



Designation: D2843 – 19

Standard Test Method for Density of Smoke from the Burning or Decomposition of Plastics¹

This standard is issued under the fixed designation D2843; 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.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope*

1.1 This fire-test-response test method covers a laboratory procedure for measuring and observing the relative amounts of smoke obscuration produced by the burning or decomposition of plastics. It is intended to be used for measuring the smoke-producing characteristics of plastics under controlled conditions of combustion or decomposition. Correlation with other fire conditions is not implied. The measurements are made in terms of the loss of light transmission through a collected volume of smoke produced under controlled, standardized conditions. The apparatus is constructed so that the flame and smoke is observable during the test.²

1.2 During the course of combustion, gases or vapors, or both, are evolved that are potentially hazardous to personnel. Adequate precautions shall be taken to protect the operator.

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

1.4 *This standard is used to measure and describe the response of materials, products, or assemblies to heat and flame under controlled conditions, but does not by itself incorporate all factors required for fire hazard or fire risk assessment of the materials, products, or assemblies under actual fire conditions.*

1.5 *Fire testing is inherently hazardous. Adequate safeguards for personnel and property shall be employed in conducting these tests. Specific safety warning statements are given in 1.2 and 9.13.*

1.6 *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 appro-*

priate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.

NOTE 1—There is no known ISO equivalent to this standard.

1.7 *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:³

- D618 Practice for Conditioning Plastics for Testing
 - D883 Terminology Relating to Plastics
 - D1600 Terminology for Abbreviated Terms Relating to Plastics
 - E84 Test Method for Surface Burning Characteristics of Building Materials
 - E176 Terminology of Fire Standards
 - E456 Terminology Relating to Quality and Statistics
 - E662 Test Method for Specific Optical Density of Smoke Generated by Solid Materials
 - E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method
 - E906/E906M Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using a Thermopile Method
 - E1354 Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter
 - E2935 Practice for Conducting Equivalence Testing in Laboratory Applications
- #### 2.2 ISO Standards:⁴
- ISO 13943 Fire Safety—Vocabulary

¹ This test method is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.30 on Thermal Properties- (Section D20.30.03).

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² Anonymous, "A Method of Measuring Smoke Density," *NFPA Quarterly*, QNFPA, Vol 57, January 1964, p. 276. Reprint NFPA Q57-9. Available from NFPA, 60 Batterymarch St., Boston, MA 02110.

³ 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.

⁴ Available from International Organization for Standardization (ISO), ISO Central Secretariat, BIBC II, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland, <http://www.iso.org>.

*A Summary of Changes section appears at the end of this standard