



Standard Test Method for Installed Precast Concrete Tanks and Accessories by the Negative Air Pressure (Vacuum) Test Prior to Backfill¹

This standard is issued under the fixed designation C1719; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This test method covers procedures for testing precast concrete tanks (and installed accessories) used for on-site wastewater treatment, grease interception, grit/oil separation, water storage, or other applications requiring watertight construction and installation. This test method uses partial vacuum to demonstrate the integrity of the installed materials and the construction processes.

1.2 This test method is intended to be used to demonstrate the condition of the installed system (precast concrete tank and accessories) prior to backfill.

1.3 Testing of the system before backfill is necessary so as to preclude inadvertent structural overloading of the system components during the test.

NOTE 1—Vacuum test criteria presented in this test method are similar to those in general use. The test and criteria have been widely and successfully used in testing manholes as specified in Test Method C1244.

1.4 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

C822 Terminology Relating to Concrete Pipe and Related Products

C1227 Specification for Precast Concrete Septic Tanks

C1244 Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test Prior to Backfill

3. Terminology

3.1 For definitions of terms relating to tanks, see Terminology C822.

4. Summary of Test Method

4.1 The tank shall be set in its installed position. Required accessories and pipes shall be installed. All openings and pipes entering the tank shall be plugged. A vacuum shall be drawn and vacuum retention over a specified time period is used to determine the acceptability of the tank and installed accessories.

5. Significance and Use

5.1 This is not a routine test. The values recorded are applicable only to the tank being tested and at the time of testing. This test is intended only to demonstrate the sealing effectiveness of the installed system. Structural design of the tank is defined or demonstrated within the scope of other applicable specifications and test methods, including Specification C1227.

6. Equipment Required

6.1 A vacuum device is required and shall be capable of reliably drawing the required vacuum. Suitable vacuum devices include vane- and venturi-type pumps, vehicle vacuum systems, and high-performance shop-style vacuum cleaners.

6.2 A vacuum measuring device is required and shall be a vacuum gauge, mercury manometer, or water manometer accurate to 0.1 in. (2.5 mm) Hg [1.4 in. (35 mm) H₂O]. If a gauge is used, it shall be in current calibration to standards traceable to NIST and shall have a range of no more than 10 in. (254 mm) Hg.

6.3 Suitable pipes (or pipe stubs), pipe plugs, and proper blocking for same shall be used. If temporary stubs are used, they shall be of the same size and type of pipe as that to be used in the final installation of the system, and shall be placed in the same orientation as required by the final installation of the system.

¹ This test method is under the jurisdiction of ASTM Committee C27 on Precast Concrete Products and is the direct responsibility of Subcommittee C27.30 on Water and Wastewater Containers.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

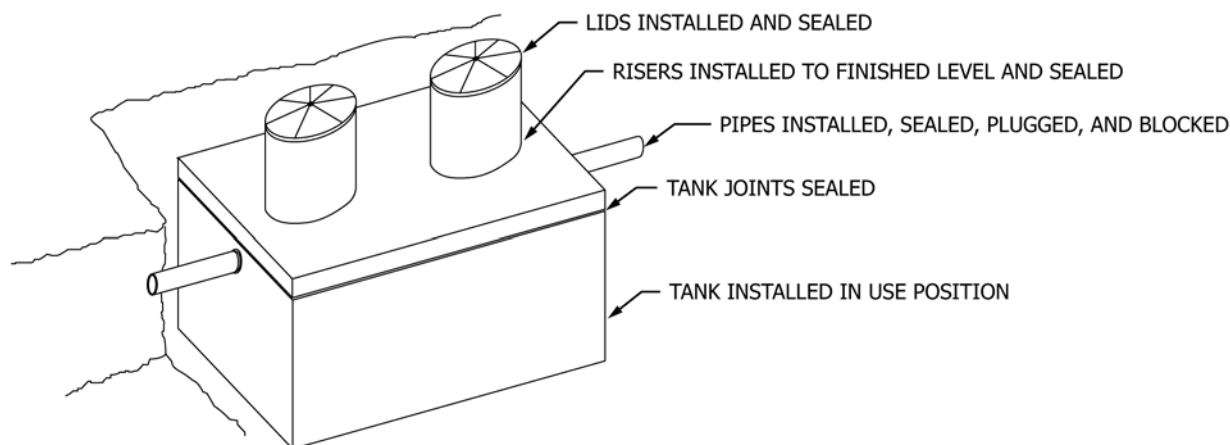


FIG. 1 Preparation of Tank for Vacuum Testing (Schematic Representation)

6.4 Suitable hose/tubing, valves, and related vacuum plumbing shall be used to allow the test to be conducted as required below.

7. Preparation of the System

7.1 The tank shall be placed into its final installed position. All section joints of the tank shall be sealed as required by the manufacturer.

7.2 All pipes and conduits entering the tank shall be installed and temporarily plugged, taking care to securely brace the pipes and plugs to prevent them from being drawn into the tank.

7.3 Risers and their lids shall be installed to finished level and sealed as required by the manufacturer.

8. Procedure

8.1 The test vacuum shall be introduced either through one of the risers or through an entry pipe, as long as either is sealed against loss of vacuum in accordance with the manufacturer's recommendations.

8.2 A vacuum of 4 in. (102 mm) Hg [54 in. (1385 mm) H₂O] shall be drawn on the system, the valve on the vacuum line of the test head closed, and the vacuum pump shut off.

8.3 The system shall pass if the vacuum is maintained for 5 min. Should the negative pressure fall below 4 in. (102 mm) Hg during the test, the pressure shall be returned to 4 in. (102

mm) Hg and the test time restarted. This shall not be prohibited and the system shall be deemed acceptable if it passes the requirements on subsequent testing.

8.4 If the installed system fails the test, the system shall not be prohibited from being repaired and retested. Repairs shall be made by the manufacturer's recommended method.

9. Report

9.1 At the conclusion of the test, a report shall be recorded and shall include at a minimum: Date, time, and location of the test; staff performing test and anyone else present; test equipment used and verification of calibration (as required); test set-up; test results and comments; and a positive statement as to the conformance of the system with this test method.

9.2 The test report shall be presented to the system owner or their representative, and a copy shall be retained by the individual performing the test.

10. Precision and Bias

10.1 No justifiable statement can be made either on the precision or bias of this procedure, since the test result merely states whether there is conformance to the criteria of the test specified.

11. Keywords

11.1 acceptance criteria; concrete; on-site; tank; test method; vacuum test

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