Standard Specification for

Class PS46 Poly(Vinyl Chloride) (PVC) Pipe

AASHTO Designation: M 278-15 (2019)

Technical Subcommittee: 4b, Flexible and Metallic Pipe

Release: Group 2 (June)

AASHTO

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1. SCOPE

1.1. This specification covers the requirements and methods of test for smooth-wall perforated and unperforated poly(vinyl chloride) (PVC) plastic pipe, couplings, and fittings for use in subsurface drainage and surface drainage (culverts) of transportation facilities, where soil support is given to its flexible walls in all applications. It includes provisions for solid wall and solid wall coextruded poly(vinyl chloride) (PVC) plastic pipe. Solid wall coextruded pipe has three layers including a center layer and concentric inner and outer layers. The inner and outer layers are made of virgin or reworked PVC compound and the center layer has external recycled PVC content.

1.1.1. Nominal sizes of 100 to 375 mm in a stiffness class designated as PS46 are included.

1.1.2. Materials, dimensions, flattening, impact resistance, pipe stiffness, extrusion quality, joining systems, perforations, and form of marking are specified.

1.2. The following precautionary caveat pertains only to the test method portion, Section 8.8, of this specification. *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. *AASHTO Standard*:

- M 294, Corrugated Polyethylene Pipe, 300- to 1500-mm (12- to 60-in.) Diameter

2.2. *ASTM Standards*:

- D618, Standard Practice for Conditioning Plastics for Testing
- D883, Standard Terminology Relating to Plastics
- D1598, Standard Test Method for Time-to-Failure of Plastic Pipe Under Constant Internal Pressure
- D1784, Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds
- D2122, Standard Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings
- D2152, Standard Test Method for Adequacy of Fusion of Extruded Poly(Vinyl Chloride) (PVC) Pipe and Molded Fittings by Acetone Immersion

- D2321, Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
- D2412, Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading
- D2444, Standard Practice for Determination of the Impact Resistance of Thermoplastic Pipe and Fittings by Means of a Tup (Falling Weight)
- D2564, Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems
- D2837, Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials or Pressure Design Basis for Thermoplastic Pipe Products
- D2855, Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets
- D3034, Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings
- D3212, Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
- F402, Standard Practice for Safe Handling of Solvent Cements, Primers, and Cleaners Used for Joining Thermoplastic Pipe and Fittings
- F412, Standard Terminology Relating to Plastic Piping Systems
- F477, Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe

2.3. *Federal Standard*:

- Fed. Std. No. 29, CFR 1910.1200 OSHA Hazard Communication Standard; see also Permissible Exposure Limits—Annotated Tables, available at https://www.osha.gov/dsg/annotated-pels/

3. TERMINOLOGY

3.1. *General*—the nomenclature used in this specification is in accordance with the definitions given in Definitions ASTM D883 and Definitions ASTM F412, unless otherwise specified. The abbreviation for polyvinyl chloride is PVC.

3.2. *delamination*—the separation of the layers of PVC in a multilayer pipe.

3.3. *reworked PVC*—clean, regrind PVC taken from the manufacturer's own production facility excluding multilayer pipe.

3.4. *external recycled PVC*—industrial rework material generated from a manufacturer manufacturing product to a standard other than this standard and used by the manufacturer manufacturing to this standard for the center layer of solid wall coextruded pipe.

4. CLASSIFICATION

4.1. *The smooth-wall PVC pipe covered by this specification is classified as follows*:

4.1.1. *Type S*—This pipe shall have a full circular cross section and solid wall constructed of virgin or reworked PVC compound complying with cell classification 12454 or 12364.

4.1.1.1. *Type SP*—This pipe shall be Type S with perforations.