

---

European Organisation for Technical Approvals  
Europäische Organisation für Technische Zulassungen  
Organisation Européenne pour l'Agrément Technique

---

## ETAG 022

GUIDELINE FOR  
EUROPEAN TECHNICAL APPROVAL  
Of

Watertight covering kits for wet room floors and or walls

**- ANNEX G WATER TIGHTNESS AROUND PENETRATIONS AND OTHER DETAILS IN WET ROOM WALLS AND FLOORS WITH RIGID SUBSTRATES**

Edition **2005-05-24**

## **1. Scope**

The aim of this method is to evaluate the ability of normally used details - such as floor gully, pipe penetrations and in- and outgoing corners – of watertight walls and floors or wall and floor coverings when exposed to water.

The test procedure is intended to simulate the exposure to hot and cold water that can be expected during long-term use in order to verify satisfactory performance. This test method is foreseen to evaluate the water tightness of kits intended to be installed on moisture insensitive substrates, e.g. concrete or render.

## **2. Field of application**

The method is applicable for installations intended to serve as watertight covering kits for walls and floors in wetrooms.

## **3. Definitions**

Watertightness in this test refers to the resistance to penetration of water acting on the surface of the floor and adjoining walls according to the test conditions.

## **4. References**

-

## **5. Preparation of test pieces**

One sample is used for the test. The box-shaped sample is made as a floor with adjoining walls. The inner dimensions are approximately 1200 mm x 1500 mm x 500 mm. The sample is constructed in a laboratory.

The test specimen shall be made on a suitable rack which supports the floor and which creates a space of approximately 0.5 m in height beneath the floor for inspection. The supporting rack might for instance be made from timber.

The floor and walls of the specimen shall be made from aerated concrete blocks (thickness 75 mm) layed by using a suitable adhesive/mortar. The floor slab is made through horizontally laying of the blocks. The floor slab shall form a rectangle of ca. 1350 mm x 1650 mm. The walls are simulated with 500 mm high pieces of aerated concrete blocks placed vertically at the edge of the slab including an additionally outgoing corner 300 mm x 300 mm as shown in figure 3.

The floor shall be supplied with gullies suitable for use with the floor in question. At least one representative sample of each type of gully intended to be used with the floor i.e. gullies:

- of stainless steel with flange for attaching of collar/membrane figure (typical example shown in figure 1A)
- of plastics – type PE or PP – for attaching of collar/membrane (typical example shown in figure 1B)
- with clamping ring (and collar) (typical examples shown in figure 2 A and B)

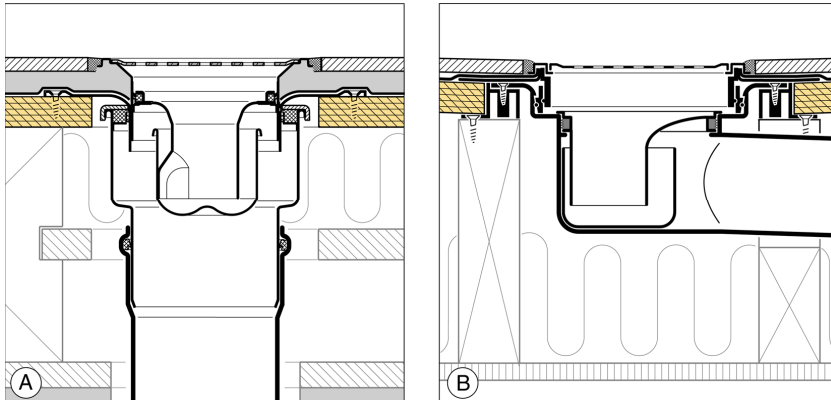


Figure 1

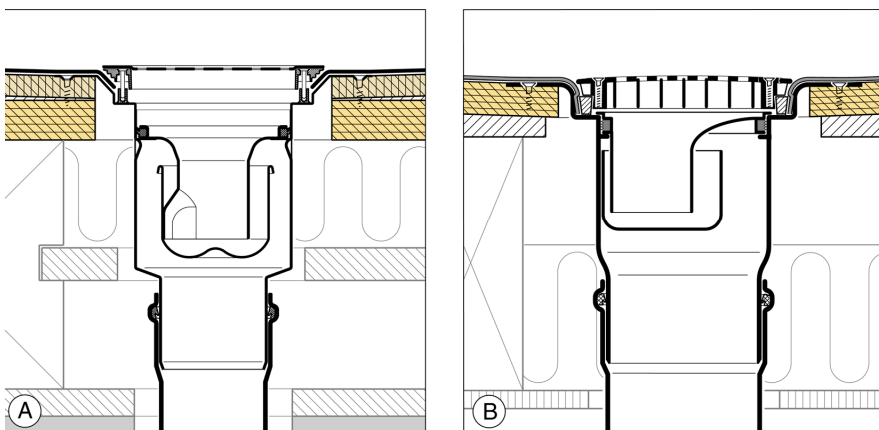


Figure 2

Further the floor is supplied with at least two water pipes (polypropylen pipes diameter 50 and 110 mm) penetrating the floor. The watertight covering shall protect as well sub-floor as walls. The watertight layer shall be carefully applied including all details – e.g. joints around gullies and between floor and walls (including in- and outgoing corners) and skirtings to pipe penetrations - as recommended by the supplier. The waterproof layer on the floor shall continue as watertight layer up the wall - to form a basin - or can be connected to an other watertight layer on the walls if this is a different system. If the watertight layers floor/wall are not identical additional penetrations of the above mentioned water pipes in one of the walls are required.

