IAPMO IGC 423-2026

PUBLIC REVIEW DRAFT

Industry Standard for

Urine Diversion Flush Toilets (UDFTs)

IAPMO Standard

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Contents

Preface

This is the first edition of IAPMO IGC 423, Urine Diversion Flush Toilet .

Urine Diversion Flush Toilets (UDFTs) function similarly to conventional gravity flush toilets, but they are designed to separate urine from other wastewater for individual collection. UDFTs include a dedicated inlet that directs urine to a separate trap, allowing it to be collected separately. The stored urine is periodically removed by a servicing company, which empties the tank for disposal or for conversion into fertilizer.

This Standard was developed by the IAPMO Standards Review Committee (SRC) in accordance with the policies and procedures regulating IAPMO industry standards development, Policy S-001, Standards Development Process. This Standard was approved as an IAPMO Industry Standard on Month DD, YYYY.

Notes:

(1) The use of the singular does not exclude the plural (and vice versa) when the sense allows.

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(3) This standard was developed using an open process and in accordance with IAPMO Standards Policy S-001, Standards Development Process*, which is available on the IAPMO Standards website (www.IAPMOstandards.org).*

(4) During its development, this Standard was made available for public review, thus providing an opportunity for additional input from stakeholders from industry, academia, regulatory agencies, and the public at large. Upon closing of public review, all comments received were duly considered and resolved by the IAPMO Standards Review Committee.

(5) This Standard was developed in accordance with the principles of consensus, which is defined as substantial agreement; consensus implies much more than a simple majority, but not necessarily unanimity. It is consistent with this definition that a member of the IAPMO Standards Review Committee might not be in full agreement with all sections of this Standard.

(6) Although the intended primary application of this Standard is stated in its scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.

(7) IAPMO Standards are subject to periodic review and suggestions for their improvement will be referred to the IAPMO Standards Review Committee. To submit a proposal for change to this Standard, you may send the following information to the International Association of Plumbing and Mechanical Officials, Attention Standards Department, at standards@IAPMOstandards.org or, alternatively, at 4755 East Philadelphia Street, Ontario, California, 91761, and include "Proposal for change" in the subject line:

- *(a) standard designation (number);*
- *(b) relevant section, table, or figure number, as applicable;*
- *(c) wording of the proposed change, tracking the changes between the original and the proposed wording; and*
- *(d) rationale for the change.*

(8) Requests for interpretation should be clear and unambiguous. To submit a request for interpretation of this Standard, you may send the following information to the International Association of Plumbing and Mechanical Officials, Attention Standards Department, at standards@IAPMOstandards.org or, alternatively, at 4755 East Philadelphia Street, Ontario, California, 91761, and include "Request for interpretation" in the subject line:

- *(a) the edition of the standard for which the interpretation is being requested;*
- *(b) the definition of the problem, making reference to the specific section and, when appropriate, an illustrative sketch explaining the question;*

(c) an explanation of circumstances surrounding the actual field conditions; and

(d) the request for interpretation phrased in such a way that a "yes" or "no" answer will address the issue.

(9) IAPMO does not "approve", "rate", or endorse any item, construction, proprietary device, or activity.

(10) IAPMO does not take any position with respect to the validity of any patent rights asserted in connection with any items mentioned in this Standard and does not undertake to insure anyone utilizing this Standard against liability for infringement of any applicable patents, nor assumes any such liability. Users of this Standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their responsibility.

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(12) Proposals for amendments to this Standard will be processed in accordance with the standards-writing procedures of IAPMO industry standards development, Policy S-001, Standards Development Process.

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IAPMO IGC 423-2026
Urine Diversion Flush Toilets (UDFTs)

1 Scope

1.1 Scope

This Standard covers ceramic Urine Diversion Flush Toilets (UDFTs) intended for new and retrofit residential and commercial applications. It provides specific requirements for materials, physical characteristics, performance testing, and markings.

1.2 Terminology

In this Standard,

(a) "shall" is used to express a requirement, i.e., a provision that the user is obliged to satisfy to comply with the Standard;
(b) "should" is used to express a recommendation, but not a requirement;
(c) "may" is used to express an option or something permissible within the scope of the Standard; and
(d) "can" is used to express a possibility or a capability.

Notes accompanying sections of the Standard do not specify requirements or alternative requirements; their purpose is to separate explanatory or informative material from the text. Notes to tables and figures are considered part of the table or figure and can be written as requirements.

1.3 Units of Measurement

SI units are the primary units of record in global commerce. In this Standard, the inch/pound units are shown in parentheses. The values stated in each measurement system are equivalent in application, but each unit system is to be used independently. All references to gallons are to U.S. gallons.

2 Reference Publications

This Standard refers to the following publications and, where such reference is made, it shall be to the current edition of those publications, including all amendments published thereto.

ASME International (The American Society of Mechanical Engineers)
ASME A112.19.2-2024/CSA B45.1:24
Ceramic plumbing fixtures

JIS (Japanese Industrial Standards)
JIS A2507:2022
Sanitary wares

3 Definitions and Abbreviations

3.1 Definitions

The following definitions shall apply in this Standard:

Urine trap — a fitting, device, or integral portion of a fixture in the urine drainage pathway that provides a liquid seal that prevents the back passage of sewer gas without affecting the flow of urine.

