
Standard Practice for Grading or Verifying the Performance Grade (PG) of an Asphalt Binder

AASHTO Designation: R 29-15 (2023)¹

Technically Revised: 2015

Reviewed but Not Updated: 2023

Technical Subcommittee: 2b, Liquid Asphalt



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1. SCOPE

- 1.1. This standard practice describes the testing required to determine the performance grade (PG) of an asphalt binder according to M 320, Table 1. It presents two approaches. In the first, the PG of an unknown asphalt binder is determined. In the second, the nominal PG of an asphalt binder is verified. It also provides an estimate of the time required to complete a single test sequence.
- 1.2. *This standard practice may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety concerns 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. *AASHTO Standards:*
- < M 320, Performance-Graded Asphalt Binder
 - < R 28, Accelerated Aging of Asphalt Binder Using a Pressurized Aging Vessel (PAV)
 - < T 240, Effect of Heat and Air on a Moving Film of Asphalt Binder (Rolling Thin-Film Oven Test)
 - < T 313, Determining the Flexural Creep Stiffness of Asphalt Binder Using the Bending Beam Rheometer (BBR)
 - < T 314, Determining the Fracture Properties of Asphalt Binder in Direct Tension (DT)
 - < T 315, Determining the Rheological Properties of Asphalt Binder Using a Dynamic Shear Rheometer (DSR)

3. SUMMARY OF THE PRACTICE

- 3.1. The tank (as-received) sample of asphalt binder is tested to determine shear modulus (G^*) and phase angle (δ) (T 315).
- 3.2. The asphalt binder is aged in the rolling thin-film oven (RTFO) (T 240), and the residue is tested to determine the mass change (T 240) and the shear modulus (G^*) and phase angle (δ) (T 315).
- 3.3. The residue from the RTFO is aged in the pressurized aging vessel (R 28), and this residue is tested to determine the shear modulus (G^*) and phase angle (δ) (T 315), creep stiffness (S), and slope (m), of the log creep stiffness versus log time relationship at 60 s (T 313), and the failure strain in direct tension (T 314), as necessary.