



Designation: C 579 – 96

Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes¹

This standard is issued under the fixed designation C 579; 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.

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

1. Scope

1.1 These test methods cover the determination of the compressive strength of chemical-resistant mortars, grouts, monolithic surfacings, and polymer concretes. These materials may be based on resin, silicate, silica, or sulfur binders.

1.2 Test Method A outlines the testing procedure generally used for systems containing aggregate less than 0.0625 in. (1.6 mm) in size. Test Method B covers the testing procedure generally used for systems containing aggregate from 0.0625 to 0.4 in. (1.6 to 10 mm) in size. Test Method C is used for systems containing aggregate larger than 0.4 in.

1.3 These test methods provide two different methods for controlling the testing rate.

1.4 *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.*

1.5 The values stated in inch-pound units are to be regarded as standard. Within this text, the SI units shown in parentheses are provided for information only.

2. Referenced Documents

2.1 ASTM Standards:

C 470 Specifications for Molds for Forming Concrete Test Cylinders Vertically²

C 904 Terminology Relating to Chemical-Resistant Non-metallic Materials³

E 4 Practices for Force Verification of Testing Machines⁴

3. Terminology

3.1 *Definitions*—For definitions of terms used in these test methods, see Terminology C 904.

4. Significance and Use

4.1 These test methods offer a means of determining the compressive strength of chemical-resistant mortars, grouts, monolithic surfacings, and polymer concretes.

5. Apparatus

5.1 *Equipment*, capable of weighing materials or specimens to $\pm 0.3\%$ accuracy.

5.2 Specimen Molds:

5.2.1 *Test Method A*— These molds shall be right cylinder $1 \pm \frac{1}{32}$ in. (25 ± 0.8 mm) in diameter by $1 \pm \frac{1}{32}$ in. high. The molds may be constructed in any manner that will allow formation of a test specimen of the desired size. Typical molds consist of a 1-in. thick, flat plastic sheet in which 1-in. diameter, smooth-sided holes have been cut, and to the bottom of which a $\frac{1}{4}$ -in. (6-mm) thick, flat plastic sheet (without matching holes) is attached by means of screws or bolts. Alternately, the molds may consist of sections of round plastic tubing or pipe, 1-in. inside diameter and 1 in. long, having sufficient wall thickness to be rigid and retain dimensional stability during the molding operation, and a $\frac{1}{4}$ -in. thick, flat plastic sheet on which one open end of each section can be rested. With the latter style of mold, the tubing segment may be sealed with a material, such as caulking compound or stopcock grease. For most types of specimens it is satisfactory to simply seal one end of the tubing segment with masking tape.

NOTE 1—For use with sulfur mortars an additional piece of flat plastic sheet at least $\frac{1}{8}$ in. (3 mm) thick containing a $\frac{1}{4}$ -in. (6-mm) hole and a section of plastic tubing or pipe 1 in. (25 mm) in diameter by 1 in. high are required. They are used to form a pouring gate and reservoir in the preparation of sulfur mortar specimens.

5.2.2 *Test Method B*— Molds for the 2-in. (50-mm) cube specimens shall be tight fitting and leakproof. The molds shall have not more than three cube compartments and shall be separable into not more than three parts. The parts of the molds, when assembled, shall be positively held together. The molds shall be made of metal not attached by the material. The sides of the molds shall be sufficiently rigid to prevent spreading or warping. The interior faces of the molds shall be manufactured to ensure plane surfaces with a permissible variation of 0.002 in. (0.05 mm). The distances between

¹ These test methods are under the jurisdiction of ASTM Committee C-3 on Chemical-Resistant Nonmetallic Materials and are the direct responsibility of Subcommittee C03.01 on Test Methods.

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² *Annual Book of ASTM Standards*, Vol 04.02.

³ *Annual Book of ASTM Standards*, Vol 04.05.

⁴ *Annual Book of ASTM Standards*, Vol 03.01.