



Designation: D3625/D3625M – 20

Standard Practice for Effect of Water on Asphalt-Coated Aggregate Using Boiling Water¹

This standard is issued under the fixed designation D3625/D3625M; 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 a rapid procedure for visually observing the loss of adhesion in uncompacted asphalt-coated aggregate mixtures due to the action of boiling water.

1.2 *Units*—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.

1.3 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.

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

1.5 *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*:²

D8 Terminology Relating to Materials for Roads and Pavements

D979/D979M Practice for Sampling Bituminous Paving Mixtures

¹ This practice is under the jurisdiction of ASTM Committee D04 on Road and Paving Materials and is the direct responsibility of Subcommittee D04.22 on Effect of Water and Other Elements on Asphalt Coated Aggregates.

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² 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.

E1 Specification for ASTM Liquid-in-Glass Thermometers

3. Terminology

3.1 *Definitions*—For definitions of terms used in this standard, refer to Terminology D8.

4. Summary of Practice

4.1 An asphalt-coated aggregate mixture sample is placed in a container of boiling distilled water and boiled for 10 min. After cooling the boiled mixture, visual observation is made of retained asphalt coating on the aggregate.

5. Significance and Use

5.1 This practice is useful as an indicator of the relative susceptibility of asphalt-coated aggregate to water, but should not be used as a measure of field performance because such correlation has not been established. If loss of adhesion due to water is indicated, testing by other procedures should be conducted to further evaluate the mixture.

5.2 This practice should not be used for acceptance/rejection by owner agencies.

6. Apparatus

6.1 *Scoop*, shovel, or other implement capable of removing a representative sample from a larger mass of asphalt aggregate mixture.

6.2 *Glass Beakers*, heat-resistant, 1000 mL to 2000 mL capacity or suitable metal containers of similar dimensions and capacity.

6.3 *Source of Distilled Water*, at least 500 mL [$\frac{1}{2}$ qt] for each test (Note 1).

NOTE 1—Water that is not distilled has been shown to significantly affect results of the procedure and should not be used.

6.4 *Device for Heating Water*—Gas burner with wire gauze supported on tripod or ring, hot plate, camp stove, or other suitable device which will distribute heat evenly.

6.5 *Thermometers*—ASTM low-distillation thermometers graduated either in Celsius or Fahrenheit as specified, having a range from 2 °C to +300 °C or 30 °F to 580 °F respectively, and conforming to the requirements for thermometer 7C or 7F

as prescribed in Specification E1. Thermometric devices such as RTDs, thermistors, or thermocouples with equal or better accuracy within the temperature range of thermometer 7C or 7F may be used.

7. Sample Preparation

7.1 Prepare an uncompacted asphalt-coated aggregate mixture following established laboratory procedures or obtain a sample of plant-produced mixture in accordance with Practice D979/D979M. Before placing the sample in the boiling water, bring the asphalt mixture sample to a temperature of 85 °C to 99 °C [180 °F to 210 °F]. The temperature of mixtures that are cold mixed shall be at or above room temperature before placing in boiling water.

8. Procedure

8.1 For each sample tested, pour distilled water into a clean container (as described in 6.2) such that the container is approximately half full and heat to boiling.

8.2 With an appropriate implement (as described in 6.1) place 200 g to 500 g [0.5 lb to 1 lb] of the asphalt-coated aggregate mixture in the boiling water while the container is exposed to the heat source. Bring the water back to boiling and maintain boiling for 10 min ± 15 s. Avoid excessive manipulation of the asphalt-coated aggregate mixture.

8.3 At the end of 10 min, remove the container from the heat source. Skim off any free asphalt from the surface of the water to prevent recoating. Cool to room temperature, decant the water, and empty the wet mix onto a white paper towel.

NOTE 2—For comparison, a similar amount of fresh asphalt-coated

aggregate mixture should be placed into a second container, covered with unheated distilled water for 10 min, the water decanted and the mixture emptied onto a white paper towel.

8.4 Visually observe the aggregate (coarse and fine) for retained asphalt coating. Any thin, brownish, translucent areas are to be considered fully coated. Visual observations shall be made immediately after the sample is placed on the white paper towel (Note 3). Examination of the sample under a light and with low magnification may aid in the visual observation of retained coating.

NOTE 3—Additional information can be obtained by repeating the visual observation 24 h after boiling when the sample has dried and the effects of moisture on the coating appearance of the sample have been eliminated.

9. Hazards

9.1 **Warning**—Mercury has been designated by 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 Safety Data Sheet (SDS) for details and EPA's website (www.epa.gov/mercury/faq.htm) for additional information. Users should be aware that selling mercury or mercury-containing products (or both) into your state may be prohibited by state law.

10. Keywords

10.1 asphalt paving mixtures; coating/stripping; loss of adhesion; water

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