



STATE OF WISCONSIN
Department of Agriculture,
Trade and Consumer Protection

Approval # 20200003
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Bureau of Weights and Measures
Storage Tank Regulation
P.O. Box 7837
Madison, WI 53707-7837

Wisconsin ATCP 93 Material Approval

Equipment: DPleak Leak Detection Method for Detecting
Leaks from Primary and Secondary
Containment Vessels

Manufacturer: Leak Detection Technologies, Inc.
2765 East Wieding Rd
Tucson, AZ 85706
855-255-5325

Expiration of Approval: December 31, 2023

SCOPE OF EVALUATION

The DPleak leak detection method for detecting leaks from primary and secondary containment vessels, as manufactured by Leak Detection Technologies, 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 DP_{leak} leak detection method is designed to detect and identify a leak of air or liquid through secondary containment barrier. The containment barrier and/or fittings is subjected to slightly lower pressure than the opposite side of the containment to induce the ingress of air or liquid. By varying the differential pressure, the sensitivity of the test can be adjusted. The testing is conducted by technicians that are trained and certified by the testing manufacturer.

The DP_{leak} leak detection method allows for detecting fluid ingress into the containment at any point that can be visually observed. 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.

The DP_{leak} leak detection method uses a camera to conduct visual observation. A vacuum is applied to the containment to induce the ingress of air or liquid. Video and still images are recorded of the containment barrier on the low pressure side of the container and are assessed in real time and recorded for documentation of the test result. The location is observed and reported, and is marked on the container wall to indicate the leak location. Ingress of air is observed by the addition of an indicator solution, and liquid ingress is directly observed.

TESTS AND RESULTS

A total of 95 tests were conducted as part of the third party evaluation, of which 48 were air leak tests and 47 were water leak tests (see Table 1. for details). There was a total of 50 non-leaking tests and 45 simulated leak tests were successfully conducted with no missed detections and one false alarm. Results show a P_D of 100% with a confidence interval of 88 to 100% for air leaks, and 87 to 100% for water leaks. An estimated P_{FA} of 0 with a 95% confidence interval of 0 to 12% for air leaks and an estimated 4% P_{FA} for water leaks with a 95% confidence interval of 1 to 20%.

Table 1. Summary of Test Results

Fluid Type	# of Tests	# of No Leaks	# of 0.1 (gal/h) Leaks	# of False Alarms	# of Missed Detections	Data collection intervals
Air						
Subtotal	48	25	23	0	0	<45
Water						
Subtotal	47	25	22	1	0	<45
No Test	1		1			Partially Plugged Orifice
Grand Total	95	50	45	1	0	

Limitations/Conditions of Approval

- Procedures specified by the manufacturer shall be used to install and maintain all equipment and to conduct all tests.
- Some soil conditional may not be suitable for air or liquid ingress; such as, saturated clay soils or other impermeable substrate layers that inhibit the flow of air or liquid.
- The water table must be determined by creating a monitoring well if none is present.
- If the containment being tested is partially filled with liquid and groundwater is above the bottom of the container, the test should not be conducted.
- Systems must be tested at a pressure which is less than atmospheric ambient or external pressure.
- The internal containment surface must be clean and dry if the container located below groundwater. If the containment is located above groundwater, the test pressure at the bottom of the container must be less than the external pressure; regardless of the level of liquid in the container.
- Temperature is not a factor. The rate of fluid ingress is not measured and indication of a leak does not depend on the physical properties of air, water and fuel that are affected by temperature.
- 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 test procedure.
- **Test Period:**

- For 0.1 gph: Less than 1 hour for sump test, 20 seconds per square foot of surface area.
- For 0.005 gph: Less than 1 hour for sump test, 5 seconds per square foot of surface area.
- This approval will be valid through December 31, 2023, 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: 5/6/2020

Reviewed by: *Erik Otterson*

Date: 5/6/2020

Erik Otterson
Environmental Engineering Specialist
Bureau of Weights and Measures
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Approved by: *Greg Bareta*

Date: 5/6/2019

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