Designation: C 207 – 06

Standard Specification for Hydrated Lime for Masonry Purposes[1]

This standard is issued under the fixed designation C 207; 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 four types of hydrated lime. Types N and S are suitable for use in mortar, in scratch and brown coats of cement plaster, for stucco, and for addition to portland-cement concrete. Types NA and SA are air-entrained hydrated limes that are suitable for use in any of the above uses where the inherent properties of lime and air-entrainment are desired. The four types of lime sold under this specification shall be designated as follows:

1.1.1 *Type N*—Normal hydrated lime for masonry purposes.

1.1.2 *Type S*—Special hydrated lime for masonry purposes.

1.1.3 *Type NA*—Normal air-entraining hydrated lime for masonry purposes.

1.1.4 *Type SA*—Special air-entraining hydrated lime for masonry purposes.

NOTE 1—Type S, special hydrated lime, and Type SA, special air-entraining hydrated lime, are differentiated from Type N, normal hydrated lime, and Type NA, normal air-entraining hydrated lime, principally by their ability to develop high, early plasticity and higher water retentivity, and by a limitation on their unhydrated oxide content.

NOTE 2—For normal (Type N) and special (Type S) finishing hydrated lime, refer to Specification C 206.

NOTE 3—Some building codes prohibit the use of air-entraining materials in mortar, because of the accompanying reduction in bond and compressive strength. Where increased freeze-thaw resistance is important, air-entraining may be beneficial. Air-entraining lime should not be used as a finishing lime.

NOTE 4—For lime putty, refer to Specification C 1489.

1.2 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:* [2]

C 25 Test Methods for Chemical Analysis of Limestone, Quicklime, and Hydrated Lime

C 50 Practice for Sampling, Sample Preparation, Packaging, and Marking of Lime and Limestone Products

C 110 Test Methods for Physical Testing of Quicklime, Hydrated Lime, and Limestone

C 206 Specification for Finishing Hydrated Lime

C 226 Specification for Air-Entraining Additions for Use in the Manufacture of Air-Entraining Hydraulic Cement

C 778 Specification for Sand

C 1489 Specification for Lime Putty for Structural Purposes

3. Terminology

3.1 *Definitions:*

3.1.1 *standard mortar*, *n*—a mortar containing only hydrated lime and sand meeting the requirements of Specification C 778. The mortar proportions are one part hydrated lime to three parts of sand by volume as indicated in Table 4 of Test Methods C 110.

4. Additions

4.1 Types NA and SA hydrated lime covered by this specification shall contain additives for the purpose of entraining air, and such additives shall conform to the requirements of Specification C 226.

5. Manufacturer's Statement

5.1 At the request of the purchaser, the manufacturer shall state in writing the nature, amount, and identity of the air-entraining agent used and of any processing addition that may have been used, and also, if requested, shall supply test data showing compliance of such air-entraining addition with the provisions of Specification C 226.

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[1] This specification is under the jurisdiction of ASTM Committee C07 on Lime and is the direct responsibility of Subcommittee C07.02 on Structural Lime.

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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.

6. Chemical Composition

6.1 Hydrated lime for masonry purposes shall conform to the following requirements as to chemical composition:

	Hydrate Types:			
	N	NA	S	SA
Calcium and magnesium oxides (nonvolatile basis), min, %	95	95	95	95
Carbon dioxide (as-received basis), max, %:				
If sample is taken at place of manufacture	5	5	5	5
If sample is taken at any other place	7	7	7	7
Unhydrated oxides (as-received basis), max, %	···	···	8	8

7. Residue, Popping, and Pitting

7.1 The four types of hydrated lime for masonry purposes shall conform to one of the following requirements:

7.1.1 The residue retained on a No. 30 (600-µm) sieve shall not be more than 0.5 %, or

7.1.2 If the residue retained on a No. 30 (600-µm) sieve is over 0.5 %, the lime shall show no pops or pits when tested in accordance with the method prescribed in 12.1.2.

8. Plasticity

8.1 The putty made from Type S, special hydrate, or Type SA, special air-entraining hydrate, shall have a plasticity figure of not less than 200 Elmey units when tested within 30 min after mixing with water using Test Methods C 110.

9. Water Retention

9.1 Hydrated lime mortar made with Type N (normal hydrated lime) or Type NA (normal air-entraining hydrated lime), after suction for 60 s, shall have a water retention value of not less than 75 % when tested in a standard mortar made from the dry hydrate or from putty made from the hydrate which has been soaked for a period of 16 to 24 h.

9.2 Hydrated lime mortar made with Type S (special hydrated lime) or Type SA (special air-entraining hydrated lime), tested in accordance with Section 10 of Test Methods C 110, shall have a water retention value of not less than 85 % when tested in a standard mortar made from the dry hydrate using Test Methods C 110.

10. Air-Entrainment

10.1 The hydrated lime covered by Types N or S in this specification shall contain no additives for the purpose of entraining air. The air content of a standard mortar made with Types N or S shall not exceed 7 % as determined in accordance with the requirements of Section 13 of Test Methods C 110. The air content of standard mortar made with Types NA or SA shall have a minimum of 7 % and a maximum of 12 % when tested in accordance with the requirements of Section 13 of Test Methods C 110.

11. Sampling and Inspection

11.1 The sampling, inspection, rejection, retesting, packaging, and marking shall be conducted in accordance with Practice C 50.

12. Test Methods

12.1 Determine the properties enumerated in this specification in accordance with the following methods:

12.1.1 *Chemical Analysis*— Test Methods C 25.

12.1.2 *Physical Tests*—Test Methods C 110.

13. Special Package Marking

13.1 When Types NA or SA air-entraining hydrated lime are delivered in packages, the name and brand of the manufacturer, the type under this specification, and the words "AIR-ENTRAINING" shall be plainly indicated thereon or in case of bulk shipments, so indicated on shipping notices.

14. Keywords

14.1 hydrated lime; masonry; mortar; plasticity; popping and pitting; residue; stucco; Type N; Type NA; Type S; Type SA; unhydrated oxides; water retention; air entraining