



**Summary of Substantive Changes
between the 2020 and the 2021 editions of
NSF 14 “Plastics Piping System Components
and Related Materials”**

Presented to the IAPMO Standards Review Committee on January 9, 2023

General: The changes to this standard will not have an impact on currently listed products. The substantive changes are:

- Update to current normative reference standards.
- Updates language regarding calibration / verification in Section 9.4.1.
- Replace “monitoring/monitored” with “testing/tested” in Sections 5.6, 7.4, 8.2.2, and 8.3.2.

Section 2, Normative references: Referenced standards were added, updated, or deleted as follows:
ANSI/ASSE 1061-~~2015~~[2020](#), Performance Requirements for Push-Fit Fittings

ASTM D2239-12a [\(2020\)](#), Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Inside Diameter

ASTM D2241-~~15~~[20](#), Standard Specification for Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series)

ASTM D2466-~~17~~[21](#), Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40

ASTM D2467-~~15~~[20](#), Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80

ASTM D2513-~~19~~[20](#), Standard Specification for Polyethylene (PE) Gas Pressure Pipe, Tubing, and Fittings

ASTM D2564-~~12 (2018)~~[20](#), Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems

ASTM D2609-~~15~~[21](#), Standard Specification for Plastic Insert Fittings for Polyethylene (PE) Plastic Pipe

ASTM D2665-~~14~~[20](#), Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings

ASTM D2672-~~14~~[20](#)^{e1}, Standard Specification for Joints for IPS PVC Pipe Using Solvent Cement

ASTM D2683-~~14~~[20](#), Standard Specification for Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing

ASTM D2737-12a [\(2020\)](#), Standard Specification for Polyethylene (PE) Plastic Tubing

ASTM F437-~~15~~[21](#), Standard Specification for Threaded Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80

ASTM F442/F442M-~~19~~[20](#), Standard Specification for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe (SDR-PR)

ASTM F493-~~14~~[20](#), Standard Specification for Solvent Cements for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe and Fittings

ASTM F656-~~15~~[21](#), Standard Specification for Primers for Use in Solvent Cement Joints of Poly(Vinyl Chloride)(PVC) Plastic Pipe and Fittings

ASTM F667/F667M-16 [\(2021\)](#), Standard Specification for 3 through 24 in. Corrugated Polyethylene Pipe and Fittings

ASTM F714-~~13 (2019)~~[21a](#), Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter



ASTM F794-~~03 (2014)~~[21](#), Standard Specification for Poly(Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter

ASTM F876-~~19a~~[20b](#), Standard Specification for Crosslinked Polyethylene (PEX) Tubing

ASTM F1336-~~15~~[20](#), Standard Specification for Poly(Vinyl Chloride) (PVC) Gasketed Sewer Fittings

ASTM F1498-08 (~~2012~~[2020](#))~~e1~~, Standard Specification for Taper Pipe Threads 60° for Thermoplastic Pipe Fittings

ASTM F1504-14 ([2021](#))~~e1~~, Standard Specification for Folded Poly(Vinyl Chloride) (PVC) Pipe for Existing Sewer and Conduit Rehabilitation

ASTM F1960-~~19a~~[21](#), Standard Specifications for Cold Expansion Fittings with PEX Reinforcing Rings for Use with Cross-linked Polyethylene (PEX) and Polyethylene of Raised Temperature (PE-RT) Tubing

~~ASTM F1986-01 (2011), Standard Specification for Multi-layer Pipe Type 2, Compression Fittings, and Compression Joints for Hot and Cold Drinking-Water Systems~~

ASTM F2080-~~18~~[19](#), Standard Specification for Cold-Expansion Fittings with Metal Compression Sleeves for Crosslinked Polyethylene (PEX) Pipe and SDR9 Polyethylene Raised Temperature (PE-RT) Pipe

ASTM F2159-~~19a~~[21](#), Standard Specification for Plastic Insert Fittings Utilizing a Copper Crimp Ring, or Alternate Stainless Steel Clamps for SDR9 Cross-Linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing

ASTM F2306/F2306M-~~19~~[20](#), Standard Specification for 12 to 60 in. [300 to 1500 mm] Annular Corrugated Profile-Wall Polyethylene (PE) Pipe and Fittings for Gravity-Flow Storm Sewer and Subsurface Drainage Applications

