



Designation: D 5869 – 04a

Standard Practice for Dark Oven Heat Exposure of Bituminous Materials¹

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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 SI units are to be regarded as the standard. The values given in parentheses are for information only.

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:²

D 883 Terminology Relating to Plastics

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

D 1566 Terminology Relating to Rubber

E 1 Specification for ASTM Liquid-In-Glass Thermometers

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

E 230 Specification and Temperature-Electromotive Force (EMF) Tables for Standardized Thermocouples

E 1137/E 1137M Specification for Industrial Platinum Resistance Thermometers

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 $70 \pm 3^\circ\text{C}$ ($158 \pm 5^\circ\text{F}$) 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.

4.4 This practice is also used to condition test specimens for time periods much shorter than 35 days for the purpose of conditioning material before testing. When used for this purpose, the shorter conditioning time shall be specified in any report of test 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 2C (or 2F) in accordance with Specification E 1. (Partially immersed in the oven and read from the shaft extending outside the oven.) As an alternate, any other thermometric device used shall be at least: (1) of equal accuracy to that of the thermometer specified in Specification E 1, (2) capable of indicating temperature to within 1°C (2°F), and (3) stable to within 1°C (2°F) for the duration of the exposure.

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

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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.