



Designation: E389 – 21

Standard Test Method for Particle Size or Screen Analysis at 4.75 mm (No.4) Sieve and Coarser for Metal-Bearing Ores and Related Materials¹

This standard is issued under the fixed designation E389; 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 the particle size distribution by screen analysis of metal-bearing ores and related materials at 4.75 mm (No. 4) sieve and coarser.

1.2 The values stated in SI units are to be regarded as standard. The values given in parentheses are provided for information only and are not considered 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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves

E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

E135 Terminology Relating to Analytical Chemistry for Metals, Ores, and Related Materials

E276 Test Method for Particle Size or Screen Analysis at 4.75 mm (No. 4) 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:

3.1.1 For definitions of terms in this test method, refer to Terminology **E135**.

3.1.2 *nominal topsize, n*—the sieve designating the upper limit or topsize shall be that sieve of the series with the smallest openings upon which is cumulatively retained a total of less than 5 % of the sample. This defined topsize is not to be confused with the size of the largest particle in the lot.

4. Summary of Test Method

4.1 The sample is passed through a bank of standard sieves by agitation. The screening technique described in this procedure may be used on any solid particles that can be dried so that sieve blinding does not occur.

5. Significance and Use

5.1 This test method is intended to be used for compliance with compositional specifications for particle size distribution. 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. Apparatus and Materials

6.1 *Brushes*, for cleaning sieves and pans.

6.2 *Drying Oven*, of approximate size and capable of maintaining a uniform temperature at $110\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$.

6.3 *Pans*, for holding samples.

6.4 *Sample Splitter or Riffle*, with openings not less than three times the size of the nominal topsize.

6.5 *Scales and Weights*, of adequate accuracy.

6.6 *Sieve Shaker*, mechanical or manual.

6.7 *U.S. Standard Sieves*, conforming to the requirements of Specification **E11**.

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.

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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.