



Designation: C110 – 16^{ε1}

Standard Test Methods for Physical Testing of Quicklime, Hydrated Lime, and Limestone¹

This standard is issued under the fixed designation C110; 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 U.S. Department of Defense.

^{ε1} NOTE—Added research report footnote to Section 24 editorially in January 2017.

1. Scope

1.1 These test methods cover physical testing of quicklime and hydrated lime, and of limestone not otherwise covered in ASTM standards.²

NOTE 1—Quicklime and hydrated lime have a high affinity for moisture and carbon dioxide. Caution should be taken to protect both hydrated and quicklime during sampling, storage, and testing (see Practice C50).

1.2 The test procedures appear in the following order:

Plastic Property Testing	Section
Standard Consistency of Lime Putty	5
Plasticity of Lime Putty	6
Water Retention of Hydrated Lime	7
Air Entrainment	8
Soundness Testing	
Autoclave Expansion of Hydrated and Hydraulic Lime	9
Popping and Pitting of Hydrated Lime	10
Application Testing	
Slaking Rate of Quicklime	11
Dry Brightness of Pulverized Limestone	12
Limestone Grindability Determination by the Laboratory Ball Mill Method	13
Settling Rate of Hydrated Lime	14
Particle Size Analysis	
Residue and Sieve Analysis	15
Sieve Analysis of Dry Limestone, Quicklime, and Hydrated Lime	16
Fineness of Pulverized Quicklime and Hydrated Lime by Air Permeability	17
Particle Size of Pulverized Limestone	18
Dry Screening of Hydrated Lime, Pulverized Quicklime, and Limestone by Air Jet Sieving	19
Wet Sieve Analysis of Agricultural Liming Materials	20
Density Measurement	
Apparent Loose Density of Hydrated Lime, Pulverized Quicklime, and Limestone	21
Apparent Packed Density of Hydrated Lime, Pulverized Quicklime, and Limestone	22
Relative Density (Specific Gravity) of Hydrated Lime Products	23

¹ These test methods are under the jurisdiction of ASTM Committee C07 on Lime and Limestone and are the direct responsibility of Subcommittee C07.06 on Physical Tests.

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² For tests on limestone as aggregate, see Vol 04.02 of the *Annual Book of ASTM Standards*. For tests on limestone as building stone, see Vol 04.05 of the *Annual Book of ASTM Standards*.

1.3 The values stated in SI units are to be regarded as standard. The values given in brackets are mathematical conversions to inch-pound units that are provided for information only and are not considered standard.

1.4 *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

- C28/C28M Specification for Gypsum Plasters
- C50 Practice for Sampling, Sample Preparation, Packaging, and Marking of Lime and Limestone Products
- C51 Terminology Relating to Lime and Limestone (as used by the Industry)
- C91 Specification for Masonry Cement
- C109/C109M Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)
- C136 Test Method for Sieve Analysis of Fine and Coarse Aggregates
- C150 Specification for Portland Cement
- C185 Test Method for Air Content of Hydraulic Cement Mortar
- C188 Test Method for Density of Hydraulic Cement
- C192/C192M Practice for Making and Curing Concrete Test Specimens in the Laboratory
- C204 Test Methods for Fineness of Hydraulic Cement by Air-Permeability Apparatus
- C207 Specification for Hydrated Lime for Masonry Purposes
- C230/C230M Specification for Flow Table for Use in Tests

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.