



Designation: D6143 – 05

## Standard Test Method for Iron Content of Bisphenol A (4,4' - Isopropylidenediphenol)<sup>1</sup>

This standard is issued under the fixed designation D6143; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope\*

1.1 This test method covers the procedure to determine the iron content of bisphenol A (4,4'-isopropylidenediphenol).

1.2 This test method has a lower detection limit of 0.1 mg/kg, and an upper limit of 10 mg/kg of iron in bisphenol A. If the iron content is higher, it may be necessary to dilute the sample. A longer path length cell can also be used for better accuracy at lower Fe levels, as well as calibration within the range expected (for example, 0 to 1 mg/kg versus 0 to 10 mg/kg for samples expected to be in the 0 to 1 mg/kg range).

1.3 In determining the conformance of the test results using this method to applicable specifications, results shall be rounded off in accordance with the rounding-off method of Practice E29.

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

1.5 *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 limits prior to use.* For a specific hazard statement, see Section 8.

### 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

D1193 Specification for Reagent Water

D4297 Practice for Sampling and Handling Bisphenol A (4,4' -Isopropylidenediphenol)

D6809 Guide for Quality Control and Quality Assurance Procedures for Aromatic Hydrocarbons and Related Materials

E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

E691 Practice for Conducting an Interlaboratory Study to

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D16 on Aromatic Hydrocarbons and Related Chemicals and is the direct responsibility of D16.02 on Oxygenated Aromatics.

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<sup>2</sup> 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.

Determine the Precision of a Test Method

2.2 *Other Documents:*

OSHA Regulations 29CFR paragraphs 1910.1000 and 1910.1200.<sup>3</sup>

### 3. Summary of Test Method

3.1 Bisphenol A is dissolved in methanol, then treated with hydroxylamine hydrochloride to convert any ferric iron present to ferrous iron. The ferrous iron is then complexed with FerroZine to form a purple/maroon chromophore that is quantified by visible spectrophotometry at 560 nm.

### 4. Significance and Use

4.1 Iron may increase the color of bisphenol A and affect other properties of end-use products.

4.2 High purity bisphenol A typically has less than 1 mg/kg of iron.

### 5. Interferences

5.1 No direct interferences have been observed in the use of this method.

### 6. Apparatus

6.1 *Visible Spectrophotometer*, capable of measuring absorbance at 560 nm.

6.2 *Analytical Balance*, capable of weighing 100 g to the nearest 0.01 g.

6.3 *Glassware*, 100 mL and 1 L volumetric flasks, 500 mL graduated cylinders, 10 mL volumetric pipettes, 1 cm square quartz cuvettes.

6.4 *All Glassware* used in this test method should be dedicated and thoroughly cleaned prior to use.

### 7. Reagents and Materials

7.1 *Methanol*, ACS reagent grade,  $\geq 99.8\%$  purity.

7.2 *Sodium Acetate*, pH 5.5.

7.2.1 This solution may be prepared by dissolving 272.0 g  $\pm$  0.1g of reagent grade sodium acetate in 1000 mL distilled water and adjusting to pH 5.5 with concentrated hydrochloric acid.

7.3 *Distilled Water*, conforming to Type IV of Specification D1193.

<sup>3</sup> Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401.

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