



Designation: D7088 – 17 (Reapproved 2023)

# Standard Practice for Resistance to Hydrostatic Pressure for Coatings Used in Below Grade Applications Applied to Masonry<sup>1</sup>

This standard is issued under the fixed designation D7088; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This practice is for the evaluation of coatings used in below grade applications to resist the passage of water through concrete block.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are 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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

## 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

**D714 Test Method for Evaluating Degree of Blistering of Paints**

**D1475 Test Method for Density of Liquid Coatings, Inks, and Related Products**

**D3924 Specification for Standard Environment for Conditioning and Testing Paint, Varnish, Lacquer, and Related Materials**

**D3925 Practice for Sampling Liquid Paints and Related Pigmented Coatings**

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.47 on Concrete, Stone and Masonry Treatments.

Current edition approved July 1, 2023. Published August 2023. Originally approved in 2004. Last previous edition approved in 2017 as D7088 – 17. DOI: 10.1520/D7088-17R23.

<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

2.2 *U. S. Federal Standards*

**TT-P-1411A Paint, Copolymer-Resin, Cementitious (for Waterproofing Concrete and Masonry Walls)**<sup>3</sup>

## 3. Summary of Practice

3.1 Commercially available concrete blocks or concrete masonry units, typically 20 cm by 20 cm by 20 cm (8 in. by 8 in. by 8 in.) in outside dimensions with a hollow inside area (cell) of a nominal 10 cm by 13 cm by 20 cm (4 in. by 5 in. by 8 in.) with a nominal wall thickness of 4 cm (1½ in.) are coated on all four faces with the test paint and allowed to cure. Rubber gaskets are sealed to the top and bottom of the test blocks typically with an epoxy or sealant. Water is then used to fill each coated test block. They are allowed to sit for seven days. Air pressure is then introduced and the face of the blocks is evaluated for the size and frequency of water droplets on the face of the coating, any blistering, loss of adhesion, softening, discoloration or other film irregularities.

## 4. Significance and Use

4.1 This test is meant to simulate the ability of a coating applied to a basement or other below grade masonry walls to prevent the intrusion of water through the coating caused by hydrostatic pressure from water on the outside of the structure.

## 5. Apparatus

5.1 The metal frame test apparatus used in this practice (See Fig. 1) consists of a series of bolts and wing nuts used for clamping the plate tightly against the gasket and the test block. The top metal plate has an opening in the center into which a pipe cap is drilled and tapped to receive an air supply from a compressor tank or hand pump to increase in inside pressure. (See Fig. 2.)

5.2 The test apparatus typically consists of the following:

5.2.1 *Galvanized Steel Top and Bottom Plates*, measuring 28 cm by 28 cm by 0.3 cm (11 in. by 11 in. by 1/8 in.), each with 1/4 in. holes drilled along the outer edges of the plates for insertion of screws and bolts to secure the blocks. There are

<sup>3</sup> Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401, <http://www.access.gpo.gov>.

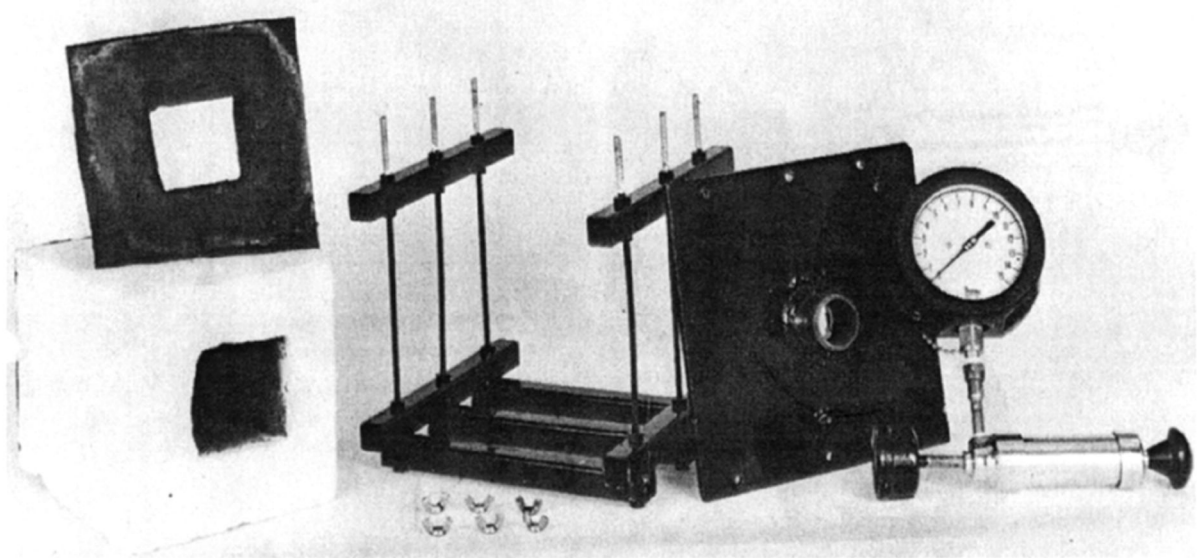


FIG. 1 Metal Frame Test Apparatus

5.2.2 *Bolts (8)*, 12 by ¼ in. with accompanying washers and wing nut screws to secure each block.

