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# Standard Specification for Trinidad Lake Modified Asphalt[1]

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 (ε) 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 may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with 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]

D5 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 Bituminous Materials
D140 Practice for Sampling Bituminous Materials
D482 Test Method for Ash from Petroleum Products
D1754 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 Absorption Method
D2170 Test Method for Kinematic Viscosity of Asphalts (Bitumens)
D2172 Test Methods for Quantitative Extraction of Bitumen From Bituminous Paving Mixtures
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 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.
5.1.2 *Penetration*—Test Method D5.
5.1.3 *Flash Point*—Test Method D92.
5.1.4 *Thin-Film Oven Test*—Test Method D1754.
5.1.5 *Solubility in N-Propyl Bromide*—Test Method D7553.
5.1.6 *Ductility*—Test Method D113.
5.1.7 *Inorganic Material (Ash)*—Test Method D482.
5.1.8 *Quantitative Extraction of Bitumen from Bituminous Paving Mixtures*—Test Method D2172.
5.1.9 *Recovery of Asphalt from Solution by Abson Method*—Test Method D1856.
5.1.10 *Kinematic Viscosity of Asphalt*—Test Method D2170.

[1] 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.

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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.

**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 [450] | — | 232 [450] | — | 232 [450] | — | 232 [450] | — |
| Solubility in N-Propyl Bromide, %[A] | 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 |

[A] Solubility requirements to be established by the user, within this range, from targeted percentage of TLA in blend.

## 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.

$$Fines\ Correction = 32.83\ x\ P(B)\ x\ P(T) \qquad (X1.1)$$

*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:

Fine contributed by Trinidad Lake Asphalt = 32.83(0.058)(0.25) = 0.48 %