



Standard Test Method for Agricultural pH Control Agents, Measurement of pH Change and Buffering Capacity¹

This standard is issued under the fixed designation E1910/E1910M; 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 cover determining if an adjuvant meets the definitions of an acidifier, a basic blend, alkalinity agent, or buffer in Terminology E1519.

1.2 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the 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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*²

D1126 Test Method for Hardness in Water

D1193 Specification for Reagent Water

E70 Test Method for pH of Aqueous Solutions With the Glass Electrode

E200 Practice for Preparation, Standardization, and Storage of Standard and Reagent Solutions for Chemical Analysis

E1519 Terminology Relating to Agricultural Tank Mix Adjuvants

3. Summary of Test Method

3.1 Test Method A measures the change in pH of a sample on the addition of an acidifier or a basic blend. Test Method B measures the buffer capacity of the adjuvant by titration.

¹ These test methods are under the jurisdiction of ASTM Committee E35 on Pesticides, Antimicrobials, and Alternative Control Agents and are the direct responsibility of Subcommittee E35.22 on Pesticide Formulations and Delivery Systems.

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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.

4. Significance and Use

4.1 This test method is intended for products sold as tank mix adjuvants for use with agricultural products.

4.2 Part A provides a determination of whether the pH modification characteristics of the adjuvant tested meet the definition of an acidifier, alkalinity agent, or a basic blend in Terminology E1519. Part B provides a measure of the buffer capacity of the adjuvant. This can be used to estimate the amount of a buffer that will be required to keep a spray solution at the desired pH.

4.3 Other pH standards can be used (see Test Method E70) as long as the pHs measured are not outside the range of the standards used.

4.4 If samples of the material to be used in a particular application are available, the first method can be used to determine what adjuvant rate is required to obtain the desired pH. The ability of an adjuvant to adjust the pH of a particular system will depend on the initial pH before addition.

4.5 The second method can be used to determine the amount of an adjuvant required to change the pH of a quantity of spray solution to the required value (see Note 1).

NOTE 1—Many acidifiers and basic blends also are buffers, so the pH change does not provide a useful measure of buffer capacity.

5. Apparatus

5.1 *pH Meter*, accurate to 0.01 unit.

5.2 *Combination Glass/Calomel Electrode*, or separate glass and calomel electrodes or other suitable pH electrode system.

5.3 *Beakers*, 250 mL.

5.4 *Magnetic Stirrer*, 120 to 1200 rpm, or equivalent.

5.5 *Magnetic Stir Bar*, 1 in. (2.5 cm) in length and $\frac{3}{8}$ in. (0.95 cm) in diameter.

5.6 *Burette*, 50 mL, Class A.

6. Reagents

6.1 *Purity of Reagents*—Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that