



Designation: E1518 – 05 (Reapproved 2019)

## Standard Practice for Evaluation of Physical Compatibility of Pesticides in Aqueous Tank Mixtures by the Dynamic Shaker Method<sup>1</sup>

This standard is issued under the fixed designation E1518; 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 ( $\epsilon$ ) 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 affected by many variables. Care should be taken to duplicate test conditions. This practice addresses the standard variables such as time, temperature, water hardness, method of agitation, and degree of agitation.

1.3 Compatibility is complex and can be affected by other variables such as order of addition, pH of the dilution water, pumping shear, etc. Under the parameters of this practice, the results will define whether the pesticide mixture is or is not compatible in the laboratory. Compatibility or incompatibility should be confirmed under field spray conditions.

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

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

1.6 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.7 *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.*

1.8 *This international standard was developed in accordance with internationally recognized principles on standard-*

*ization 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:*<sup>2</sup>  
**D1193 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.

3.3 *Order of Addition*—Pesticides should be tank mixed as recommended on the product label. If the order of the addition is not specified, then all possible orders of addition should be tested. The following is a general guide: (1) waster soluble concentrates, (2) water dispersible granules (dry flowables), (3) wettable powders, (4) liquid flowables, and (5) emulsifiable concentrates.

### 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.

<sup>1</sup> This practice 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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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.