



Designation: D6529 – 22

Standard Test Method for Operating Performance of Continuous Electrodeionization Systems on Feeds from 50 $\mu\text{S}/\text{cm}$ to 1000 $\mu\text{S}/\text{cm}$ ¹

This standard is issued under the fixed designation D6529; 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 This test method covers the determination of the operating characteristics of continuous electrodeionization (CEDI) devices using synthetic feed solutions and is not necessarily applicable to natural waters. This test method is a procedure applicable to solutions with a conductivity range from approximately 50 $\mu\text{S}/\text{cm}$ to 1000 $\mu\text{S}/\text{cm}$.

1.2 This test method covers the determination of operating characteristics under standard test conditions of CEDI devices where the electrically active transfer media therein is predominantly unregenerated. This results in more rapid achievement of steady state and shorter test time than when performing a test which requires the active media be predominantly regenerated.

1.3 This test method is not necessarily indicative of the following:

1.3.1 Long-term performance on feed waters containing foulants or sparingly soluble solutes, or both,

1.3.2 Performance on feeds of brackish water, sea water, or other high-salinity feeds,

1.3.3 Performance on synthetic industrial feed solutions, pharmaceuticals, or process solutions of foods and beverages, or,

1.3.4 Performance on feed waters less than 50 $\mu\text{S}/\text{cm}$, particularly performance relating to organic solutes, colloidal or particulate matter, or biological or microbial matter.

1.4 This test method, subject to the limitations previously described, can be applied as either an aid to predict expected deionization performance for a given feed water quality, or as a test method to determine whether performance of a given device has changed over some period of time. It is ultimately, however, the user's responsibility to ensure the validity of this test method for their specific applications.

1.5 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.6 *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.*

1.7 *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

D1293 Test Methods for pH of Water

D2777 Practice for Determination of Precision and Bias of Applicable Test Methods of Committee D19 on Water

D4189 Test Method for Silt Density Index (SDI) of Water

3. Terminology

3.1 *Definitions*—For definitions of other terms used in this test method, refer to Terminology D1129.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *cell, n*—an independently fed ion-depleting chamber formed by two adjacent ion-exchange membranes, or by a membrane and an adjacent electrode.

3.2.2 *continuous electrodeionization (CEDI) device, n*—a device that removes ionized and ionizable species from liquids using electrically active media and using an electrical potential to influence ion transport, where the ionic transport properties

¹ This test method is under the jurisdiction of ASTM Committee D19 on Water and is the direct responsibilities 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.