



**The Gambia
Standards Bureau**

Standards Specification for Concrete Aggregates¹

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THE GAMBIA STANDARDS BUREAU

The Gambia Standards Bureau is a statutory Government specialized Agency established by The Gambia Standards Bureau Act 2010 to standardize products, methods, systems and for connected matters. Hence, the Bureau is the sole National Standardization Body. As such, it has been a member of International Standardization Bodies such as the International Organization for Standardization (ISO) since 2011, International Electrotechnical Commission (IEC) and the Standards and Metrology Institute for Islamic Countries (SMIIC) from 2012.

The objectives of the Bureau, as specified in its Act, are to: establish and promulgate standards for imported and locally-produced goods; facilitate domestic and international trade; foster and promote standards both for industrial efficiency and advancing economic development; promote the health and safety of consumers; enhance international cooperation in relation to standards and standardization. Thus, the National Quality Policy details the responsibilities of the Bureau in Standardization, Metrology and Conformity Assessment services in Testing, Inspection and Certification.

Therefore, the functions, of the Bureau are to define, prepare, publish, modify or amend Standards Specifications as well information-dissemination of standards. In addition to providing Testing, Inspection and Certification services for goods, systems and processes independently or in relation to conformity with its Standards Mark, the Bureau also conducts training and research. In Metrology, the Bureau serves as the custodian of primary national reference measurement standards through its National Metrology Laboratories and conducts calibration of measurement devices and physical standards.

The development of Gambian Standards (GAMS) is carried out by the Bureau through Technical Committees composed of a balanced representation of stakeholders, as may be appropriate to the subject in question. The Bureau ensures that Standards are developed in accordance with the *ISO_IEC_Guide_21-1_2005: Regional or National adoption of International Standards and other International deliverables* and the *World Trade Organization Code of good practice for the preparation, adoption and application of standards*. To the greatest extent possible, Gambian Standards are aligned to or are adoptions of relevant international standards.

For further information on and copies of Gambian Standards, please contact The Gambia Standards Bureau.

TECHNICAL COMMITTEE RESPONSIBLE: BUILDING AND CONSTRUCTION MATERIALS COMMITTEE

The Building and construction materials Committee developed this Standard Specification for Concrete Aggregates. The Committee was set up by Bureau in 2016 to work on the development of national standards in the building and civil engineering field.

The BCM consists of representatives from the following Institutions/Organizations:

- Ministry of Transport, Works and Infrastructure
- National Road Authority
- Department of Physical Planning
- Association of Gambian construction Contractors (GACCON)
- University of the Gambia
- Gambia Technical Training Institute
- Insight Training Institute
- GACEM
- Social Security and Housing Finance Cooperation
- GAMWORKS
- Association Real Estates Companies
- Gambia Fire and Rescue Services
- Jah Oil Company
- Salam Cement Company
- Gambia Competition and Consumer Protection Commission
- ABSA Consultancy
- Finish Profiles the Gambia

The Gambia Standards Bureau is the Secretary to the Building and Construction Materials Technical Committee.

FOREWORD

This Gambian Standard was identified and developed by the Building and Construction Materials in response to the clear need at the national level for a detailed and comprehensive standards specification for Concrete Aggregates.

The standard addresses the following:

- Scope
- References Documents
- Terminology
- Ordinary and Specifying Information
- FINE AGGREGATE
 - General Characteristic
 - Grading
 - Deleterious Substance
 - Soundness
- COARSE AGGREGATES
 - General Characteristic
 - Grading
 - Method of Sampling and Testing

Standard Specification for Concrete Aggregates¹

This standard is issued under the fixed designation C33/C33M; 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 specification defines the requirements for grading and quality of fine and coarse aggregate (other than lightweight or heavyweight aggregate) for use in concrete.²
- 1.2 This specification is for use by a contractor, concrete supplier, or other purchaser as part of the purchase document describing the material to be furnished.

