



Standard Test Methods for Phenolic Compounds in Water¹

This standard is issued under the fixed designation D1783; 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.

^{ε1} NOTE—Editorial corrections were made throughout in January 2015.

1. Scope

1.1 These test methods cover the preparation of the sample and the determination of the concentration of phenolic compounds in water. They are based on the color reaction of phenol (C₆H₅OH) with 4-aminoantipyrine and any color produced by the reaction of other phenolic compounds is reported as phenol. The concentration of phenol measured represents the minimum concentration of phenolic compounds present in the sample.

1.2 Phenolic compounds with a substituent in the para position may not quantitatively produce color with 4-aminoantipyrine. However, para substituents of phenol such as carboxyl, halogen, hydroxyl, methoxyl, or sulfonic acid groups do produce color with 4-aminoantipyrine.

1.3 These test methods address specific applications as follows:

	Range	Sections
Test Method A—Chloroform Extraction	0 to 100 µg/L	11 to 17
Test Method B—Direct Photometric	>0.1 mg/L (100 µg/L)	18 to 24

1.4 It is the users' responsibility to assure the validity of the standard test method for use in their particular matrix of interest.

1.5 *This standard does not purport to address all 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 limitations prior to use.* For specific hazard statements see 6.3.2 and 8.6.

2. Referenced Documents

2.1 ASTM Standards:²

- D1129 Terminology Relating to Water
- D1192 Guide for Equipment for Sampling Water and Steam in Closed Conduits (Withdrawn 2003)³
- D1193 Specification for Reagent Water
- D1293 Test Methods for pH of Water
- D2777 Practice for Determination of Precision and Bias of Applicable Test Methods of Committee D19 on Water
- D3370 Practices for Sampling Water from Closed Conduits
- D5789 Practice for Writing Quality Control Specifications for Standard Test Methods for Organic Constituents (Withdrawn 2002)³
- D5810 Guide for Spiking into Aqueous Samples
- D5847 Practice for Writing Quality Control Specifications for Standard Test Methods for Water Analysis

3. Terminology

3.1 *Definitions*—For definitions of terms used in these test methods, refer to Terminology D1129.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *phenolic compounds*—hydroxy derivatives of benzene and its condensed nuclei.

4. Summary of Test Methods

4.1 Test Method A and Test Method B are photometric procedures based on the reaction of steam-distillable phenolic compounds with 4-aminoantipyrine.

4.2 Test Method A differs from Test Method B mainly in that the sample is extracted with chloroform, thereby providing 20-fold greater sensitivity.

4.3 Both procedures involve first separating the phenolic compounds from the background matrix by distillation. Due to

¹ These test methods are under the jurisdiction of D19 on Water and are the direct responsibility of Subcommittee D19.06 on Methods for Analysis for Organic Substances in Water.

Current edition approved June 15, 2012. Published August 2012. Originally approved in 1960. Last previous edition approved in 2007 as D1783 – 01R07. DOI: 10.1520/D1783-01R12E01.

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.

³ The last approved version of this historical standard is referenced on www.astm.org.