



Designation: D 4312 – 95a

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

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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 *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:

D 95 Test Method for Water in Petroleum Products and Bituminous Materials by Distillation²

D 329 Specification for Acetone³

D 362 Specification for Industrial Grade Toluene⁴

D 370 Test Method for Dehydration of Oil-Type Preservatives⁵

D 850 Test Method for Distillation of Industrial Aromatic Hydrocarbons and Related Materials²

D 4072 Test Method for Toluene-Insoluble (TI) Content of Tar and Pitch⁶

D 4296 Practice for Sampling Pitch⁶

E 11 Specification for Wire-Cloth Sieves for Testing Purposes⁷

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 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 E 11.

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 D 362.

6.2 *Acetone*, meeting the requirements of Specification D 329.

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 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.

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.

9.3 *Tar*—Dehydrate a representative portion of the bulk

¹ This test method is under the jurisdiction of ASTM Committee D-2 on Petroleum Products and Lubricants and is the direct responsibility of Subcommittee D02.05.OF on Industrial Pitches.

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² *Annual Book of ASTM Standards*, Vol 05.01.

³ *Annual Book of ASTM Standards*, Vol 06.04.

⁴ *Annual Book of ASTM Standards*, Vol 06.03.

⁵ *Annual Book of ASTM Standards*, Vol 04.10.

⁶ *Annual Book of ASTM Standards*, Vol 04.04.

⁷ *Annual Book of ASTM Standards*, Vol 14.02.