
Standard Method of Test for Determining the Quality of Tack Coat Adhesion to the Surface of an Asphalt Pavement in the Field or Laboratory

AASHTO Designation: T 408-23¹

Adopted without Revisions: 2023

Technical Subcommittee: 2c, Asphalt–Aggregate Mixtures



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Determining the Quality of Tack Coat Adhesion to the Surface of an Asphalt Pavement in the Field or Laboratory

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1. SCOPE

- 1.1. This test method covers the determination of the tack coat adhesion quality as measured by the tensile strength of tack coat materials on the free surface of asphalt pavement in the field or laboratory.
- 1.2. This test can be performed in the field on the surface of asphalt pavement or on 150-mm (6-in.) diameter, gyratory-compacted samples.
- 1.3. *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all safety concerns associated with its use. It is the responsibility of the user of this procedure to establish appropriate safety and health practices and to determine the applicability of regulatory limitations prior to use.*
- 1.4. *The quality of the results produced by this standard are dependent on the competence of the personnel performing the procedure and the capability, calibration, and maintenance of the equipment used. Agencies that meet the criteria of R 18 are generally considered capable of competent and objective testing/sampling/inspection/etc. Users of this standard are cautioned that compliance with R 18 alone does not completely assure reliable results. Reliable results depend on many factors; following the suggestions of R 18 or some similar acceptable guideline provides a means of evaluating and controlling some of those factors.*

2. REFERENCED DOCUMENTS

- 2.1. *AASHTO Standards:*
 - M 231, Weighing Devices Used in the Testing of Materials
 - R 18, Establishing and Implementing a Quality Management System for Construction Materials Testing Laboratories
 - T 53, Softening Point of Bitumen (Ring-and-Ball Apparatus)

3. TERMINOLOGY

- 3.1. *tack coat adhesion quality*—a measure of the ability of a tack coat material to bond to its underlying substrate as described by the adhesive tensile strength of the tack coat material.

4. SUMMARY OF METHOD

- 4.1. The standard test materials and test apparatus consist of the Louisiana Tack Coat Quality Tester (LTCQT), LTCQT software, computer, weights to hold the LTCQT in place during testing, and an infrared reflective heating (IRH) device used to desiccate the emulsion and to adjust the tacked surface to the testing temperature. A thermometer should be used to determine the temperature.
- 4.2. The test procedure involves desiccating a tacked surface using the IRH device, adjusting the temperature of the surface with the fan or heat gun to reach the testing temperature, and applying a compressive load to the tacked pavement surface for a given amount of time using the LTCQT device and software. At a prescribed displacement rate, the movement of the loading plate away from the tacked surface results in tensile loading until failure. The maximum tensile strength reflects the quality of the adhesion of the tack coat material.

5. SIGNIFICANCE AND USE

- 5.1. This test method is suitable for field or laboratory tests to determine the quality of tack coat adhesion as measured by the tensile strength. The knowledge of tack coat adhesion quality serves as a tool in characterizing the tack coat material.
- 5.2. The tensile strength produced using this test method is influenced by the temperature at which the tacked surface is tested and the application rate of the tack coat material.
- 5.3. The tensile strength values measured by this test method, with the equipment and procedures stated herein, do not necessarily agree or correlate directly with other techniques of tack coat adhesion quality measurements. This test method is also suitable for research and development purposes, where direct comparisons between tack coat materials on a pavement surface are to be made within the same test program.

6. APPARATUS

- 6.1. *Louisiana Tack Coat Quality Tester*—The device shall be equipped with a closed-loop servo motor actuator for precision control of the rate of displacement during testing. It shall be capable of measuring loads of up to 446 N (100 lbf) with an accuracy of ± 1 percent. The displacement of the actuator shall be measured using a position transducer that has a total travel of 100 mm (4 in.). The diameter of the loading plate shall be 100 mm (4 in.). The device is illustrated in Figure 1.