STATE OF WISCONSIN
Department of Agriculture,
Trade and Consumer Protection

Approval # 20230004
(Replaces 20190006)
Transaction ID # 108679

Bureau of Weights and Measures
Storage Tank Regulation
P.O. Box 7837
Madison, WI 53707-7837

Wisconsin ATCP 93 Material Approval

Equipment: Dri-sump Containment Tightness Method, Secondary Containment and Spill Bucket Integrity Test

Manufacturer: Accent Environmental Services, Inc.
523 FM 1819
Pollok, TX 75969

Expiration of Approval: December 31, 2026

SCOPE OF EVALUATION

The Dri-Sump Containment Tightness Test method, as manufactured by Accent Environmental Services, Inc.; has been evaluated for use as secondary containment and spill bucket integrity testing as complying with **ATCP 93.130(3)** and **ATCP 93.500(6)(d)** of the current edition of the Wisconsin Flammable, Combustible, and Hazardous Liquids Code.

DESCRIPTION AND USE

The Dri-Sump Containment Tightness Test method is for testing spill and sump containments that are free of debris or measurable liquid, located in non-saturated backfill consisting of sand, pea gravel, or clay/silt.

Equipment

- Vapor/aerosol dispenser
- Air Pressure Generator (to create high–volume-low-pressure (HVLP) negative or positive pressure
- Sealed view chamber with test port and viewing ports
- Specialized laser
- Misc. hoses
- Vapor Aerosol Consumable
- Vapor Stimulator Tube (VST)

The Dri-Sump Containment Tightness Method can be used to test any complete containment sump; including the sides, bottom, and penetration points to determine if the sump is liquid-tight. It is used to test the following:

- A method to test any open or closed top containment sump or tank, storage vessel, vault, or any other type containment located above and below ground.
- A method to test hazardous or non-hazardous containment sumps, vessels, tanks, vaults, etc. as listed. Including, but not limited to, under dispenser containment, submersible turbine pump (STP) containment, transition sumps, spill containment (spill bucket), and any other containment sump or tank/vessel.
- A method capable of testing dry secondary containment for piping and tanks.
- A method to test the ullage portion of any tank or vessel.

The Dri-Sump Containment Tightness Test method uses a heavy vapor aerosol instead of water to completely fill the sump, interstice, or vessel. The test method requires filling the entire containment sump with heavy vapor aerosol which takes about 3-15 seconds, depending on the size of the sump. This vapor aerosol is made from a proprietary formula of chemicals that are all food grade, pH neutral, non-petroleum based, non-

toxic, non-flammable, and pose no environmental impact. The dissipation of the aerosol reverts back to normal organic elements in ambient air.

The heavy vapor aerosol is introduced into the sump and then the air pressure generator “pulls” the soil gases from a small Vapor Stimulator Tube (VST) that is installed in the backfill adjacent to the sump indirectly into the viewing chamber. A laser is then introduced into the viewing chamber. If a leak is detected, the tester will see a laser line or beam that looks like a “green laser beam”. This beam is generated as it reflects on the micron particles of the vapor aerosol. If no leak is detected, the laser will

merely make a “dot”, indicating that no vapor aerosol is present. The test is 60 seconds, and the heavy vapor aerosol will dissipate in 5 to 10 minutes.

The following table describes the number of VSTs, placement, and depth for different types of containment sumps.

VST Placement Chart

Containment Sump Type	Minimum No. of VSTs per Containment Sump	Maximum Horizontal Distance from Sump Wall	Minimum Length/Depth of VST from surface to bottom	PST Backfill Soil Type Acceptance*	Minimum Test Time for Pass or Fail Results
Spill Bucket	1	8 inches (±1”)	18 inches	All	1 Minute
Under Dispenser Containment Sump (UDC)	1	8 inches (±1”)	18 inches	All	1 Minute
Transition Sump (UDC Depth)	1	8 inches (±1”)	18 inches	All	1 Minute
Transition Sump (STP Depth)	2	8 inches (±1”)	36 inches	All	1 Minute
Submersible Turbine Sump (STP)	2	8 inches (±1”)	36 inches	All	1 Minute

*Backfill soils tested and evaluated by Ken Wilcox Associates, October 2, 2018: Industry acceptable sand backfill, pea gravel backfill, native clay/silt backfill. See Table 1 for test times.

Additional Placement Criteria

- Containment must be free of debris and measurable liquid.
- Containment backfill can be moist but not saturated with measurable liquid as verified by visual observation of liquid level in Vapor Stimulator Tubes (VSTs) or if

the sump bottoms are deeper than the VST through observation wells located in the containment backfill.

