



# TEST REPORT

5001 East Philadelphia Street  
Ontario, California – USA 91761-2816  
Ph: 909.472.4100 | Fax: 909.472.4243  
<http://www.iapmortl.org>

**Report Number:** 1554-25004

**R&T File No.:** 9301

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**Project No.:** 47075

**Client:** Green Drain, Inc.  
20619 Torrence Chapel Rd  
Cornelius, NC 28031

**Contact:** Justin Granath

**Source of Samples:** The samples were shipped to IAPMO R&T Lab from Green Drain, Inc., and received in good condition on August 25, 2025.

**Date of Testing:** October 1, 2025 to October 28, 2025.

**Sample Description:** Trap Seal Device  
Models: GD-4 (4")

**Scope of Testing:** The purpose of the testing is to determine if the samples tested of the trap seal device meets the applicable requirements of ASSE 1072-2020, entitled, "Barrier Type Trap Seal Protection Devices for Floor Drains", less section 3.9.

**Conclusion:** The samples tested of the Trap Seal Device, of the model listed above, from Green Drain, Inc. **COMPLIES** with the applicable requirements of ASSE 1072-2020, less section 3.9.

Evaluated/Tested by,

Reviewed by,

Luis Herrera, Test Technician I

Sean Vuu, P.E., Manager, Specialty Projects

*All testing and sample preparation for this report was performed under the continuous, direct supervision of IAPMO R&T Lab, unless otherwise stated. The statement of compliance is based on the test results compared to the standard specifications without considering measurement uncertainty. The observations, test results and conclusions in this report apply only to the specific samples tested and are not indicative of the quality or performance of similar or identical products. Only the Client shown above is authorized to copy or distribute the report, and then only in its entirety. If presented with a copy of a Test Report without the IAPMO R&T Lab watermark background, contact IAPMO R&T Lab for verification. Any use of the IAPMO R&T Lab name for the sale or advertisement of the tested material, product or service is prohibited absent the advance written consent of IAPMO R&T Lab.*

**Primary Standards:** ASSE 1072-2020, Sections Tested / Evaluated:

- 1 General
- 2 Test Specimens and Test Laboratory
- 3 Performance Requirements and Compliance Testing
- 4 Detailed Requirements

**Test Results:** all tests and evaluations were conducted per the written procedures specified in the standard. Sections not listed were considered not applicable to the subject product.

**ASSE 1072-2020:**

**1 General - FOLLOWED**

1.2 Scope - FOLLOWED

1.2.1 Description

The device consists of a membrane that allows the flow of drainage to enter the plumbing drainage system. The device closes when there is no flow.

1.2.2 Size

The device shall be sized according to the nominal pipe size of the device it installs into, except for the 3-1/2 in. device which installs into the inside of a floor drain fitting that complies with ASME A112.6.3. Sizes shall include 1½ NPS through 6 NPS.

1.2.3 Flow Capacity

The device permits the flow of drainage as stipulated in Table 1 of this standard. If the floor drain size is not listed, perform an interpolation between the values in Table 1 to determine the appropriate flow rate.

Table 1: Minimum Flow Rate through Floor Drains

Floor Drain Size	Flow Rate	
	GPM	L/min
NPS		
4	73.0	276.3

1.3 Construction - FOLLOWED

1.3.1 Function

The device opens when there is a maximum of 113.4 g of water on the inlet to the device, and shall close when there is no flow of wastewater into the device.

1.3.2 Evaporation

The device shall pass the evaporation test described in Section 3.2 of this standard.

1.3.3 Obstruction of Flow

To prevent the collection of waste solids, the opening passageway in the device does not have any sharp edges or protrusions which will obstruct the flow to the drainage system or result in stoppages. The device does not obstruct access to the interior of the floor drain trap.

1.3.4 Connections within Floor Drain

The device connects within a floor drain that conforms to ASME A112.6.3. Connections shall be in accordance with local authorities having jurisdiction.

## **2 Test Specimens and Test Laboratory - FOLLOWED**

### **2.1 Samples Submitted - FOLLOWED**

6 devices of each size and model were submitted by the manufacturer.

### **2.2 Samples Tested - FOLLOWED**

Tests shall be performed in the order listed in the standard.

