Standard Method of Test for

Continuous Measurement of Sideway-Force Friction Number for Highway Pavements

AASHTO Designation: TP 137-20[1]

Technical Subcommittee: TS 5a, Pavement Measurement

Release: Group 1 (April)

AASHTO

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1. SCOPE

1.1. This test method covers the measurement of the sideway-force friction of paved surfaces using a tire mounted at 20 degrees, herein referred to as the "Device."

1.2. This test method utilizes the measurements obtained by a Device containing one freely rotating test wheel angled at 20 degrees to the direction of motion and operated over a pavement surface at operating speed while the test wheel is under a vertical load. The test equipment has been built onto a number of different vehicle chassis and functions independently of vehicle choice. This method provides data of the sideway-force friction (and other data) along the whole length of the pavement surface being tested. The data are intended for use in comparing certain frictional properties of a pavement relative to those of other pavements or for evaluating changes in these frictional properties of a pavement with the passage of time. The data are insufficient to determine the distance required to stop a vehicle on either a wet or a dry pavement.

1.3. The values stated in SI units are to be regarded as standard.

1.4. *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. See also Section 6.*

2. REFERENCED STANDARDS

2.1. *ISO Standards*[2]:

- ISO 48, Rubber, Vulcanized or Thermoplastic – Determination of Hardness – Part 2: Hardness between 10 IRHD and 100 IRHD)
- ISO 4662, Rubber, Vulcanized or Thermoplastic – Determination of Rebound Resilience

2.2. *Other Document*:

- Dunsford, A. GripTester Trial - October 2009 Including SCRIM Comparison. Transport Research Laboratory Project Report PPR497. August 2010.

3. SUMMARY OF TEST METHOD

3.1. The Device is a self-contained pavement-testing machine that measures sideway-force friction of paved surfaces using a special narrow test wheel. A typical Device is illustrated in Figure 1.

Figure 1—Device Wheel Assembly for a Machine with the Wheel in Its Raised Position

3.2. A controlled slipping condition is achieved through a freely rotating test wheel mounted mid-machine in line with the wheel path and angled at 20 degrees to the direction of travel of the vehicle. The test wheel is fitted with a special pneumatic, smooth rubber tire.

3.3. When the vehicle is in motion, the test wheel is applied to the pavement surface under a measured vertical load. A controlled flow of water wets the pavement surface immediately in front of the test wheel, so that when the vehicle moves forward, the test wheel rotates, but due to the inclined angle there is slippage in the transverse direction (i.e., in line with the test wheel axle).

3.4. The force generated by the resistance to sliding is related to the wet pavement skid resistance. The ratio of the measured sideway component of force (H) to the measured vertical load (V) multiplied by 100 provides the sideway-force friction number (SFN).

3.5. The SFN is affected by the speed of the test vehicle; so, testing speed should be measured on a continuous basis to make the necessary SFN speed correction.

3.6. The friction analysis is displayed on the in-cab monitor and can be downloaded to other Devices as required by the client for analysis.