

Translation from Finnish
Legally binding only in Finnish and Swedish

9/19

Decree of the Ministry of the Environment

on the Type Approval of Floor Drains Intended for Waste Water Installations of Buildings

By decision of the Ministry of the Environment, the following is enacted pursuant to section 6, subsection 3; section 9, subsection 2; and section 10, subsection 3 of the Act on the Type Approval of Certain Construction Products (954/2012):

Section 1

Scope of application

This Decree applies to the requirements of type approval of floor drains intended for waste water installations in a building and on property. This Decree covers floor drains to be installed in buildings, the depth of water seal of which is at least 50 millimetres. This Decree is also applied to floor drains without a water seal, i.e., dry drains.

With regard to the waterproofing joints of floor drains, this Decree covers the joining of the floor drain to the vinyl flooring serving as floor covering and simultaneously also as waterproofing.

Section 2

Definitions

In this Decree:

- 1) *Depth of water seal* means the depth of the seal formed by water in the water seal of a floor drain to prevent the passage of sewage air from the floor drain.
- 2) A *cover* means the grated or solid cover of a floor drain through the apertures of which or from the inlets between the edges and the frame of which water is allowed to flow from the floor to the floor drain.
- 3) *Clear opening (CO)* means the smallest horizontal clear diameter of the part below the body that supports the floor drain cover.
- 4) A *clamping ring* or a *pull ring* means a ring used to clamp the vinyl flooring or other waterproofing to the body of the drain or to the extension ring.

Section 3

Establishment of conformity

Type approval can be used to demonstrate that the floor drains comply with the essential technical requirements laid down in section 117 c of the Land Use and Building Act (132/1999), as amended by Act (958/2012), and thereunder.

Section 4

Surface properties

An accredited testing laboratory shall examine the inner and outer surfaces of the floor drain visually without magnification.

Section 5

Structure and dimensions

An accredited testing laboratory shall examine the structure and dimensions of the floor drain.

In connection with the testing of the floor drain, the installability of the floor drain and its adhering to sheet flooring and the demounting and remounting of the parts intended to be detached for cleansing shall be examined. The installation and service instructions shall be simultaneously examined.

Section 6

Water seal

An accredited testing laboratory shall measure the depth of water seal of a floor drain and the resistance to excess pressure. The depth of water seal shall be measured when the water seal is filled with water.

In the pressure resistance test, an accredited testing laboratory shall first fill the water seal with water and close the flap of the test apparatus so that an underpressure of -400 Pa is created in the outlet fitting. Next, the flap is opened and the water seal filled with water. Pressure fluctuation is created by closing the flap and opening it slowly after five seconds. Said opening and closing shall be repeated five times. About 8 mm of the water height is removed from the water seal. The water seal is subjected to excess pressure on the outlet side and the threshold value of excess pressure, with which air flows through the water column in the water seal, shall be measured. The test shall be carried out in room temperature.

Section 7

Blockage prevention

An accredited testing laboratory shall examine the access for cleansing of the floor drain and the size of the cleanout. The parts intended to be detached for cleansing of the floor drain shall be demounted from the floor drain.

If the floor drain, due to its structure, does not have a cleanout meeting the requirements, a self-cleansing test shall be carried out on the floor drain with five-millimetre glass beads in accordance with Table 1.

Of a floor drain, the passing of a ball of 8 mm diameter through flow paths shall be examined. The test shall be carried out with the cover demounted so that the ball passes from inlet to outlet by tilting the floor drain.

Table 1. Testing of and requirement for the self-cleansing capacity of a floor drain at test temperature (23±5) °C; water temperature (15±10) °C.

Testing of the self-cleansing capacity	Flow rate
Size of beads (5±0,5) mm, density 2.5 g/cm ³ 200 cm ³ , rinse within 30 seconds, then flow for 30 seconds	0.2 l/s, 0.3 l/s, 0.4 l/s and 0.6 l/s
Measuring of the volume of the beads passed through the water seal (cm ³). The test shall be carried out three times at each flow rate and the results shall be notified as averages.	
Requirement: The share of beads that have passed through the water seal at the flow rate 0.3 l/s - 0.6 l/s shall exceed the shares obtained from the straight line defined by the points 0%, 0.3 l/s and 50 %, 0.6 l/s.	

Section 8

Materials and temperature resistance

An accredited testing laboratory shall check of the floor drain the information on materials submitted by the manufacturer.

