



Standard Practice for Accelerated Aging of Asphalt Binder Using a Pressurized Aging Vessel (PAV)¹

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1. Scope

1.1 This practice covers the accelerated aging (oxidation) of asphalt binders by means of pressurized air and elevated temperature. This is intended to simulate the changes in rheology which occur in asphalt binders during in-service oxidative aging but may not accurately simulate the relative rates of aging. It is normally intended for use with residue from Test Method [D2872](#) (RTFOT), which is designed to simulate plant aging.

NOTE 1—Modified asphalt binders may phase separate or form skins during oven conditioning in Test Method [D2872](#) (RTFOT); the results from subsequent testing of this residue may not be representative of modified asphalts short-term aged under field conditions. Phase separation, or formation of skins, or both can also occur during PAV conditioning. Therefore, the practice may not be suitable for some modified asphalts.

NOTE 2—PAV conditioning has not been validated for materials containing particulate materials.

1.2 The aging of asphalt binders during service is affected by ambient temperature and by mixture-associated variables, such as the volumetric proportions of the mix, the permeability of the mix, properties of the aggregates, and possibly other factors. This conditioning process is intended to provide an evaluation of the relative resistance of different asphalt binders to oxidative aging at selected elevated aging temperatures and pressures, but cannot account for mixture variables or provide the relative resistance to aging at in-service conditions.

1.3 The values stated in SI units are to be regarded as the standard. Values in parentheses in inch-pound units are provided for informational purposes only.

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.*

¹ This practice 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. Referenced Documents

2.1 ASTM Standards:²

[D8](#) Terminology Relating to Materials for Roads and Pavements

[D2872](#) Test Method for Effect of Heat and Air on a Moving Film of Asphalt (Rolling Thin-Film Oven Test)

[D4753](#) Guide for Evaluating, Selecting, and Specifying Balances and Standard Masses for Use in Soil, Rock, and Construction Materials Testing

[D6373](#) Specification for Performance Graded Asphalt Binder

[E1137/E1137M](#) Specification for Industrial Platinum Resistance Thermometers

2.2 AASHTO Standards:³

[M 320](#) Specification for Performance-Graded Asphalt Binder

2.3 CGA Standards:⁴

[CGA G-7.1-1997](#) Commodity Specification for Air, Fourth Edition

3. Terminology

3.1 Definitions:

3.1.1 Definitions of terms used in this practice may be found in Terminology [D8](#), determined from common English usage, or combinations of both.

4. Summary of Practice

4.1 Asphalt binder is normally first conditioned using Test Method [D2872](#) (RTFOT). Residue from the RTFOT is then placed in standard stainless steel pans and aged at the specified conditioning temperature for 20 h in a vessel pressurized with air to 2.10 MPa. The conditioning temperature is selected according to the grade of asphalt binder. The residue is then vacuum degassed.

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.

³ Available from American Association of State Highway and Transportation Officials (AASHTO), 444 N. Capitol St., NW, Suite 249, Washington, DC 20001, <http://www.transportation.org>.

⁴ Available from Compressed Gas Association (CGA), 4221 Walney Rd., 5th Floor, Chantilly, VA 20151-2923, <http://www.cganet.com>.