Waterproofing membranes which in normal use are covered by protective layers, e.g. tiles, are to be tested without this protection unless something different has been agreed with the approval body.

## 6. Testing

### 6.1 Principle

The watertightness of all details, e.g. penetrations and in- and outgoing corners, is tested by exposing the specimen to a head of water and alternating influences from hot and cold water. Finally the specimen is again tested with a head of water.

### 6.2 Apparatus

9 nozzles mounted on water pipes at a distance of about 300 mm from the surface of the floor. The spray of water from the nozzles shall form a cone of about 60°, and shall be evenly distributed. The pressure of water shall be about 0.1 MPa before the nozzles.

*Note: A suitable nozzle is for example produced by Spraying Systems Inc., USA. It is marked ¼ G 10 (female) or ¼ GG 10 (male).*

### 6.3 Preparation of test samples

Before the test the test specimen shall be allowed to dry/harden sufficiently according to the suppliers instructions.

### 6.4 Procedure

6.4.1 The floor gullies are blocked in the trap (at the outlet) and the basin formed by the floor is filled with (tap) water to a height of 100 mm above the gullies. After 48 hours it is controlled visually and/or with a moisture meter if water has penetrated.

*Note: When assessing the results of the test, measurements of the humidity level in the aerated concrete blocks used for the test specimen may be used. The humidity level in the blocks shall roughly correspond to the humidity level in blocks at conditions similar to those in the test laboratory. Only minor differences in the humidity content shall occur.*

If the specimen still proves to be watertight, the following exposure to hot and cold water is carried out:

#### 6.4.2

1) Hot and cold water is alternately carried directly into the floor gullies in such a way that the water runs along the joint between the drain and the floor. The water can be applied successively to one gully at a time or to all three gullies at the same time depending on the test equipment. The water supply shall be in accordance with the following cycle:

Hot water ( $90 \pm 3$  °C) 0.3 litre/sec for 60 sec,  
Pause for 60 sec,  
Cold water ( $10 \pm 3$  °C) 0.3 litre/sec for 60 sec,  
Pause for 60 sec.

The temperature is measured at the nozzle.

The cycle is repeated 100 times.

### 6.4.3

- 2) From the nozzles, hot and cold water is alternately sprayed over the details, see figure 3, of the floor and wall construction, e.g. gullies, pipes and corners. The nozzles are mounted at least 300 mm from the floor and/or wall surfaces. The water is supplied with the following cycle:  
Hot water ( $60 \pm 3$  °C) for 60 sec,  
Pause for 60 sec.  
Cold water ( $10 \pm 3$  °C) for 60 sec,  
Pause for 60 sec.

The temperature is measured at the nozzle.

In the gullies an arrangement for simulating blocked floor drains shall be mounted, so that the water level rises 20 mm above the gully during each spraying period.

The cycle is repeated 1500 times.

6.4.4 After the hot and cold water exposure the test sample is again filled with water to create a head of water of 100 mm above the gullies. The floor is controlled from beneath for any signs of water penetration after 7 days. Supplementary humidification of the substrate for the waterproofing membrane around details considered vulnerable can be controlled by means of a moisture meter.

## 6.4 Expression of results

There shall be no signs of water penetration after the test e.g. after visual inspection or measurement of humidity level around sensitive details.

## 7. Test report

The test report should include the following information:

- a) Name and address of the testing laboratory
- b) Identification number of the test report
- c) Name and address of the organization or the person who ordered the test
- d) Purpose of the test
- e) Method of sampling and other circumstances (date and person responsible for sampling)
- f) Name and address of manufacturer or supplier of the tested material or system.
- g) Name or identification marks of the tested product or products
- h) Description of the tested object
- i) Date of supply of the tested object
- j) Date of test
- k) Test method
- l) Conditioning of the test specimens, environmental data during the test (temperature, relative humidity etc.)
- m) Identification of the test equipment and instruments used
- n) Any deviations from the test method
- o) Test results
- p) Inaccuracy or uncertainty of the test results
- q) Date and signature

Figure 3: Plan view

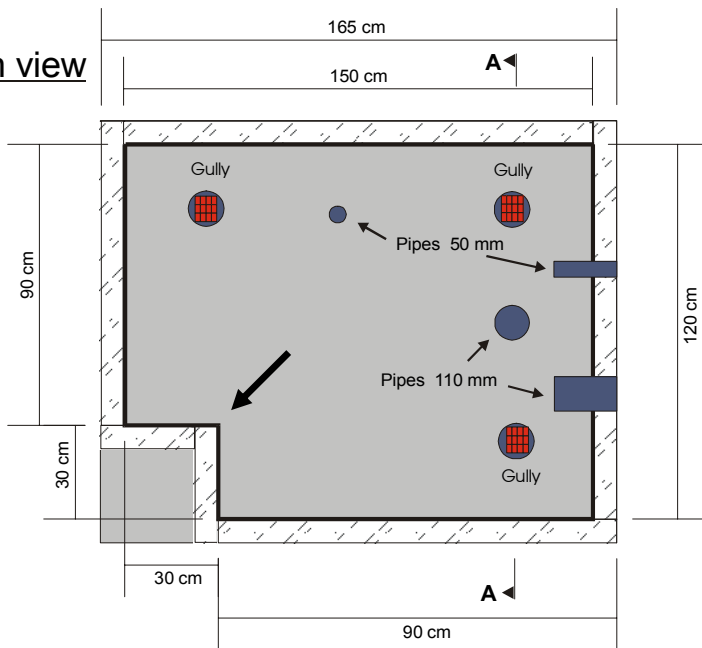


Figure 4: View A-A

