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An American National Standard

Standard Test Methods for pH Measurement of Water of Low Conductivity[1]

This standard is issued under the fixed designation D 5464; 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 These test methods are applicable to determine the pH of water samples with a conductivity lower than 100 µS/cm (see Annex A1 and Table A1.1 and Table A1.2) over the pH range of 3 to 11 (see Fig. 1). pH measurements of water of low conductivity are problematical (see Annex A2). Specifically, these test methods avoid contamination of the sample with atmospheric gases (see Section 7) and prevent volatile components of the sample from escaping. These test methods provide for pH electrodes and apparatus that address the considerations discussed in Annex A2. These test methods also minimize problems associated with the sample's pH temperature coefficient when the operator uses these test methods to calibrate an on-line pH monitor or controller (see Appendix X1). Two test methods are given as follows:

Test Method	Sections
Test Method A—Precise pH Measurement of Low Conductivity Water Utilizing the Real-Time Flowing Sample Procedure	5 to 12
Test Method B—pH Measurement of Low Conductivity Water Utilizing the Static Grab Sample Procedure	13 to 20

1.2 Test Method A covers the precise measurement of pH in water of low conductivity utilizing a real-time, short duration, flowing sample procedure.

1.3 Test Method B covers the measurement of pH in water of low conductivity with a lower limit of 2.0 µS/cm, utilizing a static grab-sample procedure where it is not practicable to take a real-time flowing sample.

NOTE 1—Test Method A is preferred over Test Method B whenever possible. Test Method A is not subject to the limited conductivity range, temperature interferences, potential KCl contamination, and time limitations found with Test Method B.

1.4 The values stated in SI units are to be regarded as 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 limitations prior to use.*

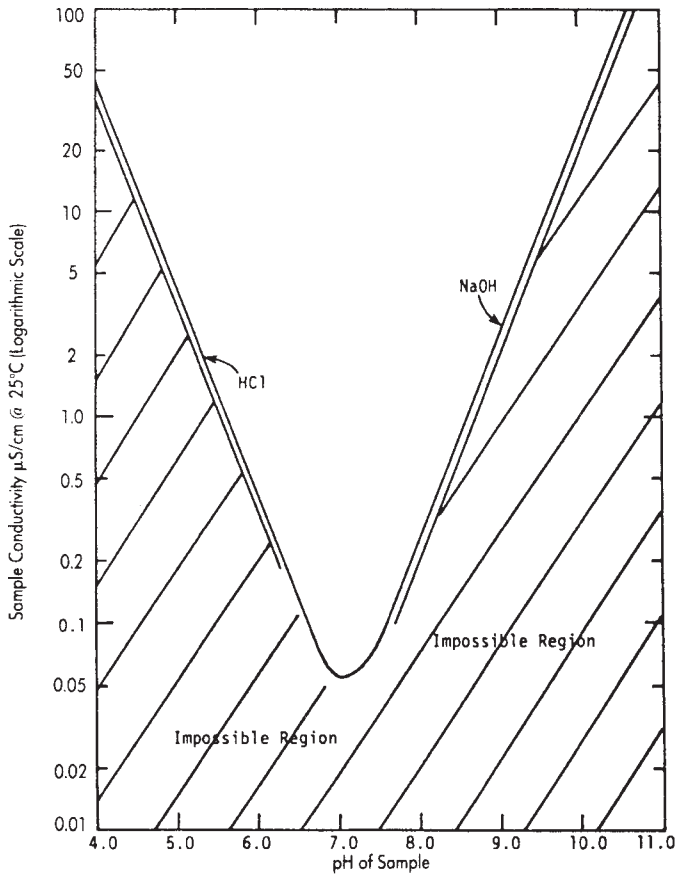

FIG. 1 Restrictions Imposed by the Conductivity-pH Relationship

2. Referenced Documents

2.1 *ASTM Standards:*

D 1067 Test Methods for Acidity or Alkalinity of Water[2]
D 1129 Terminology Relating to Water[2]
D 1193 Specification for Reagent Water[2]
D 1293 Test Methods for pH of Water[2]
D 2777 Practice for Determination of Precision and Bias of Applicable Methods of Committee D-19 on Water[2]
D 4453 Practice for Handling Ultra-Pure Water Samples[2]
D 5128 Test Method for On-Line pH Measurement of Water of Low Conductivity[2]

[1] These test methods are under the jurisdiction of ASTM Committee D19 on Water and are the direct responsibility of Subcommittee D19.03 on Sampling of Water and Water-Formed Deposits, Surveillance o f Water, and Flow Measurement of Water.

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[2] *Annual Book of ASTM Standards*, Vol 11.01.

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