Urine inlet — an inlet located in the bowl or trap section of a toilet for separating and collecting urine.

Urine capture class — performance classification indicating how much urine can be separated and collected in the urine pathway.

Flushing water inflow class — performance classification indicating the percentage of the total flushing water flows into the urine trap and mixes with the collected urine.

4 General Requirements

4.1 Ceramic plumbing fixtures

A toilet and accessories for Urine Diversion Flushing Toilet covered by this Standard shall comply with the applicable requirements in ASME A112.19.2/CSA B45.1.

4.2 Urine Trap Seal Depth

The trap seal depth shall be at least 51 mm (2.0 in).

5 Testing Requirements

5.1 Test Specimen

Tests for Urine Diversion Flush Toilet shall be conducted on complete toilets including flushing devices and urine trap pathways, unless otherwise specified in the test procedure.

5.2 Urine Capture Test

5.2.1 Test Procedure

The urine capture test shall be conducted as follows:

(a) Install the test specimen in accordance with the manufacturer's installation instructions.
(b) Dry interior toilet bowl before each test condition.
(c) Place the discharge nozzle with an inner diameter of 3.18 mm (0.13 in) at center of the toilet bowl, 205 mm (8.07 in) forward in front of the seat bolt hole as shown in Figure 1.
Note: Both round and elongated toilet styles use the same dimensions.
(d) Under each of the following conditions, stabilize discharge for 15 seconds and measure the total amount of water flowing from the urine inlet into the urine trap;
Note: Empty urine trap between each condition.
    (i) Discharge 300 mL of water at a rate of 20 ml/sec with a discharge angle of 20 degrees.
    (ii) Discharge 450 mL of water at a rate of 30 ml/sec with a discharge angle of 20 degrees.
    (iii) Discharge 300 mL of water at a rate of 20 ml/sec with a discharge angle of 35 degrees.
    (iv) Discharge 450 mL of water at a rate of 30 ml/sec with a discharge angle of 35 degrees.
    (v) Discharge 300 mL of water at a rate of 20 ml/sec with a discharge angle of 50 degrees.
    (vi) Discharge 450 mL of water at a rate of 30 ml/sec with a discharge angle of 50 degrees.
(e) Divide the amount of water flowing into the urine trap by the total discharge amount to calculate the capturing rate.

5.2.2 Report

The capture rate under each condition shall be reported in a format as shown in Table A.

5.2.3 Performance Requirement

The product urine capture class shall be classified as follows:

(a) Urine capture class A: 80 % or above of the average capturing rate.
(b) Urine capture class B: 60 % or above and less than 80 % of the average capturing rate
(c) Urine capture class C: less than 60 % of the average capturing rate

5.3 Flushing Water Inflow Test

5.3.1 Test Procedure

The flushing water inflow test shall be conducted as follows:

(a) Install the test specimen in accordance with the manufacturer's installation instructions and remove the urine trap.
(b) Flush the toilet as normal product flush volume with either single-flush or dual-flush (Reduced and Full volume of water), and measure the water volume entering the urine trap pathway.
(c) Divide the water volume entering the urine trap pathway by the total flush volume (either single flush or dual flushed full/reduced) to calculate the flushing water inflow ratio.

5.3.2 Report

The flushing water inflow ratio under each condition shall be reported in a format as shown in Table B.

5.3.3 Performance Requirement

The product flush volume ratio class shall be classified as follows:

(a) Flushing water inflow class A: 15 % or less of the total flushing volume.
(b) Flushing water inflow class B: more than 15 % of the total flushing volume.
(c) For dual-flush toilets, if the results for Full and Reduced are not in the same class, Class B shall be used as the flushing water inflow class.

5.4 Urine Trap Water Replacement Test

5.4.1 Test Procedure

The urine trap water replacement test shall be conducted as follows:

(a) Install the test specimen in accordance with the manufacturer's installation instructions
(b) Measure the seal water volume in the urine trap (water volume: i)
(c) Flush the toilet as normal product flush volume with either single-flush or dual-flush (Reduced and Full volume of water), and measure the water volume entering the urine trap pathway (water volume: ii)
(d) Calculate urine trap water replacement rate by dividing the urine trap inflow (ii) by the seal water volume (i).

5.4.2 Performance Requirement

The urine trap water replacement rate shall exceed 95%.

5.5 Floating Media Inflow Test

5.5.1 Test Procedure

The floating media inflow test shall be conducted as follows:

(a) Install the test specimen in accordance with the manufacturer's installation instructions.
(b) Float a total of 100 cylindrical high-density polyethylene (HDPE) granules, on the surface of the urine trap seal water, simulating floating solids. HDPE granules shall have the following characteristics:
    a. weight: 65 ± 1 g (2.3. ± 0.04 oz);
    b. diameter: approximately 4.0 mm (0.16 in);
    c. thickness: approximately 2.6 mm (0.10 in); and
    d. density: 951 ± 10 kg/m3 (59.4± 0.6 lb/ft3); and
(c) Flush the toilet twice as normal product flush volume, with either single-flush or full volume of dual-flush.
(d) Count the number of granules that have discharged from the urine trap pathway.

