



Maryland Helium Testing Protocol

The individual performing the inspection and test as outline in this protocol must be either a certified UST technician in compliance with COMAR 26.10.06 or employed by a UST testing company recognized by the Maryland Department of the Environment as indicated on the list of approved UST tests methods authored and updated by the Department.

Equipment Needed:

1. Helium detector capable of detecting 5 parts per million of helium, calibrated and checked per manufacturer's requirements before each test.
2. Digital gauges capable of reading inches of water column to the hundredths.
3. Compressed helium gas (High purity grade 99.995%).
4. Compressed nitrogen gas.
5. Pressure regulator (0-30 psi).
6. A one psi pressure relief valve.

Pre-testing:

1. No product deliveries are to be made to the underground storage tanks 3 hours prior to the test.
2. Note and record the following items:
 - **Spill Basins**. Locations; listed individually (Tank #, Fill, Stage I riser) and their condition (water/gas present, dry, broken, etc.).
 - **Containment Sumps** Locations; listed individually (Submersible Pumps, Dispensers, etc.) and their condition (water/gas present, dry, broken, etc.).
 - **Secondary Containment Piping** Are boots and clamps present and is it capable of being tested per manufacturers' specifications? (Note: it is not a recommendation to test the doubled wall portions of most secondary contained piping with helium). What pipes have secondary containment (product, vent, Stage II, product manifold)?
 - Any other form of containment where tank top releases (liquid/vapor) may not directly enter into the environment? Describe.
 - Inspect all tank top components and vents for obvious problems (product leaks; loose, broken, missing parts; gaskets replaced, etc.) Repair, replace and **record** all findings, corrections and repairs.

Testing:

1. Initially perform California Air Resources Board (CARB) Test Procedure TP-201.3 using commercial grade nitrogen as required. Test failure must be reported to Oil Control Program and Air and Radiation Management Administration, within 2 hours in accordance with Code of Maryland Regulation

2. (COMAR 26.10.08.01A). Record any corrections made prior to and during the testing to achieve a passed test.
3. Once CARB test has been successfully completed, remove the Pressure/Vacuum (P/V) vent cap(s) on UST(s) to be tested and install 1-psi pressure relief valve.
4. Note: The UST systems should be in operating condition minus the vent cap. All fill and Stage I dust caps must be installed for the duration of the helium test.
5. Begin introducing helium into the system following the specifications as stated in CARB procedure TP-201.3. Do not exceed 1.0 inch of water column. Pressure in the tank must be constantly monitored.
6. Confirm helium is present in all areas to be tested. Also check your test connections to verify they are not leaking.
7. Lids to all sumps, tank top components and dispensers should remain in place until they are tested to allow for any releasing helium to build inside the contained area for detection.
8. Test for helium leaks at all tank top components and areas in the dispensers at the pump island grade with the helium detector. Record the location of any positive detection of helium.
9. Repair or replace any defective components and record work performed.
10. Repeat steps #7 and #8 until no helium is detected.
11. Once helium is not detected, increase pressure to 5.0 inches of water column and repeat steps #7 and #8 until no helium is detected.
12. Testing is complete once no helium is detected at 5.0 inches of water column in all sumps, manways, at any of the tank top components or in the dispenser areas. Record the monometer pressure and time. Maintain the test for 10 additional minutes and record the pressure again. If pressure decay is observed, record and bring pressure back to 5.0 inches of water column and maintain for 10 minutes and record pressures. If pressure increase is observed, also record. A failure is any detection of helium or any decay of pressure after achieving 5.0 inches of water column for 10 minutes.
13. Breakdown test equipment and replace P/V vent caps.
14. If secondary piping exists it should be tested using the manufacturers specifications.
15. Introduce nitrogen through one test port on line being tested. A second gauge should be placed farthest from the area where the nitrogen is being applied. Lines may have to be connected (jumped) inside dispensers to perform test. In order to determine continuity of the line being tested, the pressure on the gauge where the nitrogen is introduced should equal to or be close to the pressure of the gauge at the other end of the piping run. Follow the manufacturers' protocol in order to determine if the line is passing. A failure would be the pressure gauges in the piping run are not the same or close, and/or the test does not meet the manufacturers' specifications.

Reporting:

1. The UST owner must maintain records of the test for 1 year at the facility and 5 years at a location determined by the owner.

2. In accordance with Code of Maryland Regulation 26.10.08.01A, if a storage system fails a test for tightness, is otherwise determined to be leaking, or there exists evidence of a discharge, the person conducting the test, the owner, and the operator of the storage system shall notify the Department within 2 hours. Two consecutive inconclusive tests are considered a failure and shall be reported as required.
3. Within 30 days upon completion of the helium test, a report detailing all activities and results must be maintained on site. If a test failure is detected, a copy of the report must be forwarded to the Department.
4. The report must include:
 - Name and address of facility tested
 - Owner's name, telephone number and address
 - Date test was performed and weather conditions.
 - Name and telephone number of tester/company and equipment used (make/model #)
 - Site Diagram of station identifying all tank top components, dispensers and, if known, layout of piping.
 - All items listed in the pre-test section of this protocol and any repairs made before and during the CARB or Helium Test
 - Secondary piping test results if performed.
 - Results of the test and a record identifying all repairs made to the storage system prior to and during each test pressure (1.0 and 5.0 inches water column).
5. In accordance with Annotated Code of Maryland Environmental Article § 4-417 (c) *False Statements in required documents; tampering with monitoring devices.* – Any person who knowingly makes any false statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under this title, or by any permit, rule, regulation or order issued under this title, or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this title or by any permit, rule, regulation, or order issued under this title, upon conviction, is subject to a fine not exceeding \$10,000, or by imprisonment not exceeding six months or both.
6. In the event there is a test failure of the storage tank system, or repairs were made to a failed system that enabled it to pass the test, the Department recommends that the tank owner immediately inform their pollution insurance provider of this testing occurrence

Disclaimer:

The storage of petroleum products and the maintenance and inspection of storage systems is a hazardous endeavor. Only experienced storage tank technicians should perform the actions as outline in this protocol. The Maryland Department of the Environment makes no claim as to the completeness or the quality of work performed by private parties. The use of this protocol is designed to demonstrate compliance with Maryland regulations. The damage of storage tank equipment, loss of life or injury are the sole responsibility of the storage tank owner and the person performing the test.