ASTM F2389-~~19~~[21](#), Standard Specification for Pressure-rated Polypropylene (PP) Piping Systems

ASTM F2618-~~19~~[21](#), Standard Specification for Chlorinated Poly(Vinyl Chloride) (CPVC) Pipe Fittings for Chemical Waste Drainage Systems

ASTM F2788/F2788M-~~20~~[21](#), Standard Specification for Metric and Inch-sized Crosslinked Polyethylene (PEX) Pipe

ASTM F2806-~~10 (2015)~~[20](#), Standard Specification for Acrylonitrile Butadiene Styrene (ABS) Plastic Pipe (Metric SDR PR)

ASTM F2969-12 ([2020](#)), Standard Specification for Acrylonitrile Butadiene Styrene (ABS) IPS Dimensioned Pressure Pipe

ASTM F3347-20[a](#), Standard Specification for Metal Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing

ASTM F3348-~~20~~[21](#), Standard Specification for Plastic Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-linked Polyethylene (PEX) Tubing [and SDR9 Polyethylene of Raised Temperature \(PE-RT\) Tubing](#)

ANSI/AWWA C901-~~17~~[20](#), Polyethylene (PE) Pressure Pipe and Tubing, 1/2 in (13 mm) Through 3 in (76 mm), for Water Service

ANSI/AWWA C950-~~2013~~[20](#), Fiberglass Pressure Pipe

CAN/CSA B181.1:~~18~~[21](#), Acrylonitrile-Butadiene-Styrene (ABS) Drain, Waste, and Vent Pipe and Pipe Fittings

CAN/CSA B181.2:~~18~~[21](#), Polyvinylchloride (PVC) Drain, Waste, and Vent Pipe and Pipe Fittings

CAN/CSA B181.3:~~18~~[21](#), Polyolefin and Polyvinylidene Fluoride (PVDF) Laboratory Drainage Systems

CAN/CSA B181.5:~~18~~[21](#), Coextruded Acrylonitrile-Butadienestyrene / PolyvinylChloride (ABS/PVC) Drain Waste and Vent Pipe



CAN/CSA B182.1:~~1821~~, Plastic Drain and Sewer Pipe and Pipe Fittings
CAN/CSA B182.2:~~1821~~, PSM Type Polyvinylchloride (PVC) Sewer Pipe and Fittings (PSM Type)
CAN/CSA B182.4:~~1821~~, Profile Polyvinylchloride (PVC) Sewer Pipe and Fittings
CAN/CSA B182.6:~~1821~~, Profile polyethylene (PE) Sewer Pipe and Fittings for Leak-Proof Sewer Applications
CAN/CSA B182.8:~~1821~~, Profile polyethylene (PE) Storm Sewer and Drainage Pipe and Fittings
CAN/CSA B182.11:~~1821~~, Standard Practice for the Installation of Thermoplastic Drain, Storm, and Sewer Pipe and Fittings
CAN/CSA B182.13:~~1821~~, Profile Polypropylene (PP) Sewer Pipe and Fittings for Leak-Proof Sewer Applications
CAN/CSA B182.14:~~1821~~, Profile Steel Reinforced Polyethylene (SRPE) Storm Sewer Pipe and Fittings
CAN/CSA B182.15:~~1821~~, Profile Steel Reinforced Polyethylene (SRPE) Sewer Pipe and Fittings
ANSI/CSA/IGSHPA C448 Series 16 (~~R2021~~), Design and Installation of Ground Source Heat Pump Systems for Commercial and Residential Buildings
PPI TR-2 [2020](#), PPI PVC Range Composition Listing of Qualified Ingredients
UL 1285 (~~67th~~ edition), Standard for Pipe and Couplings, Polyvinyl Chloride (PVC), and Oriented Polyvinyl Chloride (PVCO) for Underground Fire Service^{9F}

2.2 Normative references for compounds and other materials

ASTM D3222-~~18a~~[20](#), Standard Specification for Unmodified Poly(Vinylidene Fluoride) (PVDF) Molding Extrusion and Coating Materials
ASTM D6394-~~1421a~~, Standard Specification for Sulfone Plastics (SP)