5.5.2 Performance Requirement

A discharge of less than 95% of granules from the urine trap seal water shall constitute a failure.

6 Markings and Accompanying Literature

6.1 Markings

Urine Diversion Flush Toilet complying with this Standard shall be marked with the:

(a) manufacturer's name or trademark;
(b) model number;
(c) Urine capture class (e.g., “Urine capture class A” or “Urine capture class B” or “Urine capture class C”);
(d) Flushing water inflow class (e.g., “Flushing water inflow class A” or “Flushing water inflow class B”).

6.2 Permanency

Markings shall be permanent, legible, or clearly listed under the product specification sheet on manufacturer’s website.

6.3 Packaging

Packaging shall be marked with the

a) manufacturer’s name or registered trademark or, in the case of private labeling, the name of the customer for whom the fixture was manufactured;
b) model number;
c) Urine capture class (e.g., “Urine capture class A” or “Urine capture class B” or “Urine capture class C”); and
d) Flushing water inflow class (e.g., “Flushing water inflow class A” or “Flushing water inflow class B”).

6.4 Installation Instructions

The manufacturer shall provide installation instructions for UDFTs. Electronic means (i.e. QR codes) of installation instructions are acceptable.

6.4.1 Minimum Pressure

The manufacturer shall specify the recommended minimum pressure in the packaging and installation instructions and other literature.

6.4.2 Wall-mounted UDFTs

Wall-mounted UDFTs shall include instructions that specify the proper installation of the fixtures and structural support requirements.

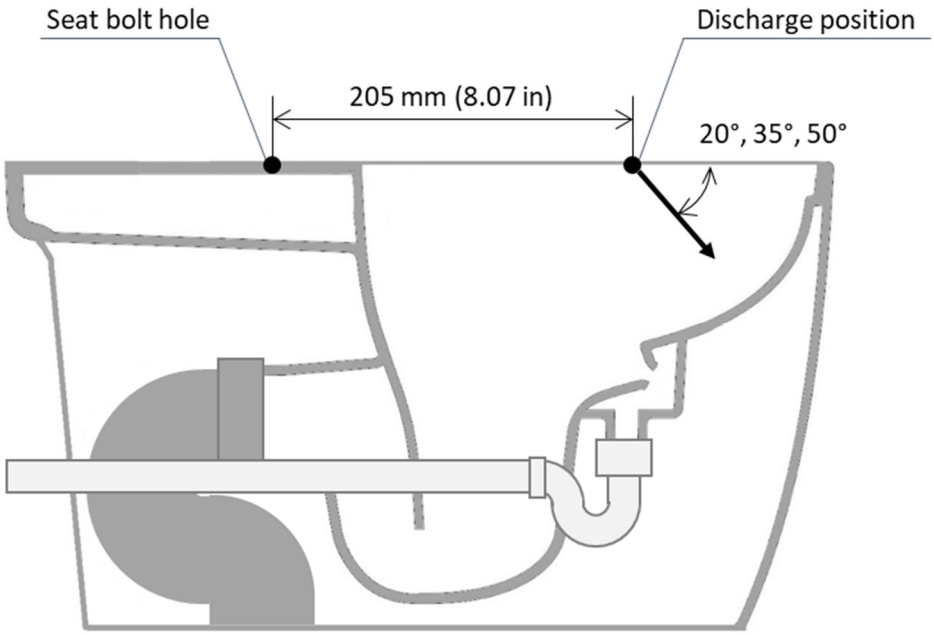

Figure 1
Urine Capture Test
(See Sections 5.3)

Annex A (informative)

Suggested formats for reporting test results

Table A
Format for reporting test results of the Urine Capture Test
(See Section 5.2.2)

Discharge Angle (degrees)	Discharge Rate	Total Flow	Run no.	Capture Amount in Urine Trap (ml)	Urine Capture Rate (%)	Average Urine Capture Rate (%)	Urine Capture Class (A or B or C)
20	20ml/sec	300ml	1				
			2				
			3				
	30ml/sec	450ml	1				
			2				
			3				
30	20ml/sec	300ml	1				
			2				
			3				
	30ml/sec	450ml	1				
			2				
			3				
50	20ml/sec	300ml	1				
			2				
			3				
	30ml/sec	450ml	1				
			2				
			3				

Table B
Format for reporting test results of the Flushing water inflow Test
(See Section 5.3.2)

Flush Volume (l)	Run no.	Capture Amount in Urine Trap (ml)	Average Capture Amount (ml)	Flushing Water inflow Class (A or B)	Product Flushing Water inflow Class * (A or B)
	1				
	2				
	3				
	1				
	2				
	3				

* For dual-flush toilet, if the results for Full and Reduced are not in the same class, Class B shall be used as the product flushing water inflow class. (see Clause 5.5.3)

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