



Designation: D4887 – 99 (Reapproved 2003)

Standard Practice for Preparation of Viscosity Blends for Hot Recycled Bituminous Materials¹

This standard is issued under the fixed designation D4887; 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 practice covers the procedure for preparation of hot recycled bituminous blends for testing in the laboratory. The procedure involves an iterative trial blend process followed by the preparation of batch blends.

1.2 The batch blends can be used for extensive evaluation such as viscosity, penetration, ductility, aging properties (such as Rolling Thin Film Oven or Thin-Film Oven tests, or both (RTFO/TFO)), composition analysis, solubility analysis, and other user-selected tests.

1.3 This practice assumes that a representative reclaimed asphalt pavement (RAP) sample is extracted and the aged binder recovered using Test Methods D2172 and Test Method D1856 (this practice may be modified by using a rotary evaporator which is extensively evaluated in the minutes of the 18th Pacific Coast Conference on Asphalt Specifications²) or any other acceptable test method.

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:³

D1856 Test Method for Recovery of Asphalt From Solution by Abson Method

D2171 Test Method for Viscosity of Asphalts by Vacuum Capillary Viscometer

¹ This practice is under the jurisdiction of ASTM Committee D04 on Road and Paving Materials and is the direct responsibility of Subcommittee D04.25 on Analysis of Bituminous Mixtures.

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² Asphalt Recovery Subcommittee Report, San Francisco, CA, May 17–18, 1983.

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.

D2172 Test Methods for Quantitative Extraction of Bitumen From Bituminous Paving Mixtures

D3381 Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction

3. Summary of Practice

3.1 The percentage of a recycling agent or paving-grade-asphalt required to meet a target viscosity is initially determined on a weight basis by the use of a viscosity blend chart as illustrated in Fig. 1. A 10.0 ± 0.1 -g (minimum) trial blend consisting of the recycling agent or paving grade asphalt and reclaimed RAP binder is prepared in the laboratory. The viscosity of the trial blend at 60°C (140°F) is compared to the target viscosity. If the blend viscosity is not within the limits of Specification D3381 about the target value, another trial blend is prepared using adjusted proportions of the same or an alternate grade modifier, or both, and the RAP binder. A batch blend larger than the trial blend can then be prepared after the target viscosity is achieved to facilitate additional tests.

NOTE 1—It is recognized that Test Method D2171 requires 20 mL (minimum) of asphalt sample; however, due to enormous resources involved in extraction and recovery, plus conducting a number of iterations, a 10.0 ± 0.1 -g (minimum) sample is suggested to be adequate for this practice. The accuracy of Test Method D2171 is not significantly affected by the change in sample size.

4. Significance and Use

4.1 A standard procedure for blend preparation is essential to ensure material quality, specification compliance, and procedural uniformity.

5. Apparatus

5.1 *Beakers*, 50-mL, 600-mL capacity or other suitable containers.

5.2 *Hot plate*.

5.3 *Glass stirring rod*.

6. Procedure

6.1 Weigh the RAP binder and recycling agent or paving-grade-asphalt in appropriate proportions in accordance with 3.1 in a 10.0 ± 0.1 -g specimen or larger for a trial blend. Prepare