



Designation: E 1839 – 96 (Reapproved 2001)

Standard Test Method for Efficacy of Slimicides for the Paper Industry—Bacterial and Fungal Slime¹

This standard is issued under the fixed designation E 1839; 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 presents a procedure to evaluate the efficacy of slimicides for the control of bacterial and fungal slimes in paper mill systems and their counterparts.

1.2 It is the responsibility of the investigator to determine whether Good Laboratory Practices (GLP) are required and to follow them where appropriate (40 CFR 160).

1.3 *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 1054 Practices for Evaluating Inactivators of Antimicrobial Agents Used in Disinfection, Sanitizer, Antiseptic, or Preserved Products³

2.2 TAPPI Standard:

T 205 Forming Handsheets for Physical Tests of Pulp⁴

2.3 CFR Standard:

Title 40, Code of Federal Regulations (CFR), Part 160, Good Laboratory Practice Standards⁵

3. Terminology

3.1 Definitions:

3.1.1 *furnish, n*—pulp slurry fed to a paper machine. The type of pulp (sulfite, Kraft, mechanical), the source of fiber (virgin, recycled including pre- or post-consumer waste paper), and the pH are used to designate a specific type of furnish.

3.1.2 *pulp, n*—wood separated by chemical or mechanical means into their fibrous components. The pulp is used to make paper, paper board, or pulp sheets after specific treatments.

Hardwood pulp is made from trees, such as maples or oaks, and softwood pulp is produced from trees, such as pines.

3.1.3 *pulp slurry, n*—an aqueous combination of cellulosic fibers, fillers, and other additives used for specific grades of paper.

3.1.4 *slimicides, n*—chemicals added during pulp and paper processing to control the growth of slime-forming microorganisms.

4. Summary of Test Method

4.1 Bacterial cells or fungal spores are added to acid or alkaline pulp slurries, or both, treated with slimicides to achieve final concentrations of 2×10^6 to 1×10^7 bacteria/mL or 10^5 to 10^6 fungal spores/mL, and incubated at appropriate temperature for determined time periods. Aliquots of the test suspension are then neutralized, plated onto bacterial or fungal medium, and observed for growth. Results with biocide are compared to results without biocide (control).

4.2 As a performance standard, an effective slimicide is one that shows a continued reduction in bacterial and fungal counts relative to the control over the duration of the test.

5. Significance and Use

5.1 This test method is to be used to determine if a slime control agent has application in the paper industry for control of bacterial or fungal slime.

5.2 This test method is run in acid, alkaline, or acid and alkaline conditions to determine the efficacy of the slime control agent.

5.3 The test conditions may be modified to reflect intended use patterns in typical paper mill systems, including use of actual paper mill furnish.

6. Apparatus

6.1 Balance:

6.1.1 *Plant Balance*, sensitive to 0.1 g and used to weight furnish.

6.1.2 *Analytical Balance*, sensitive to 0.1 mg and employed to weigh the candidate slime control agent to be used in the preparation of the stock solutions.

6.2 *Sample Containers (Sterile)*, 120-mL plastic specimen containers with screw-cap lids are ideal for holding test materials. Other suitable containers include 150/160-mL milk dilution bottles or WHIRL-PAKS.

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

Current edition approved Oct. 10, 1996. Published December 1996. Replaces Test Methods E 599 and E 600.

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

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

⁴ Forming Handsheets for Physical Tests of Pulp, TAPPI Test Method T 205 on-88, 1994–1995, TAPPI, Atlanta, GA, 11994.

⁵ Available from U.S. Government Printing Office, Superintendent of Documents, Mail Stop: SSOL, Washington, DC 20402-9328.