



Designation: **C977 – 10 C977 – 18**

# Standard Specification for Quicklime and Hydrated Lime for Soil Stabilization<sup>1</sup>

This standard is issued under the fixed designation C977; 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 reappraisal. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reappraisal.

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

## 1. Scope

1.1 This specification pertains to quicklime and hydrated lime, either high calcium, dolomitic, or magnesian lime, for use in stabilization of soils (See [Note 2](#)).

NOTE 1—Quicklime and hydrated lime act upon clay soils and may render such soils suitable for highway construction and for other load-bearing applications. In most cases, lime causes finely divided clay particles to agglomerate into coarser particles which ~~improves~~ improve load-bearing properties and subsequently the lime-treated soil hardens by chemical reaction.

NOTE 2—No attempt is made to present requirements for by-product lime, commercial lime slurry, etc. and so forth. Specification requirements for these materials could be better determined on a local basis.

1.2 The values stated in ~~inch-pound~~ SI 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.~~ No other units of measurement are included in this 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, health, and ~~health~~ environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

## 2. Referenced Documents

2.1 ASTM Standards:<sup>2</sup>

[C25 Test Methods for Chemical Analysis of Limestone, Quicklime, and Hydrated Lime](#)

[C50/C50M 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](#)

[D6276 Test Method for Using pH to Estimate the Soil-Lime Proportion Requirement for Soil Stabilization \(Withdrawn 2015\)](#)<sup>3</sup>

## 3. Chemical Composition

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

3.2 Quicklime and hydrated lime for soil stabilization shall conform to the following chemical composition:

Calcium and Magnesium Oxides (on a non-volatile basis, minimum %)	90.0
Carbon Dioxide (taken at point of manufacture, maximum %)	5.0
Free Moisture (taken at point of manufacture, maximum %)	2.0

## 4. Physical Properties

4.1 *Hydrated Lime*, shall have not more than 3 % retained on a ~~No. 30 (590- $\mu$ m)~~ 595- $\mu$ m (No. 30) sieve and not more than 25 % retained on a ~~No. 200 (75- $\mu$ m)~~ 74- $\mu$ m (No. 200) sieve.

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

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> The last approved version of this historical standard is referenced on [www.astm.org](http://www.astm.org).