



Designation: C 413 – 01

Standard Test Method for Absorption of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes¹

This standard is issued under the fixed designation C 413; 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 This test method covers the determination of the absorption of chemical-resistant mortars, grouts, monolithic surfacings, and polymer concretes. These materials may be based on resin, silicate, silica, or sulfur binders.

1.2 Mold Method A is used for systems containing aggregates less than 0.0625 in. (1.6 mm) in size. Mold Method B is used for systems containing aggregates from 0.0625 to 0.4 in. (1.6 to 10 mm) in size. Mold Method C is used for systems containing aggregates larger than 0.4 in.

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

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.*

2. Referenced Documents

- 2.1 *ASTM Standards:*
C 470 Specification for Molds for Forming Concrete Test Cylinders Vertically²
C 904 Terminology Relating to Chemical-Resistant Non-metallic Materials³

3. Terminology

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

4. Significance and Use

4.1 The results obtained by this test method should serve as a guide in, but not as the sole basis for, selection of a

chemical-resistant material for a particular application. No attempt has been made to incorporate in the test method all the various factors which may affect the performance of a material when subjected to actual service.

4.2 This is not a test for permeability and the test results are not to be interpreted as a measurement of, or indication of, the permeability properties of the materials tested.

5. Apparatus

5.1 *Equipment*, capable of weighing materials or specimens and for determining specific gravity to $\pm 0.03\%$ accuracy.

5.2 *Equipment for Mixing*, consisting of a flat-bottom container of suitable size, preferably corrosion-resistant, and a trowel having a 4 to 5 in. (100 to 125 mm) blade, and a spatula or a rounded-end rod.

5.3 *Container*, a glass flask of suitable size to hold the specimens and the water and connected reflux condenser.

5.4 *Equipment for Heating*, a hot plate or heating mantle.

5.5 *Specimen Molds:*

5.5.1 *Mold Method A*—These molds shall be right cylinders $1 \pm \frac{1}{32}$ in. (25 ± 0.8 mm) in diameter by $1 \pm \frac{1}{32}$ in. (25 ± 0.8 mm) high. The molds may be constructed in any manner that will allow formation of a test specimen of the desired size. Typical molds may 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. Alternatively, the molds may consist of sections of round plastic tubing or pipe, 1 in. 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 strips of 2 in. wide masking tape.

NOTE 1—For use with sulfur materials, 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 1 in. (25 mm) in diameter by 1 in. high are

¹ This test method is under the jurisdiction of ASTM Committee C03 on Chemical-Resistant Nonmetallic Materials and is the direct responsibility of Subcommittee C03.01 on Test Methods.

Current edition approved May 10, 2001. Published July 2001. Originally published as C 413 – 58. Last previous edition C 413 – 96.

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

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