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Standard Test Methods for Sieve Analysis of Wet-Milled and Dry-Milled Porcelain Enamel¹

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INTRODUCTION

These test methods provide a rapid means of determining the fineness of glass frit in wet- or dry-milled porcelain enamel coating materials by sieve analysis. Fineness is a key predictor of fusibility, tearing, gloss, opacity, suspension in the slip, and ease of spraying because of the direct relationship to surface area.

1. Scope

1.1 These test methods cover the determination of the fineness of frit in wet- or dry-milled porcelain enamels and other ceramic coatings for metals by means of the No. 200 (75- μ m) or No. 325 (45- μ m) sieve.

1.2 The two methods appear as follows:

Method A—Referee Method
Method B—Routine Method

Sections
4 to 9
10 to 14

1.3 Method A is intended for use where a referee method of higher accuracy is required, while Method B is intended to meet the needs of normal enamel plant production control operations where a rapid, simplified method of sieve testing is required. The accuracy of the simplified method has proved to be entirely adequate for this use. The simplified test, however, is not recommended where high accuracy is required.

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.*

2. Referenced Documents

2.1 *ASTM Standards:*²

E11 [Specification for Woven Wire Test Sieve Cloth and Test Sieves](#)

3. Significance and Use

3.1 The fineness of the frit has a direct bearing on many of its properties, such as fusibility, tearing, gloss, opacity, suspension in the slip, and ease of spraying.

METHOD A—REFEREE METHOD

4. Apparatus

4.1 *Balance*—The balance or scale shall be of at least 500-g capacity, and accurate to 0.1 g.

4.2 *Sieves*—The sieves shall conform to Specification E11. They shall include the No. 40 (425- μ m) sieve and also the No. 200 (75- μ m) or the No. 325 (45- μ m) sieve (Note 1), or both. A No. 325 sieve shall be used when the fineness is such that, from a sample containing 100 g of dry solids, less than 2 g is retained on a No. 200 sieve. An 8-in. (203-mm) full-height sieve is recommended. This height is preferred because there is less tendency to flood or splash, and also because it fits commercial automatic tapping

¹ These test methods are under the jurisdiction of ASTM Committee B08 on Metallic and Inorganic Coatings and are the direct responsibility of Subcommittee B08.12 on Materials for Porcelain Enamel and Ceramic-Metal Systems.

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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.