



Standard Practice for Sampling and Sample Preparation of Iron Ores and Related Materials¹

This standard is issued under the fixed designation E 877; 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 practice covers procedures for mechanical sampling of iron ores and related materials in a falling stream or stopped-belt sampling and preparing the gross sample to the various test samples required for each characteristic to be measured. Included as Annexes are (1) design criteria to prevent bias, (2) statistical methods to determine quality variation and precisions of sampling and division, and (3) a method for comparing two sampling procedures for possible systematic differences.

1.2 *This standard does not purport to address all of the safety problems, 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 precautionary statements are given in Section 8.

2. Referenced Documents

2.1 ASTM Standards:

- E 135 Terminology Relating to Analytical Chemistry for Metals, Ores and Related Materials²
- E 276 Test Method for Particle Size or Screen Analysis at No. 4 (4.75-mm) Sieve and Finer for Metal-Bearing Ores and Related Materials²
- E 279 Test Method for Determination of Abrasion Resistance of Iron Ore Pellets and Sinter (Tumbler Test)²
- E 389 Test Method for Particle Size or Screen Analysis at No. 4 (4.75-mm) Sieve and Coarser for Metal Bearing Ores and Related Materials³
- E 882 Guide for Accountability and Quality Control in the Chemical Analysis Laboratory³
- E 1072 Test Method for Low Temperature Breakdown of Iron Ores³

3. Terminology

3.1 *Definitions*—For definitions of terms used in this test method, refer to Terminology E 135.

3.1.1 *nominal size*—*in sampling*, the opening of the screen of the standard series that would pass 95 % of a representative sample.

3.1.2 *precision*—a measure of reproducibility of test results, using the same equipment and method, statistically derived from multiple data expressed at 95 % confidence level.

4. Summary of Practice

4.1 The precision required for the sampling and sample preparation steps are calculated based on the objectives of the testing, resulting in a sampling plan specifying the minimum weights and number of increments required for each step in the procedure. Samples are then collected, dried, blended, divided, crushed, pulverized, and ground as required by the test methods to be utilized.

5. Significance and Use

5.1 This practice is to be used for sampling and sample preparation of iron ores and related materials, prior to use of a referee method for testing for compliance with compositional specifications for metal content or physical properties. 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. Appropriate quality control practices must be followed, such as those described in Guide E 882.

5.2 Adequate methods for obtaining representative samples for testing the chemical and physical properties of a consignment of iron ore are essential. The sale and use are dependent on the chemical or physical properties, or both, of an ore.

5.3 The criteria to prevent bias may be used for both design of a sampling system and in checking the design of an existing system.

¹ This practice 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 June 10, 2003. Published September 2003. Originally approved in 1982. Last previous edition approved in 1998 as E 877 – 93 (1998).

² *Annual Book of ASTM Standards*, Vol 03.05.

³ Discontinued; see 1996 *Annual Book of ASTM Standards*, Vol 03.06.