



Designation: D4887/D4887M – 11 (Reapproved 2021)^{ε1}

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

This standard is issued under the fixed designation D4887/D4887M; 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.

^{ε1} NOTE—Section 1 was updated editorially in December 2021.

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/D2172M 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 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 nonconformance with the standard.

1.5 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.

1.6 *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*

appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.

1.7 *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.*

2. Referenced Documents

2.1 ASTM Standards:³

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

D2171/D2171M Test Method for Viscosity of Asphalts by Vacuum Capillary Viscometer

D2172/D2172M Test Methods for Quantitative Extraction of Asphalt Binder from Asphalt Mixtures

D3381/D3381M Specification for Viscosity-Graded Asphalt Binder for Use in Pavement Construction

D6373 Specification for Performance-Graded Asphalt Binder

D6816 Practice for Determining Low-Temperature Performance Grade (PG) of Asphalt Binders (Withdrawn 2021)⁴

D7175 Test Method for Determining the Rheological Properties of Asphalt Binder Using a Dynamic Shear Rheometer

3. Summary of Practice

3.1 This specification covers the use of a viscosity blending chart shown in Fig. 1 or by a Performance Grade (PG) temperature blending chart shown in Fig. 2 to determine the percentage of a recycling agent, rejuvenating agent, or paving-grade asphalt (hereafter referred to as virgin modifier) required to meet the target viscosity or PG temperature. The blending

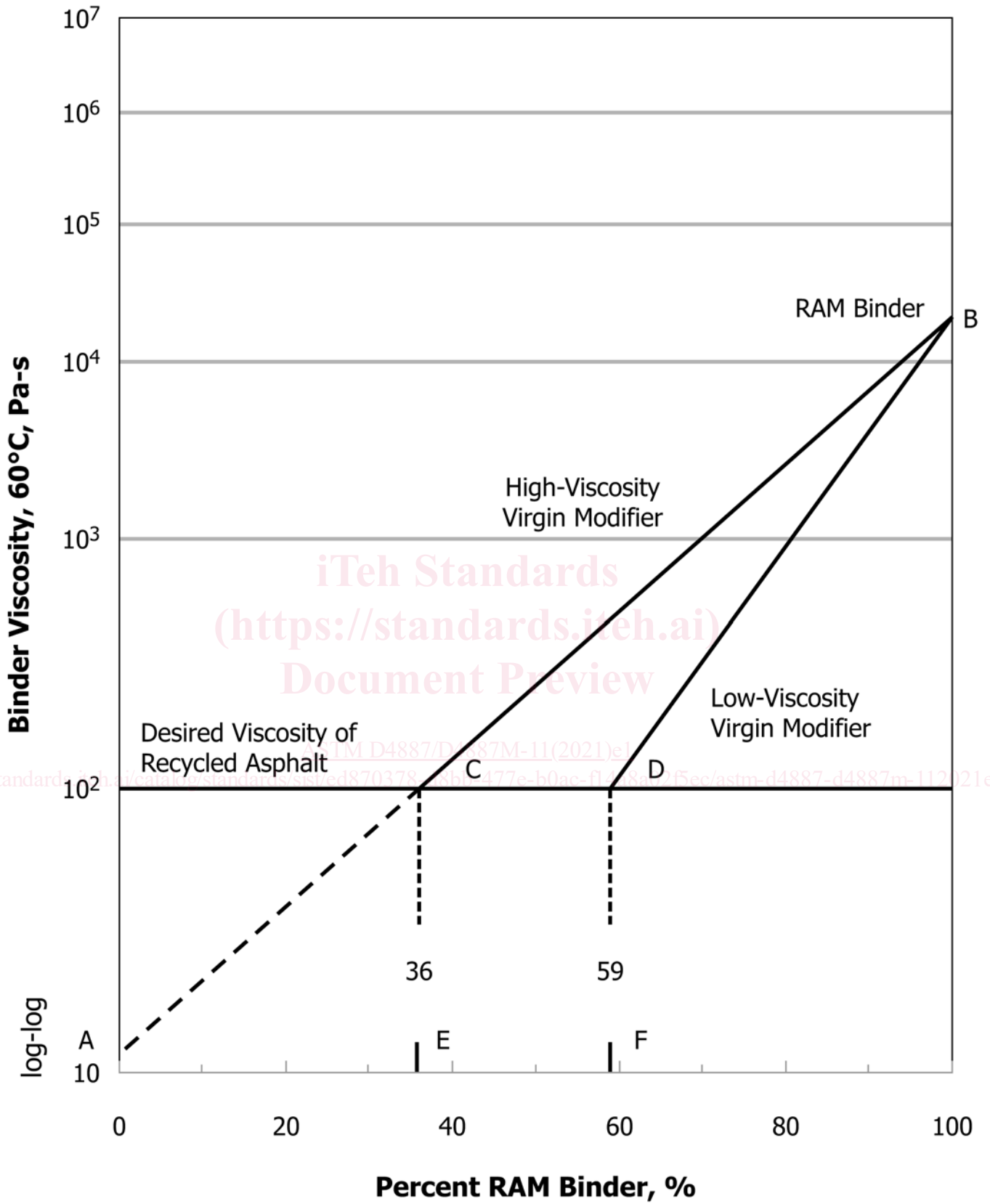
¹ This practice is under the jurisdiction of ASTM Committee D04 on Road and Paving Materials and is the direct responsibility of Subcommittee D04.25 on Analysis of Asphalt Mixtures.

