



Designation: D7858 – 13 (Reapproved 2018)

Standard Test Method for Determination of Bisphenol A in Soil, Sludge, and Biosolids by Pressurized Fluid Extraction and Analyzed by Liquid Chromatography/Tandem Mass Spectrometry¹

This standard is issued under the fixed designation D7858; 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 procedure covers the determination of Bisphenol A (BPA) in soil, sludge, and biosolids. This test method is based upon solvent extraction of a soil matrix by pressurized fluid extraction (PFE). The extract is filtered and analyzed by liquid chromatography/tandem mass spectrometry (LC/MS/MS). BPA is qualitatively and quantitatively determined by this test method.

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

1.3 The method detection limit (MDL),² electrospray ionization (ESI) mode, and reporting range³ for BPA are listed in Table 1.

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.*

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.*

¹ This test method is under the jurisdiction of ASTM Committee D34 on Waste Management and is the direct responsibility of Subcommittee D34.01.06 on Analytical Methods.

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² The MDL is determined following the Code of Federal Regulations, 40 CFR Part 136, Appendix B utilizing solvent extraction of soil by PFE. A 10-g sample of Ottawa sand was utilized. A detailed process determining the MDL is explained in the reference and is beyond the scope of this test method to be explained here.

³ Reporting range concentration is calculated from Table 4 concentrations assuming a 25- μ L injection of the Level 1 calibration standard for BPA, and the highest level calibration standard with a 5-mL final extract volume of a 10-g soil sample. Volume variations will change the reporting limit and ranges.

2. Referenced Documents

2.1 *ASTM Standards*:⁴

D653 *Terminology Relating to Soil, Rock, and Contained Fluids*
D1193 *Specification for Reagent Water*
D3694 *Practices for Preparation of Sample Containers and for Preservation of Organic Constituents*
D3740 *Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction*
D3856 *Guide for Management Systems in Laboratories Engaged in Analysis of Water*
D5681 *Terminology for Waste and Waste Management*
E2554 *Practice for Estimating and Monitoring the Uncertainty of Test Results of a Test Method Using Control Chart Techniques*

2.2 *Other Documents*:

EPA SW-846 *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*⁵
40 CFR Part 136, Appendix B *Definition and Procedure for the Determination of the Method Detection Limit*⁶

3. Terminology

3.1 *Definitions*:

3.1.1 *Bisphenol A (BPA)*, n —2,2-bis(4-hydroxyphenyl) propane.

3.1.2 *Bisphenol A (propane- D_6) (BPA- D_6)*, n —deuterium labeled Bisphenol A where the two methyl moieties contain all ^2H and is used as a surrogate in this method.

⁴ 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.

⁵ Available from United States Environmental Protection Agency (EPA), William Jefferson Clinton Bldg., 1200 Pennsylvania Ave., NW, Washington, DC 20460, <http://www.epa.gov>.

⁶ Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401, <http://www.access.gpo.gov>.