



Designation: D8310 – 20

Standard Test Method for Analysis of Target Phenols (TPs) in Soil by Multiple Reaction Monitoring Liquid Chromatography/Mass Spectrometry (LC/MS/MS)¹

This standard is issued under the fixed designation D8310; 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 analysis of nonylphenol (NP), nonylphenol monoethoxylate (NP1EO), nonylphenol diethoxylate (NP2EO), octylphenol (OP), and bisphenol A (BPA), referred to collectively as target phenols (TPs), in soil, sediments, and biosolids by extraction with acetone, filtration, dilution with water, and analysis by liquid chromatography/tandem mass spectrometry. The sample extracts are prepared in a solution of 75 % acetone and 25 % water because TPs have an affinity for surfaces and particles that is more pronounced at lower concentrations. The range of applicability of the test method is shown in [Table 1](#). The method may be extended outside of these ranges depending on additional performance studies not undertaken here.

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

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

1.4 *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:²

[D1193](#) Specification for Reagent Water

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.

Current edition approved Feb. 1, 2020. Published February 2020. DOI: 10.1520/D8310-20.

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.

[D7858](#) Test Method for Determination of Bisphenol A in Soil, Sludge, and Biosolids by Pressurized Fluid Extraction and Analyzed by Liquid Chromatography/Tandem Mass Spectrometry

2.2 Federal Standards:³

[29 CFR Part 1910](#) Occupational Safety and Health Standards
[40 CFR Part 136, Appendix B](#) Definition and Procedure for the Determination of the Method Detection Limit—Revision 1.11

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *batch quality control, n*—all the quality control (QC) samples and standards included in an analytical procedure.

3.1.2 *bisphenol A, BPA*—defined in Test Method [D7858](#).

3.1.3 *bisphenol A (propane-D6), BPA-D₆*—defined in Test Method [D7858](#).

3.1.4 *2-bromo-4-(1,1,3,3-tetramethylbutyl)phenol, Br-OP, n*—used in this test method as a surrogate.

3.1.4.1 *Discussion*—2-bromo-4-(1,1,3,3-tetramethylbutyl)phenol is not produced commercially and is not expected to be found in the environment. It was reported that compounds in highly chlorinated, bromide-rich wastewaters could potentially interfere with the Br-OP surrogate. If this interference is encountered, *n*-nonylphenol is suggested as an alternative surrogate.

3.1.5 *nonylphenol, NP, n*—mixture of branched *p*-nonylphenol isomers.

3.1.5.1 *Discussion*—Commercial NP is produced by the reaction of phenol with commercial nonene. Commercial nonene is not simply a linear C₉H₁₈ alpha olefin; it is a complex mixture of predominantly nine-carbon olefins, called propylene trimer, containing no linear isomers. This synthesis results in a mixture of various branched nonylphenol isomers rather than a discrete chemical structure. The branched nonyl group is positioned predominantly in the para position on the phenol ring.

³ Available from U.S. Government Printing Office, Superintendent of Documents, 732 N. Capitol St., NW, Washington, DC 20401-0001, <http://www.access.gpo.gov>.