The testing agency shall select 4 samples of each model and size for testing:

- 1 sample for the testing specified in Sections 3.1 through 3.7;
- 1 sample for repeat testing to Section 3.2;
- 1 sample for the testing specified in Section 3.8;
- 1 sample for the testing specified in Section 3.9.

### **2.3 Rejection - FOLLOWED**

Failure of 1 sample shall result in a rejection of that model.

## **3.0 Performance Requirements and Compliance Testing – FOLLOWED**

Laboratories shall have the option to increase the size of the base opening for water flow on the test assembly for floor drains 4 NPS and larger in diameter. If the water overflows the sides of the test assembly without the device for the larger floor drain sizes, the walls of the test assembly shall be raised to prevent the overflow of water. Once the overflow rate has been established, the sides shall be increased 1.0 inch in height for tests with the installation of the device.

When assembling the device on test into the assembly, the top of the device shall be inserted no more than 6 in. from the top of the drain fitting.

### **3.1 Flow Test - COMPLIED**

#### **3.1.1 Purpose**

The purpose of this test is to determine if the device allows the required flow of water through a floor drain.

#### **3.1.2 Procedure**

- a) For testing sizes 1-1/2 NPS through 3 NPS,
  - 1. Laboratories shall have the option to increase the size of the base opening for water flow on the test assembly for floor drains 4 NPS and larger.
  - 2. Install a floor drain that conforms to ASME A112.6.3 to an assembly measuring  $24.0 \pm 1.0$  in. by  $24.0 \pm 1.0$  in. by 1.0 in. deep at the drain pan edge with the floor sloped to the floor drain as shown within Figure 1.
- b) For testing sizes 4 NPS through 6 NPS, install a floor drain that conforms to ASME A112.6.3 to an assembly measuring  $48.0 \pm 1$  in. by  $48.0 \pm 1$  in. by 1.0 in. deep at the drain pan edge with the floor sloped to the floor drain as shown within Figure 1.
- c) Install the device to the floor drain according to the manufacturer's instructions. The floor drain grate shall be permitted to be removed to achieve the required flow through the floor drain.
- d) Turn on the water and adjust the flow rate for the given floor drain size to the flow rate in Table 1, or the manufacturer's maximum rated flow per the specification sheet, whichever is greater. Continue running the water for a period of 10 minutes.

#### **3.1.3 Criteria**

Any water overflowing the open side of the pan shall result in rejection of the device.

Findings: the device was able to maintain 73 gpm for 10-minute period without water level surpassing 1” mark.

### 3.2 Evaporation Test - COMPLIED

#### 3.2.1 Purpose

The purpose of this test is to determine if the device will reduce evaporation from the trap seal of the floor drain.

#### 3.2.2 Procedure

- a) The test equipment for this test shall include three vessels identified as cylinders A, B, and C in Figure 2. The vessels shall be the nominal pipe diameter of the device being tested, and have a minimum height of 4.0 in. and a maximum height of 12.0 in.
- b) Attach the device to the top of vessels B and C, sealing the connection between the device and the vessel.
- c) Insert a 1/8 inch diameter wire [(the wire shall have a maximum length of 3.0 in.] through the opening of the device in cylinder B.
- d) Fill the three vessels with 2.0 in. of water. For the vessels with the device, manually open the device to fill the vessel with water so that there is no water on the membrane of the device.
- e) Weigh each vessel independently with a scale having an accuracy of 0.01 pounds (4.5 g) to establish the initial weight. Record the initial weight of each vessel.

NOTE: The wire should be configured to allow the membrane to close around the wire. This may require the wire to be bent into place.

- f) Place the vessels in a controlled environment that is maintained at  $100.0\text{ }^{\circ}\text{F} \pm 5.0\text{ }^{\circ}\text{F}$  with 20 percent ( $\pm 10$  percent) relative humidity.
- g) Continue the test for  $96\text{ hours} \pm 1\text{ hour}$ , record the weight of each vessel at the end of the test.
- h) Establish the total weight loss of the contents of each vessel by subtracting the weight of each vessel just before placement into the controlled environment for this test from the final weight of the vessel.

