



Designation: **D2042 – 09 D2042 – 15**

Standard Test Method for Solubility of Asphalt Materials in Trichloroethylene¹

This standard is issued under the fixed designation D2042; 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.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This test method covers the determination of the degree of solubility in trichloroethylene of asphalt materials having little or no mineral matter.

NOTE 1—This method is not applicable to tars and their distillation residues or highly cracked petroleum products. For methods covering tars, pitches, and other highly cracked petroleum products, and the use of other solvents, see Test Methods **D4**, **D2318**, and **D2764**.

1.2 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.3 The text of this standard references notes and footnotes which provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of 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.* Specific precaution statements are given in Section 7.

2. Referenced Documents

2.1 ASTM Standards:²

C670 Practice for Preparing Precision and Bias Statements for Test Methods for Construction Materials

D4 Test Method for Bitumen Content

D2318 Test Method for Quinoline-Insoluble (QI) Content of Tar and Pitch

D2764 Test Method for Dimethylformamide-Insoluble (DMF-I) Content of Tar and Pitch

D3666 Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials

2.2 AASHTO Standard:³

T44 Solubility of Bituminous Materials in Organic Solvents

3. Summary of Method

3.1 The sample is dissolved in trichloroethylene and filtered through a glass fiber pad. The insoluble material is washed, dried, and weighed.

4. Significance and Use

4.1 This test method is a measure of the solubility of asphalt in trichloroethylene. The portion that is soluble in trichloroethylene represents the active cementing constituents.

NOTE 2—The quality of the results produced by this standard are dependent on the competence of the personnel performing the procedure and the capability, calibration, and maintenance of the equipment used. Agencies that meet the criteria of Specification **D3666** are generally considered capable of competent and objective testing/sampling/inspection/etc. Users of this standard are cautioned that compliance with Specification **D3666** alone does not completely assure reliable results. Reliable results depend on many factors; following the suggestions of Specification **D3666** or some similar acceptable guideline provides a means of evaluating and controlling some of these factors.

¹ This test method 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 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 Available from American Association of State Highway and Transportation Officials (AASHTO), 444 N. Capitol St., NW, Suite 249, Washington, DC 20001, <http://www.transportation.org>.

5. Apparatus and Materials

- 5.1 The assembly of the a typical filtering apparatus is illustrated in Fig. 1. Details of the component parts are as follows:
- 5.1.1 *Bitumen Crucible or Gooch Crucible*, glazed inside and outside with the exception of outside bottom surface. The approximate dimensions shall be a diameter of 44 mm at the top, tapering to 36 mm at the bottom, and a depth of 20-30 mm.
 - 5.1.2 *Glass Microfiber Filter Pad*, 32-34 mm diameter, fine porosity, fast flow rate, 1.5 μm particle retention.
 - 5.1.3 *Filter Flask*, heavy-wall, with side tube, ~~250-~~250-, 500-, or ~~500-mL~~1000-mL capacity.
 - 5.1.4 *Filter Tube*, 40- to 42-mm inside diameter.
 - 5.1.5 *Rubber Tubing or Adapter*, for holding the crucible on the filter tube.
- NOTE 3—Other suitable assemblies permitting vacuum filtration with a crucible may be used.
- 5.1.6 *Erlenmeyer Flask*, 125 mL.
 - 5.1.7 *Oven*, capable of maintaining a temperature of $110 \pm 5^\circ\text{C}$.

6. Reagent

- 6.1 *Trichloroethylene*, technical grade.

7. Safety Precautions

- 7.1 Trichloroethylene is toxic, and good ventilation should be provided.

8. Preparation of Crucible

- 8.1 Place the crucible plus one thickness of the filter pad in an oven at $110 \pm 5^\circ\text{C}$ for 15 min, allow to cool in a desiccator for 30 ± 5 min, and then determine the mass to the nearest 0.1 mg. Designate this mass as A. Store in the desiccator until ready for use.

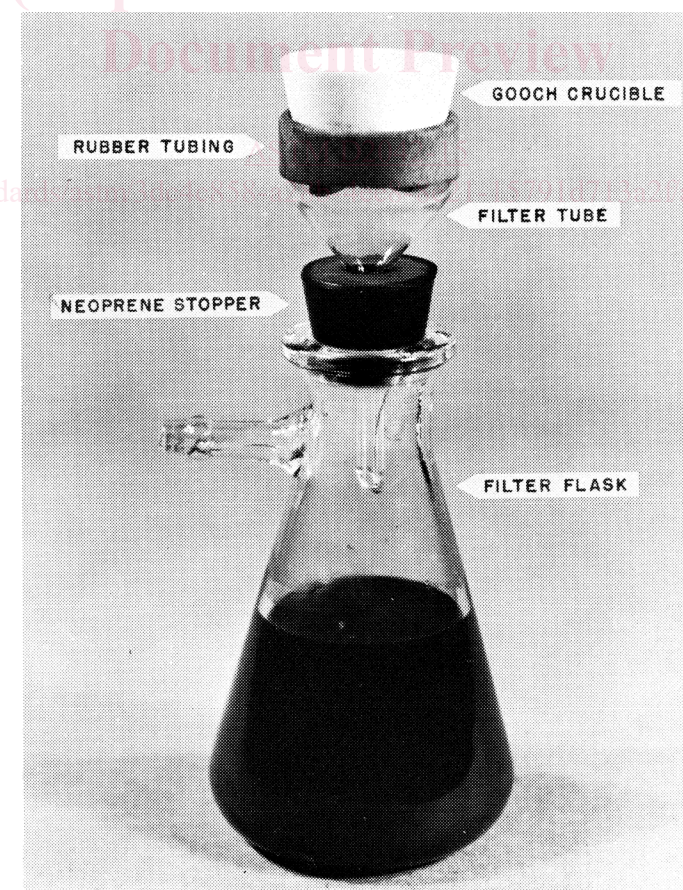


FIG. 1 Filtering Apparatus Assembly