



Standard Specification for Quicklime for Structural Purposes¹

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This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This specification covers all classes of quicklime such as crushed lime, granular lime, ground lime, lump lime, pebble lime, and pulverized lime, used for structural purposes.

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

1.3 *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
 - [C25 Test Methods for Chemical Analysis of Limestone, Quicklime, and Hydrated Lime](#)
 - [C50 Practice for Sampling, Sample Preparation, Packaging, and Marking of Lime and Limestone Products](#)
 - [C51 Terminology Relating to Lime and Limestone \(as used by the Industry\)](#)
 - [C110 Test Methods for Physical Testing of Quicklime, Hydrated Lime, and Limestone](#)
 - [C1489 Specification for Lime Putty for Structural Purposes](#)
 - [E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves](#)

3. Terminology

3.1 *Definitions*—Unless otherwise specified, for definitions of terms used in this standard, refer to Terminology [C51](#).

¹ This specification is under the jurisdiction of ASTM Committee [C07](#) on Lime and is the direct responsibility of Subcommittee [C07.02](#) on Specifications and Guidelines.

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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.

4. Chemical Composition

4.1 The quicklime shall conform to the following requirements as to chemical composition, calculated on a nonvolatile basis:

	Calcium Lime	Magnesium Lime
Calcium oxide, min, %	75	
Magnesium oxide, min, %		20
Calcium and magnesium oxide, min, %	95	95
Silica, alumina, and oxide of iron, max, %	5	5
Carbon dioxide, max, %:		
If sample is taken at place of manufacture	3	3
If sample is taken at any other place	10	10

5. Residue

5.1 The quicklime shall contain no more than 15 weight % of residue.

6. General Requirements

6.1 Quicklime shall be slaked and aged in accordance with the printed directions of the manufacturer. The resulting lime putty shall be stored until cool.

6.2 Lime putty prepared in accordance with Appendix [X1.4.2](#) must conform to the requirements of Specification [C1489](#).

7. Sampling, Inspection, etc.

7.1 The sampling, inspection, rejection, retesting, packaging, and marking shall be conducted in accordance with Methods [C50](#).

8. Test Methods

8.1 Conformance to chemical requirements shall be determined in accordance with Test Methods [C25](#).

8.2 Conformance to residue requirements shall be determined in accordance with Test Methods [C110](#).

9. Keywords

9.1 building (structural); calcium oxide; dolomitic lime; high calcium lime; lime putty; magnesium oxide; plasticity; quicklime; residue; slaking

APPENDIX

(Nonmandatory Information)

X1. SLAKING AND PREPARATION OF LIME PUTTY

X1.1 Introduction

X1.1.1 Quicklime can never be used as such for structural purposes; it must always be slaked first. Since the method of slaking is an important factor in determining the quality of the finished product, the following directions for the preparation of lime putty are given, not as a part of the specification, but as information for the further protection of the purchaser.

X1.1.2 Different kinds of lime vary considerably in the way in which they behave with water. A little supervision over the operation of slaking will amply pay for itself by ensuring the production of the greatest possible quantity and the best possible quality of putty. To find out how to slake a new lot of lime, it is safest to try a little of it and see how it works. Since different lots of the same brand of lime vary somewhat, and since the weather conditions at the time have a decided influence, it is wise to try a sample from each lot used, whether familiar with the brand or not.

X1.2 Classification of Limes

X1.2.1 In a bucket, put two or three lumps of lime about the size of one's fist, or, in the case of granular lime, an equivalent amount. Add sufficient water to just barely cover the lime, and note how long it takes for slaking to begin. Slaking has begun when pieces split off from the lumps or when the lumps crumble. Water of the same temperature should be used for test and field practice.

X1.2.2 If slaking begins in less than 5 min, the lime is quick slaking; from 5 to 30 min, medium slaking; over 30 min, slow slaking.

X1.3 Directions for Slaking

X1.3.1 Slake quicklime in accordance with the printed directions of the manufacturer. When such directions are not provided, proceed as follows:

X1.3.2 For quick-slaking lime, always add the lime to the water, not the water to the lime. Have sufficient water at first to cover all the lime completely. Have a plentiful supply of water

available for immediate use—a hose throwing a good stream, if possible. Watch the lime constantly. At the slightest appearance of escaping steam, hoe thoroughly and quickly, and add enough water to stop the steaming. Do not be afraid of using too much water with this kind of lime.

X1.3.3 For medium-slaking lime, add the water to the lime. Add enough water so that the lime is about half submerged. Hoe occasionally if steam starts to escape. Add a little water now and then if necessary to prevent the putty from becoming dry and crumbly. Be careful not to add any more water than required, and not too much at a time.

X1.3.4 For slow-slaking lime, add enough water to the lime to moisten it thoroughly. Let it stand until the reaction has started. Cautiously add more water, a little at a time, taking care that the mass is not cooled by the fresh water. Do not hoe until the slaking is practically complete. If the weather is very cold, it is preferable to use hot water, but if this is not available, the mortar box may be covered in some way to retain the heat.

X1.4 Preparation of Putty for Use

X1.4.1 After slaking, prepare putty for use as follows:

X1.4.2 *White Coat*—After slaking and aging finishing quicklime in accordance with the printed directions of the manufacturer, store the putty until cool. If no printed directions are provided by the manufacturer, prepare the putty for use as follows: After the action has ceased, run off the putty through a No. 10 (2.00-mm) sieve conforming to Specification E11, and store for a minimum of 2 weeks.

X1.4.3 *Base Coats*—After the action has ceased, run off the putty through a No. 8 (2.36-mm) sieve conforming to Specification E11. Add sand up to equal parts by weight, all of the hair or other fibers required, and store for a minimum of 2 weeks.

X1.4.4 *Masons' Mortar*—After the action has ceased, add part or all of the sand required, and store for a minimum of 24 h.

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