



STATE OF WISCONSIN
Department of Agriculture,
Trade and Consumer Protection

Approval #20230003

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

Wisconsin ATCP 93 Material Approval

Equipment: SafeSite Vacuum Interstitial Monitor Leak
Detection System

Manufacturer: Core Engineered Solutions, Inc.
620 Herndon Parkway
Herndon, VA 20170

Expiration of Approval: December 31, 2026

SCOPE OF EVALUATION

The SafeSite Vacuum Monitor Leak Detection System manufactured by Core Engineered Solutions, Inc., was evaluated as a means of monthly tank and piping monitoring in accordance with **s. ATCP 93.130, ATCP 93.510(3), ATCP 93.515(7), and ATCP 93.515(8)**.

This evaluation summary is condensed to provide the specific installation, application, and operational parameters necessary to maintain the subject systems in compliance with the Wisconsin Administrative Code – ATCP 93.

DESCRIPTION AND USE

Consoles

The SafeSite Vacuum Monitor Leak Detection System consists of a control panel, gauges and a vacuum or air pump for the detection of liquids in tank and piping interstices. The system continuously monitors the vacuum level and will begin a test if the vacuum falls below a preset level. Before a test begins the system pressure must be maintained at -7.5 psig for at least 30 seconds. During the test the system uses vacuum generated by a pump to continuously maintain a partial vacuum of 7.5 psig for a period of up to 60 minutes. If the pressure increases above -7.5 psig during either the 30 second pre-test or the 60 minute test, the pump will cycle on and bring the pressure back to -7.5 psig. If the pressure increases again above -7.5 psig the vacuum pump will restart and if the leaking continues the vacuum pump will be restarted up to 3 consecutive times before an alarm will be declared on a failed leak detection test.

After the interstitial space holds the required vacuum level for thirty seconds, a leak test begins by continuously calculating a vacuum decay rate in terms of psi per hour. The continuously monitored vacuum level is compared to previous vacuum levels and if the updated rate of vacuum decay is less than one psi of vacuum/hour, the System records a "pass" and the system continues to monitor the vacuum level. If the updated rate of vacuum decay is greater than one psi of vacuum/ hour, an alarm will be declared on a failed leak detection test.

Alarms

System alarms when a liquid or air leak occurs which causes the interstitial vacuum to decrease (pressure to increase) and the system is unable to maintain a vacuum pressure of 1.0 psi per hour for three consecutive failures based upon the rate of vacuum decay. The system incorporates a minimal detectable pressure change of 0.028 psi.

System will also alarm if liquid is detected in the interstitial space, or if the vacuum level in the interstitial space decreases at a rate exceeding 0.1 gallons per minute in 15 min. Detection of liquid ingress occurs by system monitoring of vacuum decay and replenishment rates.

TESTS AND RESULTS

Testing of the SafeSite Vacuum Monitor Leak Detection System was conducted in accordance with the EPA utilizing the Flora protocol. The probabilities of detection and false alarm of a leak were certified to within the 95-5 ranges required by the EPA protocols. Double-walled piping or double-walled tank (underground or aboveground) with an open interstitial space of 1/8" or greater and a restricted interstitial space of 3/64", storing gasoline, gasohol, diesel, heating oil #2, kerosene, aviation fuel, motor oil, water. Storage of biodiesel blends B6-B20 meeting ASTM D7467 and biodiesel B100 meeting ASTM D6751 would also produce a system alarm if the system threshold is exceeded.

Note: an open interstice is an interstice with a 1/8 inch gap or greater between the inner wall and outer wall of a double wall tank or pipe for the full circumferential radius of the interstice. A restricted interstice has an interstice gap of less than 1/8 inch.

LIMITATIONS / CONDITIONS OF APPROVAL

General

- All monitoring equipment shall be installed, calibrated, operated, and maintained in accordance with the manufacturer instructions, and certified every 12 months for operability, proper operating condition, and proper calibration. Records of sampling, testing, or monitoring shall be maintained in accordance with **ATCP 93.500(9)**.
- The manufacturer shall submit for a revision to this Wisconsin Material Approval application if any of the functional performance capabilities of this equipment are revised. This would include, but not be limited to changes in software, hardware, or methodology.
- All equipment shall be installed, operated and maintained in accordance with procedures specified by Core Engineered Solutions, Inc.
- Volume of monitored interstitial space shall not exceed 270 gallons for tanks and piping (individual or combined total) or 5,690 feet of piping.
- The vacuum rate of replenishment is limited to a maximum of 85 liters per hour or a lesser rate specified by manufacturer.
- The system was tested with open interstitial spaces of 1/8" or greater. This system may not be compatible with all secondarily contained tanks and/or piping. Always consult with the tank and/or piping manufacturer and the leak detection manufacturer's applicable recommended installation practices before installing this system, or damage may be caused to the tank or piping by its use. System was evaluated for detecting breaches within the interstitial space effective gap of 3/64" or greater of a double-walled tank or double-walled piping.

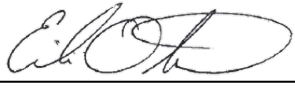
This approval will be valid through December 31, 2026 unless manufacturing modifications are made to the product or a re-examination is deemed necessary by the department. The Wisconsin Material Approval Number must be provided when plans that include this product are submitted for review.

DISCLAIMER

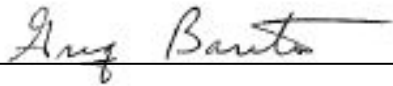
The Department is in no way endorsing or advertising this product. This approval addresses only the specified applications for the product and does not waive any code requirement unless specified in this document.

DATCP Material Approval No. 20230003

Effective Date: February 6, 2023

Reviewed by: 

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

Approved by:  Date: 02-06-2023

Greg Bareta, P. E.
Internal Operations Section Manager
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