



Designation: D4198 – 82 (Reapproved 2003)

# Standard Test Methods for Evaluating Absorbent Pads Used with Membrane Filters for Bacteriological Analysis and Growth<sup>1</sup>

This standard is issued under the fixed designation D4198; 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 These test methods cover the determination of the nutrient-holding capacity and the toxic or nutritive effect on bacterial growth of organisms retained on a membrane filter, when the absorbent pad being tested is used as a nutrient reservoir and medium supply source for the retained bacteria.

1.2 The tests described are conducted on 47-mm diameter disks, although other size disks may be employed for bacterial culture techniques.

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:*<sup>2</sup>

D1129 Terminology Relating to Water

D1193 Specification for Reagent Water

D3508 Method for Evaluating Water Testing Membrane Filters for Fecal Coliform Recovery (Discontinued 1994)<sup>3</sup>

## 3. Terminology

3.1 *Definitions*—For definitions of terms used in these test methods, refer to Terminology D1129.

## 4. Summary of Test Methods

4.1 Test Method A involves saturating a 47-mm absorbent pad with water and determining the volume of water held by the pad by weighing the pad dry and when fully saturated.

4.2 Test Method B involves culturing micro-organisms from suspensions of pure cultures on a 0.45- $\mu$ m membrane filter, which is placed on the test absorbent pad saturated with the

appropriate growth medium. The resultant cultures are compared to cultures grown on spread plates and to membrane filters placed directly on agar with no absorbent pad.

## 5. Significance and Use

5.1 These test methods are appropriate for qualifying absorbent pads used with membrane filters for bacteriological enumeration.

5.1.1 The test methods described are applicable to quality control testing of absorbent pads by the suppliers and users of these pads and to specification testing of absorbent pads intended for use with membrane filters in bacteriological enumeration.

5.2 Other pure culture organisms and their appropriate culture medium may be substituted for the *E. coli* and M-FC media for specification testing, as required.

## 6. Apparatus

6.1 *Filtration Units* for membrane filters with side-arm flask and tubing.

6.2 *Vacuum Source*.

6.3 *Vortex Mixer* or similar mixer.

6.4 *Forceps*, flat-bladed.

6.5 *Incubator* capable of maintaining temperatures of 44.5  $\pm$  0.2°C.

6.6 *Stereoscopic Microscope and Illuminator*.

6.7 *Illuminated Magnifying Stand* for counting colonies on agar spread plates.

6.8 *Hand Tally Counter*.

6.9 *Autoclave*.

6.10 *Analytical Balance* readable to the nearest 1 mg.

6.11 *Petri Dish*, 50-mm, nonsterile.

6.12 *Expendable Equipment*:

6.12.1 Filters (gridded, 0.45- $\mu$ m, 47-mm) sterile, for water testing.

6.12.2 Absorbent pads (47-mm), sterile for the growth test.

6.12.3 Petri dishes, sterile 50-mm and 100-mm.

6.12.4 Pipets, sterile, 10-mL, 0.1 mL graduations, accuracy of  $\pm$  5%.

6.12.5 Test tubes, sterile, 20-mL, with screw caps.

6.12.6 Bent glass rod, sterile, for spreading bacterial cultures.

<sup>1</sup> These methods are under the jurisdiction of ASTM Committee D19 on Water and are the direct responsibilities of Subcommittee D19.08 on Membranes and Ion Exchange Materials.

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<sup>2</sup> 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.

<sup>3</sup> Withdrawn. The last approved version of this historical standard is referenced on www.astm.org.