



Designation: E 1518 – 99

Standard Practice for Evaluation of Physical Compatibility of Pesticides in Aqueous Tank Mixtures by the Dynamic Shaker Method¹

This standard is issued under the fixed designation E 1518; 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 practice describes the method for the evaluation of the physical compatibility and stability of pesticide tank mixtures diluted for aqueous application. This practice may also be adapted to use with liquid fertilizers in replacement of the water diluent.

1.2 Tank mix compatibility can be a complex evaluation. A single method or battery of methods will not always indicate whether a pesticide tank mix will be compatible in the field. The method described in this practice is run under dynamic conditions.

1.3 Proper safety and hygiene precautions must be taken when working with pesticide formulations to prevent skin or eye contact, vapor inhalation, and environmental contamination.

1.4 Read and follow all handling instructions for the specific formulation and conduct the test in accordance with good laboratory practice.

1.5 *This standard does not purport to address all of the safety problems, 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

D 1193 Specification for Reagent Water

3. Summary of Practice

3.1 In this practice, pesticides are diluted in water and tank mixed at specific application rates. Evaluations are conducted under dynamic conditions. Pesticides are mixed and kept under agitation by a mechanical shaker. Evaluations are conducted at

chosen water hardnesses and temperatures. Compatibility is measured in terms of the dispersion stability and screen residue.

3.2 Pesticides being examined for mixing compatibility should be evaluated individually as controls.

4. Significance and Use

4.1 This practice is designed for researchers, applicators, and end users of pesticides where one or more ingredients are being mixed into an aqueous spray system. The practice is useful in determining physical compatibility of aqueous spray mixtures of pesticides and/or fertilizers.

4.2 The practice is not designed to determine physical compatibility of non-aqueous based spray mixtures.

4.3 The results or the testing should be used to determine the compatibility of the mixture ingredients in dynamic applications. Interpolation of static results to the expectations of the results of this test is not encouraged.

5. Apparatus

5.1 *Graduated Cylinder*, 100 mL, glass-stoppered.

5.2 *Pipets*, graduated, wide tip, serological, various delivery volumes.

5.3 *Balance*, accurate to 0.1 g.

5.4 *Sieve*, US Standard, 50 mesh (300 microns), 3-in. diameter.³

5.5 *Wide-Mouth Jars*, 4 oz with polyethylene seal cups.

5.6 *Shaker*, wrist action, Burrell Model 75 or equivalent.

6. Reagents

6.1 *Purity of Reagents*—Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society where such specifications are available.⁴ Other grades may be

¹ This practice is under the jurisdiction of ASTM Committee E35 on Pesticides and is the direct responsibility of Subcommittee E35.22 on Pesticide Formulation and Application 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 Other sieve mesh sizes may be used as defined by field-use applications.

⁴ "Reagent Chemicals, American Chemical Society Specifications," Am. Chemical Soc., Washington, DC. For suggestions on the testing of reagents not listed by the American Chemical Society, see "Reagent Chemicals and Standards," by Joseph Rosin, D. Van Nostrand Co., Inc., New York, NY, and the "United States Pharmacopeia."