



# Standard Test Method for Residue of Specified Penetration<sup>1</sup>

This standard is issued under the fixed designation D243/D243M; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This test method is used to thermally reduce cutback asphalt, a road oil or a semisolid asphalt, having a penetration greater than 100, to a residue of specified penetration. It is primarily used with slow-curing cutback asphalt as specified in Specification [D2026](#).

1.2 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.3 **Warning**—Mercury has been designated by the United States Environmental Protection Agency (EPA) and many state agencies as a hazardous material that can cause central nervous system, kidney and liver damage. Mercury, or its vapor, may be hazardous to health and corrosive to materials. Caution should be taken when handling mercury and mercury containing products. See the applicable product Material Safety Data Sheet (MSDS) for details and EPA's website—<http://www.epa.gov/mercury/>—for additional information. Users should be aware that selling mercury, mercury-containing products, or both, into your state may be prohibited by state law.

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.*

## 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

[D5 Test Method for Penetration of Bituminous Materials](#)

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee [D04](#) on Road and Paving Materials and is the direct responsibility of Subcommittee [D04.46](#) on Durability and Distillation Tests.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[D2026 Specification for Cutback Asphalt \(Slow-Curing Type\)](#)

[E1 Specification for ASTM Liquid-in-Glass Thermometers](#)

[E77 Test Method for Inspection and Verification of Thermometers](#)

[E220 Test Method for Calibration of Thermocouples By Comparison Techniques](#)

[E644 Test Methods for Testing Industrial Resistance Thermometers](#)

[E1137/E1137M Specification for Industrial Platinum Resistance Thermometers](#)

## 3. Summary of Test Method

3.1 The material to be tested is rapidly heated to 249°C [480°F] and maintained at 249 to 260°C [480 to 500°F] during evaporation of the volatiles. Penetration of the residue is determined and if not within the specified limits, the evaporation procedure is repeated. Change in sample mass is used to calculate the percentage of residue having the specified penetration.

## 4. Significance and Use

4.1 This test method is used to determine the percentage of residue having a specified penetration at 100 g/5 s at 25°C [77°F]. This test method provides a residue for quality control or for use in other tests as desired.

## 5. Apparatus

5.1 The apparatus shall consist of a container, heating bath, hot plate, and thermometric device, with necessary accessory apparatus as follows:

5.1.1 *Container*—The container in which the sample is to be tested shall be a flat-bottom, cylindrical seamless tin box, approximately 70 mm in diameter and 45 mm in depth.

NOTE 1—Containers known in the pharmaceutical industry as seamless "ointment boxes" may be obtained in dimensions conforming to the above requirements.

5.1.2 *Heating Bath*—The heating bath shall be a cast-iron air bath, or equivalent, permitting the immersion of the container to a depth of  $32 \pm 5$  mm through an opening  $3 \pm 2$  mm larger in diameter than the container. It shall support the container  $6 \pm 2$  mm above the hot plate, and with at least 6.4