

Test Procedure for

# TEST METHODS FOR VARIOUS BITUMINOUS MATERIALS



TxDOT Designation: Tex-501-C, et al

Effective Date: **May 2020**

## 1. SCOPE

- 1.1 Some of the Department's test methods on bituminous materials are based on AASHTO and ASTM test methods and practices. References to individual test methods and practices are summarized in Table 1.
- 1.2 The values given in parentheses (if provided) are not standard and may not be exact mathematical conversions. Use each system of units separately. Combining values from the two systems may result in nonconformance with the standard.

## 2. TESTING INFORMATION

- 2.1 **Materials and Tests Division (MTD)** is responsible for the performance of these tests. District laboratories may also perform some of these tests.

## 3. REFERENCE LOCATION

Table 1—Test Method Reference

TxDOT Test Method	Standard Method of Test for	Reference
Tex-501-C	Water in Petroleum Products and Bituminous Materials by Distillation	ASTM D 95
Tex-502-C	Penetration of Bituminous Materials	AASHTO T 49 (ASTM D 5/D5M with some provisions)
Tex-503-C	Ductility of Asphalt Materials	AASHTO T 51 (ASTM D 113 with some provisions)
Tex-504-C	Flash and Fire Points by Cleveland Open Cup	AASHTO T 48
Tex-505-C	Softening Point of Bitumen (Ring-and-Ball Apparatus)	AASHTO T 53 (ASTM D 36 with some provisions)
Tex-506-C	Effect of Heat and Air on a Moving Film of Asphalt Binder (Rolling Thin-Film Oven Test)	AASHTO T 240
Tex-507-C	Solubility of Bituminous Materials	AASHTO T 44
Tex-508-C	Specific Gravity of Semi-Solid Asphalt Materials	AASHTO T 228, See Note 1 in Section 4.1 (ASTM D 70 with some provisions)
Tex-509-C	Spot Test of Asphaltic Materials	AASHTO T 102, See Note 2 in Section 4.2
Tex-510-C	Effect of Heat and Air on Asphalt Materials (Thin-Film Oven Test)	AASHTO T 179

<b>TxDOT Test Method</b>	<b>Standard Method of Test for</b>	<b>Reference</b>
Tex-512-C	Flash Point with Tag Open-Cup Apparatus for Use with Material Having a Flash Point < 93°C (200°F)	AASHTO T 79
Tex-513-C	Saybolt Viscosity	AASHTO T 72
Tex-514-C	Specific Gravity for Cutbacks and Emulsions	Either of the following, depending on the material: <ul style="list-style-type: none"> <li>▪ Cutback Asphalts—ASTM D 3142</li> <li>▪ Emulsified Asphalts—ASTM D 6937</li> </ul>
Tex-515-C	Distillation of Cutback Asphalt Products	AASHTO T 78
Tex-519-C	Float Test for Bituminous Materials	AASHTO T 50 (ASTM D 139 with some provisions)
Tex-520-C	Residue of Specified Penetration	ASTM D 243
Tex-521-C	Emulsified Asphalts	AASHTO T 59
Tex-528-C	Viscosity of Asphalts by Vacuum Capillary Viscometer	AASHTO T 202 (ASTM D 2171/D2171M with some provisions)
Tex-529-C	Kinematic Viscosity of Asphalts (Bitumens)	AASHTO T 201 (ASTM D 2170/D2170M with some provisions)

#### 4. NOTES

- 4.1 In routine testing, it is convenient to determine the specific gravity of asphalt at 25°C (77°F) and convert this value to the specific gravity of asphalt at 15.6°C (60°F) by the addition of 0.006, derived by the use of the accepted ASTM IP coefficient of thermal expansion. The specific gravity can be used to select the proper group or factor from the Asphaltic Materials Measurement tables for reducing the volume of the material at high observed temperature to the basis of 15.6°C (60°F).
- 4.2 In lieu of the standard naphtha, perform all testing using a blend of 65% heptane and 35% xylene.
- 4.3 To measure residue content of asphalt emulsions, except for solvent-containing emulsions, Moisture Analyzer Balance (MAB) can be used adhering to ASTM D7404 with the following changes: Test 6 to 8 g of the material at 130°C with the termination criterion (mass change) of less than 1 mg in 10 s.

#### 5. ARCHIVED VERSIONS

- 5.1 Archived versions are available.