- VSTs shall be installed per manufacturer's installation training and certification procedures and instructions which include the minimum number of VSTs, placement and depth for each type of containment.
- VSTs can be installed as close as direct contact with any containment sump exterior wall to a maximum horizontal distance of 8 inches (±1").
- In the case of STP and deep penetration sumps, VSTs should be placed near the most penetration points at the prescribed minimum horizontal distance from the sump wall. The bottom of the VST should be within 12 inches vertically (above) the highest penetration point. The second VST should be placed near the opposite side, approximately 180 degrees from the opposing VST. VSTs installed for these specific sumps are of the same length.
- VSTs can be installed in the soil between the exterior sump wall and interior man-way wall. This area is called the apron or gutter.

Installation Summary

- The VST requires advancing a small borehole in the backfill soils adjacent to the containment sump exterior wall. The borehole should be approximately 1½ inches in diameter. Inspect the interior of the containment sump to determine location and penetration of all lines existing the sump.
- Measure the depth from surface grade to the highest penetration point. Refer to VST placement chart.
- The VST is placed into the borehole, and the top is sealed with a small section of backer-rod or similar material. The area above the sealed section can then be filled with hydraulic cement to prevent any potential impact to the subsurface from a surface spill or leak.

Equipment Connection Pre-test

- View chamber is checked to make sure the interior is clean and that the seals are intact.
- All hose fittings are inspected to make sure seals are in place.
- Hoses and the VST are checked for blockages.
- The air pressure generator is checked to make sure the venturi is clear and filters are clean.
- Laser is inspected to ensure it is working properly.

- The test equipment is connected by flexible hoses and quick-couple fittings for a closed and tight test system, and the VST is connected to top port of the view chamber.
- The vapor aerosol dispenser is connected to the vapor discharge hose and turned on to warm up.
- The air pressure generator is turned on and negative pressure should be observed by the deflection to the view chamber exterior cabinet wall.
- The vapor aerosol dispenser is checked to see that it is generating the vapor aerosol into the sump.

Backfill Communication Verification Test

The Dri-Sump containment tightness test method automatically tests for adequate flow of air and vapor through the backfill each time the system is activated. Any stoppage of flow through the VST or backfill will cause increased vacuum on the view chamber that is quickly identified by a collapse of the view chamber walls.

Pre-Test Verification

A nanometer is used to indicate adequate air flow and communication between VSTs in a 5-10 second pre-test procedure. Communication will be verified between two VSTs within the tank, piping, and dispenser in the same type backfill.

Test Procedure Summary

- Containment sump is filled completely with vapor aerosol.
- When the vapor aerosol is exists the top of the sump and is sufficiently “hanging” thick in the interior of the sump, the test can begin.
- A timer is used to start the 1-min test.
- The air Pressure Generator is started by pressing the foot control switch sand is operating the full test time.
- The laser is placed in one end of the view chamber’s viewing ports and should illuminate the interior of the view chamber.
- If a “laser beam” is observed in the view chamber, the fails the leak test. If there is only a “laser dot” observed in the view chamber, the sump passes the leak test.
- The test is completed at the end of one minute. Re-testing requires disconnecting the VST and removing the VST hose from any area that contains vapor aerosol. The

air pressure generator is switched on until the laser indicates the view chamber and attached hoses are cleared of vapor aerosol. Re-testing can then begin if necessary.

TESTS AND RESULTS

A total of 42 tests were conducted as part of the third party evaluation, of which 21 were leak tests and 21 were tight tests. There was no missed detection for the 21 leak tests and no false alarms for the tight tests, resulting in a P_D of a 0.1 gph leak of 100% and a P_{FA} on a tight tank of 0%. The 95% confidence interval is from 89.50% to 100% for the P_D and from 0% to 9.50% for the P_{FA}.

The test duration where a leak was present varied based on the type of backfill that was present. The following table describes average test times based on backfill type:

Average Test Times Based on Backfill Material

Type of Backfill	Avg. Time of Test (seconds)
Sand	11
Native Soil	15
Pea Gravel	25

Limitations/Conditions of Approval

- Procedures specified by the manufacturer shall be used to install and maintain all equipment and to conduct all tests.
- VSTs cannot be installed outside the backfilled soils or excavated area holding the containment sump and associated product piping and equipment.
- The presence of water above the bottom of the sumps was not evaluated.
- Equipment pre-test and backfill communication test shall be performed before initiating leak test.
- Temperature is not a factor.
- All sumps should be visually inspected for cracks and leak areas before beginning any test procedure including this test method. All visual cracks and leaks should be repaired, or the sump replaced before beginning any vacuum, pressure, hydrostatic, or heavy-vapor test procedure.

- This approval will be valid through December 31, 2026, unless manufacturing modifications are made to the product or a re-examination is deemed necessary by the department. The Wisconsin Material Approval Number must be provided when plans that include this product are submitted for review.

DISCLAIMER

The Department is in no way endorsing or advertising this product. This approval addresses only the specified applications for the product and does not waive any code requirement unless specified in this document.

Effective Date: 1/12/2023

Reviewed by: _____ Date: 1/12/2023

Erik Otterson
Environmental Engineering Specialist
Bureau of Weights and Measures
Storage Tank Regulation

Approved by: _____ Date: 1/12/2023

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