



Designation: D7601 – 19

Standard Practice for Pressure Driven Membrane Separation Element/Bundle Evaluation¹

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1. Scope

1.1 This practice covers the inspection, performance testing, autopsy, and analytical work associated with evaluating pressure driven membrane separation elements (microfiltration (MF), ultrafiltration (UF), nanofiltration (NF), and reverse osmosis (RO)).

1.2 This practice is applicable for elements when newly manufactured or at any time during their operation in a water treatment facility. The Analytical section (6.4) covers only membrane surface and foulant analyses.

1.3 The data derived from these tests should be evaluated versus newly manufactured elements/bundles or against operating systems when they were initially brought on-stream, or both. Industry norms can also be used for comparative purposes.

1.4 The values stated in inch-pound units are to be regarded as standard. No other units of measurement are included in this standard.

1.5 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

¹ This practice is under the jurisdiction of ASTM Committee D19 on Water and is the direct responsibility of Subcommittee D19.08 on Membranes and Ion Exchange Materials.

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2. Referenced Documents

2.1 ASTM Standards:²

- D1129 Terminology Relating to Water
- D3923 Practices for Detecting Leaks in Reverse Osmosis and Nanofiltration Devices
- D4194 Test Methods for Operating Characteristics of Reverse Osmosis and Nanofiltration Devices
- D4472 Guide for Recordkeeping for Reverse Osmosis and Nanofiltration Systems
- D4516 Practice for Standardizing Reverse Osmosis Performance Data
- D5090 Practice for Standardizing Ultrafiltration Permeate Flow Performance Data (Withdrawn 2016)³
- D6161 Terminology Used for Microfiltration, Ultrafiltration, Nanofiltration, and Reverse Osmosis Membrane Processes
- D6908 Practice for Integrity Testing of Water Filtration Membrane Systems
- D7285 Guide for Recordkeeping Microfiltration and Ultrafiltration Systems

3. Terminology

3.1 Definitions:

3.1.1 For definitions of terms used in this standard, refer to Terminologies D1129 and D6161.

4. Summary of Practice

4.1 This practice discusses the inspection of the pressure driven membrane separation elements required for individual units to be readied for a visual inspection or an autopsy that can be performed to ascertain structural integrity (Practice D6908) and cleanliness. Visual inspection is non-destructive testing; autopsy requires the dismantlement of the element.

4.2 Performance testing of an element are discussed that can be accomplished on or off line, in a single or multi-element housing under conditions proscribed by the user or element

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.