



Designation: D7643 – 16

Standard Practice for Determining the Continuous Grading Temperatures and Continuous Grades for PG Graded Asphalt Binders¹

This standard is issued under the fixed designation D7643; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice is used to estimate the continuous grading temperatures and continuous grade for an asphalt binder graded in accordance with the requirements specified in Specification [D6373](#).

1.2 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.3 *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

[D8 Terminology Relating to Materials for Roads and Pavements](#)

[D2872 Test Method for Effect of Heat and Air on a Moving Film of Asphalt \(Rolling Thin-Film Oven Test\)](#)

[D6373 Specification for Performance Graded Asphalt Binder](#)

[D6521 Practice for Accelerated Aging of Asphalt Binder Using a Pressurized Aging Vessel \(PAV\)](#)

[D6648 Test Method for Determining the Flexural Creep Stiffness of Asphalt Binder Using the Bending Beam Rheometer \(BBR\)](#)

[D6723 Test Method for Determining the Fracture Properties of Asphalt Binder in Direct Tension \(DT\)](#)

[D6816 Practice for Determining Low-Temperature Performance Grade \(PG\) of Asphalt Binders](#)

[D7175 Test Method for Determining the Rheological Prop-](#)

[erties of Asphalt Binder Using a Dynamic Shear Rheometer](#)

3. Terminology

3.1 *Definitions:* Definitions for many terms common to asphalt cement and asphalt binder are found in Terminology [D8](#).

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *continuous grade, n* —a grade defined by the estimated upper and lower continuous grading temperatures.

3.2.2 *continuous grading temperatures, T_c , n* —the estimated temperatures at which the properties of an asphalt binder are equal to the specification requirements given in Tables 1 or 2 of Specification [D6373](#).

3.2.3 *difference between estimated continuous grading temperature for S and the m -value, ΔT_c* —determined by subtracting the continuous grading temperature for the m -value from the continuous grading temperature for S .

3.2.4 *PG grading temperatures, T_{PG} , n* —the temperatures listed in Specification [D6373](#) used to designate the grade of a PG binder, for example, 64 °C, 22 °C, and –28 °C for a PG 64–28.

3.2.5 *specification requirements, n* —the limiting values given in Specification [D6373](#) that are used to grade an asphalt binder, for example, 1.00 kPa for $G^*/\sin\delta$, 300 MPa for S , etc.

3.2.6 *test temperatures, T_1 and T_2 , n* —two PG grading temperatures, one grade apart such that the measured properties at the two temperatures bracket the specification requirement for the property in question.

4. Summary of Practice

4.1 The continuous grading temperature for each specification requirement is determined by interpolating between test results obtained at two adjacent specification temperatures. The two temperatures are chosen so that the test result at one temperature is greater than the specification requirement and the test result at the other temperature is less than the specification requirement. The upper continuous grade is determined as the lower of the two continuous grading temperatures determined for the original and RTFOT condition

¹ This practice is under the jurisdiction of ASTM Committee [D04](#) on Road and Paving Materials and is the direct responsibility of Subcommittee [D04.44](#) on Rheological Tests.

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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.