NOTE 1—This specification is regarded as adequate to ensure satisfactory materials for most concrete. It is recognized that, for certain work or in certain regions, it may be either more or less restrictive than needed. For example, where aesthetics are important, more restrictive limits may be considered regarding impurities that would stain the concrete surface. The specifier should ascertain that aggregates specified are or can be made available in the area of the work, with regard to grading, physical, or chemical properties, or combination thereof.

- 1.3 This specification is also for use in project specifications to define the quality of aggregate, the nominal maximum size of the aggregate, and other specific grading requirements. Those responsible for selecting the proportions for the concrete mixture shall have the responsibility of determining the proportions of fine and coarse aggregate and the addition of blending aggregate sizes if required or approved.
- 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 The text of this standard references notes and footnotes which provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of this standard.

2. Referenced Documents

2.1 ASTM Standards:³

- C29/C29M Test Method for Bulk Density (“Unit Weight”) and Voids in Aggregate
- C40 Test Method for Organic Impurities in Fine Aggregates for Concrete
- C87 Test Method for Effect of Organic Impurities in Fine Aggregate on Strength of Mortar
- C88 Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
- C117 Test Method for Materials Finer than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing
- C123 Test Method for Lightweight Particles in Aggregate
- C125 Terminology Relating to Concrete and Concrete Aggregates
- C131 Test Method for Resistance to Degradation of Small- Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
- C136 Test Method for Sieve Analysis of Fine and Coarse Aggregates
- C142 Test Method for Clay Lumps and Friable Particles in Aggregates
- C150 Specification for Portland Cement

- C227 Test Method for Potential Alkali Reactivity of Cement-Aggregate Combinations (Mortar Bar Method)
- C289 Test Method for Potential Alkali-Silica Reactivity of Aggregates (Chemical Method) (Withdrawn 2016)
- C294 Descriptive Nomenclature for Constituents of Concrete Aggregates
- C295 Guide for Petrographic Examination of Aggregates for Concrete
- C311 Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use in Portland-Cement Concrete
- C330 Specification for Lightweight Aggregates for Structural Concrete
- C331 Specification for Lightweight Aggregates for Concrete Masonry Units
- C332 Specification for Lightweight Aggregates for Insulating Concrete
- C342 Test Method for Potential Volume Change of Cement- Aggregate Combinations (Withdrawn 2001)⁴
- C441 Test Method for Effectiveness of Pozzolans or Ground Blast-Furnace Slag in Preventing Excessive Expansion of Concrete Due to the Alkali-Silica Reaction
- C535 Test Method for Resistance to Degradation of Large- Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
- C586 Test Method for Potential Alkali Reactivity of Carbon- ate Rocks as Concrete Aggregates (Rock-Cylinder Method)
- C595 Specification for Blended Hydraulic Cements
- C618 Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
- C637 Specification for Aggregates for Radiation-Shielding Concrete
- C638 Descriptive Nomenclature of Constituents of Aggregates for Radiation-Shielding Concrete
- C666/C666M Test Method for Resistance of Concrete to Rapid Freezing and Thawing
- C989 Specification for Slag Cement for Use in Concrete and Mortars
- C1105 Test Method for Length Change of Concrete Due to Alkali-Carbonate Rock Reaction
- C1157 Performance Specification for Hydraulic Cement
- C1240 Specification for Silica Fume Used in Cementitious Mixtures
- C1260 Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
- C1293 Test Method for Determination of Length Change of Concrete Due to Alkali-Silica Reaction
- C1567 Test Method for Determining the Potential Alkali- Silica Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method)
- D75 Practice for Sampling Aggregates
- D422 Test Method for Particle-Size Analysis of Soils (With- drawn 2016)⁴
- D2419 Test Method for Sand Equivalent Value of Soils and Fine Aggregate
- D3665 Practice for Random Sampling of Construction Materials
- E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves

2.2 *Other Standards:*

- AASHTO T 330 Method of Test for the Qualitative Detection of Harmful Clays of the Smectite Group in Aggregates Using Methylene Blue⁵