Current edition approved Dec. 15, 2021. Published December 2021. Originally approved in 1989. Last previous edition approved in 2016 as D4887/D4887M – 11 (2016). DOI: 10.1520/D4887_D4887M-11R21E01.

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.

⁴ The last approved version of this historical standard is referenced on www.astm.org.



NOTE 1—Calculations using ordinate viscosity (η) values (scales A and B) can be simplified by using $\log\log(100 \times \eta_A$ or η_B (Pa·s)) such that ordinates and abscissa axes become linear.

FIG. 1 Percent RAM Binder Allowed Based on Viscosity

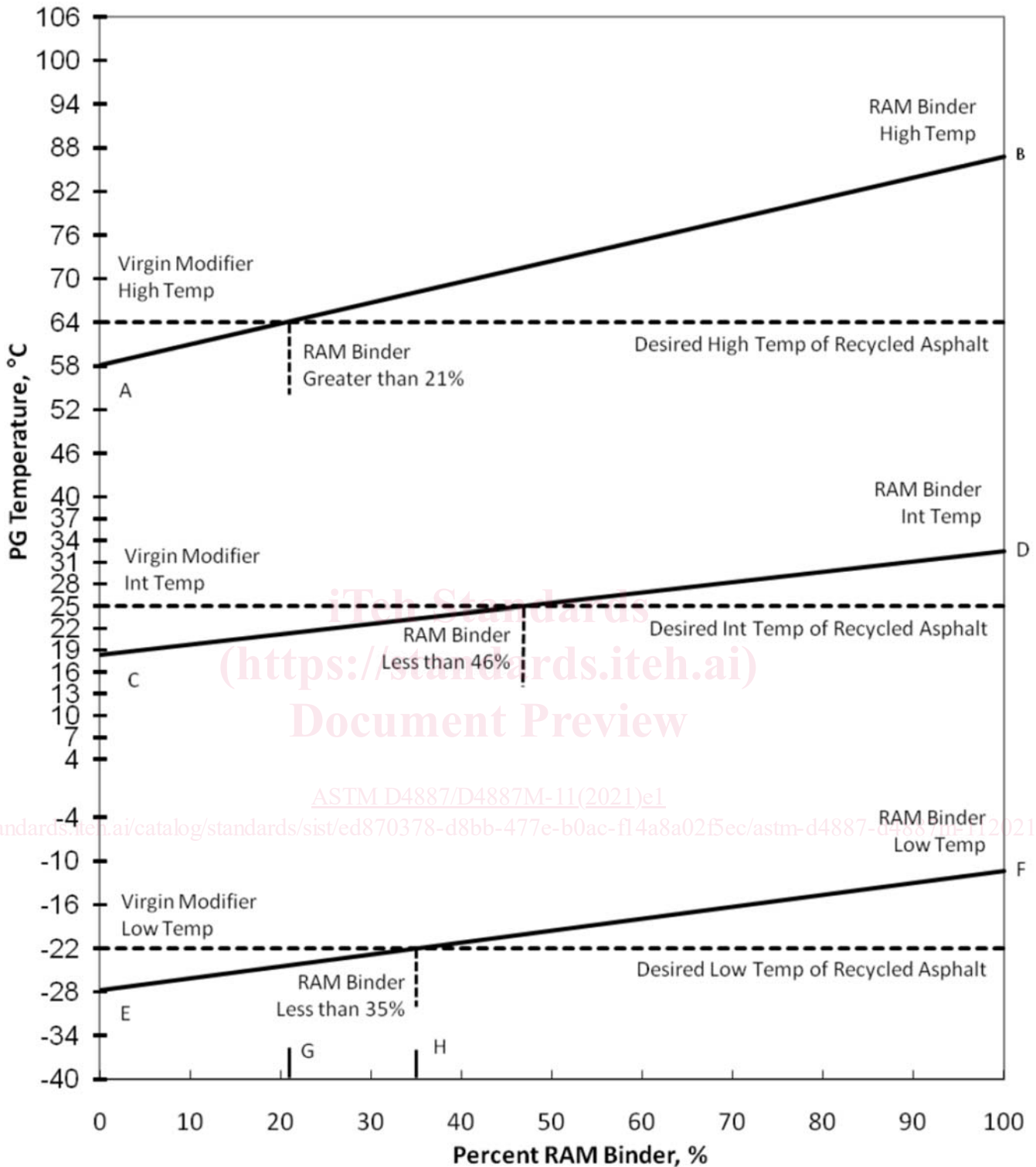


FIG. 2 Percent RAM Binder Allowed Based on PG Temperatures

chart based on viscosity is based upon results from Test Method [D2171/D2171M](#) compared to the limits of Specification [D3381/D3381M](#). The PG blending chart is based upon the results from Practice [D6816](#) and Test Method [D7175](#), which are compared to the limits of Specification [D6373](#). The procedure consists of determining the asphalt binder grade of

reclaimed asphalt binder (hereafter referred to as RAM binder), estimating the blend by graphical methods, and preparing a blend of virgin modifier and the RAM binder in the laboratory. The measured properties of the blend are compared to the target values. If the blend properties do not meet the requirements and are not within the limits of Specification [D3381/](#)