Designation: C1714/C1714M – 23

Standard Specification for Preblended Dry Mortar Mix for Unit Masonry[1]

This standard is issued under the fixed designation C1714/C1714M; 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.

1. Scope*

1.1 This specification covers masonry mortars whose materials and design requirements are governed by Specification C270 but are preblended dry in a factory instead of produced from individual raw materials delivered to the job-site.

1.2 The field-sampling, testing, directly comparable test results, packaging, and the traceability of ingredients of preblended dry mortar mix differ from job site mixed mortars and this standard specifically addresses these issues. The tight control of ingredient ratios possible with preblended dry mortar is also covered.

1.3 The text of this specification refers to notes and footnotes, which provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered the requirements of the standard.

1.4 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.5 *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 environmental practices and determine the applicability of regulatory limitations prior to use. (***Warning—**Fresh hydraulic cementitious mixtures are caustic and may cause chemical burns to skin and tissue upon prolonged exposure.*)*

1.6 *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:*[2]

C144 Specification for Aggregate for Masonry Mortar
C260/C260M Specification for Air-Entraining Admixtures for Concrete
C270 Specification for Mortar for Unit Masonry
C305 Practice for Mechanical Mixing of Hydraulic Cement Pastes and Mortars of Plastic Consistency
C780 Test Methods for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry
C979/C979M Specification for Pigments for Integrally Colored Concrete
C1180 Terminology of Mortar and Grout for Unit Masonry
C1384 Specification for Admixtures for Masonry Mortars
C1403 Test Method for Rate of Water Absorption of Masonry Mortars
C1437 Test Method for Flow of Hydraulic Cement Mortar
C1586 Guide for Quality Assurance of Mortars

3. Terminology

3.1 For definition of terms used in this specification, refer to Terminology C1180.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *preblended dry mortar mix, n*—a mix of dry aggregate; portland cement and hydrated lime, blended hydraulic cement, masonry cement, hydraulic cement, or mortar cement; and may contain additives used to enhance one or more properties such as setting time, workability, water retention, bond and durability or color pigment; and are thoroughly blended together at the factory without the addition of water.

3.2.2 *additive, n*—a dry mortar material other than the Specification C270 prescribed materials of aggregate and cementitious materials that is added to a dry mortar mix at the batch plant to modify one or more properties of the conventional masonry mortar.

[1] This specification is under the jurisdiction of ASTM Committee C15 on Manufactured Masonry Units and is the direct responsibility of Subcommittee C15.30 on Specifications for Mortars and Grouts.

Current edition approved Aug. 15, 2023. Published September 2023. Originally approved in 2009. Last previous edition approved in 2019 as C1714/C1714M – 19a. DOI: 10.1520/C1714_C1714M-23.

[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.

***A Summary of Changes section appears at the end of this standard**

4. Classification

4.1 The classifications of mortars in this specification are as described in Specification C270. Mortar type selected shall be a Type M, S, N, or O meeting the requirements of either the Property Specification or the Proportion Specifications.

5. Specifying Mortar

5.1 Specify type of mortar desired.

5.2 Preblended dry mortar mix shall be a mortar meeting both the requirements of Specification C270 and the requirements of this specification.

5.2.1 The property specification requirements of Specification C270 shall govern unless the proportion specification requirements are specified.

6. Materials

6.1 Materials shall conform to Specification C270 except as follows:

6.1.1 *Additives*—Shall comply with the admixture requirements of Specification C1384, except as follows:

6.1.1.1 The Specification C1384 reference mortar shall be this mortar without the additives and the Specification C1384 admixed mortar shall be this mortar with the additives.

6.1.1.2 When more than one additive meeting the requirements of Specification C1384 is used, the chloride limits of Specification C1384 shall apply to the sum of all of these additives.

6.1.1.3 Air entraining additives shall comply with the admixture requirements of Specification C260/C260M.

6.1.2 Additives used as coloring pigments shall comply with the requirements of C979/C979M.

6.2 As required by Specification C270, mortar mixes conforming to the Proportion Specification requirements shall not contain more than one air entraining material.

7. Manufacture and Use

7.1 All of the mortar mix materials shall be dry and measured by weight. The batch scales shall be calibrated at least annually and shall be capable of consistently measuring each ingredient to within 1 % of the total batch weight for each ingredient that is added at a rate of at least 20 % of total batch weight, and to within 5 % of the individual ingredients weight for each ingredient that is added at a rate of less than 20 % of total batch weight.

7.2 Each ingredient shall be added within a tolerance of ±10 % of the individual ingredients' target weight.

7.3 The weight of each mortar mix ingredient of the final batch shall be recorded and archived for every batch.

NOTE 1—This batch information is commonly referred to as a batch ticket.

7.4 A run number or batch number or some other marking used to ensure traceability of the batch shall be assigned to each batch and retained as part of the batch archive.

7.5 The batch information of 7.3 and 7.4 shall be archived for a minimum of twelve months from date of manufacture.

7.6 All of the dry mortar mix ingredients shall be thoroughly blended.

7.7 The preblended dry mortar mix shall be stored and covered in such a manner as to prevent hardening, deterioration, contamination, and segregation.

7.8 Except for water, no mortar materials, wet or dry, shall be added to the mortar mix or the resulting masonry mortar after the initial blending of the dry mortar materials in the batch plant unless otherwise specified and approved by the manufacturer of the preblended mortar mix.

8. Sampling

8.1 For mortars produced to property specifications, all samples for determining compliance with this specification shall be both uncontaminated and sampled prior to the addition of water.

8.2 Samples shall be of sufficient size to conduct all of the desired testing. At a minimum, take three random samples of at least 2.3 kg [5 lb] each and combine them to form a single sample.

8.2.1 For mortars sold in packages up to 45 kg [100 lb], select whole packages as necessary for required testing.

8.2.1.1 Mix the entire contents of the package or packages before selecting random samples in accordance with 8.2.

8.3 Field samples taken from the original containers shall be marked with the package markings as described in Section 14. The date of sampling shall also be included.

8.3.1 Samples taken from job site silos shall be marked with silo number or location and the sample date. If possible, the samples shall also be marked with the package markings from the original containers.

NOTE 2—Silos are typically filled from large bulk bags or super sacks, these large bags will have the product identification markings from Section 14 and may still be available on the job-site.

8.3.2 Samples taken at the job site from a mobile batch plant shall be marked in accordance with Section 14.1.2.

9. Testing

9.1 Testing shall be conducted in accordance with Specification C270 with the following exceptions:

9.1.1 For mortar mixes meeting the proportion specifications of C270, testing shall be performed by using verification of ingredient proportions (batch tickets) archived from 7.3. In addition, the aggregate shall be tested for compliance with the requirements of Specification C144.

9.1.2 *Mixing*—Mix 3000 ± 3 g [6.61 ± 0.01 lb] of preblended dry mortar mix in accordance with Practice C305 with the exception that the combined material is added at the time of cement addition in Practice C305. Additional water may be added in the final mix period to adjust the flow. Determine the flow in accordance with Test Method C1437. Use sufficient water to produce a flow of 110 ± 5 %.

9.1.3 *Air Content*—If the mixture proportions and densities of all constituent materials are known, calculate the air content in accordance with Specification C270, otherwise use the density of the preblended dry mortar mix as supplied by the preblended dry mortar mix producer using the following