



Standard Test Methods for Resistance of Adhesive Preparations in Container to Attack by Bacteria, Yeast, and Fungi¹

This standard is issued under the fixed designation D4783; 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.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 These test methods cover the determination of the resistance of liquid adhesive preparations to microbial attack in the container by challenging adhesive specimens with cultures of bacteria, yeast, or fungi, and checking for their ability to return to sterility. These test methods return qualitative results.

1.2 The values stated in SI units are to be regarded as the standard. The values in parentheses are for information only.

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.* These test methods are designed to be used by persons trained in correct microbiological technique. Specific precautionary statements are given in Section 8.

2. Referenced Documents

2.1 ASTM Standards:²

[D907 Terminology of Adhesives](#)

[D4299 Test Method for Effect of Bacterial Contamination on Performance of Adhesive Preparations and Adhesive Films](#) (Withdrawn 1990)³

[D4300 Test Methods for Ability of Adhesive Films to Support or Resist the Growth of Fungi](#)

[E640 Test Method for Preservatives in Water-Containing Cosmetics](#)

NOTE 1—Test Method [E640](#) is under the jurisdiction of ASTM Committee E35 on Pesticides. The procedure in this method outlines a

¹ These test methods are under the jurisdiction of ASTM Committee [D14](#) on Adhesives and are the direct responsibility of Subcommittee [D14.30](#) on Wood Adhesives.

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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 The last approved version of this historical standard is referenced on www.astm.org.

serial dilution method of determining plate count using a pour plate technique.

2.2 TAPPI Method:

[T 487 Fungus Resistance of Paper and Paperboard](#)⁴

2.3 CSMA:

[Cosmetics Preservation, Method 38](#)⁵

3. Terminology

3.1 *Definitions*—Many terms in these test methods are defined in Terminology [D907](#).

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *adhesive preparation, n*—the adhesive as packaged for distribution, storage, and use.

3.3 Abbreviations:

3.3.1 *PBS*—phosphate buffered saline.

3.3.2 *PDA*—potato dextrose agar.

3.3.3 *YMPG*—yeast malt peptone glucose (agar).

4. Summary of Test Method

4.1 The adhesive specimen is challenged by inoculation with a culture of bacteria, yeast, or fungi, which may be a single species or a mixed culture of several species, following the guidelines given in [Note 6](#). The inoculated adhesive specimen is stored at 21 to 27°C (70 to 80°F) for 7 days, during which time cultures (streak plates) are made at preset intervals. See [Note 2](#). At any point in the series of challenges, if the inoculated specimen shows microbial growth on the streak plates made during the week following the challenge (indicating that it has not returned to sterility), the test is discontinued, and the sample is reported as *not resistant to attack in the container* by the species or combination of species used as the inoculum. If the cultures show no growth, the test is repeated with up to four challenges. If the specimen tests out as sterile following the fourth challenge, it is reported to be *resistant to attack in the container* by the species or combination of species of bacteria, fungi, or yeast used as the inoculum. At the

⁴ Available from Technical Association of the Pulp and Paper Industry (TAPPI), 15 Technology Parkway South, Norcross, GA 30092, <http://www.tappi.org>.

⁵ This method is the same as Test Method [E640](#).