



Designation: E1070 – 00 (Reapproved 2005)

Standard Test Method for Determination of Phosphorus in Iron Ores by Photometric Method¹

This standard is issued under the fixed designation E1070; 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 phosphorus in iron ores, concentrates, and agglomerates in the concentration range from 0.005 to 1.0 % phosphorus.

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:*²

[D1193 Specification for Reagent Water](#)

[E50 Practices for Apparatus, Reagents, and Safety Considerations for Chemical Analysis of Metals, Ores, and Related Materials](#)

[E60 Practice for Analysis of Metals, Ores, and Related Materials by Molecular Absorption Spectrometry](#)

[E135 Terminology Relating to Analytical Chemistry for Metals, Ores, and Related Materials](#)

[E877 Practice for Sampling and Sample Preparation of Iron Ores and Related Materials for Determination of Chemical Composition](#)

[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](#).

¹ 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.

Current edition approved Oct. 1, 2005. Published October 2005. Originally approved in 1985. Last previous edition approved in 2000 as E1070 – 00. DOI: 10.1520/E1070-00R05.

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.

4. Summary of Test Method

4.1 The sample is fused in a zirconium crucible with sodium peroxide. The melt is dissolved in water and hydrochloric acid. In a suitable aliquot, the molybdenum blue complex is formed by the addition of ammonium molybdate-hydrazine sulfate solution. The absorbance of the phospho-molybdenum-blue complex is measured at 725 nm.

5. Significance and Use

5.1 This test method for the analysis of iron ore concentrates and agglomerates is primarily intended as a referee method to test for compliance with compositional specifications. It is assumed that users of this test method 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 shall be followed, such as those described in Guide [E882](#).

5.2 The determination of this element is needed for international trade and primary iron and steel making.

6. Interferences

6.1 Elements normally found in iron ores do not interfere excepting arsenic giving positive interference (0.01 % As = 0.001 % P).

7. Apparatus

7.1 *Zirconium Crucible*, 50 mL capacity.

7.2 *Spectrophotometer*—Visible spectrophotometer capable of measuring absorbance at the 725 nm wavelength using a 1-cm path length cell in accordance with Practice [E60](#).

8. Reagents and Materials

8.1 *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