



Standard Practice for Commercial Radial Truck-Bus Tires to Establish Equivalent Test Severity Between a 1.707-m (67.23-in.) Diameter Roadwheel and a Flat Surface¹

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1. Scope

1.1 This practice describes the procedure to identify equivalent test severity conditions between a 1.707-m diameter laboratory roadwheel surface and a flat or highway surface for commercial radial truck-bus tires.

1.1.1 Tire operational severity, as defined as the running or operational temperature for certain specified internal tire locations, is not the same for these two test conditions. It is typically higher for the laboratory roadwheel at equal load, speed and inflation pressure conditions due to the curvature effect.

1.1.2 The practice applies to specific operating conditions of load range F through L for such commercial radial truck-bus tires.

1.1.3 The specific operating conditions under which the procedures of the practice are valid and useful are completely outlined in Section 6 (Limitations) of this standard.

1.1.4 It is important to note that this standard is composed of two distinct formats:

1.1.4.1 The usual text format as published in this volume of the Book of Standards (Vol 09.02).

1.1.4.2 A special interactive electronic format that uses a special software tool, designated as prediction profilers or profilers. This special profiler may be used to determine laboratory test conditions that provide equivalent tire internal temperatures for the tread centerline, belt edge, or ply ending region for the two operational conditions, that is, the curved laboratory roadwheel and flat highway test surfaces.

1.2 The prediction profilers are based on empirically developed linear regression models obtained from the analysis of a large database that was obtained from a comprehensive experimental test program for roadwheel and flat surface testing of

typical commercial truck and bus tires. See Section 7 and References (1, 2)^{2,3} for more details.

1.2.1 For users viewing the standard on CD-ROM or PDF, with an active and working internet connection, the profilers can be accessed on the ASTM website by clicking on the links in 7.5 and 7.6.

1.2.2 For users viewing the standard in a printed format, the profilers can be accessed by entering the links to the ASTM website in 7.5 and 7.6 into their internet browsers.

1.3 For this standard, SI units shall be used, except where indicated.

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.*

2. Referenced Documents

2.1 *ASTM Standards:*⁴

F538 Terminology Relating to the Characteristics and Performance of Tires

F551 Practice for Using a 67.23-in. (1.707-m) Diameter Laboratory Test Roadwheel in Testing Tires

IEEE/ASTM SI 10 American National Standard for Use of the International System of Units (SI): The Modern Metric System

3. Terminology

3.1 *Definitions:*

3.1.1 *belt edge (BE) temperature, n — in the cross section of a radial tire, the temperature at the edge of the stabilizer (working, widest) plies or belts, for example, in the rubber region of the belt edges.*

² The boldface numbers in parentheses refer to the list of references at the end of this standard.

³ Supporting data have been filed at ASTM International Headquarters and may be obtained by requesting Research Report RR:F09-1002.

⁴ 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.

¹ This practice is under the jurisdiction of ASTM Committee F09 on Tires and is the direct responsibility of Subcommittee F09.30 on Laboratory (Non-Vehicular) Testing.

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