



Designation: C 330 – 03a

Standard Specification for Lightweight Aggregates for Structural Concrete¹

This standard is issued under the fixed designation C 330; 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 specification covers lightweight aggregates intended for use in structural concrete in which prime considerations are reducing the density while maintaining the compressive strength of the concrete. Procedures covered in this specification are not intended for job control of concrete.

1.2 The values stated in SI units are to be regarded as the standard. The values shown in parentheses are for information purposes only.

1.2.1 With regard to other units of measure, the values stated in inch-pound units are to be regarded as standard.

1.3 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 the standard.

NOTE 1—This specification is regarded as adequate to ensure satisfactory lightweight aggregates for most concrete. It is recognized that it may be either more or less restrictive than needed for some conditions and for special purposes, such as fire resistance, fill, and concrete constructions, the use of which is based on load tests rather than conventional design procedures.

2. Referenced Documents

2.1 ASTM Standards:²

- C 29/C 29M Test Method for Bulk Density (“Unit Weight”) and Voids in Aggregate
- C 31/C 31M Practice for Making and Curing Concrete Test Specimens in the Field
- C 33 Specification for Concrete Aggregates
- C 39/C 39M Test Method for Compressive Strength of Cylindrical Concrete Specimens
- C 40 Test Method for Organic Impurities in Fine Aggregates for Concrete
- C 114 Test Methods for Chemical Analysis of Hydraulic Cement

¹ This specification is under the jurisdiction of ASTM Committee C09 on Concrete and Concrete Aggregates and is the direct responsibility of Subcommittee C09.21 on Lightweight Aggregates and Concrete.

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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.

C 136 Test Method for Sieve Analysis of Fine and Coarse Aggregates

C 142 Test Method for Clay Lumps and Friable Particles in Aggregates

C 151 Test Method for Autoclave Expansion of Portland Cement

C 157/C 157M Test Method for Length Change of Hardened Hydraulic-Cement, Mortar, and Concrete

C 192/C 192M Practice for Making and Curing Concrete Test Specimens in the Laboratory

C 496 Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens

C 567 Test Method for Determining Density of Structural Lightweight Concrete

C 641 Test Method for Staining Materials in Lightweight Concrete Aggregates

C 666 Test Method for Resistance of Concrete to Rapid Freezing and Thawing

C 702 Practice for Reducing Samples of Aggregate to Testing Size

D 75 Practice for Sampling Aggregates

2.2 ACI Standards:

ACI 211.2 Standard Practices for Selecting Proportions for Structural Lightweight Concrete³

3. Aggregate Types

3.1 Two general types of lightweight aggregates are covered by this specification, as follows:

3.1.1 Aggregates prepared by expanding, pelletizing, or sintering products such as blast-furnace slag, clay, diatomite, fly ash, shale, or slate, and

3.1.2 Aggregates prepared by processing natural materials, such as pumice, scoria, or tuff.

3.2 The aggregates shall be composed predominately of lightweight-cellular and granular inorganic material.

4. Chemical Composition

4.1 Lightweight aggregates shall not contain excessive amounts of deleterious substances, as determined by the following limits:

³ Available from American Concrete Institute, PO Box 9094, Farmington Hills, MI 48333.