#### 3.2.3 Criteria

A weight loss in cylinder B greater than 10 percent of the weight loss in cylinder A shall result in rejection of the device. A weight loss in Cylinder C greater than 1% of the weight loss in cylinder A shall result in rejection of the device.

Findings:

- Weight loss in cylinder A: 249.05 g
- Weight loss in cylinder B: 9.34 g (3.75% of cylinder A)
- Weight loss in cylinder C: 2.11 g (0.85% of cylinder A).

### 3.3 Trap Seal Interference Test – COMPLIED

The purpose of this test is to determine if the device extends into the trap seal of a floor drain.

#### 3.3.2 Procedure

Install the device in a floor drain with an integral trap conforming to ASME A112.6.3 in accordance with the device manufacturer's installation instructions. Fill the floor drain trap. With the device fully open, no portion of the device shall extend into the water seal of the floor drain trap.

### 3.3.3 Criteria

Any protrusion of the device into the floor drain trap seal shall result in rejection of the device.

Findings: No portion of device was observed to extend into the water seal of the floor drain trap.

## 3.4 Opening Test - COMPLIED

### 3.4.1 Purpose

The purpose of this test is to determine that the device will open when there is a minimal amount of water on the membrane of the device.

### 3.4.2 Procedure

Install the device in a floor drain conforming to ASME A112.6.3 in accordance with the device manufacturer's installation instructions. Add water to the top of the membrane at a rate of 29.57 mL/min or less. Record the quantity of water required to open the device and allow the passage of water.

### 3.4.3 Criteria

Failure of the device to open with 113.4 g or less of water shall result in rejection of the device.

Findings: device opened at 32 g of water, which meets the 113.4 g or less criteria.

## 3.5 Dirt and Debris Test - COMPLIED

### 3.5.1 Purpose

The purpose of this test is to determine the ability of the device to seal after sand passes through the device.

### 3.5.2 Procedure

- a. Install a floor drain that conforms to ASME A112.6.3 in an assembly as shown in Figure 1.
- b. Install the device in the floor drain in accordance with the device manufacturer's instructions.
- c. Remove the top grate of the floor drain. Using sand that passes through a Number 50 sieve (300  $\mu\text{m}$ ) but not through a Number 120 sieve (125  $\mu\text{m}$ ) as designated by ASTM E11, pour 1.0 oz (28.3 g) of sand in the center of the device.
- d. Reinstall the grate on the floor drain. Pour 5.0 gallons (18.9 L) of water in the center of the floor drain at a rate of 1.0 GPM (3.8 L/min) with the grate in place.
- e. Subject the device to the evaporation test specified in Section 3.2.

### 3.5.3 Criteria

Failure to pass the evaporation test specified in Section 3.2 shall result in rejection of the device.

Finding:

- Weight loss in cylinder A: 266.66 g
- Weight loss in cylinder B: 9.76 g (3.66% of cylinder A)
- Weight loss in cylinder C: 2.03 g (0.76% of cylinder A).

## 3.6 Floor Wax Test - COMPLIED

### 3.6.1 Purpose

The purpose of this test is to determine if the device will open after being exposed to common liquid floor waxes.

### 3.6.2 Procedure

- a) Install a floor drain that conforms to ASME A112.6.3 in an assembly as shown in Figure 1. Install the device in the floor drain in accordance with the device manufacturer's instructions.
- b) Remove the top grate of the floor drain. Pour 8 fl oz (237 mL) of an acrylic co-polymer floor finish with  $\geq 20\%$  solids into the center of the device. Reinstall the top grate on the floor drain. Maintain the test assembly undisturbed at ambient room temperature until the wax is dry.

NOTE: an example acceptable floor finish is Diversey Signature Ultra High Speed floor finish.

- c) Flow cold water at a rate of 1.0 GPM into the floor drain and observe the opening of the device.
- d) Once the device opens, discontinue flowing water into the floor drain. If water overflows the top grate of the floor drain, discontinue flowing water into the floor drain.

### 3.6.3 Criteria

Failure to open before the water overflows the floor drain top grate shall result in rejection of the device.

Findings: the device opened before water overflowed the floor drain top gate after being exposed to liquid wax. No indications of potential overflowing at 1 gpm was observed.