An accredited testing laboratory shall test the temperature resistance of the floor drain and the extension collar with the floor drain temperature variation test in accordance with Table 2. The test may not cause deformations or damage to the parts of the floor drain that impair their usability. After the test, tightness tests shall be carried out with water and air.

The joint of the floor drain to the vinyl flooring of a wet room shall be tested with the temperature variation test of the flooring joints in accordance with Table 2.

Table 2. Temperature variation tests of the floor drain and its vinyl flooring joint.

Flow rate to a floor drain and length of the phase of the cycle ¹⁾	Water temperature, °C	
	Water seal	Flooring joint ²⁾
Hot water flow rate (0.5±0.05) l/s, (60±2) s	93±2	60±2
Pause (60±2) s	-	-
Cold water flow rate (0.5±0.05) l/s, (60±2) s	15±10	15±10
Pause (60±2) s	-	-
¹⁾ Cycles (length 4 min) repeated 1,500 times, duration 100 h		
²⁾ In the flooring joint test, during water inlet, backwater at around 80 mm		

Section 9

Load tolerance of a cover

An accredited testing laboratory shall test the load tolerance of the cover of a floor drain. The testing shall be carried out with a compression test apparatus used to press the cover at the test force in accordance with Table 3. The test force shall be directed perpendicularly to the cover with a press plate placed at the centre of the clear opening and selected in accordance with Table 4. A plywood sheet, rubber sheeting or a corresponding interlayer may be placed between the cover and the press plate.

Metal covers shall be tested so that the force is increased steadily to the test force in accordance with the loading class of the cover. In the post-test examination, the cover may not show any cracks or breaks.

Non-metal covers shall be tested so that the force is steadily increased to two thirds of the test force in accordance with the loading class of the cover after which the loading is terminated. The same procedure is carried out a total of five times. After an hour, the deflection shall be measured at the centre of the cover. The deflection may be at most 1.2 mm. Finally, the cover is subjected to loading with the test force for five minutes. In the post-test examination, the cover may not show any cracks or breaks.

Table 3. Forces applied to test the load tolerance of a cover and the loading rate.

Class	H 1.5	K 3	L 15	R 50	M 125
Test force ¹⁾ , kN	1.5	3	15	50	125
Loading rate, kN/s	0.1	0.2	1		5
¹⁾ Stability of the test force at least within 3 % accuracy					

Table 4. Form, size and placement of the press plate in the load tolerance test.

Clear opening CO mm	Form and size of the press plate mm		Smallest unsupported clearance mm
	Round	Rectangular	
$25 < CO \leq 50$	20 ± 0.5	$(20 \pm 0.5) \times (90 \pm 0.5)$	2.5
$50 < CO \leq 90$	40 ± 0.5	$(40 \pm 0.5) \times (110 \pm 0.5)$	5
$90 < CO \leq 140$	75 ± 0.5	$(75 \pm 0.5) \times (120 \pm 0.5)$	7.5
$140 < CO \leq 200$	110 ± 0.5	$(110 \pm 0.5) \times (180 \pm 0.5)$	15
$200 < CO \leq 300$	150 ± 0.5	$(150 \pm 0.5) \times (250 \pm 0.5)$	25
<p>The form of the press plate shall be selected on the basis of the form of the cover. The size of the press plate shall be selected</p> <ul style="list-style-type: none"> - on the basis of the size of the clear opening and the smallest unsupported clearance (the smallest clearance between the clear opening and the edges of the loading head), the press plate always inside the edges of the cover, - for covers with irregular support so that the smallest unsupported clearance is met. 			

Section 10

Mechanical strength

An accredited testing laboratory shall carry out a bending test of the combination of an extension ring and a floor drain in accordance with point A of Table 5. In the tightness test to be performed after the test with the water pressure at 10 KPa and test period 15 minutes, the joint of the extension ring and the floor drain shall be tight.

A tensile test shall be carried out on the clamping ring of the floor drain and the vinyl flooring in accordance with point B of Table 5. In the test, the clamping ring shall stay in place.

Table 5. Bending test of the extension ring of a floor drain and tensile test of the clamping ring of the vinyl flooring.

