



Designation: D8280 – 20a

# Standard Test Method for Determination of the Blooming of Brominated Flame Retardants onto the Surface of Plastic Materials by Ion Chromatography<sup>1</sup>

This standard is issued under the fixed designation D8280; 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 covers the quantification of the blooming of brominated flame retardants onto the surface of plastic materials by an ion chromatographic method.

1.2 The test method involves recovery of the deposits on the surface of plastic materials, containing brominated flame retardants, on unaged specimens, on specimens aged at 70°C for 14 days and on specimens aged at 70°C for 35 days. These deposits are quantitatively analyzed to obtain the fraction of brominated flame retardant that has bloomed onto the surface.

1.3 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this 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.*

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

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:<sup>2</sup>

**D573 Test Method for Rubber—Deterioration in an Air Oven**

**D883 Terminology Relating to Plastics**

**D3045 Practice for Heat Aging of Plastics Without Load**

**E176 Terminology of Fire Standards**

### 2.2 ISO Standards:<sup>3</sup>

**ISO 188 Rubber, vulcanized or thermoplastic—Accelerated ageing and heat resistance tests**

## 3. Terminology

### 3.1 Definitions of Terms:

3.1.1 For definitions of terms used in this test method and associated with plastics refer to Terminology **D883**.

### 3.2 Definitions of Terms Specific to This Standard:

3.2.1 *blooming, n*—the formation of a visible exudation or efflorescence on the surface of a plastic.

3.2.1.1 *Discussion*—Additives typically have a higher solubility in the polymer at processing temperature than at ambient temperature (since processing temperature is usually above ambient). Blooming occurs when, after cooling, a portion of the additive segregates out of the cooled polymer at ambient temperature and in some instances, migrates to the surface of the polymer.

3.2.2 *flame retardant, n*—a substance which, when added to a combustible material, inhibits flame spread of the resulting substance or material when exposed to flame impingement (Terminology **E176**).

3.2.2.1 *Discussion*—Flame retardants may be incorporated in plastics as additives (additive flame retardant) or as chemical groups in the base polymer by use of reactive intermediates in the polymerization process (reactive flame retardant).

## 4. Summary of Test Method

4.1 The test method presents a procedure for the quantification of the blooming of brominated flame retardants onto the surface of plastic materials.

4.2 The first stage involves the aging of two sets of samples of plastic materials at 70°C for 14 and 35 days, respectively, which are compared to a set of unaged materials.

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee **D20** on Plastics and is the direct responsibility of Subcommittee **D20.70** on Analytical Methods.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

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