



Standard Practice for the Identification of Trinidad Lake Asphalt in Asphalt Mixes¹

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1. Scope

1.1 This practice shall be used for the qualitative determination of Trinidad Lake Asphalt in Trinidad Lake Modified Asphalt Cements obtained from production blends or recovered binder from asphalt paving mixtures.

1.2 It is limited to the binder content of Trinidad Lake Modified Asphalt (Specification D 5710) used in the construction of asphalt pavements.

1.3 *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:

D 140 Practice for Sampling Bituminous Materials²

D 1856 Test Method for Recovery of Asphalt from Solution by the Abson Method²

D 2172 Test Methods for Quantitative Extraction of Bitumen from Bituminous Paving Mixtures²

D 5710 Specification for Trinidad Lake Modified Asphalt²

E 1 Specification for ASTM Thermometers³

3. Summary of Test Method

3.1 A polished copper strip is immersed in a given quantity of sample and heated at a temperature and for a given time characteristic of the material being tested. At the end of this period the copper strip is removed, washed, and compared with the classifications of the TLA Copper Tarnishing Ranges for copper strips.

4. Significance and Use

4.1 Bitumen contains sulfur compounds most of which are removed during refining, the resulting asphalt cement also contains sulfur compounds which are released at the tempera-

tures above 230°C (446°F). Trinidad Lake Modified Asphalt contains sulfur compounds, which are released at lower temperatures between 170°C (338°F) and 230°C (446°F). The release of sulfur from Trinidad Lake Modified Asphalt tarnishes the copper strip and appears to be related directly to the total TLA content. The copper strip test is designed to assess the qualitative presence of TLA in asphalt cements.

5. Apparatus

5.1 *Test Tubes*, 25 by 150 mm.

5.2 Provide a bath, which can maintain a constant temperature of $210 \pm 1^\circ\text{C}$ ($410 \pm 2^\circ\text{F}$) and $225 \pm 1^\circ\text{C}$ ($437 \pm 2^\circ\text{F}$). The bath should have suitable supports to hold the test tubes in a vertical position and immersed to a depth of about 100-mm (4-in.). Oil or aluminum block baths are suitable.

5.3 *Thermometer*, partial immersion for indicating the required test temperature, with graduations 1°C (2°F) or less. The ASTM 2C (2F) thermometer is suitable.

5.4 *Polishing Vise*, to hold the copper strip firmly without marring the edge while polishing. Any suitable holder may be used provided that the surface is held tightly and the surface being polished is supported above the surface of the holder.

5.5 *Viewing Test Tubes*, flat glass test tubes, are convenient for protecting corroded strip and may be used for close inspection and storage.

6. Materials

6.1 *Wash Solvent*—Any volatile, sulfur free hydrocarbon solvent may be used that would show no tarnish when tested at 210°C or 225°C.

NOTE 1—Toluene is a suitable solvent.

6.2 Polishing Materials:

6.2.1 Silicone carbide grip paper of varying degrees of fineness including 65 μm (240 grit) paper or cloth.

6.2.2 Silicone carbide grains 105 μm (150-mesh).

6.2.3 Absorbent cotton (cotton wool), pharmaceutical grade.

6.3 Copper Strips:

6.3.1 *Specifications*—Use strips 12.5 mm ($\frac{1}{2}$ in.) wide, 1.5 to 3.0 mm ($\frac{1}{16}$ to $\frac{1}{8}$ in.) thick, cut 75 mm (3 in.) long from smooth-surface, hard temper, cold-finished copper of 99.9+ % purity; electrical bus bar stock is generally suitable (see Annex

¹ This practice is under the jurisdiction of ASTM Committee D04 on Road and Paving Materials and is the direct responsibility of Subcommittee D04.47 on Miscellaneous Asphalt Tests.

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² Annual Book of ASTM Standards, Vol 04.03.

³ Annual Book of ASTM Standards, Vol 14.03.