



Standard Test Method for Assessment of Antimicrobial Activity for Water Miscible Compounds Using a Time-Kill Procedure¹

This standard is issued under the fixed designation E2783; 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 measures the changes of a population of aerobic and anaerobic microorganisms within a specific sampling time when tested against antimicrobial test materials *in vitro*. The organisms used are standardized as to growth requirements and inoculum preparation and must grow under the conditions of the test. The primary purpose of this test method is to provide a set of standardized conditions and test organisms to facilitate comparative assessments of antimicrobial materials miscible in aqueous systems.

1.2 This test method allows the option of using a test sample size of 10 mL or 100 mL.

1.3 Knowledge of microbiological techniques is required for this procedure.

1.4 Aseptic technique should be practiced at all times.

1.5 In this test method, SI units are used for all applications, except for distance in which case inches are used and SI units follow in parentheses.

1.6 *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. Referenced Documents

2.1 ASTM Standards:²

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

E1054 Test Methods for Evaluation of Inactivators of Antimicrobial Agents

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 E35.15 on Antimicrobial Agents.

Current edition approved April 1, 2016. Published May 2016. Originally approved in 2010. Last previous edition approved in 2011 as E2783 – 11. DOI: 10.1520/E2783-11R16.

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. Terminology

3.1 Definitions:

3.1.1 *antimicrobial, n*—describes an agent that kills or inactivates microorganisms or suppresses their growth or reproduction.

3.1.2 *drug, n*—articles intended for use in the diagnosis, cure, mitigation, treatment, or prevention of disease in man or other animals. Drugs are intended to affect the structure or any function of the body of man or other animals.

3.1.3 *initial microbial population, n*—bacterial count (CFU/mL) in the final volume of test material. Also known as initial bacterial population, numbers control or control.

3.1.4 *inoculum, n*—the viable microorganisms used to contaminate a sample, device or surface, often expressed as to number and type.

3.1.5 *microbiocide, n*—a physical or chemical agent that kills microorganisms.

3.1.6 *neutralization, n*—the process for inactivating or quenching the activity of a microbiocide. Often achieved through chemical or physical means (for example, filtration or dilution).

3.1.7 *room temperature, n*—temperature in the range of 20 to 30°C (68 to 85°F).

3.1.8 *test material, n*—a formulation which incorporates antimicrobial ingredient(s). Also known as test formulation.

3.1.9 *total test volume, n*—the volume of test material plus the volume of inoculum suspension.

4. Summary of Test Method

4.1 A dilution/aliquot of the test material is brought into contact with a known population of test organisms for specified periods of time, at a specified temperature. The activity of the test material is quenched at specified sampling intervals (example 15, 30, and 60 s, or any range covering several minutes or hours) with an appropriate neutralizing technique. The test material is neutralized at the sampling time and the surviving microorganisms enumerated. The percent and log₁₀ reduction, from an initial microbial population is calculated.