



Standard Test Methods for Tire Performance Testing on Snow and Ice Surfaces¹

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1. Scope

1.1 These test methods cover the evaluation of tire performance on snow and ice surfaces utilizing passenger car or light truck vehicles. Since the tires are evaluated as part of a tire/vehicle system, the conclusions reached may not be applicable to the same tires tested on a different vehicle.

1.2 These test methods do not purport to identify every maneuver useful for determining tire performance in a winter environment.

1.3 These test methods are not meant to evaluate vehicle performance. Allowing for the variability of test results with different vehicles, these procedures have been developed and selected to evaluate relative tire-snow performance.

1.4 These test methods are suitable for research and development purposes, where tires are compared during a single series of tests. They may not be suitable for regulatory statutes or specification acceptance because the values obtained may not necessarily agree or correlate either in rank order or absolute traction performance level with those obtained under other environmental conditions on other surfaces or the same surface after additional use.

1.5 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.6 *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

E178 Practice for Dealing With Outlying Observations

¹ These test methods are under the jurisdiction of ASTM Committee F09 on Tires and are the direct responsibility of Subcommittee F09.20 on Vehicular Testing.

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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.

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

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

F538 Terminology Relating to the Characteristics and Performance of Tires

F811 Practice for Accelerometer Use in Vehicles for Tire Testing

F1046 Guide for Preparing Artificially Worn Passenger and Light Truck Tires for Testing

F1650 Practice for Evaluating Tire Traction Performance Data Under Varying Test Conditions

F1805 Test Method for Single Wheel Driving Traction in a Straight Line on Snow- and Ice-Covered Surfaces

2.2 SAE Standards:³

SAE J1466 Passenger Car and Light Truck Tire Dynamic Driving Traction in Snow

3. Terminology

3.1 Definitions:

3.1.1 *candidate tire, n*—a test tire that is part of a test program.

3.1.1.1 *Discussion*—The term “candidate object” may be used in the same sense as *candidate tire*. **F538**

3.1.2 *candidate tire set, n*—a set of candidate tires. **F538**

3.1.3 *control tire, n*—a reference tire used in a specified manner throughout a test program.

3.1.3.1 *Discussion*—A control tire may be of either type and typical tire use is the reference (control) tire in Practice **F1650** that provides algorithms for correcting (adjusting) test data for bias trend variations (See Practice **F1650** and **Annex A1**). **F538**

3.1.4 *driving coefficient (nd), n*—the ratio of the driving force to a normal force. **F538**

3.1.5 *driving force (F), n*—of a tire, the positive longitudinal force resulting from the application of driving torque. **F538**

3.1.6 *grooming, v*—in tire testing, mechanically reworking a snow test surface in order to obtain a surface with more consistent properties. **F538**

³ Available from SAE Automotive Headquarters, 755 W. Big Beaver, Suite 1600, Troy, MI 48084.