts of anti-flooding devices shall be detachable, or capable of being dismantled in situ.

The mode of actuation and the direction of closing on the emergency closure device shall be clearly and durably indicated. Where this is actuated by the rotation of an operating element this shall close clockwise.

Where simulation of backflow of the automatic closure device in the installed position is requested, the anti-flooding device shall be provided with appropriate means for testing in situ. For this purpose some anti-flooding devices may be disassembled and the functional components tested separately. Where required, a threaded connection of G 1/2 in accordance with ISO 228-1 shall be provided.

6.2 Special requirements of anti-flooding devices of types 0, 1 and 2

The operational closure device shall open, to allow the passage of water, to a depth of flow of minimum 70 % of the internal diameter of the incoming pipe.

The body of the anti-flooding devices shall retain a minimum of 90 % of the cross sectional area of the incoming pipe. When tested in accordance with 3.3 of prEN 13564-2:2001 the body including covers shall be watertight up to 0,5 bar.

6.3 Special requirements of anti-flooding devices of type 3

The automatic closure device and the emergency closure device shall be fully opened except when backflow occurs. When these closure devices are fully opened they shall maintain not less than 90 % of the cross sectional area of the incoming pipe.

The closing process shall commence at the latest when the backflow level is equal to 100 mm, measured from the top of the outlet of the anti-flooding device. The closing time shall not exceed 60 s. When tested in accordance with 3.3 of prEN 13564-2:2001, the body including covers shall be watertight up to 0,5 bar. When tested in accordance with 3.4.3 of prEN 13564-2:2001 (textile test) the leakage for each test cycle shall not exceed 0,5 l.

The closed position of the automatic closure device shall be indicated by either optical or acoustical means, even in the event of power failure.

6.4 Special requirements of anti-flooding devices of types 4 and 5

Waste fittings for sanitary appliances and floor gullies in which anti-flooding devices are incorporated shall comply with prEN 274-1 and EN 1253-1 respectively. Gratings of such floor gullies shall not be fixed to the automatic and/or emergency closure device.

Anti-flooding devices shall have provision for cleaning and rodding the upstream and down-stream pipe system. When an opening with an airtight and watertight cover or plug is provided for rodding, the clear diameter of such opening shall not be less than 32 mm in a gully having an outlet size DN 110 or below and not less than 50 mm in a gully of an automatic and/or emergency outlet size DN 125 to DN 200.

7 Durability

Products conforming with the requirements of clauses 5 and 6 are deemed to be durable.

8 Marking

Anti-flooding devices shall bear the following clear and durable markings i.e. cast in, stamped or labelled:

- EN 13564;
- name and/or mark of the manufacturer;
- type Y (where Y can be 0, 1, 2, 3, 4 or 5 in accordance with clause 4 and, where required by regulations, the letter "F" for type 3 only);

- direction of flow (for types 1 to 3, visible when the unit is installed);
- nominal size of outlet;
- period of manufacture (coded or not).

Further marking may be added (e.g. loading class for floor gullies, third party certification body).

Where the requirements of ZA.3 cover the same information as this clause, the requirements of this clause are met.

9 Manufacturer's instruction

Anti-flooding devices shall be delivered together with the manufacturer's illustrated instructions for installation, operation, maintenance and testing in-situ, where required, in accordance with 3.4.4 of prEN 13564-2:2001 (see annex B).

10 Quality control

The quality control shall comply with prEN 13564-3.

NOTE Annex A (informative) of prEN 13564-3:2001 gives information where third party control is to be carried out.

Annex A
(informative)

Use and choice of anti-flooding devices

Information on local and national limitations concerning the use of types of anti-flooding devices are as follows:

— Germany

Non-faecal wastewater: Types 2, 3 and 5

Faecal wastewater: Type 3 only and marked with "F"

— Switzerland

The use of anti-flooding devices is only allowed in exceptional cases and needs the approval of the relevant authority in every case.

— Austria

Non-faecal wastewater: Types 0 to 5

Faecal wastewater: Types 2 and 3 only

— Denmark

Non-faecal wastewater: Types 3 and 5

Faecal wastewater: Type 3