



Standard Test Methods for Determination of Iron in Iron Ores and Related Materials by Dichromate Titrimetry¹

This standard is issued under the fixed designation E246; 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 total iron in iron ores, concentrates, and agglomerates in the concentration range 30 % to 95 % iron.

1.2 The test methods in this standard are contained in the sections indicated as follows:

Test Method A—Iron by the Hydrogen Sulfide Reduction Dichromate Titration Method (30 % to 75 % Fe)

Test Method B—Iron by the Stannous Chloride Reduction Dichromate Titration Method (35 % to 95 % Fe)

Test Method C—Iron by the Silver Reduction Dichromate Titration Method (35 % to 95 % Fe)

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

1.4 *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 statements are given in Section 5 and in special “Warning” paragraphs throughout these test methods.

2. Referenced Documents

2.1 *ASTM Standards*:²

D1193 Specification for Reagent Water

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

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

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

E877 Practice for Sampling and Sample Preparation of Iron Ores and Related Materials for Determination of Chemical Composition and Physical Properties

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

E1028 Test Method for Total Iron in Iron Ores and Related Materials by Dichromate Titrimetry (Withdrawn 2003)³

3. Significance and Use

3.1 The determination of the total iron content is the primary means for establishing the commercial value of iron ores used in international trade.

3.2 These test methods are intended as referee methods for the determination of iron in iron ores. It is assumed that all who use these test methods will be trained analysts capable of performing common laboratory procedures 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. Appropriate quality control practices must be followed, such as those described in Guide E882.

4. Apparatus, Reagents, and Instrumental Practices

4.1 *Apparatus*—Specialized apparatus requirements are listed in the “Apparatus” Section in each test method.

4.2 *Reagents*:

4.2.1 *Purity of Reagents*—Unless otherwise indicated, all reagents used in these test methods shall conform to the reagent grade specifications of the American Chemical Society.⁴ Other grades may be used provided it is first ascertained that they are of sufficient purity to permit their use without adversely affecting the expected performance of the determination, as

¹ These test methods are under the jurisdiction of ASTM Committee E01 on Analytical Chemistry for Metals, Ores, and Related Materials and are the direct responsibility of Subcommittee E01.02 on Ores, Concentrates, and Related Metallurgical Materials.

Current edition approved Aug. 15, 2015. Published August 2015. Originally approved in 1964. Last previous edition approved in 2010 as E246 – 10. DOI: 10.1520/E0246-10R15.

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.

⁴ *Reagent Chemicals, American Chemical Society Specifications*, American Chemical Society, Washington, DC, www.chemistry.org. 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, <http://www.usp.org>.