



Designation: D6560 – 17



Designation: IP 143/01

Standard Test Method for Determination of Asphaltenes (Heptane Insolubles) in Crude Petroleum and Petroleum Products^{1,2}

This standard is issued under the fixed designation D6560; 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 a procedure for the determination of the heptane insoluble asphaltene content of gas oil, diesel fuel, residual fuel oils, lubricating oil, bitumen, and crude petroleum that has been topped to an oil temperature of 260 °C (see A1.2.1.1).

1.2 The precision is applicable to values between 0.50 % m/m and 30.0 % m/m. Values outside this range may still be valid but may not give the same precision values.

1.3 Oils containing additives may give erroneous results.

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

1.5 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

¹ This test method is under the jurisdiction of ASTM Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants and is the direct responsibility of Subcommittee D02.14 on Stability, Cleanliness and Compatibility of Liquid Fuels.

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² This standard is based on material published in the IP *Standard methods for Analysis and Testing of Petroleum and Related Products and British Standard 2000 Parts*, copyright Energy Institute, 61 New Cavendish Street, London, W1M 8AR. Adapted with permission of Energy Institute.

2. Referenced Documents

2.1 ASTM Standards:³

D86 Test Method for Distillation of Petroleum Products and Liquid Fuels at Atmospheric Pressure

D1298 Test Method for Density, Relative Density, or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method

D4052 Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter

D4057 Practice for Manual Sampling of Petroleum and Petroleum Products

D4177 Practice for Automatic Sampling of Petroleum and Petroleum Products

2.2 Energy Institute Standard:⁴

Specifications for IP Standard Thermometers

3. Terminology

3.1 Definitions:

3.1.1 *asphaltenes*, *n*—(rarely used in the singular) — *in petroleum technology*, represent an oil fraction that is soluble in a specified aromatic solvent but separates upon addition of an excess of a specified paraffinic solvent.

3.1.1.1 *Discussion*—In this test method, the aromatic solvent is hot toluene and the paraffinic solvent is heptane.

3.1.1.2 *Discussion*—Historically, benzene was the aromatic solvent, but benzene is not typically used now for health reasons. The precision of this test method when using toluene has been found to be the same as when using benzene.

4. Summary of Test Method

4.1 A test portion of the sample is mixed with heptane and the mixture heated under reflux, and the precipitated asphaltenes, waxy substances, and inorganic material are

³ 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.

⁴ Available from Energy Institute, 61 New Cavendish St., London, W1M 8AR, UK.

*A Summary of Changes section appears at the end of this standard