



Standard Test Method for Determination of Beryllium in Soil, Rock, Sediment, and Fly Ash Using Ammonium Bifluoride Extraction and Fluorescence Detection¹

This standard is issued under the fixed designation D7458; 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 is intended for use in the determination of beryllium in samples of soil, rock, sediment, and fly ash. This test method can be used for purposes such as environmental remediation projects where beryllium is a contaminant of concern. It is also useful for characterization of levels of beryllium in soil at sites where beryllium is in mining or manufacturing applications, and for determination of background levels of beryllium in soil.

1.2 This test method assumes that samples of soil, rock, sediment, or fly ash are collected using appropriate and applicable ASTM International standard practices.

1.3 This test method includes a procedure for extraction (dissolution) of beryllium in dilute ammonium bifluoride, followed by analysis of aliquots of the extract solution using a beryllium-specific fluorescent dye.

1.4 No detailed operating instructions are provided because of differences among various makes and models of suitable fluorometric instruments. Instead, the analyst shall follow the instructions provided by the manufacturer of the particular instrument. This test method does not address comparative accuracy of different devices or the precision between instruments of the same make and model.

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 All observed and calculated values shall conform to the guidelines for significant digits and rounding established in Practice [D6026](#).

1.6.1 The procedures used to specify how data are collected/recorded, or calculated, in this standard are regarded as the industry standard. In addition, they are representative of the significant digits that generally should be retained. The procedures

used do not consider material variation, purpose for obtaining the data, special purpose studies, or any considerations for the user's objectives; and it is common practice to increase or reduce significant digits of reported data to be commensurate with these considerations. It is beyond the scope of this standard to consider significant digits used in analytical methods for engineering design.

1.7 This test method contains notes that are explanatory and not part of mandatory requirements of the standard.

1.8 *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.* Specific hazards associated with performance of this test method are described in Section 9.

2. Referenced Documents

2.1 ASTM Standards:²

- [D653 Terminology Relating to Soil, Rock, and Contained Fluids](#)
- [D1193 Specification for Reagent Water](#)
- [D3740 Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction](#)
- [D4840 Guide for Sample Chain-of-Custody Procedures](#)
- [D5730 Guide for Site Characterization for Environmental Purposes With Emphasis on Soil, Rock, the Vadose Zone and Groundwater \(Withdrawn 2013\)³](#)
- [D6026 Practice for Using Significant Digits in Geotechnical Data](#)
- [D7202 Test Method for Determination of Beryllium in the Workplace by Extraction and Optical Fluorescence Detection](#)

¹ This test method is under the jurisdiction of ASTM Committee [D18](#) on Soil and Rock and is the direct responsibility of Subcommittee [D18.01](#) on Surface and Subsurface Characterization.

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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.

³ The last approved version of this historical standard is referenced on www.astm.org.