



Standard Guide for Petrographic Examination of Aggregates for Concrete¹

This standard is issued under the fixed designation C295/C295M; 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.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope*

1.1 This guide outlines procedures for the petrographic examination of samples representative of materials proposed for use as aggregates in cementitious mixtures or as raw materials for use in production of such aggregates. This guide is based on Ref (1).²

1.2 This guide outlines the extent to which petrographic techniques should be used, the selection of properties that should be looked for, and the manner in which such techniques may be employed in the examination of samples of aggregates for concrete.

1.3 The rock and mineral names given in Descriptive Nomenclature C294 should be used, insofar as they are appropriate, in reports prepared in accordance with this guide.

1.4 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.5 *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:³

C33 Specification for Concrete Aggregates

C117 Test Method for Materials Finer than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing

C136 Test Method for Sieve Analysis of Fine and Coarse Aggregates

C294 Descriptive Nomenclature for Constituents of Concrete Aggregates

C702 Practice for Reducing Samples of Aggregate to Testing Size

D75 Practice for Sampling Aggregates

E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves

E883 Guide for Reflected-Light Photomicrography

3. Qualifications of Petrographers

3.1 All petrographic examinations of aggregate for use in concrete as described in this guide should be performed by a petrographer with at least 5 years experience in petrographic examination of concrete or concrete-making materials. The petrographer should have completed college-level course work pertaining to basic geology, mineralogy, petrography, and optical mineralogy or have obtained equivalent knowledge through experience and on-the-job training. Completion of course work in concrete materials is also advantageous. The petrographer should have experience evaluating the effects of aggregates on the physical and chemical properties of hardened concrete. Identification of individual minerals in aggregate particles, classification of rock types, and categorizing the physical and chemical properties of rocks and minerals should also be included in the petrographer's experience. The petrographer should have expertise to properly use the equipment and apparatus described in Section 6 and provide detailed interpretations of the petrographic examination. If the petrographer does not meet these qualifications, the individual may perform such examinations under the technical direction of a full-time supervising petrographer who meets these qualifications. A resume of the professional experience and education of the petrographer shall be available.

3.1.1 Licensing, certification, or other accreditation by a governmental agency or other organization stating the individual is a professional geologist should not, by itself, constitute sufficient qualification for examination of aggregates for concrete.

¹ This guide is under the jurisdiction of ASTM Committee C09 on Concrete and Concrete Aggregates and is the direct responsibility of Subcommittee C09.65 on Petrography.

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² The boldface numbers in parentheses refer to the list of references at the end of this standard.

³ 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.