



Standard Test Method for Absorption of Chemical-Resistant Mortars, Grouts, and Monolithic Surfacing¹

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, and monolithic surfacings. These materials may be based on resin, silicate, silica, or sulfur binders.

1.2 The values stated in inch-pound units are to be regarded as the standard. The values in parentheses are given for information only.

1.3 *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 904 Terminology Relating to Chemical-Resistant Non-metallic Materials²

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 *Weighing Equipment*, capable of weighing specimens and for determining specific gravity to ± 0.03 % accuracy.

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

Current edition approved Sept. 10, 1996. Published November 1996. Originally published as C 413 – 58. Last previous edition C 413 – 94.

² *Annual Book of ASTM Standards*, Vol 04.05.

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.

5.3 *Flask*, glass, having a 34/45 standard-taper joint neck. A reflux condenser having a 24/40 standard-taper bottom, and a glass adaptor bushing having an outer ground zone for the 34/45 joint and an inner ground zone for a 24/40 standard-taper joint.

5.4 *Specimen Molds*—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 required. They are used to form a pouring gate and reservoir in the preparation of sulfur material specimens.

NOTE 2—The material from which the mold is constructed must be corrosion resistant and have antistick properties. Polyethylene, polypropylene, polytetrafluoroethylene, and metal forms having either a sintered coating of tetrafluoroethylene or a suitable release agent compatible with the material being tested are satisfactory. Because of their superior heat resistance, only trifluorochloroethylene and tetrafluoroethylene mold release agents should be used with sulfur materials.

5.5 *Batching Equipment*, capable of weighing materials to ± 0.3 % accuracy.

6. Temperature

6.1 The temperature in the vicinity of the mixing operation shall be $73 \pm 4^\circ\text{F}$ ($23 \pm 2^\circ\text{C}$).