



Designation: E938/E938M – 12

# Standard Test Method for Effectiveness of Liquid, Gel, Cream, or Shampoo Insecticides Against Adult Human Lice<sup>1</sup>

This standard is issued under the fixed designation E938/E938M; 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 test method determines the effectiveness of pediculicidal materials in liquid, gel, or cream form, against the adult human louse, *Pediculus humanus humanus*, the surrogate subspecies for the human head louse (*P.h. capitis*). (Only gels or creams that liquefy at 32°C [90°F] can be tested).

1.2 This test method is for the use of those wishing to develop efficacy data on adult lice.

1.3 This test method consists of five replicates for a statistical comparison of formulations.

1.4 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.

1.5 *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. Terminology

### 2.1 Definitions of Terms Specific to This Standard:

2.1.1 *morbid*—unable to move towards heat 1 h after treatment: sickly, but not necessarily dying; may recover by 24 h.

2.1.2 *moribund*—unable to move towards heat (and therefore food) 24 h after treatment; dying.

<sup>1</sup> 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 E35.12 on Insect Control Agents.

Current edition approved April 1, 2012. Published May 2012. Originally approved in 1983. Last previous edition approved in 2011 as E938 – 05(2011) <sup>ε1</sup>. DOI: 10.1520/E0938-12.

## 3. Summary of Test Method

3.1 Five replicates of 25 lice shall be used for each test concentration or any other variable tested. Five water control replicates will be used on each day of testing.

3.2 Percent louse mortality, corrected by Abbott's Formula, is determined.<sup>2</sup>

## 4. Significance and Use

4.1 This test method should provide a consistent approach both in terms of test insects and test procedures for the gathering of efficacy data for pediculicides.

4.2 Data collection in this manner should be suitable for product development and comparison. In addition, it should be suitable for review by regulatory agencies.

## 5. Apparatus and Materials

5.1 *Test Container*—A 9-dram plastic vial, screened at the bottom with 20-mesh screen, shall be used as the dipping vessel. A plunger, made from a plastic rod, and a circular screen fits inside the vial. Plastics used should be as chemically unreactive as possible. Plastic vials are to be discarded after each test.

5.2 *Beakers*—A 100- to 500-mL beaker is used to contain the pediculicide into which the test container is dipped. A 1000-mL beaker is used as the container in which the lice are washed after treatment.

5.3 *Heating Surface*—A slide warmer that provides heat of approximately 37°C [98°F].

5.4 *Incubator*, capable of maintaining a temperature of 31.7°C [89°F] and 60 % RH.

5.5 *Petri dishes*, 8.9 cm in diameter and 1.3 cm deep.

5.6 *Waterbath*, capable of maintaining 32°C [90°F].

<sup>2</sup> Abbott, W. S., "A Method of Computing the Effectiveness of An Insecticide," *Journal of Economic Entomology*, Vol 18, 1925, pp. 265–267.