



Standard Test Method for Toluene-Insoluble (TI) Content of Tar and Pitch¹

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^{ε1} NOTE—Warning notes were editorially moved into the standard text in November 2003.

1. Scope

1.1 This test method covers the determination of toluene-insoluble matter (TI) in tar and pitch.

1.2 Since this test method is empirical, strict adherence to all details of the procedure is necessary.

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.* For specific hazard information, see Section 7.

2. Referenced Documents

2.1 *ASTM Standards:*²

D 95 Test Method for Water in Petroleum Products and Bituminous Materials by Distillation

D 362 Specification for Industrial Grade Toluene

D 850 Test Method for Distillation of Industrial Aromatic Hydrocarbons and Related Materials

D 4296 Practice for Sampling Pitch

E 11 Specification for Wire Cloth and Sieves for Testing Purposes

3. Summary of Test Method

3.1 The sample is digested, then extracted with hot toluene in an alundum thimble. The insoluble matter is dried and weighed.

4. Significance and Use

4.1 This test method is useful for evaluating and characterizing tars and pitches and as one element in establishing the uniformity of shipments or sources of supply.

5. Apparatus

5.1 *Extraction Apparatus*—Flask with metal cap condenser as shown in Fig. 1.

5.2 *Extraction Thimble*, Alundum AN 485 coarse (formerly RA 98), 30 mm in diameter by 80 mm in height with flat bottom.

5.3 *Thimble Cover*—Paper cone, made by wetting with water a 70-mm filter paper normally folded in a small glass funnel, and drying the funnel in an oven with the paper cone in place.

5.4 *Sieves*, U.S. Standard 600- μ m (No. 30) and 250- μ m (No. 60), conforming to Specification E 11.

5.5 *Heater*, having a minimum capacity of 300 W per unit.

6. Reagents

6.1 *Toluene, Industrial Pure*, meeting Specification D 362. (**Warning**—Flammable.)

6.2 *Concentrated Hydrochloric Acid*. (**Warning**—Corrosive.)

7. Hazards

7.1 Since toluene is a toxic and flammable substance, all working areas should be efficiently hooded and kept free of sparks and flames.

7.2 Observe proper laboratory procedures for handling and diluting hydrochloric acid.

8. Bulk Sampling

8.1 Samples from shipments shall be taken in accordance with Practice D 4296, and shall be free of foreign substances. Thoroughly mix the sample immediately before removing a representative portion for the determination or for dehydration.

9. Dehydration of Sample

9.1 *Hard Pitch*—If the solid bulk sample contains free water, air-dry a representative portion in a forced draft oven at 50°C.

9.2 *Soft Pitch*—If the presence of water is indicated by surface foam on heating, maintain a representative portion of the bulk sample of a temperature between 125 and 150°C in an open container until the surface is free of foam. Take care not to overheat, and remove heat source immediately when foam subsides.

¹ This test method is under the jurisdiction of ASTM Committee D02 on Petroleum Products and Lubricants and is the direct responsibility of Subcommittee D02.05 on Properties of Fuels, Petroleum Coke and Carbon Material.

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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.