



SLOVENSKI STANDARD
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Odtoki v stavbah - 2. del: Preskusne metode

Gullies for buildings - Part 2: Test methods

Abläufe für Gebäude - Teil 2: Prüfverfahren

Avaloirs et siphons pour bâtiments - Partie 2: Méthodes d'essais

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91.140.80 Drenažni sistemi Drainage systems

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EUROPEAN STANDARD
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English version

Gullies for buildings - Part 2: Test methods

Avaloirs et siphons pour bâtiments - Partie 2: Méthodes
d'essais

Abläufe für Gebäude - Teil 2: Prüfverfahren

This European Standard was approved by CEN on 20 February 2003.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Foreword

This document (EN 1253-2:2003) 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of an identical text or by endorsement, at the latest by June 2004, and conflicting national standards shall be withdrawn at the latest by June 2004.

This document supersedes EN 1253-2:1998.

This is the second part in a standards series relating to floor gullies, roof gullies and access covers for drainage systems inside buildings. There will be five parts, as follows: Gullies for buildings —

Part 1: Requirements

Part 2: Test methods

Part 3: Quality control

Part 4: Access covers

Part 5: Gullies with light liquid closure

Annex A is informative, annex B 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, 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 1253-2:2003 (E)

1 Scope

This standard specifies test methods for gullies for buildings according to EN 1253-1:2003 and access covers in accordance with EN 1253-4.

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.

EN 1253-1:2003, *Gullies for buildings — Part 1: Requirements*.

EN 1253-4, *Gullies for buildings — Part 4: Access covers*.

3 Terms and definitions

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

3.1

clear opening

Diameter of the largest circle that can be inscribed in the clear area of the frame.

3.2

test load

Specified load which a component is required to withstand when tested in accordance with clause 4.

4 Loading test

4.1 Test loads and permanent set

The values given in table 1 shall be applied.

No crack or fracture shall occur before the test load has been attained.

In addition, in the case of gullies with a grating or a cover made of ductile cast iron, steel, non-ferrous metals, plastics or these materials in combination with concrete, the permanent set shall not exceed the values given in table 1.

Table 1 — Test loads and permanent set

Class	Test load P kN	Permanent set f at $2/3 P$
H 1,5	1,5	2/500 (0,4 %) of the clear opening (CO) but not more than 2,0 mm)
K 3	3	
L 15	15	
M 125	125	

For gratings in accordance with EN 1253-1:2003, 5.2 a test load P of 0,25 kN shall be applied and the permanent set f at $2/3$ of the test load shall not exceed 2,0 mm.

4.2 Testing machine

The testing machine, preferably an hydraulic press, shall be capable of applying a load of at least 25 % greater than the test loads.

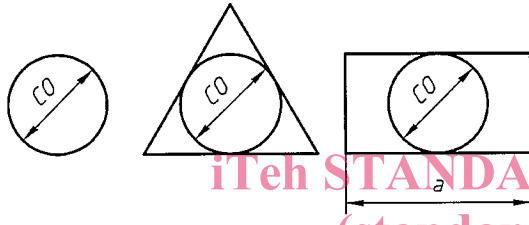
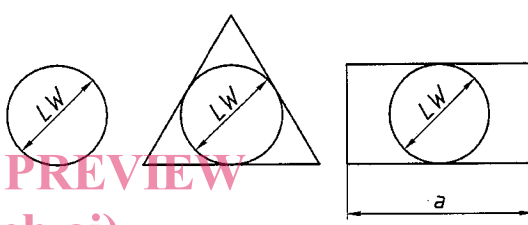
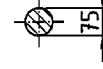
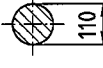
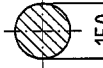
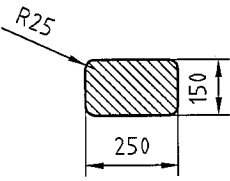
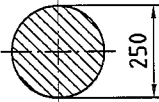
The dimensions of the bed of the testing machine shall be greater than the bearing area of the unit to be tested.

The testing machine shall be capable of applying and maintaining the test load within a tolerance of $\pm 3\%$.

4.3 Test blocks

The shape and dimensions of frames and corresponding test blocks are given in table 2.

Table 2 — Dimensions of frames and test blocks (mm)

Shape of frame and clear opening (CO)	Shape and size of test block
	
CO \leq 140 CO > 140 CO \leq 200	 
CO > 200 CO \leq 300	for $a \leq 300$  for $a > 300$ 
CO > 300	

An intermediate layer of a thin coating of gypsum, cardboard, rubber or similar shall be applied between the grating or cover and the test block. Bottom edges of the test block shall be rounded with a radius ≤ 3 mm. When testing gratings or covers with a non-flat surface, the contact face of the test block shall be shaped to match the grating or cover.

