

TEST REPORT



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Report Number: 1622-13001-004

Lab Project No. 21349

Report Issued: March 4, 2013

Client: R Turner Associates
410 Friar Tuck Road
Winston Salem, NC 27104

Contact: Robert Turner

Source of Samples: The samples were shipped to IAPMO R&T Lab from Zero H2O (R Turner Associates) and received in good condition on August 16, 2011 and on September 30, 2011. Additional information was received on February 6, 2013 and on February 28, 2013.

Date of Evaluation: September 20, 2011 to September 27, 2011

Sample Description: A vitreous china wall hung, non-flushing / waterless type urinal.

Model No.: Hybrid H2O Series

HL-28 Marmara – overall dimensions 19-3/4” x 28”x 15-1/2”

HM-25 Coral – overall dimensions 16” x 24-3/4”x 15-1/2”

HS-20 Baffin – overall dimensions 13-1/4” x 19-1/2”x 13”

Cartridges (Identical design)

Hybrid H2O Dry Cartridge – Assembled with Hybrid H2O urinals.

Smarty-Bee Cartridge – Sold separately to be installed with other urinal manufacturers.

Each unit consisted of a vitreous china wall hung urinal with a special trap cartridge. The cartridge collects urine and discharges it without using any water into the drainage system. A cleaner / deodorizer dome uses natural surfactants and enzymes to reduce drain line sediment and adds a pleasant scent. The outlet housing was made of plastic and connected to a plastic drain tube and coupler that attaches to a standard urinal flange.

Please refer to the photographs for details.

Scope of Testing: The purpose of testing was to determine whether the sample tested of the urinal met the applicable requirements of ASME A112.19.2-2008/CSA B45.1-08 entitled, “Ceramic plumbing fixtures” with Update No. 1, August 2009 & Update No. 2, March 2011.

CONCLUSION: The samples tested of the urinals from R Turner Associates, models listed above, **COMPLIED** with the applicable requirements of ASME A112.19.2-2008/CSA B45.1-08 with Update No. 1, August 2009 and Update No. 2, March 2011.

By our signatures below we certify that all the testing and sample preparation for this report was performed under continuous, direct supervision of IAPMO R&T Lab, unless otherwise stated.

Tested By,

Handwritten signature of Norm Smith, Sr. in black ink.

Norm Smith, Sr. Test Technician

Reviewed By,

Handwritten signature of Jeffrey Yu in black ink.

Jeffrey Yu, MSEM, Manager - Fixture Testing

Primary Standard: ASME A112.19.2-2008/CSA B45.1-08 / Applicable Sections Tested / Evaluated:

Section 4.1.1 Thickness
Section 4.2 Glazing
Section 4.7.2 Dimensions
Section 4.7.5 Non-Water-Consuming Urinals
Section 6.1 Absorption Test
Section 6.2 Crazing Test
Section 6.3 Surface Examination
Section 6.4 Warpage Test
Section 6.7.1 All wall Mounted Fixtures
Section 8 Urinals
Section 8.7 Tests for Non-Water-Consuming Urinals
Section 9 Markings, Packaging, and Installation Instructions and Other Literature
Section 9.5 Packaging
Section 9.6 Installation Instructions and Other Literature

Secondary Standard: ASME A112.19.19-2006 / Applicable Sections Tested / Evaluated:

Section 3.2 Alternate Materials in Trapways
Section 3.6 Connection to the Drainage System
Section 4.1 Markings
Section 4.4 Repair Parts
Section 5.5 Auger Test
Section 6.2 Selection of Test Urinal and General Instructions
Section 6.3 Resistance to Stoppage
Section 6.4 Tightness Test of Removable Trap
Section 6.5 Evaluation Test for Ammonia

Test Results: All tests and evaluations were conducted per the written procedure in the specific standard.

ASME A112.19.2-2008/CSA B45.1-08

Section 4.1.1 Thickness – COMPLIED

The thickness of the ceramic material was at least 6 mm (0.25 in.) thick throughout.

Findings: Minimum thickness found, exclusive of the glaze was 0.031”.

