Designation: E2044 – 99 (Reapproved 2019)

Standard Test Method for Spreading of Liquid Agricultural Spray Mixtures[1]

This standard is issued under the fixed designation E2044; 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 the visual evaluation of the relative spread radius of liquid spray mixture droplets.

1.2 The values stated in SI units are to be regarded as 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]

E1519 Terminology Relating to Agricultural Tank Mix Adjuvants

3. Terminology

3.1 *Definitions:*

3.1.1 *adjuvant, n*—a material added to a tank mix to aid or modify the action of an agrochemical, or the physical characteristics of the mixture. (See Terminology E1519.)

3.1.2 *spreader, n*—a material that increases the area that a droplet of a given volume of spray mixture will cover on a target. (See Terminology E1519.)

3.1.3 *spread radius, n*—the radius in millimetres or some other standardized unit, of a substrate covered by a droplet.

4. Summary of Test Method

4.1 The material(s) to be tested is mixed using the desired concentration of each component.

4.2 A 20 µL droplet of the spray mixture is placed carefully onto a substrate. Under this substrate is a graph with concentric rings spaced at 1 mm intervals.

4.3 After 60 s, the number of rings that the droplet covers, and thus the radius of the droplet, is observed and recorded.

5. Significance and Use

5.1 This test method is intended to provide a rapid means of determining the relative ability of a liquid agricultural spray mixture to spread on a test substrate.

5.2 This test method was validated using Parafilm M[3] as a test substrate. It is the user's responsibility for determining the validity of this test method for alternative test surfaces. While it may be generally agreed upon that there is no perfect model for the variety of surfaces for which spreading information would be useful, this test method does not limit users to any one surface. Further consideration must also be given to the potential effect that the liquid droplet may have on the chemical composition and morphology of the test surface. While this does not restrict the test method, an understanding of this potential can help in the interpretation of test data.

5.3 This test method will determine the relative spread of radii of water, fertilizers, oils, and mixtures of these carriers with surfactants. It is the user's responsibility to determine the validity of the test method with alternative liquids.

5.4 This test method will determine the relative spread radii of droplets over 30 s, 60 s, and 5 min. It is the user's responsibility to determine the validity of the test method at alternative spreading times.

5.5 This test method is appropriate for relative humidities within the range of 40 to 70 %. It is the user's responsibility to determine the validity of the test method at alternate relative humidities.

[1] This test method is under the jurisdiction of ASTM Committee E35 on Pesticides, Antimicrobials, and Alternative Control Agents and is 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.

[3] The sole source of supply of the apparatus (Parafilm M, registered trademark) known to the committee at this time is American National Can Company, Chicago, IL 60631. If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,[1] which you may attend.