EN 1253-2:2003 (E)**4.4 Procedure**

Place the gully according to the manufacturer's installation instructions in a special test support (concrete, frame, wood etc.) on the bed of the testing machine. Apply the test load, by means of the specified test block, vertically to the centre of the grating or cover.

When different versions of the same component exist, testing shall be applied to the most unfavourable of their combinations.

Before the load is applied, locate the geometric centre of the cover or grating and ensure this point has a smooth surface and take a datum reading at this point measured to an accuracy of $\pm 0,1$ mm.

For gratings/covers made of cast iron, or of this material in combination with concrete, the load shall be steadily increased with the prescribed load being attained within 1 min. Check that no crack or fracture has occurred. For gratings/covers made of ductile cast iron, steel, non-ferrous materials, plastics or these materials in combination with concrete, the load shall be applied at a rate of 1 kN/s to 5 kN/s up to 2/3 of the test load; the load on the test specimen is then released. This procedure shall be carried out five times. After 1h take a new reading at the geometric centre of cover or grating.

The permanent set shall then be determined as the difference between the two readings and the set shall not exceed the values given in table 1. The loading shall then be steadily increased, with the prescribed test load being reached within 1 min and maintained for 5 min. Check that no crack or fracture has occurred.

Testing shall be carried out at ambient temperature on three gratings/covers, each of which shall meet the requirements.

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5 Water seal**5.1 Depth of water seal**

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Measure the difference between the water level on the inlet side when the water seal is completely filled with water, and the water level when there is just so much water in the seal that through movement of air can take place without movement of the water surface.

5.2 Resistance of water seal to pressure

Mount the gully in a test arrangement illustrated in figure 1, and fill the trap with water. Close the flap and set a negative pressure of 400 Pa by means of the bypass valves. Open the flap and fill the trap with water.

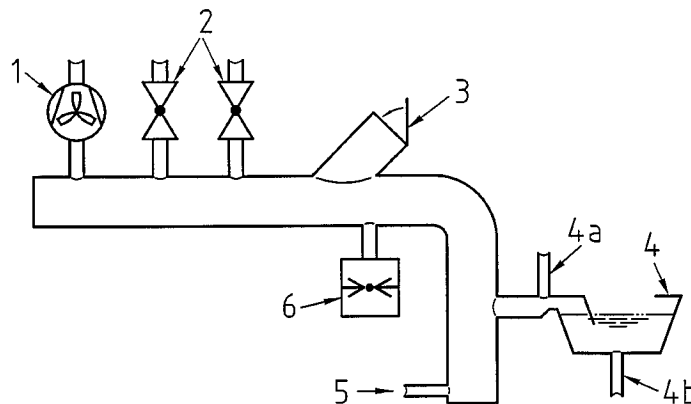
Close the flap and slowly open after about 5 s. Repeat this procedure until the trap no longer loses water, but no more than 5 times.

Remove 8 mm of water height; this corresponds to the reduction in the depth of water seal due to evaporation over a period of disuse.

Subject the trap on the outlet side to a positive pressure such that through flow of air just occurs. Record the pressure.

With the flap closed, set the desired negative pressure P with the bypass valves, and read the manometer. The sensors in the trap are connected to the printout apparatus. When the flap is closed rapidly, the desired vacuum pressure is established suddenly.

By reversing the fan and securing the flap in the closed position, the arrangement can be used also for the measurement of the resistance to positive pressure.

**Key**

- 1 Fan
- 2 Bypass valves
- 3 Flap
- 4 Water seal
- 4a Connection to pressure recorder
- 4b Connection to water level recorder
- 5 Drain cock
- 6 Manometer

Figure 1 — Typical test arrangement for determining the resistance of water seals to pressure

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6 Dimensions of apertures in gratings

By means of suitable measuring instruments or balls of suitable sizes in accordance with table 1 from EN 1253-1:2003, check that the dimensions of apertures comply with the minimum and maximum dimensions specified in EN 1253-1:2003, 8.5.

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7 Blockage prevention — trapped gullies

7.1 Access for cleaning

Demount and remount those parts of the gully which are designed for cleaning access to the gully itself and/or to the pipework to which it is connected. Measure and check for compliance with the requirements of EN 1253-1:2003, 8.6.1.

7.2 Self-cleansing capacity

Using the same test arrangement described in clause 9, mount the gully including the grating.

Supply cold water at $(15 \pm 10) ^\circ\text{C}$ at a rate of 0,2 l/s, 0,3 l/s, 0,4 l/s and 0,6 l/s to the test box.

At each of the water flow rates, supply the gully, through the grating, with 200 cm³ of glass beads of $(5 \pm 0,5)$ mm diameter and density 2,5 g/cm³ to 3,0 g/cm³. Supply the beads at a steady and uniform rate for 30 s. Continue the flow of water for a further 30 s. Measure in cm³ the volume of glass beads that has passed through the gully. Conduct the test three times at each discharge rate. The average of the three results shall be taken.

