



Standard Test Method for Water Infiltration Resistance of Plastic Underground Conduit Joints Which Use Flexible Elastomeric Seals¹

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1. Scope

1.1 This test method covers the determination of the water infiltration resistance of gasketed plastic underground conduit joints using a pressurized water bladder apparatus.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

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:²

D618 Practice for Conditioning Plastics for Testing

D2122 Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings

F512 Specification for Smooth-Wall Poly(Vinyl Chloride) (PVC) Conduit and Fittings for Underground Installation

2.2 Underwriter's Laboratories (UL) Standard:

UL 651 Schedule 40 and 80 Rigid PVC Conduit³

2.3 National Electrical Manufacturers Association (NEMA)

Standards:

TC-2 Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and EPC-80)⁴

TC-6 PVC and ABS Plastic Utilities Duct for Underground Installation⁴

¹ This test method is under the jurisdiction of ASTM Committee F17 on Plastic Piping Systems and is the direct responsibility of Subcommittee F17.40 on Test Methods.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from Underwriters Laboratories (UL), 333 Pfingsten Rd., Northbrook, IL 60062-2096, <http://www.ul.com>.

⁴ Available from National Electrical Manufacturers Association (NEMA), 1300 N. 17th St., Suite 1752, Rosslyn, VA 22209, <http://www.nema.org>.

TC-8 Extra-Strength PVC Plastic Utilities Duct for Underground Installation⁴

3. Significance and Use

3.1 Underground electrical and communication conduit should be impervious to groundwater in order to prevent damage to conductors and utility vaults. The bladder test described in this test method may be used to qualify potential gasketed conduit systems by indicating whether the joint system will prevent water infiltration.

3.2 This test method can be used to qualify joints for plastic underground conduits using flexible elastomeric seals. However, it should not be assumed that a joint system that passes this test method will be able to seal under cases of misinstallation or abuse, or both.

3.3 This test method covers all of the following gasketed conduit types: encased burial (EB) excluding EB20, direct burial (DB), telecommunications, cable television, and Schedule 40 conduit and Schedule 80 conduit. Trade sizes covered are 2-in. nominal size and larger. (See UL 651; NEMA TC-2, TC-6, and TC 8; and Specification F512.)

3.4 This test method also covers fittings that are intended for use with the conduit types described in 3.3 and which use flexible elastomeric seals.

4. Apparatus

4.1 *General*—One type of bladder joint tester is shown in Fig. 1.

4.2 Bladder:

4.2.1 The bladder shall be similar to that shown in Fig. 1. The bladder shall be comprised of a reinforced elastomeric tube that is capable of providing a watertight capsule around the subject joint specimen.

4.2.2 The bladder shall be able to safely contain an internal water pressure of at least 11.0 psi (75 kPa).

4.2.3 The bladder shall have plumbing connections that allow the bladder to be pressurized with water and that allow trapped air to be bled out of the bladder.

4.2.4 The bladder shall have a pressure gage that indicates pressure in the bladder. This gage shall be capable of measuring 11 psi (75 kPa) (gage) with an accuracy of ± 0.5 psi (± 3.5 kPa) (gage).