Strength test	Force	Test period
A. Bending test of the extension ring and floor drain joint, force via a metal pipe connected to the exhaust fitting at 1 metre from the joint, testing 3 times	100 N	60 s
B. Tensile test of the clamping ring, 3 most unfavourable points	400 N	60 s

Section 11

Tightness

An accredited testing laboratory shall carry out tightness tests on the floor drain. The tightness tests to be performed on the floor drain and the test requirements are provided in Table 6.

Table 6. Tightness tests of a floor drain, test parameters and requirements.

Tightness test	Pressure	Test period	Requirement
Airtightness of a floor drain (water seal) ¹⁾	200 Pa	15 min	≥ 180 Pa
Watertightness of the body and the extension ring	10 kPa	15 min	Tight
Airtightness	-10 kPa	10 min	Tight
Watertightness of the vinyl flooring joint	100 mmH ₂ O ²⁾	24 h	Tight
¹⁾ Pressure in the exhaust fitting, equipped with an airtight test tube, volume approximately 2.0 dm ³ The temperature of the water in the water seal and room temperature may deviate from each other at most ±2°C.			
²⁾ mm H ₂ O: mm water column			

Section 12

Flow rate

An accredited testing laboratory shall measure the flow rate of the floor drain through the cover and through possible side inlets in a non-turbulent flow rate test basin.

Section 13

Floor drain without a water seal

An accredited testing laboratory shall test the dry drain with all the tests provided in this Decree with the exception of the tests relating to a water seal.

Section 14

Marking

An accredited testing laboratory shall inspect the markings of the floor drain.

Section 15

Type testing

For type approval, an accredited testing laboratory shall type test the floor drains in accordance with the extent of testing presented in Table 1.1 of Appendix 1. For type approval, the manufacturer shall, in addition to samples, submit product designs, material information and certificates as well as installation and service instructions.

Section 16

Quality control relating to type approval

The certifying body for quality control shall verify that the floor drains comply with the requirements of type approval and also meet the conditions set in the decision on type approval.

The certifying body for quality control shall carry out an initial inspection of the production, an on-going control of the internal production quality control as well as the selection of random samples of products and their testing once annually or more frequently if the products do not meet the type-approval requirements. The extent of testing of the random samples is presented in Table 1.2 of Appendix 1.

The manufacturer's internal production quality control shall cover at least the inspections and tests presented in Appendix 2.

Section 17

Entry into force

This Decree enters into force on 1 January 2020.

Helsinki, 9 April 2019

Minister of the Environment, Energy and Housing Kimmo Tiilikainen

Senior Specialist Tomi Marjamäki

Type testing of a floor drain and the tests used in the verification of quality control

Table 1.1. The properties to be tested in the type tests of floor drains and the number of samples.

Property to be tested	Samples to be tested
Structure and outer appearance	3 samples
Dimensions - DN size and other dimensions - apertures in the cover - side inlet place	3 samples 1 sample 1 sample
Properties of the water seal	1
Blockage prevention	1 sample
Materials and temperature resistance	1 sample/test
Load tolerance of a cover	3 samples/ size/material
Mechanical strength	1 sample
Tightness	Air tightness: 3 samples Other tests 1 sample
Flow rate	1 sample
<p>Order of tests on a floor drain: Blockage prevention - tightness of the extension ring and floor drain joint - temperature resistance - blockage prevention (dismounting and remounting of parts) - air tightness - tightness of the extension ring and floor drain joint - mechanical strength of the extension ring and floor drain</p> <p>Order of tests on a vinyl flooring joint: Mechanical strength (clamping ring) - tightness- temperature resistance - mechanical strength (clamping ring) - tightness</p>	

Table 1.2. Properties to be tested in the verification of quality control of floor drains and the minimum sampling frequency.

Property to be tested	Minimum sampling frequency
Structure and outer appearance	3 samples/product/year
Dimensions DN size and other dimensions	3 samples/product/year
Depth of water seal	1 sample/product/year
Tightness - Air tightness - watertightness with an extension ring	3 samples/product/year 1 sample/product/year
Marking	3 samples/product/year

Testing by the manufacturer's internal quality control

Table 2.1 Inspections and tests on floor drains by the internal quality control and their minimum frequency.

Property to be tested	Inspection/test frequency
Structure and outer appearance	All products
Dimensions	At the beginning of a production patch and by random tests at least once a week
Materials:	Manufacturer's raw material certificate / production batch
Air tightness	At the beginning of a production patch and by random tests at least once a week
Marking	Continuously by random tests