



Designation: D2872 – 22

Standard Test Method for Effect of Heat and Air on a Moving Film of Asphalt Binder (Rolling Thin-Film Oven Test)¹

This standard is issued under the fixed designation D2872; 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 test method is intended to measure the effect of heat and air on a moving film of semi-solid asphaltic materials. The effects of this treatment are determined from measurements of the selected properties of the asphalt before and after the test.

1.2 The values stated in inch-pound units are to be regarded as 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

[D113 Test Method for Ductility of Asphalt Materials](#)

[D2171/D2171M Test Method for Viscosity of Asphalts by Vacuum Capillary Viscometer](#)

[D3666 Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials](#)

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

¹ 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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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.

[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](#)

[E2877 Guide for Digital Contact Thermometers](#)

2.2 NCHRP Documents:

[NCHRP Project 20-07 / Task 400 Effect of Elevation on Rolling Thin Film Oven Aging of Asphalt Binder](#)

3. Summary of Test Method

3.1 A moving film of asphaltic material is heated in an oven for 85 min at 325 °F (163 °C). The effects of heat and air are determined from changes in physical test values as measured before and after the oven treatment. An optional procedure is provided for determining the change in sample mass.

3.2 Precision values for this test method have been developed for viscosity at 140 °F (60 °C); ductility at 60 °F (15.6 °C); and mass change.

4. Significance and Use

4.1 This test method indicates approximate change in properties of asphalt during conventional hot-mixing at about 302 °F (150 °C) as indicated by viscosity and other rheological measurements. It yields a residue which approximates the asphalt condition as incorporated in the pavement. If the mixing temperature differs appreciably from the 302 °F (150 °C) level, more or less effect on properties will occur. This test method can also be used to determine mass change, which is a measure of asphalt volatility.

NOTE 1—The quality of results produced by this standard is dependent on the competence of the personnel performing the procedure and the capability, calibration, and maintenance of the equipment used. Agencies that meet the criteria of Specification [D3666](#) are generally considered capable of competent and objective testing, sampling, inspection, etc. Users of this standard are cautioned that compliance with Specification [D3666](#) alone does not completely ensure reliable results. Reliable results depend on many factors; following the suggestions of Specification [D3666](#) or some similar acceptable guidance provides a means of evaluating and controlling some of those factors.