



Standard Practice for Evaluating Tire Traction Performance Data Under Varying Test Conditions¹

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INTRODUCTION

Tire traction testing programs at proving grounds or other exterior test sites are often extended over a period of days or weeks. During this time period test conditions may change due to a number of varying factors, for example, temperature, rain or snow fall, surface texture, water depth, and wind velocity and direction. If tire performance comparisons are to be made over any part of the test program (or the entire program) where these test condition variations are known or suspected to affect performance, the potential influence of these variations must be considered in any final evaluation of traction performance.

1. Scope

1.1 This practice covers the required procedures for examining sequential control tire data for any variation due to changing test conditions. Such variations may influence absolute and also comparative performance of candidate tires, as they are tested over any short or extended time period. The variations addressed in this practice are systematic or bias variations and not random variations. See Appendix X1 for additional details.

1.1.1 Two types of variation may occur: time or test sequence “trend variations,” either linear or curvilinear, and the less common transient or abrupt shift variations. If any observed variations are declared to be statistically significant, the calculation procedures are given to correct for the influence of these variations. This approach is addressed in Method A.

1.2 In some testing programs, a policy is adopted to correct all candidate traction test data values without the application of a statistical routine to determine if a significant trend or shift is observed. This option is part of this practice and is addressed in Method B.

1.3 The issue of rejecting outlier data points or test values that might occur among a set of otherwise acceptable data values obtained under identical test conditions in a short time period is not part of this practice. Specific test method or other outlier rejection standards that address this issue may be used on the individual data sets prior to applying this practice and its procedures.

1.4 Although this practice applies to various types of tire traction testing (for example, dry, wet, snow, ice), the procedures as given in this practice may be used for any repetitive tire testing in an environment where test conditions are subject to change.

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:

E 501 Specification for Standard Rib Tire for Pavement Skid-Resistance Tests²

E 524 Specification for Standard Smooth Tire for Pavement Skid-Resistance Tests²

E 826 Practice for Testing Homogeneity of Materials for the Development of Reference Materials³

E 1136 Specification for a Radial Standard Reference Test Tire²

F 538 Terminology Relating to the Characteristics and Performance of Tires⁴

3. Terminology

3.1 *Descriptions of Terms Specific to This Standard*—Descriptions of terms particular to this practice are listed either as principal terms or under principal terms as derived terms.

¹ This practice is under the jurisdiction of ASTM Committee F-9 on Tires and is the direct responsibility of Subcommittee F09.20 on Vehicular Testing.

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² *Annual Book of ASTM Standards*, Vol 04.03.

³ *Annual Book of ASTM Standards*, Vol 03.06.

⁴ *Annual Book of ASTM Standards*, Vol 09.02.