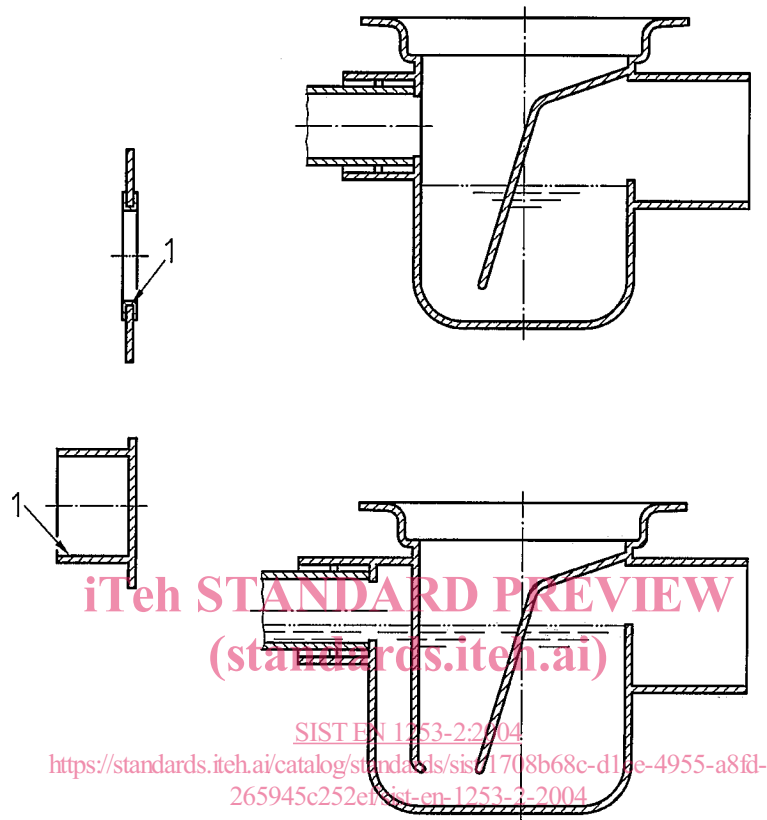
7.3 Anti-blockage

Pass a ball of 8 mm diameter through the gully, with grating/cover removed, from inlet to outlet merely by tilting the gully in the appropriate directions, no other force being applied to the ball.

EN 1253-2:2003 (E)

8 Position of side inlets

Close the side inlet(s) and fill the trap with water. Check whether the lowest connecting point of side inlet(s) is completely above the water level (see figure 2).



Key

1 Connecting point

Figure 2 — Testing the position of side inlets

9 Thermal behaviour

9.1 Temperature cycling for floor gullies

9.1.1 General

Mount the gully in accordance with figure 3. Connect a suitable pipe to the outlet of the gully (the outlet shall be open all the time). When different versions of same components exist, testing shall be applied to the most unfavourable of their combinations.

Admit water through the grating or, if not possible, through the side inlet(s) as follows:

- 1) 0,5 l/s hot water at (93 ± 2) °C for 60 s.
- 2) Pause for 60 s.
- 3) 0,5 l/s cold water at (15 ± 10) °C for 60 s.
- 4) Pause for 60 s.

Repeat this cycle 1500 times (100 h).

Check to ensure that there is no deformation or change in surface texture of any components which would impair the fitness for use.

This test does not apply to gullies of only metallic materials.

9.1.2 Additional test for gullies for use with sheet floor covering

This additional test shall be applied to gullies intended for installation in floor constructions where the floor covering is a watertight synthetic material such as PVC. The floor covering may be connected to the gully by bonding and a clamping ring, or by a clamping ring alone.

Mount the gully in the test box in accordance with the manufacturer's instructions.

Cover the entire internal surface of the box with sheet floor covering of the thickness which the gully manufacturer states is the thickness for which the gully is designed. If the gully is designed for a number of different thicknesses of sheet floor covering, it may be necessary to carry out several tests. The instructions of the sheet floor covering manufacturer are to be followed when the covering is applied.

A moisture indicator is fitted to the bottom of the box at the opening where the floor gully is placed.

Admit water to the gully via the floor covering and grating as shown in figure 3.

Supply water as follows:

- 1) 0,5 l/s hot water at (60 ± 2) °C for 60 s.
- 2) Pause for 60 s.
- 3) 0,5 l/s cold water at (15 ± 10) °C for 60 s.
- 4) Pause for 60 s.

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Repeat this cycle 1500 times (100 h).

During the test the outlet of the gully shall be closed when water is being supplied, and open during pauses. Water will back up by approximately 80 mm in the box.

The outlet of the gully shall be connected to a pipe of 1 m length of the same DN as the gully outlet, laid at a gradient of 2 % to the horizontal. Where necessary, a bend of (88 ± 2) ° shall be used to connect the outlet of the gully to the pipe. The pipe shall be connected to a vented vertical pipe of DN 100.