



Designation: D4266 – 17

Standard Test Methods for Precoat Capacity of Powdered Ion-Exchange Resins¹

This standard is issued under the fixed designation D4266; 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.

1. Scope

1.1 These test methods cover the determination of the operating ion-exchange capacity of both powdered cation-exchange resins (hydrogen form) and powdered anion-exchange resins (hydroxide form). These test methods are intended for use in testing new powdered ion-exchange resins when used for the treatment of water. The following two test methods are included:

	Sections
Test Method A—Operating Capacity, Anion-Exchange Resin, Hydroxide Form	7 to 15
Test Method B—Operating Capacity, Cation-Exchange Resin, Hydrogen Form	16 to 24

1.2 The values stated in SI units are to be regarded as the standard. The inch-pound units given 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.*

1.4 *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.*

2. Referenced Documents

2.1 *ASTM Standards:*²

D1125 Test Methods for Electrical Conductivity and Resistivity of Water

D1129 Terminology Relating to Water

D1193 Specification for Reagent Water

¹ These test methods are under the jurisdiction of ASTM Committee D19 on Water and are the direct responsibility of Subcommittee D19.08 on Membranes and Ion Exchange Materials.

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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.

D2687 Practices for Sampling Particulate Ion-Exchange Materials

D4456 Test Methods for Physical and Chemical Properties of Powdered Ion Exchange Resins

D5391 Test Method for Electrical Conductivity and Resistivity of a Flowing High Purity Water Sample

E200 Practice for Preparation, Standardization, and Storage of Standard and Reagent Solutions for Chemical Analysis

3. Terminology

3.1 *Definitions:*

3.1.1 For definitions of other terms used in this standard, refer to Terminology D1129.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *powdered ion-exchange material, n*—an ion-exchange resin that has undergone post-manufacturing size reduction to less than 300 μm .

3.2.2 *resin dosage, n*—the weight of mixed resin applied per unit area of precoatable filter surface. This is expressed as dry pounds per square foot.

3.2.3 *resin floc, n*—that voluminous aggregate formed when powdered anion-exchange resin and powdered cation-exchange resin are slurried together in an aqueous suspension.

3.2.4 *resin ratio, n*—the ratio of the weights of powdered cation-exchange resin to powdered anion-exchange resin used to prepare a resin slurry. If not otherwise indicated, it is understood to be the ratio of the dry resin weights.

4. Significance and Use

4.1 The salt removal capacity of a powdered resin precoat is limited by the capacity of either the anion-exchange resin or the cation-exchange resin contained in it. Applications include condensate polishing in fossil-fueled electric generating plants, as well as condensate polishing, spent fuel pool water treatment, reactor water treatment, and low-level radioactive liquid waste treatment in nuclear-powered electric generating plants.

4.2 By determining the ion-exchange capacity profile of either a cation exchange resin or an anion-exchange resin (capacity expended per unit of time under specific conditions), it is possible to estimate runlength and remaining capacity when treating a liquid of the same makeup. Although they cannot accurately predict performance during condenser leaks,