



Standard Test Method for Determining the Fracture Properties of Asphalt Binder in Direct Tension (DT)¹

This standard is issued under the fixed designation D6723; 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 test method covers the determination of the failure strain and failure stress of asphalt binders by means of a direct tension test. It can be used with unaged material or with material aged using Test Method D2872 (RTFOT), Practice D6521 (PAV), or AASHTO T240 (RTFOT) and AASHTO PP1 (PAV). The test apparatus is designed for testing within the temperature range from +6 to -36°C.

1.2 This test method is limited to asphalt binders containing particulate material having dimensions less than 250 μm .

1.3 The values stated in SI units are to be regarded as the standard.

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:²

C670 Practice for Preparing Precision and Bias Statements for Test Methods for Construction Materials

D8 Terminology Relating to Materials for Roads and Pavements

D140 Practice for Sampling Bituminous Materials

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)

E1 Specification for ASTM Liquid-in-Glass Thermometers

E4 Practices for Force Verification of Testing Machines

E77 Test Method for Inspection and Verification of Thermometers

E83 Practice for Verification and Classification of Extensometer Systems

E220 Test Method for Calibration of Thermocouples By Comparison Techniques

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

2.2 Deutsche Industrie Norm (DIN) Standard:

43760 Standard for Calibrating Thermocouples³

2.3 AASHTO Standards:

T 240⁴

PPI (PAV)⁴

3. Terminology

3.1 *Definitions*—For definitions of general terms used in this standard, refer to Terminology D8.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *brittle, adj*—type of failure in a direct tension test where the stress-strain curve is essentially linear up to the point of failure and the failure is by sudden rupture of the test specimen without appreciable reduction in cross-section of the specimen.

3.2.2 *brittle-ductile, adj*—type of failure in a direct tension test where the stress-strain curve is curvilinear and the failure is by sudden rupture of the test specimen. Limited reduction in cross-section of the specimen occurs before rupture.

3.2.3 *ductile, adj*—type of failure in a direct tension test where the specimen does not rupture but fails by flow at large strains.

3.2.4 *effective gage length, n*—for specimens used in this test, the effective gauge length, L_e , has been determined to be 33.8 mm. This is an effective gauge length that represents the portion of the specimen that contributes to the majority of the strain.

¹ This test method 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.

³ Deutsches Institut für Normung e.V. (German Standards Institute), Beuth Verlag GmbH, Burggrafenstrasse 6, 10787, Berlin Germany.

⁴ Available from American Association of State Highway and Transportation Officials (AASHTO), 444 N. Capitol St., NW, Suite 249, Washington, DC 20001, <http://www.transportation.org>.