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Standard Test Method for Methylene Blue Index of Clay¹

This standard is issued under the fixed designation C 837; 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 measurement of the adsorption of methylene blue dye by a clay, which is calculated as a methylene blue index for a clay.

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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:*

C 324 [Test Method for Free Moisture in Ceramic Whiteware Clays](#)

3. Significance and Use

3.1 Tests run on many clays generally indicate that a straight-line relationship exists between the methylene blue index (MBI) and such fundamental clay properties as cation exchange capacity, dry bond strength, and casting rate. Where the colloidal portion of the clay is kaolinite, there is also a direct correlation with specific surface (as determined by nitrogen adsorption). Where the colloidal portion contains significant amounts of illite or montmorillonite, the same close correlation does not exist. The MBI better correlates with the ceramic-forming properties than does the specific surface.

3.2 That portion of a clay lying within the colloidal range (generally defined as the 0.5- to 0.001- μm range), determines the strictly colloidal properties of the clay and, together with the amount and type of organic material associated with the clay and the 2- to 0.2- μm fraction, largely determines the properties of the clay when used in ceramic-forming processes. While the specific surface of a clay is a function of the particle size and morphology and a relationship exists between dye adsorption and specific surface, the MBI should not be considered to be a particle size analysis since the value obtained is dominated by the character of only the very fine end of the particle size distribution. This procedure describes the determination of the dye adsorption (in this case, methylene blue) of a clay.

4. Apparatus

4.1 *Balance*, accurate to 0.01 g.

4.2 *Mixer*.

4.3 *pH Meter or pH Paper*.

4.4 *Beaker*, 600 mL.

4.5 *Buret*, 25 mL.

4.6 *Medicine Dropper or Glass Stirring Rod*.

4.7 *Filter Paper*; Baroid No. 987.

5. Reagents

5.1 *Purity of Reagents*—Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where

¹ This test method is under the jurisdiction of ASTM Committee C-21 on Ceramic Whitewares and Related Products and is the direct responsibility of Subcommittee C21.04 on ~~Clays—Raw Materials~~.

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*A Summary of Changes section appears at the end of this standard.