



Designation: D5710/D5710M – 21

## Standard Specification for Trinidad Lake Modified Asphalt<sup>1</sup>

This standard is issued under the fixed designation D5710/D5710M; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This specification covers Trinidad Lake modified asphalt for use in the construction of pavements.

1.2 This specification covers the following penetration grades:

40–55  
60–75  
80–100  
120–150

1.3 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system are not necessarily exact equivalents; therefore, to ensure conformance with the standard, each system shall be used independently of the other, and values from the two systems shall not be combined.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

### 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

[D5/D5M Test Method for Penetration of Bituminous Materials](#)

[D92 Test Method for Flash and Fire Points by Cleveland Open Cup Tester](#)

[D113 Test Method for Ductility of Asphalt Materials](#)

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee D04 on Road and Paving Materials and is under the direct responsibility of Subcommittee D04.40 on Asphalt Specifications.

Current edition approved Nov. 1, 2021. Published November 2021. Originally approved in 1995. Last previous edition approved in 2015 as D5710/D5710M – 15. DOI: 10.1520/D5710\_D5710M-21.

<sup>2</sup> 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.

[D140/D140M Practice for Sampling Asphalt Materials](#)  
[D1754/D1754M Test Method for Effects of Heat and Air on Asphaltic Materials \(Thin-Film Oven Test\)](#)  
[D1856 Test Method for Recovery of Asphalt from Solution by Abson Method](#)  
[D2170/D2170M Test Method for Kinematic Viscosity of Asphalts](#)  
[D2172/D2172M Test Methods for Quantitative Extraction of Asphalt Binder from Asphalt Mixtures](#)  
[D2415 Test Method for Ash in Coal Tar and Pitch](#)  
[D7553 Test Method for Solubility of Asphalt Materials in N-Propyl Bromide](#)

### 3. Manufacture

3.1 Trinidad Lake modified asphalt shall be prepared by blending naturally occurring Trinidad Lake asphalt (TLA) (20 to 50 %) with asphalt cement obtained by the refining of crude petroleum by methods suitable to produce a homogeneous final product. The percentage of TLA in the blend shall be clearly stated by the supplier. Fillers other than those from TLA will not be allowed in the asphalt cement blend.

### 4. Properties

4.1 The blended Trinidad Lake modified asphalt shall be homogeneous as determined by appropriate sampling and testing.

4.2 The various grades of Trinidad Lake modified asphalt shall conform to the requirements prescribed in [Table 1](#).

### 5. Sampling and Testing

5.1 The material shall be sampled and the properties enumerated in this specification shall be determined in accordance with the following ASTM International standards:

NOTE 1—Local agencies will determine sampling and testing procedures before a contract is awarded. Methods that have been used include sampling at various levels from storage tanks or transports followed by penetration testing or spectroscopic examination of these samples.

5.1.1 *Sampling*—Practice [D140/D140M](#).

5.1.2 *Penetration*—Test Method [D5/D5M](#).

5.1.3 *Flash Point*—Test Method [D92](#).

5.1.4 *Thin-Film Oven Test*—Test Method [D1754/D1754M](#).

5.1.5 *Solubility in N-Propyl Bromide*—Test Method [D7553](#).

5.1.6 *Ductility*—Test Method [D113](#).

**TABLE 1 Requirements for Trinidad Lake Modified Asphalt for Use in Pavement Construction**

	Penetration Grade							
	min	max	min	max	min	max	min	max
Penetration at 25 °C [77 °F], 100 g, 5 s	40	55	60	75	80	100	120	150
Kinematic viscosity at 135 °C [275 °F], cst	385	—	275	—	215	—	175	—
Ductility at 25 °C [77 °F], 5 cm/min, cm	100	—	100	—	100	—	100	—
Flash point, °C [°F]	232	—	232	—	232	—	232	—
	[450]		[450]		[450]		[450]	
Solubility in N-Propyl Bromide, % <sup>A</sup>	77	90	77	90	77	90	77	90
Retained penetration after thin-film oven test, %	55	—	52	—	47	—	42	—
Ductility at 25 °C [77 °F], 5 cm/min, cm, after thin-film oven test	50	—	50	—	75	—	100	—
Inorganic matter (ash), %	7.5	19.0	7.5	19.0	7.5	19.0	7.5	19.0

<sup>A</sup> Solubility requirements to be established by the user, within this range, from targeted percentage of TLA in blend.

5.1.7 *Inorganic Material (Ash)*—Test Method **D2415**.

5.1.8 *Quantitative Extraction of Bitumen from Bituminous Paving Mixtures*—Test Method **D2172/D2172M**.

5.1.9 *Recovery of Asphalt from Solution by Absorbent Method*—Test Method **D1856**.

5.1.10 *Kinematic Viscosity of Asphalt*—Test Method **D2170/D2170M**.

## 6. Keywords

6.1 pavement construction; Trinidad Lake modified asphalt

## APPENDIX

### (Nonmandatory Information)

#### X1. CORRECTION TO MIX FINES TO COMPENSATE FOR FINES IN TRINIDAD LAKE ASPHALT

X1.1 Since Trinidad Lake asphalt contains some fines, it may be desirable to make a correction to the minus 75 µm [No. 200] fines in the mix to compensate. A formula used by the Utah DOT has been developed based on 36 % mineral matter with 91.2 % passing the 75 µm [No. 200] and is included for information.

$$\text{Fines Correction} = 32.83 \times P(B) \times P(T) \quad (\text{X1.1})$$

where:

$P(B)$  = percent binder in total mix expressed as a decimal, and

$P(T)$  = percent Trinidad Lake asphalt in total binder expressed as a decimal.

X1.1.1 *Example*—If a mix contains 5.8 % binder by weight of mix and the total binder consists of 25 % Trinidad Lake asphalt:

$$\text{Fines contributed by Trinidad Lake Asphalt} = 32.83(0.058)(0.25) = 0.48 \%$$

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