



Standard Specification for Lightweight Aggregate for Internal Curing of Concrete¹

This standard is issued under the fixed designation C1761/C1761M; 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 covers lightweight aggregate intended to provide water for internal curing of concrete. It includes test methods for determining the absorption and desorption properties of lightweight aggregate.

NOTE 1—Internal curing provides an additional source of water to sustain hydration and substantially reduce the early-age autogenous shrinkage and self-desiccation that can be significant contributors to early-age cracking. **Appendix X1** provides guidance on calculating the quantity of lightweight aggregate for internal curing.

1.2 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. Some values have only SI units because the inch-pound equivalents are not used in practice.

NOTE 2—Sieve size is identified by its standard designation in Specification **E11**. The alternative designation given in parentheses is for information only and does not represent a different standard sieve size.

1.3 The text of this specification references notes and footnotes that provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the standard.

1.4 *This specification 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

C29/C29M Test Method for Bulk Density (“Unit Weight”) and Voids in Aggregate

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.

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

C114 Test Methods for Chemical Analysis of Hydraulic Cement

C125 Terminology Relating to Concrete and Concrete Aggregates

C128 Test Method for Relative Density (Specific Gravity) and Absorption of Fine Aggregate

C136 Test Method for Sieve Analysis of Fine and Coarse Aggregates

C142 Test Method for Clay Lumps and Friable Particles in Aggregates

C330/C330M Specification for Lightweight Aggregates for Structural Concrete

C641 Test Method for Iron Staining Materials in Lightweight Concrete Aggregates

C702 Practice for Reducing Samples of Aggregate to Testing Size

C1498 Test Method for Hygroscopic Sorption Isotherms of Building Materials

C1608 Test Method for Chemical Shrinkage of Hydraulic Cement Paste

C1698 Test Method for Autogenous Strain of Cement Paste and Mortar

D75 Practice for Sampling Aggregates

E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves

3. Terminology

3.1 Definitions:

3.1.1 For definitions of terms used in this practice, refer to Terminology **C125**.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *absorption*, A_{72} , n —of lightweight aggregate, the increase in mass of a specimen of oven-dry lightweight aggregate due to water penetrating into the permeable pores of the particles after being submerged for 72 h, expressed as percentage of oven-dry mass.

3.2.2 *autogenous shrinkage*, n —reduction in volume due to chemical shrinkage of a sealed cementitious mixture, not subjected to external forces and under constant temperature, measured from the time of final setting.

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