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Standard Guide for Quality Assurance of Mortars¹

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1. Scope

1.1 This document provides guidance regarding the proper use of Specification C270 and Test Method C780 for evaluating masonry mortar produced in the laboratory and at the construction site.

2. Referenced Documents

2.1 *ASTM Standards:*²

- C144 Specification for Aggregate for Masonry Mortar
- C270 Specification for Mortar for Unit Masonry
- C780 Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry

3. Significance and Use

3.1 This document is intended to provide guidance and clarification to designers, specifiers, inspectors, testing agencies, producers, and users in specifying and evaluating masonry mortar.

3.2 Users of documents Specification C270 and Test Method C780 often confuse and sometimes inadvertently misuse parts of the two documents when specifying or evaluating masonry mortar. This guide seeks to address specific items within Specification C270 and Test Method C780 to help promote their proper use and interpretation.

4. Specifying Masonry Mortar

4.1 Use Specification C270 to specify masonry mortar by either the Proportion or Property Specifications of that standard, but not both. If neither the Proportion nor Property specification is given, Specification C270 the Proportion specification to be used.

4.2 *Proportion Specifications*—These Specifications direct the mason to produce the masonry mortar using designated

volumetric proportions of cementitious materials and aggregate as set forth in Table 1, Proportion Specifications, of Specification C270 for the Type of mortar specified. This procedure of specifying mortar requires no sampling and testing of mortar, and hence, no measurement of mortar properties in the laboratory or the field is required. All that is necessary is field confirmation of the proper proportions of the mixes used in construction.

4.3 *Property Specifications*—These Specifications require testing of laboratory-prepared mortar for compliance with the requirements of Table 2, Property Specifications, of Specification C270 for the Type of mortar specified.

4.3.1 The Property Specifications require evaluation of a mortar with a consistency (flow) of $110 \pm 5\%$. This is an arbitrarily established mortar consistency that is used to approximate the water content of mortar after it is placed in a masonry assemblage with absorbent masonry units. The amount of water required in mortar produced at the construction site is normally greater than the amount used for Specification C270 Property Specifications testing.

4.3.2 Do not use the Specification C270 Property Specifications requirements to evaluate construction site-produced mortars. Due to the higher amount of water necessary for actual masonry construction, mortar produced and sampled in the field will typically have lower compressive strength than that produced in the laboratory per Specification C270.

4.3.3 When mortar is specified by the Property Specifications, the quantities of cementitious materials and aggregates as determined through laboratory testing are converted to volumetric proportions to produce masonry mortar at the construction site.

5. Quality Assurance of Masonry Mortar

5.1 *Mortar Materials*—Verify that individual mortar materials being used meet the ASTM Standards listed under the Materials Section of Specification C270. Compliance is typically verified by submission of a letter of certification or test report for each mortar material.

NOTE 1—If any of the materials used do not comply with the material requirements of Specification C270, the Proportion Specifications can not be used. Specification C270 specifically permits the use of masonry sands that do not comply with the gradation requirements of Specification C144 provided that the Property Specifications of Specification C270 are used rather than the Proportion Specifications.

¹ This guide is under the jurisdiction of ASTM Committee C12 on Mortars and Grouts for Unit Masonry and is the direct responsibility of Subcommittee C12.03 on Specifications for Mortars.

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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.