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Standard Guide for Recordkeeping for Reverse Osmosis Systems¹

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^{ε1} NOTE—Keywords were added editorially in December 1998.

1. Scope

1.1 This guide covers procedures for well-defined recordkeeping of reverse osmosis (RO) systems.

1.2 This guide includes a start-up report, recordkeeping of RO operating data, recordkeeping of pretreatment operating data and a maintenance log.

1.3 This guide is applicable to waters including brackish waters and seawaters but is not necessarily applicable to wastewaters.

1.4 *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 1125 Test Methods for Electrical Conductivity and Resistivity of Water²

D 1129 Terminology Relating to Water²

D 1253 Test Method for Residual Chlorine in Water²

D 1889 Test Method for Turbidity of Water²

D 3739 Practice for Calculation and Adjustment of Langelier Saturation Index for Reverse Osmosis³

D 4189 Test Method for Silt Density Index (SDI) of Water²

D 4194 Test Methods for Operating Characteristics of Reverse Osmosis Devices³

D 4195 Guide for Water Analysis for Reverse Osmosis Application³

D 4582 Practice for Calculation and Adjustment of the Stiff and Davis Stability Index for Reverse Osmosis³

3. Terminology

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

3.2 *Definitions of Terms Specific to This Standard*: For description of terms relating to RO, refer to Practice D 3739

¹ This guide 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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² *Annual Book of ASTM Standards*, Vol 11.01.

³ *Annual Book of ASTM Standards*, Vol 11.02.

and Test Methods D 4194.

4. Significance and Use

4.1 Proper operation and maintenance of an RO system are key factors in obtaining successful performance. This guide provides the necessary input for the evaluation of the performance of the RO system, the pretreatment system, and the mechanical equipment in the plant.

4.2 This guide is for general guidance only and must not be used in place of the operating manual for a particular plant.

4.3 Site-dependent factors prevent specific recommendations for all recordkeeping. Thus, only the more general recordkeeping is covered by this guide.

4.4 This guide can be used for both brackish and seawater systems which contain either spiral-wound or hollow-fiber devices.

5. Procedure

5.1 Start-Up Report:

5.1.1 Provide a complete description of the RO plant. This can be done by using a flow diagram and equipment, instrumentation, and material lists to show water source, pretreatment system, RO configuration, and posttreatment system.

5.1.2 Record initial performance of RO and pretreatment systems as provided in 5.2 and 5.3, respectively.

5.1.3 Calibrate all gages and meters based on manufacturers' recommendations.

5.2 RO Operating Data:

5.2.1 Record the permeate and brine flows of each stage in the RO system.

5.2.2 Record the feed, permeate and brine pressures of each stage. For hollow-fiber devices also record the brine pressure for each permeator.

5.2.3 Record the water temperature of the feed stream after the RO pump or of the permeate stream.

5.2.4 Record the pH of the feed, permeate, and brine streams.

5.2.5 Record the conductivity of the feed, permeate, and brine streams for each stage. For hollow-fiber devices also record the brine conductivity of each permeator. For conductivity measurements use Test Methods D 1125.

5.2.6 Record the Silt Density Index (SDI) or turbidity of the RO feed stream, or both. For SDI measurements use Test Method D 4189. For turbidity measurement use Test Method