2.3 International and other normative references

21 CFR Parts 1-99, Food and Drugs (Rev ~~4/195/20~~)
21 CFR Parts 100-169, Food and Drugs (~~4/195/20~~)
21 CFR Parts 170-199, Food and Drugs (Rev ~~4/195/20~~)
ASTM D2837-21, Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials or Pressure Design Basis for Thermoplastic Pipe Products
ASTM D2855-~~1520~~, 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
ASTM D3212-~~0720~~, Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
PPI TR-3 [2021](#), Policies and Procedures for Developing Hydrostatic Design Basis (HDB), Pressure Design Basis (PDB), Strength Design Basis (SDB), and Minimum Required Strength (MRS) Ratings for Thermoplastic Piping Materials or Pipe

Section 5, Physical and performance requirements:

5.3 Requirements for PVC resins

[PVC pipe Resins intended for use in the PVC ~~pressure pipe compounds~~ Range Formulation shall comply with PPI TR-2,⁹ B.1 PVC Resin. The substitution of PVC resins in an existing listed formulation shall comply with the applicable requirements of PPI TR-3⁹, Section E.4.2.4.](#)

~~NOTE — PPI TR-3 currently limits the inherent viscosity of PVC pressure pipe resin to a minimum of 0.88.~~



5.6 Monitoring

Plastic piping system components and related materials shall be **monitored tested**, at a minimum of once annually, to ensure compliance with the applicable physical and performance standards referenced in Section 2 of this standard. Cell classification **monitoring testing** by compound suppliers shall satisfy the requirements for purchased compounds or in-plant compounds that are dependent formulation transfers.

7.4 Monitoring

In addition to the physical and performance monitoring requirements specified in Section 5.6, plastic piping system components and related materials intended for potable water shall be **monitored tested** annually to ensure compliance with NSF/ANSI/CAN 61, except as permitted in Section 9.8 for solvent cements and primers. PVC and CPVC pipe, tubing, fittings, and appurtenances intended for potable water shall also be tested a minimum of three times annually for RVCM. Appurtenances produced using a material or compound that is also being used to produce fittings subject to these requirements shall not require separate testing for RVCM. RVCM in PVC and CPVC potable water piping products shall not exceed 3.2 mg/kg.

8.2.2 Material cell class designation

Material cell class designation shall be permitted to be marked on pipe. Where the cell class designation marked on pipe exceed the minimum cell class required in the referenced standard, annual **monitoring testing** shall be required for compliance with the cell class designation marked on the pipe.

8.3.2 Material cell class designation

Material cell class designation shall be permitted to be marked on fittings and appurtenances. Where the cell class designation marked on fittings and appurtenances exceed the minimum cell class required in the referenced standard, annual **monitoring testing** shall be required for compliance with the cell class designation marked on the fittings and appurtenances.

Section 9.4, Verification of the calibration of equipment:

9.4.1 Verification

The calibration of all equipment used to check critical dimensions (as defined in Section 5.4) shall be verified weekly.

NOTE — Consideration is given to thread gauges and go / no-go socket gauges which cannot be verified on a weekly basis. In lieu of verification, this equipment shall be calibrated in accordance with Section 9.4.2.

The calibration of all in-line equipment used to check pipe or tubing critical dimensions during the extrusion process shall be performed at a minimum of once annually.

NOTE — An equipment is defined as being in-line if it is part of the extrusion line and collecting critical dimensions data.

Other equipment, (including, but not limited to pressure gauges, scales, etc.) shall be verified at a minimum of once annually.



Verification shall consist of checking the zero point, if applicable, and the critical dimension or a point near the upper limit of the instrument.

Records of equipment verification shall include the following:

- date that the verification was performed;*
- identity of the equipment verified (description and serial number);*
- verification data;*
- description of any corrective actions taken, if applicable; and*
- identity of the person who performed the verification.*

Variations from these minimum requirements shall be permitted if an alternate program is established in writing and determined to be equivalent.

Table 9.6 was revised.

Table 9.7 was revised.

Table 9.11A was revised.

Table 9.11B was revised.

Table 9.12 was revised.

Table 9.13 was revised.

Table 9.21 was revised.

Table 9.30 was revised.

Table 9.35 was revised.

Table 9.37 was revised.