Section 4.2 Glazing - COMPLIED

The glaze was thoroughly fused to the fixture body. All exposed surfaces required to be glazed were glazed properly.

Section 4.7.2 Dimensions – COMPLIED

The urinal complied with the dimensions as specified in Table 4 for wall mounted urinals.

Model #	Width A	Height B	Depth C	Projection D
	8-1/2” min.	7-1/2” min.	3” min.	6” min.
HL-28 Marmara	8-1/2	16	7-3/4	13
HM-25 Coral	11-1/2	14	6	12
HS-20 Baffin	9	9	4	9

Section 4.7.5 Non-Water-Consuming Urinals – COMPLIED

In addition to complying with the applicable requirements of this Standard, non-water-consuming urinals shall comply with ASME A112.19.19.

Findings: Refer to ASME A112.19.19 section of this test report.

Section 6.1 Absorption – COMPLIED

Three samples each with approximately 5 square inches of unglazed surface area and not more than 0.63 inch thick, were dried at 230 degrees Fahrenheit, cooled in a desiccator, weighed, boiled in distilled water for 2 hours, allowed to soak for an additional 18 hours (for a total of 20 hrs), had all surface water wiped off and weighed. The average absorption weight was less than 0.5%.

Findings:

Sample	Wt (o) gm	Wt (f) gm	% Absorption	Average Absorption 0.35%	Required Less than 0.5%
1	53.71	53.24	0.88%		
2	46.16	46.11	0.11%		
3	49.38	49.35	0.06%		

Section 6.2 crazing – COMPLIED

A test sample with approximately 5 square inches of glazed surface area and not more than 0.63 inch thick was heated at 230 degrees Fahrenheit for 90 minutes, then immediately submerged into an ice water bath of 37 degrees for one hour. The test sample was then soaked in a 1% solution of methylene blue dye for 12 hours, removed and examined for crazing lines.

Findings: There was no crazing.

Section 6.3 Surface Examination – COMPLIED

When evaluated in accordance with Section 6.3.2.3 and Table 1, the unit did not contain any discolored areas, dull or eggshell finish, dints, exposed body, fire cracks, large blisters, or projections. The wavy finish, spots, blisters, pinholes or specks on the bowl were less than the maximum allowed in Table 1 of the standard.

Section 6.4 Warpage Test – COMPLIED

The urinal met the warpage requirement in Table 1 of the standard.

Findings: The urinals were not noticeably warped.

Section 6.7.1 All Wall-Mounted Fixtures – COMPLIED

The wall mounted urinals withstood a load of 50 lbf when tested in accordance with Clause 6.7.4

Section 8 Urinal Tests – COMPLIED

Section 8.7 Tests for Non-Water-Consuming Urinals – COMPLIED

Non-water-consuming urinals shall comply with ASME A112.19.19.

Findings: Refer to ASME A112.19.19 section of this test report.

Section 9 Markings, Packaging, and Installation Instructions and Other Literature – COMPLIED

The urinals tested were marked with the manufacturer's name or trademark, "Hybrid H2O". The marking was permanent, legible, and visible after installation per the quality control document.

Section 9.5 Packaging – COMPLIED

The packaging for the units tested contained the manufacturer's name or trademark, "Hybrid H2O" and the model number, "HL-28, HM-25 and HS-20" per the drawings.

Section 9.6 Installation Instructions and Other Literature – COMPLIED

The manufacturer provided installation instructions.

ASME A112.19.19-2006

Section 3.2 Alternate Materials in Trapways – COMPLIED

Where alternate materials are used in a nonwater urinal trapway, the trapway shall comply with the requirements of the auger test specified in para. 5.5.

Findings: See section 5.5. of this test report.

Section 3.6 Connection to the Drainage System – COMPLIED

The unit tested has a liquid seal and an outlet assembly for connection to the drainage system. The outlet size was more than 1-1/2" in diameter. The urinal connects to a standard 2" NPT urinal flange to the drainage system.

Section 4.1.2 Model Number – COMPLIED

The model number of the nonwater urinal shall be applied so as to be legible.

