



Standard Test Method for Efficacy of Antimicrobials as Preservatives for Aqueous-Based Products Used in the Paper Industry (Bacterial Spoilage)¹

This standard is issued under the fixed designation E 723; 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 laboratory test method is used to determine the efficacy of an antimicrobial for preventing bacterial spoilage of in-process aqueous-based products used in the paper industry. For information on fungal spoilage, see Test Method E 875. This test method should be performed by persons who have had basic microbiological training.

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.*

2. Referenced Documents

2.1 ASTM Standards:

D 1193 Specification for Reagent Water²

E 875 Test Method for Efficacy of Fungal Control Agents as Preservatives for Aqueous Based Products Used in the Paper Industry³

E 1054 Practices for Evaluating Inactivators of Antimicrobial Agents Used in Disinfectant, Sanitizer, Antiseptic, or Preserved Products³

E 1326 Guide for Evaluating Nonconventional Microbiological Tests Used for Enumerating Bacteria³

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *antimicrobial, n*—chemical or physical agent that kills microorganisms.

3.1.2 *bactericide, n*—an agent that kills bacteria. This term is applied to chemical agents that kill bacteria but not necessarily bacterial spores.

3.1.3 *preservatives, n*—a chemical or physical agent used to prevent microbial spoilage of products.

4. Summary of Test Method

4.1 Aqueous material to be preserved is inoculated with an appropriate microbial inoculum followed by addition of a concentration of bactericide that will kill the microbes and prevent their growth for a desired period of time. Microbial numbers in the sample are determined at various time periods and compared to a control without any biocide. The proper level of antimicrobial is one that reduces and keeps the organisms to an acceptable level in the test material.

5. Significance and Use

5.1 This test method should be used to determine if an antimicrobial prevents spoilage by bacteria and preserves pigment suspensions, dye solutions, pulp slurries, starch solutions, polymers, sizing agents, latex emulsions, and other aqueous-based materials used in the paper industry.

6. Apparatus

6.1 *Balance*—Two balances: one should be sensitive to 0.1 g at a load of 200 g and have a platform to accommodate bottles being used in the test. The second balance (analytical) should be sensitive to 0.1 mg and should be employed to weigh the candidate preservative to be used in the preparation of the stock solutions.

6.2 *Bottles*—Borosilicate glass milk dilution bottles or other suitable containers fitted either with screw caps or Escher rubber stoppers. These bottles are used for water blanks and aqueous-based samples.

6.3 *Colony Counter*—Any one of several types may be used as the Quebec, Buck, and Wolfhuegel. A hand tally for the recording of the bacterial count is recommended if manual counting is done. Alternatively, an automated video colony counter may also be used.

6.4 *Culture Tube Closures*—Appropriate nontoxic closures should be selected.

6.5 *Culture Tubes*—Recommended size is 15 by 125 mm or 18 by 150 mm without lip, and preferably of borosilicate glass.

6.6 *Blender*—Any blender that will assure proper agitation and blending.

6.7 *Flaming Equipment*—Depending upon circumstances, either an alcohol lamp or bunsen burner may be used to flame inoculating needles and other equipment.

¹ This test method is under the jurisdiction of ASTM Committee E-35 on Pesticides and is the direct responsibility of Subcommittee E35.15 on Antibacterial and Antiviral Agents.

Current edition approved April 10, 1997. Published June 1997. Originally published as E 723 – 80. Last previous edition E 723 – 91.

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

³ *Annual Book of ASTM Standards*, Vol 11.05.