



Standard Test Method for SOLVENT EXTRACTION OF ORGANIC MATTER FROM WATER¹

This Standard is issued under the fixed designation D 2778; 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.

⁶ NOTE—An editorial correction was made by replacing Table A1 in January 1978.

1. Scope and Application

1.1 This method² is applicable to the separation of solvent-extractable organic matter from water.

2. Significance

2.1 This method separates organic matter from water by solvent extraction. Unlike many previous methods, the solvent is not specified as part of the method, but left to the educated decision of the analyst with respect to his particular needs for information about the organic content of the water sample and to the detection methods which he has available. However, for reporting data obtained by this method, the solvent must be indicated so that others might be expected to obtain similar results.

2.2 To standardize the extraction procedure, a constant solvent-to-water ratio is established. Also an order for the extraction steps is instituted for a neutral pH, an acid pH, and an alkaline pH. The constant ratio of solvent to aqueous sample is maintained to achieve a nearly constant extraction efficiency for samples of differing size and differing concentration of organic matter. The order of extraction and the different pH levels accomplish a general classification of the organic constituents and a more complete separation of the total organic content from the water sample.

2.3 The extraction efficiencies (E) calculated from the following equations show that each of the extracts will contain 90 percent or more of the organics with distribution coefficients of 40 or greater at a given pH. Also, the total extracts

will contain 90 percent or more of the organics with distribution coefficients of 15 or greater at any pH used in the extraction.

$$E, \text{ percent} = 100 - 100W_n$$

$$W_n = W_{n-1} [V_w / (DV_s - V_w)]$$

where:

W_n = weight of organic remaining after n extractions,

W_{n-1} = weight of organic remaining after $n - 1$ extractions,

V_w = volume of water,

V_s = volume of solvent, and

D = distribution coefficient of the organic matter.

3. Summary of Method

3.1 The organic matter present in the aqueous sample is partitioned between the water and the immiscible solvent phases. A primary crude separation of the organic matter is accomplished by serial extraction at a neutral pH, at an acid pH, and at an alkaline pH. These extracts may be further classified and analyzed or the solvent may be evaporated and the residue of each extract or the combined extracts weighed.

4. Definitions

4.1 For definitions of terms used in this

¹ This method is under the jurisdiction of ASTM Committee D-19 on Water.

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² This comprehensive procedure for the solvent extraction of organic matter is the result of cooperative efforts within the responsible task group.

³ Annual Book of ASTM Standards, Part 31.