Findings: The model number was marked legibly at the bottom of the housing per the quality control document.

Section 4.1.3 Date of Manufacture – COMPLIED

The date of manufacture shall be applied so as to be legible.

Findings: The date of manufacture was marked legibly marked at the bottom of the housing per the quality control document.

Section 4.4 Repair Parts – COMPLIED

The repair / replacement parts information was provided.

Section 5.5 Auger Test – COMPLIED

With the cartridge / trap removed, a conventional manual type urinal auger was inserted a minimum of 24" into the well and through the outlet of the urinal. The auger was rotated 5 times for each test cycle. A total of 100 cycles was performed by removing, reinserting, and rotating the auger 5 times for each cycle. After replacing the cartridge / trap, there shall be no leakage, other than trap outlet spillage.

Findings: There was no water leakage found.

Section 6.2 Selection of Test Urinal and General Instructions

6.2.1 Selection Information- FOLLOWED. One sample was selected for testing.

6.2.2 FOLLOWED. The unit was installed in an enclosure per 6.5.1.2 for the testing

6.2.2.1 FOLLOWED. The unit was installed per the manufactures instructions and an outlet installed.

Section 6.3 Resistance to Stoppage- COMPLIED

When tested per the standard according to section 6.3.1 With the fixture installed on a test stand in accordance with the manufacturer's installation instructions, two unfiltered cigarette butts were dropped into the urinal and tap water added to the unit at a flow rate of 1 pint per minute. This procedure was repeated, alternating between the cigarette butts and water until a total of twenty cigarette butts and ten pints of water had been added. The cigarette butts were removed and the test repeated five times alternating between unfiltered and unfiltered crumpled cigarettes.

Findings: There was no evidence of stoppage or clogging during the test.

Section 6.4 Tightness Test of Removable Trap- COMPLIED

When tested per the standard according to section 6.4.1 The trap insert was installed and removed 50 times using the extractor tool provided by the manufacturer. Upon completion of the extractions and insertions, the trapway was subjected to an air pressure test of 1.45 psi for 15 minutes, The test was repeated five times.

Findings: There was no pressure loss.

Section 6.5 Evaluation Testing for Ammonia- COMPLIED

Section 6.5.1 Test Method - FOLLOWED

Section 6.5.2 Performance Requirement

Section 6.5.2.1 – COMPLIED

When tested to section 6.5.1 Extraction of all liquid was required in eight of nine solution extraction test sets as specified in 6.5.1.8.2 on each of the successive 3 days of test.

Findings:

	Day 1	Day 2	Day 3
Solution Poured	9	9	9
Solution Extracted	9	9	9
Complied (Yes/No)	Yes	Yes	Yes

Section 6.5.2.2 COMPLIED All initial ammonia sample reading taken in paragraph 6.5.1.8.2.b 1 (5 minutes after introduction of the test sample liquid) did not exceed 40 % of the ammonia vapor measures under paragraph 6.5.1.8.1

Findings:

DAY 1

Location	Initial PPM (Avg of 3 test)	Required: 40% of initial PPM, Max	PPM after 5 mins Test 1	PPM after 5 mins Test 2	PPM after 5 mins Test 3
3" above urinal lip	20.0	8	3.0	3.25	3.0
3" above urinal well	24.0	9.6	4.5	4.75	5.0
59" above floor	2.0	0.8	0.0	0.0	0.0
47" above floor	3.5	1.4	0.0	0.5	0.5

DAY 2

Location	Initial PPM (Avg of 3 test)	Required: 40% of initial PPM, Max	PPM after 5 mins Test 1	PPM after 5 mins Test 2	PPM after 5 mins Test 3
3" above urinal lip	22.0	8.8	3.25	3.25	3.25
3" above urinal well	25.0	10	4.75	4.75	5.0
59" above floor	2.25	0.8	0.0	0.0	0.0
47" above floor	3.5	1.4	0.0	0.0	0.0

