



Designation: E463 – 14

# Standard Test Method for Determination of Silica in Fluorspar by Silico-Molybdate Visible Spectrometry<sup>1</sup>

This standard is issued under the fixed designation E463; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This test method covers the determination of silica in fluorspar in concentrations from 0.5 % to 10 %.

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

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.*

## 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

**D1193** Specification for Reagent Water

**E50** Practices for Apparatus, Reagents, and Safety Considerations for Chemical Analysis of Metals, Ores, and Related Materials

**E135**

**E276** Test Method for Particle Size or Screen Analysis at No. 4 (4.75-mm) Sieve and Finer for Metal-Bearing Ores and Related Materials

**E882** Guide for Accountability and Quality Control in the Chemical Analysis Laboratory

## 3. Terminology

3.1 *Definitions*—For definitions of terms used in this test method, refer to Terminology **E135**.

## 4. Summary of Test Method

4.1 The sample is fused with anhydrous sodium borate and the melt is dissolved in dilute HCl. Silica is determined

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee **E01** on Analytical Chemistry for Metals, Ores, and Related Materials and is the direct responsibility of Subcommittee **E01.02** on Ores, Concentrates, and Related Metallurgical Materials.

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<sup>2</sup> 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.

photometrically after extraction of the silico-molybdate complex with normal butyl alcohol. Photometric measurement of the extract is made at 400 nm.

## 5. Significance and Use

5.1 This test method is intended as a referee method for compliance with compositional specifications for impurity content. It is assumed that all who use this procedure will be trained analysts capable of performing common laboratory practices skillfully and safely. It is expected that work will be performed in a properly equipped laboratory and that proper waste disposal procedures will be followed. Follow appropriate quality control practices such as those described in Guide **E882**.

## 6. Interferences

6.1 The elements ordinarily present in commercial fluorspars do not interfere in this test method.

## 7. Reagents and Materials

7.1 *Purity of Reagents*—Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society where such specifications are available.<sup>3</sup> 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.

7.2 Unless otherwise indicated, references to water shall be understood to mean reagent water conforming to Type I or II of Specification **D1193**. Type III or IV may be used if they effect no measurable change in the blank or sample.

7.3 *Ammonium Molybdate Solution* (100 g/L)—Dissolve 100 g of ammonium-heptamolybdate  $[(\text{NH}_4)_6\text{Mo}_7\text{O}_{24}\cdot 4\text{H}_2\text{O}]$  in 500 mL of water, dilute to 1 L, and mix.

7.4 *Silica* ( $\text{SiO}_2$ )—Heat pure silicic acid in a platinum crucible to expel combined water by gradually increasing

<sup>3</sup> *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 the *United States Pharmacopeia and National Formulary*, U.S. Pharmacopeial Convention, Inc. (USPC), Rockville, MD.