



Standard Practice for Dark Oven Heat Exposure of Bituminous Materials¹

This standard is issued under the fixed designation D 5869; 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 establishes a procedure and conditions of temperature and time for heat exposure of bituminous materials in the presence of air.

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

1.3 *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:*

D 883 Terminology Relating to Plastics²

D 1079 Terminology Relating to Roofing, Waterproofing, and Bituminous Materials³

D 1566 Terminology Relating to Rubber⁴

E 1 Specification for ASTM Thermometers⁵

E 145 Specification for Gravity-Convection and Forced-Ventilation Ovens⁶

3. Terminology

3.1 *Definitions*—For definitions of terms used in this practice, refer to Terminologies D 883, D 1079, and D 1566.

4. Summary of Practice

4.1 Specimens of bituminous materials are exposed to heat in a dark forced-ventilation oven at a specified elevated temperature for a known period of time.

4.2 This practice specifies an exposure temperature of $158 \pm 5^\circ\text{F}$ ($70 \pm 3^\circ\text{C}$) in a forced-ventilation oven.

4.3 This practice permits the selection of the duration of heat exposure from three specified time periods, which are 35, 90, and 180 ± 0.25 consecutive days. The duration selected

must be included in any report of results obtained by using this practice.

NOTE 1—The time period to be used should be specified in any standard that refers to this practice. European standards for polymer-modified bituminous materials specify 180 days at 70°C . For research purposes, selection of other time periods is permitted, provided that the precise duration is stated in any report of results.

5. Significance and Use

5.1 Bituminous materials undergo changes in physical properties as a result of being subjected to heat. Bituminous materials undergo changes in physical properties as they age in service. Since service conditions vary widely, any relationship between changes observed in this practice and changes in service must be established by the user of this practice.

6. Apparatus

6.1 *Oven*—The oven shall have forced ventilation, shall be electrically heated, and shall conform to the requirements of Specification E 145, Type IIB. The oven shall be of sufficient size to accommodate the size and number of specimens selected by the user of this practice.

6.2 *Thermometer*—The thermometer shall be an ASTM partial immersion (general use) thermometer, conforming to the requirements for thermometer 2°F or 2°C in accordance with Specification E 1. (Partially immersed in the oven and read from the shaft extending outside the oven.)

7. Specimens

7.1 The number, geometry, and size of specimens shall be determined by the user of this practice.

8. Heat Exposure

8.1 Expose the specimens in a forced-ventilation oven at $158 \pm 5^\circ\text{F}$ ($70 \pm 3^\circ\text{C}$).

8.2 The specimens shall be supported in the oven on shelves, plates, or other containers appropriate to the specimen being studied. Specimens shall be separated on shelves to allow free access of air. The specimen orientation, vertical, horizontal, and so forth, shall be determined by the user of this practice.

8.3 The duration of exposure of the specimens to the heat shall be selected by the user of this practice from the following options: (1) 35 ± 0.25 consecutive days; (2) 90 ± 0.25

¹ This practice is under the jurisdiction of ASTM Committee D-8 on Roofing, Waterproofing, and Bituminous Materials and is the direct responsibility of Subcommittee D08.02 on Prepared Roofings, Shingles, and Siding Materials.

Current edition approved Dec. 10, 1995. Published February 1996.

² *Annual Book of ASTM Standards*, Vol 08.01.

³ *Annual Book of ASTM Standards*, Vol 04.04.

⁴ *Annual Book of ASTM Standards*, Vol 09.01.

⁵ *Annual Book of ASTM Standards*, Vol 14.03.

⁶ *Annual Book of ASTM Standards*, Vol 14.02.

consecutive days; or (3) 180 ± 0.25 consecutive days. (See also Note 1.)

9. Report

9.1 Report the following information:

9.1.1 State the geometry of the specimen, orientation during the exposure, and nature of support.

9.1.2 Report the duration of exposure to the heat.

10. Keywords

10.1 bituminous materials; dark oven exposure; heat exposure

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