



Standard Test Method for Water Extractable Residue from Particulate Ion-Exchange Resins¹

This standard is issued under the fixed designation D 5627; 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 measurement of water soluble extractable residue from particulate ion-exchange resins based on elevated temperature extraction and gravimetric determination of residue.

1.2 *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 1129 Terminology Relating to Water²

D 1193 Specification for Reagent Water²

D 2187 Test Methods for Physical and Chemical Properties of Particulate Ion-Exchange Resins³

D 2687 Practices for Sampling Particulate Ion-Exchange Materials³

D 2777 Practice for Determination of Precision and Bias of Applicable Methods of Committee D-19 on Water²

3. Terminology

3.1 Definitions:

3.1.1 For definitions of terms used in this test method, refer to Terminology D 1129.

4. Summary of Test Method

4.1 A sample of particulate ion exchange material is contacted with water at an elevated temperature. After a specified contact time, the concentration of soluble material in the aqueous phase is measured gravimetrically after filtration.

5. Significance and Use

5.1 The presence of water extractables in ion-exchange resins can cause fouling of other materials downstream and

contamination of process water. The quantity of water extractables is sometimes used as a specification to indicate resin quality, and typical values are 0.01 to 0.1 %.

5.2 It is recognized that this test method may not remove all potential sloughage products and does not measure volatile compounds. More extensive extraction and identification of compounds may be needed in specific cases.

6. Interferences

6.1 The hygroscopic nature of some extracted compounds can make it difficult to obtain a constant weight. Other extraction times and temperatures may give results that are not comparable to these.

7. Apparatus

7.1 *Funnel*, 60 mL with coarse frit.

7.2 *Filtration assembly*.

7.3 *Glass fiber filters*, without binder, pre-rinsed with water.⁴

7.4 *Weighing vessel*—Platinum, nickel, or aluminum may be used so long as there is no attack by the sample and constant weight can be achieved.

7.5 *Water bath*, for use at $60 \pm 1^\circ\text{C}$.

8. Reagents

8.1 *Purity of Reagents*—Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available.⁵ Other grades may be used, provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination.

⁴ Gelman Type A/E, Millipore Type AP40, Whatman GF/C, or equivalent, have been found suitable for this purpose.

⁵ *Reagent Chemicals, American Chemical Society Specifications*, American Chemical Society, Washington, DC. For suggestions on the testing of reagents not listed by the American Chemical Society, see *Analar Standards for Laboratory Chemicals*, BDH Ltd., Poole, Dorset, U.K., and the *United States Pharmacopeia and National Formulary*, U.S. Pharmaceutical Convention, Inc. (USPC), Rockville, MD.

¹ 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.

Current edition approved Nov. 15, 1994. Published January 1995.

² *Annual Book of ASTM Standards*, Vol 11.01.

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