



Standard Test Method for Determination of Quinoline Insolubles (QI) in Tar and Pitch by Pressure Filtration¹

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1. Scope

1.1 This test method covers the determination of the quinoline-insoluble matter (QI) in tar and pitch by pressure filtration and gives results comparable to those obtained by Method D 2318.

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 precautionary statements are given in Section 7.

2. Referenced Documents

2.1 ASTM Standards:

- D 70 Test Method for Density of Semi-Solid Bituminous Materials (Pycnometer Method)²
- D 95 Test Method for Water in Petroleum Products and Bituminous Materials by Distillation³
- D 329 Specification for Acetone⁴
- D 850 Test Method for Distillation of Industrial Aromatic Hydrocarbons and Related Materials⁴
- D 2318 Test Method for Quinoline-Insoluble (QI) Content of Tar and Pitch³
- D 4296 Practice for Sampling Pitch⁵
- E 1 Specification for ASTM Thermometers⁶

3. Summary of Test Method

3.1 The sample is digested in hot quinoline and filtered through a heated pressure filter. The insoluble material is washed with hot, fresh quinoline and consequently with cold acetone, dried, and weighed.

4. Significance and Use

4.1 This test method is useful in evaluating and characterizing tar and pitch and as one element in establishing the uniformity of shipments and sources of supply.

5. Apparatus

5.1 *Pressure Filtration Vessel*—The pressure filtration vessel⁷ (see Fig. 1) is a stainless steel (304) jacketed block heated by steam or cooled with water, sealed by a lid, flat gasket, and clamp. The interior of the block is designed to accept a 3A2 Berlin porcelain filtration crucible (see 5.4). The crucible is sealed within the block by the use of three O-rings, a crucible sealing collar, and an adjustable plunger.

5.1.1 The seal is accomplished when the sealing lid is placed on top of the block and clamped. The adjustable plunger applies a force to the crucible sealing collar, which in turn pushes downward on the crucible and simultaneously compresses O-ring gaskets, forming a seal between surfaces of the crucible and the wall of the block. The filtration of material is accomplished by nitrogen (10 to 30 psig) introduced through the lid of the pressure filter. The filtrate exits from the drain tube at the bottom of the block. The filtrate is disposed into a Buchner flask, attached to drain tube by a No. 7 rubber stopper. A vacuum hose is attached to the Buchner flask and placed in a 100-mL beaker containing water to indicate the exit of nitrogen when the filtration is completed.

5.2 *Beaker*, 50 mL.

5.3 *Buchner Flask*, 500.

5.4 *Filtering Crucible*, porcelain, with a medium-porosity bottom, top outer diameter 1¾ in. (45 mm), bottom outer diameter 1.2 in. (30 mm), height 2 in. (50 mm).

5.5 *Analytical Balance*.

5.6 *Desiccator*.

5.7 *Thermometer*, 0 to 300°F (150°C).

5.8 *Drying Oven*, maintained at 221°F (105°C).

5.9 *Mortar and Pestle*.

5.10 *Two Wash Bottles*, 500 mL.

5.11 *Steam Bath*.

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 D02.05.01 on Industrial Pitches.

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² *Annual Book of ASTM Standards*, Vol 04.03.

³ *Annual Book of ASTM Standards*, Vol 05.01.

⁴ *Annual Book of ASTM Standards*, Vol 06.04.

⁵ *Annual Book of ASTM Standards*, Vol 05.02.

⁶ *Annual Book of ASTM Standards*, Vol 14.03.

⁷ The sole source of supply of the pressure filtration vessel known to the committee at this time is Koppers Co., Inc., 1005 Wm. Pitt Way, Pittsburgh, PA 15238. If you are aware of alternative suppliers, please provide this information to ASTM Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,¹ which you may attend.