DAY 3

Location	Initial PPM (Avg of 3 test)	Required: 40% of initial PPM, Max	PPM after 5 mins Test 1	PPM after 5 mins Test 2	PPM after 5 mins Test 3
3" above urinal lip	21.0	8.4	3.25	3.25	3.25
3" above urinal well	24.0	9.6	4.5	4.5	5.0
59" above floor	2.0	0.8	0.0	0.0	0.0
47" above floor	3.25	1.3	0.0	0.0	0.0

Section 6.5.2.3 COMPLIED. Ninety five percent minimum of all initial ammonia sample reading taken in paragraph 6.5.1.8.2.b 2,3 4 (15 minutes, 30 minutes and 1 hour after introduction of the test sample liquid) shall not exceed 10 ppm at the end of test period specified.

Finding: 100% of all the readings did not exceed 10 ppm.

DAY 1 READING 1

Location	Max PPM allowed	PPM after 15 Min	PPM after 30 Min	PPM after 60 Min
3" above urinal lip	10	1.75	1.0	0.0
3" above urinal well	10	4.0	2.0	0.5
59" above floor	10	0.0	0.0	0.0
47" above floor	10	0.0	0.0	0.0

DAY 1 READING 2

Location	Max PPM allowed	PPM after 15 Min	PPM after 30 Min	PPM after 60 Min
3" above urinal lip	10	1.75	1.25	0.25
3" above urinal well	10	4.5	2.25	0.75
59" above floor	10	0.0	0.0	0.0
47" above floor	10	0.0	0.0	0.0

DAY 1 READING 3

Location	Max PPM allowed	PPM after 15 Min	PPM after 30 Min	PPM after 60 Min
3" above urinal lip	10	1.5	1.0	0.0
3" above urinal well	10	4.0	2.25	0.5
59" above floor	10	0.0	0.0	0.0
47" above floor	10	0.0	0.0	0.0

DAY 2 READING 1

Location	Max PPM allowed	PPM after 15 Min	PPM after 30 Min	PPM after 60 Min
3" above urinal lip	10	2.0	1.0	0.0
3" above urinal well	10	4.0	2.5	0.5
59" above floor	10	0.0	0.0	0.0
47" above floor	10	0.0	0.0	0.0

DAY 2 READING 2

Location	Max PPM allowed	PPM after 15 Min	PPM after 30 Min	PPM after 60 Min
3" above urinal lip	10	2.0	1.0	0.0
3" above urinal well	10	4.0	2.25	0.0
59" above floor	10	0.0	0.0	0.0
47" above floor	10	0.0	0.0	0.0

DAY 2 READING 3

Location	Max PPM allowed	PPM after 15 Min	PPM after 30 Min	PPM after 60 Min
3" above urinal lip	10	2.25	1.0	0.0
3" above urinal well	10	4.25	2.5	0.0
59" above floor	10	0.0	0.0	0.0
47" above floor	10	0.0	0.0	0.0

DAY 3 READING 1

Location	Max PPM allowed	PPM after 15 Min	PPM after 30 Min	PPM after 60 Min
3" above urinal lip	10	2.25	1.0	0.0
3" above urinal well	10	4.25	2.0	0.0
59" above floor	10	0.0	0.0	0.0
47" above floor	10	0.0	0.0	0.0

DAY 3 READING 2

Location	Max PPM allowed	PPM after 15 Min	PPM after 30 Min	PPM after 60 Min
3" above urinal lip	10	2.25	1.0	0.0
3" above urinal well	10	4.25	2.0	0.0
59" above floor	10	0.0	0.0	0.0
47" above floor	10	0.0	0.0	0.0

DAY 3 READING 3

Location	Max PPM allowed	PPM after 15 Min	PPM after 30 Min	PPM after 60 Min
3" above urinal lip	10	2.5	1.25	0.0
3" above urinal well	10	4.5	2.25	0.0
59" above floor	10	0.0	0.0	0.0
47" above floor	10	0.0	0.0	0.0

Photograph of Samples Tested:



Model HM-25 Coral – Front View



Side View



Model HS-20 Baffin – Front View



Side View



Model HL-28 Marmara – Front View



Side View