



Standard Test Method for Toluene-Insoluble (TI) Content of Tar and Pitch (Short Method)¹

This standard is issued under the fixed designation D4312; 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 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 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.* Specific hazard statements are given in Section 7.

2. Referenced Documents

2.1 *ASTM Standards:*²

D95 Test Method for Water in Petroleum Products and Bituminous Materials by Distillation

D329 Specification for Acetone

D362 Specification for Industrial Grade Toluene³

D370 Practice for Dehydration of Oil-Type Preservatives

D850 Test Method for Distillation of Industrial Aromatic Hydrocarbons and Related Materials

D4072 Test Method for Toluene-Insoluble (TI) Content of Tar and Pitch

D4296 Practice for Sampling Pitch

E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves

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.

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.

Current edition approved May 1, 2010. Published May 2010. Originally approved in 1983. Last previous edition approved in 2005 as D4312-95a (2005). DOI: 10.1520/D4312-95R10.

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.

³ Withdrawn.

4. Significance and Use

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

5. Apparatus

5.1 *Extraction Apparatus*, flask with metal cap condenser as shown in Fig. 1.

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

5.3 *Sieves*, U.S. Standard 600-μm (No. 30) and 250-μm (No. 60), conforming to Specification E11.

5.4 *Heater*, having a minimum capacity of 300 W per unit. A hot plate or other heaters that maintain the proper reflux rate are acceptable.

6. Reagents

6.1 *Toluene, Industrial Pure*, meeting Specification D362.

6.2 *Acetone*, meeting the requirements of Specification D329.

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.

8. Bulk Sampling

8.1 Samples from shipments shall be taken in accordance with Practice D4296, 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.

9.2 *Soft Pitch*—If the presence of water is indicated by surface foam on heating, maintain a representative portion of the bulk sample at 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.