

CALIFORNIA COUNCIL OF TESTING & INSPECTION AGENCIES

FAQ_{10.062}

MORTAR TESTING BY CYLINDERS OR CUBES

Q When testing for compressive strength of mortar the 2007 CBC (California Building Code) specifies “Average Compressive Strength at 28 days” as noted in Table 2103A.8(2). Is this strength tested and computed by cylinders or cubes?

Submitted by Special Inspector in Sacramento, California

Response Submitted by Dave Chippero

A Mortar testing is normally required for schools and hospitals, hence your reference to table 2103A.8(2) in 2007 CBC. In the title block of the reference table under Average Compressive Strength there is a small b notation, referring the note at the bottom, which reads “*b. Average of three 2-inch cubes of laboratory-prepared mortar, in accordance with ASTM C270.*” So, the specified strength is based on 2-inch cubes prepared in the laboratory.

Section 2105A.5 specifies “Test specimens for mortar shall be made as set forth in ASTM C1586”. As we were informed in FAQ 10.043, C1586 refers us to C780 Annexes A.7, which describes specimens made as cylinders or cubes.

A further clarification is found in “Reinforced Concrete Masonry Construction Inspector’s Handbook” Fourth Edition, which indicates “The 2-inch cube is typically used for laboratory prepared mortar while the 2 inch x 4 inch cylindrical specimen is used for field cast mortar”. To obtain an equivalency of a 2” x 4” cylinder field test specimen to a 2” cube specimen, divide the compression test result of the cylinder specimen by 0.85. The factor of 0.85 is the normal correction h/d found in ASTM C780 5.2.6 Note 3.

When testing for compressive strength of mortar in the field you could use either 2-inch cube molds or 2 inch x 4 inch cylindrical molds. The typical standard of practice that most testing laboratories follow is to test field mortar by preparing specimens in a 2 inch x 4 inch cylindrical mold and if required showing a correction factor when the specimens are tested depending on which specimen, cubes or cylinders, was specified for the project.

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