



# Standard Specification for Gypsum Keene's Cement<sup>1</sup>

This standard is issued under the fixed designation C 61/C 61M; 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 ( $\epsilon$ ) 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 various grades of anhydrous calcined gypsum known as gypsum Keene's cement, designed for use in the base and finish coats of gypsum plaster.

NOTE 1—The setting time is accelerated by the addition of other materials.

NOTE 2—Keene's cements are generally available as quick-setting and standard-setting types. However, various grades of gypsum Keene's cement of different fineness and setting time are available. Grades intended for use in scagliola castings and other special purposes should conform to the requirements of this specification in all respects except fineness and setting time.

1.2 The values stated in either inch-pound or SI (metric) units are to be regarded separately as standard. Within the text, the SI units are shown in brackets. The values stated in each system shall be used independently of the other. Values from the two systems shall not be combined.

1.3 The text of this standard references notes and footnotes that provide explanatory material. These notes and footnotes shall not be considered as requirements of the standard.

1.4 The following safety hazards caveat pertains only to the test method in the appendix of this specification: *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:*<sup>2</sup>

**C 11** Terminology Relating to Gypsum and Related Building Materials and Systems

**C 471M** Test Methods for Chemical Analysis of Gypsum and Gypsum Products [Metric]

**C 472** Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete

**E 11** Specification for Wire Cloth and Sieves for Testing Purposes

## 3. Terminology

3.1 *Definitions*—Definitions of terms used in this specification shall be as defined in Terminology **C 11**.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *scagliola, n*—an imitation marble used for ornamental interior work.

## 4. Chemical Composition

4.1 *Combined Water*—The cement shall show a combined water content not more than 2 % when tested in accordance with Test Methods **C 471M**.

## 5. Physical Properties

5.1 Testing shall be in accordance with Test Methods **C 472**, except that in the determination of the setting time and compressive strength, the consistency used shall be such that a 35-g conical plunger, described in Test Methods **C 472**, shall give a penetration of  $30 \pm 2$  mm, 20 s after release, the measurement being made 5 min after the addition of the gypsum Keene's cement to the gauging water.

5.1.1 *Setting Time*—The cement shall set in not less than 20 min and not more than 6 h when determined by the Vicat method.

5.1.2 *Compressive Strength*—Gypsum Keene's cement shall have a compressive strength of not less than 2500 psi [17 MPa]. Soak standard Keene's cement in water for 20 min with occasional stirring before filling the mold in the compressive strength determination.

5.1.3 *Fineness*—The cement shall all pass a No. 14 [1.40 mm] sieve; not less than 98 % shall pass a No. 40 [425- $\mu$ m] sieve, and not less than 80 % shall pass a No. 100 [150- $\mu$ m] sieve.<sup>3</sup>

## 6. Sampling

6.1 Randomly select not less than 1 % of the packages, but not less than 5 packages. Take samples of approximately equal

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<sup>2</sup> 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.

<sup>3</sup> Detailed requirements for these sieves are given in ASTM Specification **E 11**.

amounts from both the outer portion and the center of each package. Mix the samples so obtained to provide a composite sample of not less than 15 lb [6.8 kg]. Immediately place the sample in a clean, dry, airtight container for delivery to the laboratory.

## **7. Inspection**

7.1 Inspection of the gypsum Keene's cement shall be agreed upon between the producer or supplier and the purchaser as part of the purchase agreement.

## **8. Rejection**

8.1 Rejection of gypsum Keene's cement that fails to conform to the requirements of this specification shall be reported to the producer or supplier promptly and in writing. The written notice of rejection shall contain a statement documenting how the gypsum Keene's cement has failed to conform to the requirements of this specification.

## **9. Certification**

9.1 When specified in the purchase agreement, a producer's or supplier's report shall be furnished at the time of shipment certifying that the product is in compliance with this specification.

## **10. Packaging and Marking**

10.1 Gypsum Keene's cement shall be dry, free of lumps, and shipped in packages.

10.2 When shipped for resale, the following information shall be legibly marked on each package or on a tag of suitable size attached thereto:

10.2.1 Name of producer or supplier,

10.2.2 Brand,

10.2.3 Description, and

10.2.4 Net weight of package. Gross weight shall be shown where required.

## **11. Keywords**

11.1 anhydrous gypsum; gypsum; gypsum Keene's cement; gypsum plaster; Keene's cement; plaster

# **APPENDIX**

## **(Nonmandatory Information)**

### **X1. FIELD TEST FOR GYPSUM KEENE'S CEMENT**

#### **X1.1 Scope**

X1.1.1 This method is a simple field test for the identification of gypsum Keene's cement. It does not indicate the quality of the cement, which shall be determined by the laboratory tests in the body of this specification.

#### **X1.2 Significance and Use**

X1.2.1 This method is of value to users in determining whether the material at hand is gypsum Keene's cement or some other material.

#### **X1.3 Procedure**

X1.3.1 Take a cupful of the material, mix with water to the consistency of a thick paste, and transfer to a plate or piece of glass. Let stand until fairly firm and definite signs of set having

begun are manifest. This will be some time less than 2 h, depending on climatic conditions.

X1.3.2 Divide the sample, allowing one half to remain undisturbed. Take the other half, add a little water, remix, and then allow it to "set up" again on the plate or glass.

#### **X1.4 Interpretation of Results**

X1.4.1 If the material is gypsum Keene's cement, the remixed portion will, within a few hours, become as hard and strong as the portion that was not remixed.

#### **X1.5 Precision and Bias**

X1.5.1 It is not possible to state either the precision or bias of this test method because the method only determines whether a material is or is not gypsum Keene's cement and there are no numerical results generated.

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