



Designation: D 3861 – 91 (Reapproved 1998)

## Standard Test Method for Quantity of Water-Extractable Matter in Membrane Filters <sup>1</sup>

This standard is issued under the fixed designation D 3861; 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 approval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This test method covers the gravimetric determination of the water-extractable material present in membrane filters and is applicable over the complete concentration range of extractables.

1.2 The analyst should be aware that adequate collaborative data for precision and bias statements as required by Practice D 2777 is not provided. See Section 11 for details.

1.3 *This standard does not purport to address all of the safety problems, 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 1129 Terminology Relating to Water <sup>2</sup>

D 1193 Specification for Reagent Water <sup>2</sup>

D 2777 Practice for Determination of Precision and Bias of Applicable Methods of Committee D-19 on Water <sup>2</sup>

### 3. Terminology

3.1 *Definitions*—For definitions of terms used in this test method, refer to Terminology D 1129.

### 4. Summary of Test Method

4.1 The quantity of water-soluble extractables present in membrane filters is determined by immersing the preweighed membrane in boiling reagent grade water for an extended time, then drying and reweighing the membrane. A control membrane is employed to eliminate weighing errors caused by balance changes or changing moisture content of the membrane in the weighing procedures. Weight changes of the control membrane are applied as a correction factor to the weight change of the test membrane filters.

### 5. Significance and Use

5.1 The presence of water-soluble extractables in membrane filters can create errors in test procedures employing membrane filters. However, these errors can be eliminated or significantly reduced if the quantity of water-soluble extractables of the specific membrane is previously determined. Certain membrane filter uses require specifications of maximum water-soluble extractable levels. This test method is intended to be a rapid test to determine the loss of water-soluble compounds such as plasticizers or wetting agents from filtration membranes. This test method is not designed to predetermine the performance of a filter, but is significant in determining the percent extractables of membranes from different sources and lot variations from a single source.

### 6. Apparatus

6.1 *Beaker*, borosilicate glass, 300-mL capacity.

6.2 *Forceps*, stainless steel, unserrated tips.

6.3 *Desiccator*.

6.4 *Drying Oven*, with thermostatic control.

6.5 *Analytical Balance*, sensitivity 0.01 mg.

6.6  $\alpha$ -*Emitting Polonium Source* <sup>3</sup> (to discharge static charge in balance).

6.7 *Humidity-Controlled Room or Hood*, for balance.

6.8 *Evaporating Dishes*, glass, having sides or other means to keep test filters on the dish while drying.

### 7. Reagents and Materials

7.1 *Purity of Water*— Unless otherwise indicated, references to water shall be understood to mean Type III reagent water conforming to Specification D 1193.

7.2 *Membrane Filters*, 47-mm diameter (same type as those under test).

### 8. Preparation of Apparatus and Materials

8.1 *Preparation of Samples and Apparatus:*

8.1.1 Select 47-mm diameter sample (Note 1) membrane filters for the test, and label with water-resistant ink.

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D-19 on Water and is the direct responsibility of Subcommittee D19.08 on Membranes and Ion Exchange Materials.

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 11.01.

<sup>3</sup> The “Staticmaster,” available from Nuclear Products Inc., El Monte, CA, has been found suitable for this purpose.