



Standard Test Method for Skid Resistance of Paved Surfaces Using a Full-Scale Tire¹

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1. Scope

1.1 This test method covers the measurement of skid resistance of paved surfaces with a specified full-scale automotive tire.

1.2 This test method utilizes a measurement representing the steady-state friction force on a locked test wheel as it is dragged over a wetted pavement surface under constant load and at a constant speed while its major plane is parallel to its direction of motion and perpendicular to the pavement.

1.3 The values measured represent the frictional properties obtained with the equipment and procedures stated herein and do not necessarily agree or correlate directly with those obtained by other pavement friction measuring methods. The values are intended for use in evaluating the skid resistance of a pavement relative to that of other pavements or for evaluating changes in the skid resistance of a pavement with the passage of time. The values are insufficient to determine the distance required to stop a vehicle on either a wet or a dry pavement. They are also insufficient for determining the speed at which control of a vehicle would be lost, because peak and side force friction are also required for these determinations.

1.4 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.5 *This standard does not purport to address all of the safety problems 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.* For specific safety precautions, see Section 5.

2. Referenced Documents

2.1 ASTM Standards:²

E178 Practice for Dealing With Outlying Observations

E501 Specification for Rib Tire for Pavement Skid-Resistance Tests

E524 Specification for Smooth Tire for Pavement Skid-Resistance Tests

E867 Terminology Relating to Vehicle-Pavement Systems

E1136 Specification for P195/75R14 Radial Standard Reference Test Tire

F377 Practice for Calibration of Braking/Tractive Measuring Devices for Testing Tires

F457 Test Method for Speed and Distance Calibration of Fifth Wheel Equipped With Either Analog or Digital Instrumentation

3. Summary of Test Method

3.1 The test apparatus consists of an automotive vehicle with one or more test wheels incorporated into it or forming part of a suitable trailer towed by a vehicle. The apparatus contains a transducer, instrumentation, a water supply and proper dispensing system, and actuation controls for the brake of the test wheel. The test wheel is equipped with a standard pavement test tire. See 4.4 for tire references.

3.2 The test apparatus is brought to the desired test speed. Water is delivered ahead of the test tire and the braking system is actuated to lock the test tire. The resulting friction force acting between the test tire and the pavement surface (or some other quantity that is directly related to this force) and the speed of the test vehicle are recorded with the aid of suitable instrumentation.

3.3 The skid resistance of the paved surface is determined from the resulting force or torque record and reported as skid number (SN), which is determined from the force required to slide the locked test tire at a stated speed, divided by the effective wheel load and multiplied by 100.

¹ This test method is under the jurisdiction of ASTM Committee E17 on Vehicle - Pavement Systems and is the direct responsibility of Subcommittee E17.21 on Field Methods for Measuring Tire Pavement Friction.

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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.