5.2.3 *Air Compressor*, capable of pressurizing the test blocks to approximately 4 pounds per square inch (psi) equipped with a pressure regulator to control the air pressure being applied to the block.

5.2.4 *Rubber Gaskets (2)*, 20 cm by 20 cm by 0.5 cm (8 in. by 8 in. by ¼ in.) to be placed on top and bottom of the test block. The gaskets to be used for the top of the block should have an opening to assure that air pressure can be applied.

## 6. Reagents and Materials

6.1 *Concrete Masonry Units (3)*, 20 cm by 20 cm by 20 cm (8 in. by 8 in. by 8 in.) blocks with hollow cores with an inside openings (cell) typically 10 cm by 13 cm by 20 cm (4 in. by 5 in. by 8 in.) in size and walls approximately 4 cm (1½ in.) thick. These blocks are typical of the masonry units used in construction and may be obtained from commercial masonry supply companies.

6.2 *Stiff Bristle Brush*, for cleaning test substrates.

6.3 *Paint Brush*, polyester nylon for applying test coatings.

6.4 *Rubber Gasket*, (¼ in. thick) used to ensure a tight seal on the top and bottom of the coated block.

6.5 *Sealant, Epoxy or Other Adhesive*, to ensure a tight seal of the gasket to the block.

6.6 *Food Dyes*.

## 7. Sampling

7.1 Sampling of the coating shall be conducted in accordance with procedures outlined in Practice D3925.

## 8. Procedure

8.1 Presoak test blocks in tap water overnight. Scrub off any remaining dirt and then thoroughly dry in an oven and store at standard conditions as outlined in Specification D3924 until testing.

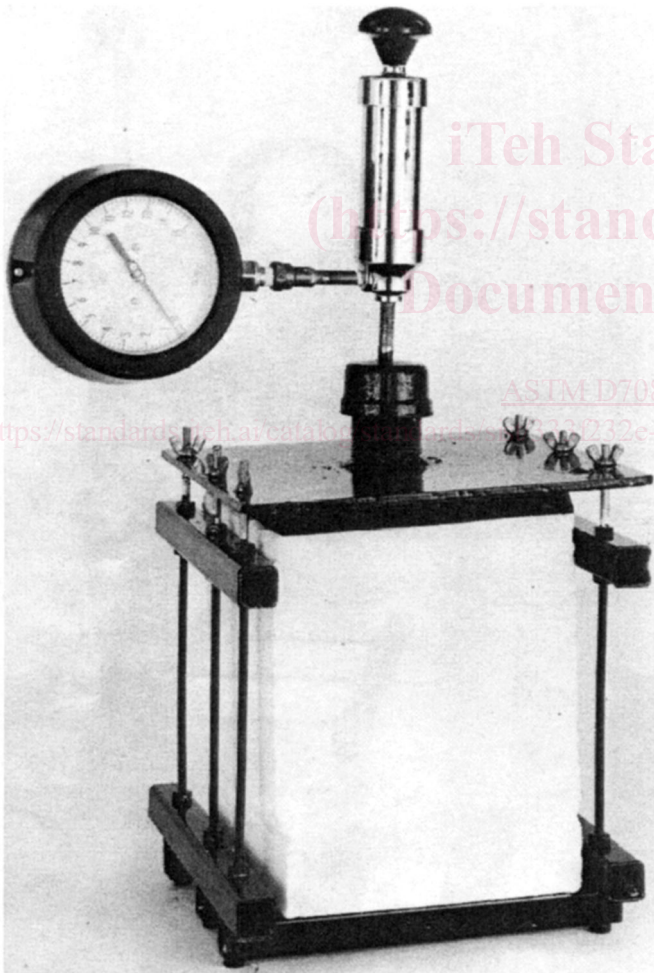


FIG. 2 Test Apparatus

typically three holes on each side. In addition, the top plate should have a 2.5 cm (1 in.) diameter hole in the center for insertion of the air supply.