## 3.7 Grease Test - COMPLIED

### 3.7.1 Purpose

The purpose of this test is to determine if the device will open after receiving the discharge of grease-laden waste.

### 3.7.2 Procedure

- a) Install a floor drain that conforms to ASME A112.6.3 in an assembly as shown in Figure 1. Install the device in the floor drain in accordance with the device manufacturer's instructions.
- b) Prepare a test media consisting of a ratio of 5.0 gallons of water with a pH of 6.0 to 8.0 and 1.0 pound (454 g) of lard having a specific gravity of  $0.875 \pm 0.05$ . The media shall be at a temperature of  $155.0 \text{ }^\circ\text{F} \pm 5.0 \text{ }^\circ\text{F}$ .
- c) With the floor drain cover grate in place, pour the 5.0 gallons of the media in the center of the grate. Maintain the test assembly undisturbed at ambient room temperature for a period of four (4) hours.
- d) Flow cold water at a rate of 1.0 GPM into the floor drain and observe the opening of the device.
- e) Once the device opens, discontinue flowing water into the floor drain. If water overflows the top grate of the floor drain, discontinue pouring water into the floor drain.

### 3.7.3 Criteria

Failure to open before the water overflows the floor drain top grate shall result in rejection of the device.

Findings: the device opened before water overflowed the floor drain top gate after being exposed to grease. No indications of potential overflowing at 1 gpm was observed.

## 3.8 Life Cycle Test - COMPLIED

### 3.8.1 Purpose

The purpose of this test is to evaluate the performance of the device after cycling 2,500 times.

### 3.8.2 Procedure

- a) Install the device in a floor drain conforming to ASME A112.6.3 in accordance with the device manufacturer's installation instructions.
- b) Subject the device to 1250 cycles of hot water. A cycle shall constitute running water at a rate of 1.0 GPM (3.8 L/m) and a temperature of  $140.0\text{ }^{\circ}\text{F} \pm 5.0\text{ }^{\circ}\text{F}$  for a period of 10 seconds, then turn the water off for a period of 50 seconds.
- c) At the completion of the hot water cycle test, subject the device to 1250 cycles of water at room temperature. A cycle shall constitute running water at a temperature of  $70.0\text{ }^{\circ}\text{F} \pm 5.0\text{ }^{\circ}\text{F}$  for a period of 10 seconds, then turn the water off for a period of 50 seconds.
- d) Three days (72 hours) after the completion of the cycle testing, subject the device to the evaporation test specified in Section 3.2 of this standard.

### 3.8.3 Criteria

Failure to pass the test in Section 3.2 shall result in rejection of the device.

#### Findings:

- Weight loss in cylinder A: 253.63 g
- Weight loss in cylinder B: 9.26 g (3.65% of cylinder A)
- Weight loss in cylinder C: 2.00 g (0.79% of cylinder A).

3.9 Physical Test of Membrane Material – NO TESTING CONDUCTED (per instruction).

## 4.0 Detailed Requirements

### 4.1 Materials - FOLLOWED

Materials used in devices shall conform to the requirements of this standard. Metal alloys in contact with potable water shall not exceed 8% lead content.

Finding: the trap seal does not contain any metal.

### 4.2 Identification and Markings – COMPLIED

#### 4.2.1 Marking of Devices - COMPLIED

Each device shall have the following information marked on it by a permanent method where it will be visible:

- a) Name of manufacturer or trademark - "Green Drain"
- b) AF-GW - "ASSE 1072-AF-GW"

#### 4.2.2 Packaging – QUESTIONABLE.

Each device shall have the following information marked (molded) on the packaging:

- a) Name of manufacturer or trademark. - "Green Drain"
- b) Model number or description of the device. - "GD4"
- c) AF-GW – **NONE.**
- d) Floor drain size. - "Pipe Size: 4" (102-110 mm), Height: 2" (51 mm)"

### 4.3 Installation Instructions – COMPLIED

Instructions for installation of the device shall be on the packaging or packaged with the device. Instructions may include an illustrative calculation providing information on evaporation rates to purchasers or installers.

Findings: an installation guide was provided with packing as well as a QR code was found that redirects to a website and video of installation instruction for device.

