



Standard Test Method for VACUUM DISTILLATION OF LIQUID AND SEMI- SOLID ASPHALTIC MATERIALS TO OBTAIN A RESIDUE OF SPECIFIED PENETRATION¹

This Standard is issued under the fixed designation D 1189; 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.

1. Scope

1.1 This method of test covers the determination, by vacuum distillation and with the elimination of oxidation effects, of the quantity of asphaltic residue of specified penetration. When the penetration of the residue is not otherwise stated, it shall be understood to be 100. The residue obtained is available for tests as desired.

NOTE 1—The test results on the residue may be affected by nonasphaltic materials present in the asphalt.

NOTE 2—This method is not intended to replace ASTM Method D 243, Test for Residue of Specified Penetration², which introduces oxidation effects.

2. Apparatus

2.1 *Flask*—A standard 500-ml Claisen distilling flask, constructed of heat-resistant glass,³ as shown in Fig. 1 and conforming to the following dimensions:

Diameter of bulb, outside	101 ± 2.0 mm
Diameter of necks outside	25 ± 1.2 mm
Diameter of tubulature, outside	9 ± 0.5 mm
Height of flask, outside	268 ± 3.0 mm
Vertical distance from bottom of bulb, outside, to horizontal tangent at junction of necks, outside	126 ± 3 mm
Vertical distance from bottom of bulb, outside, to horizontal tangent at junction of neck and tubulature, inside	190 ± 3 mm
Length of tubulature	175 ± 3 mm
Angle of tubulature	75 ± 3 deg
Thickness of tubulature wall	0.035 to 0.045 in. (0.89 to 1.14 mm)

2.2 *Condenser Tube*—A suitable form of tapered glass condenser tube constructed of heat-resistant glass³ and having the following dimensions:

Outside diameter of small end	12.5 ± 1.5 mm
Outside diameter of large end	28.5 ± 3.0 mm
Length	360.0 ± 4.0 mm
Length of tapered part	100.0 ± 5.0 mm

The condenser tube shall be as shown in Fig. 2, with a 75-deg angle smooth bend toward the outlet, and with approximately a 100-mm straight section at the outlet.

2.3 *Shield*—A galvanized iron shield, lined with 1/8-in. (3.2-mm) asbestos, fitted with transparent covered windows, of the form and dimensions shown in Fig. 3, to protect the flask from air currents and to prevent radiation. The cover (top) may be of Transite board made in two parts, or it may be of galvanized iron lined with 1/8-in. asbestos.

2.4 *Receiver*—Graduated cylinder, of uniform diameter, with a pressed or molded base and the lip on the top closed so as to make possible an airtight deal with a rubber stopper. The over-all height shall be not less than 248 mm (9 3/4 in.) nor more than 260 mm (10 1/4 in.). The cylinder shall be graduated in 1-ml divisions to contain 100 ml, and the graduated portion shall be not less than 177.8 mm (7 in.) nor more than 203.2 mm (8 in.) in length. Each fifth graduation shall be distinguished by a longer line, and the graduations shall be num-

¹ This method is under the jurisdiction of ASTM Committee D-4 on Road and Paving Materials and is the direct responsibility of Subcommittee D04.46 on Durability Tests.

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² *Annual Book of ASTM Standards*, Part 15.

³ Borosilicate glass has been found satisfactory for this purpose.