Designation: E 1945 – 98

AMERICAN SOCIETY FOR TESTING AND MATERIALS
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Standard Test Method for Percent Dispersibility[1]

This standard is issued under the fixed designation E 1945; 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 is used to determine the percent dispersibility of dry pesticide formulations.

1.2 *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.* For specific precautionary statements see Section 7.

2. Referenced Documents

2.1 *ASTM Standards:*

D 1126 Test Method for Hardness in Water[2]

D 1193 Specification for Reagent Water[2]

3. Summary of Test Method

3.1 A known amount of dry pesticide formulation is added to a 250-mL mixing cylinder that has been filled to volume with standard water. The mixing cylinder is then stoppered and inverted 30 times in two minutes. The mixing cylinder is allowed to stand for 1 min. After 1 min the top 225 mL is drawn off and the remaining suspension is dried. The residue weight will determine percent dispersibility.

4. Significance and Use

4.1 This test method is designed specifically for dry formulations.

4.2 This test method may not be applicable to all dry formulations such as those containing either liquid technicals or ingredients that rise to the top upon separation.

4.3 This test method may not be applicable to those technicals that decompose below the drying temperature.

4.4 This test method should be run in duplicate.

4.5 Products containing water soluble or volatile components may result in errors.

5. Apparatus

5.1 *Balance*, top loading, with an accuracy of ±0.01 g or better.

5.2 *Gravity Oven*.

5.3 *Weighing Dish*, 150 mL capacity or greater.

5.4 *Vacuum Apparatus*, see Fig. 1, equipped with a vented stopper.

5.5 *Mixing Cylinder*, stoppered, 250 mL, flat bottom, KIMAX series 20 039 or equivalent.

5.6 *Timer*, adjustable, with an accuracy of ±1 second.

5.7 *Weighing Dish*, aluminum (57 × 18 mm) or petri dish or equivalent.

5.8 *Filtering Flask*, heavy wall, 500 mL, Kimax Series 27 060 or equivalent.

6. Reagents (Test Water)

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.[3]

6.2 *Purity of Water*—Unless otherwise indicated, reference to water shall be understood to mean reagent water, Type IV, as defined by Specification D 1193.

NOTE 1—Type IV grade reagent water may be prepared by distillation, ion exchange, reverse osmosis, electrodialysis, or a combination thereof.

6.3 *Synthetic Hard Water Stock*, transfer 12.14 g of anhydrous calcium chloride ($CaCl_2$) and 5.55 g of magnesium chloride hexahydrate ($MgCl_2 \cdot 6H_2O$) to a 1000-mL volumetric flask. Dissolve the reagents with approximately 750 mL of water and equilibrate to 20°C. Dilute the solution to 1000 mL total volume with water at 20°C, stopper the flask, and mix the solution thoroughly. This mixture is equivalent to 13 680 ppm as calcium carbonate ($CaCO_3$) and is based on a compositional ratio of 4:1 calcium carbonate to magnesium carbonate.

6.3.1 *Soft Water*, equivalent to a total hardness of 34.2 ppm

[1] This practice is under the jurisdiction of ASTM Committee E-35 on Pesticides and is direct responsibility of Subcommittee E35.22 on Pesticide Formulation and Application Systems.

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

[3] Reagent Chemicals, American Chemical Society Specifications, American Chemical Society, Washington, DC. For suggestions on the testing of reagents not listed by the American Chemical Society, see Analar Standards for Laboratory Chemicals, BDF Ltd., Poole, Dorset, U.K., and the United States Pharmacopoeia and National Formulary, U.S. Pharmaceutical Convention, Inc., (USPC), Rockville, MD.