



Standard Specification for Plastic-Lined Ferrous Metal Pipe, Fittings, and Flanges¹

This standard is issued under the fixed designation F 1545; 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.

1. Scope

1.1 This specification covers factory-made plastic-lined ferrous metal pipe, fittings, and flanges intended primarily for conveying corrosive fluids. Requirements for materials, workmanship, dimensions, design, fabrication, working pressure and temperatures, test methods, qualification requirements, and markings are included.

1.1.1 This specification does not define the suitability of different liner materials to various chemical and operating environments. Refer to the manufacturer's chemical resistance data for suitability recommendations.

1.1.2 This specification does not include products coated with plastics.

1.2 This specification covers plastic-lined pipe, flanges, and fittings as listed in Table 1. Pressure limitations shall be in accordance with ANSI/ASME B16 Standards, except reduced pressure limitations may be established by the manufacturer, considering both pressure and temperature limitations of the ferrous metal housing and the sealing ability of the liner.

NOTE 1—In this specification, propylene plastics cover those materials defined as both polypropylene plastics and propylene plastics in Terminology F 412. Both materials are identified as “PP” on the product. Note that this is at variance with Terminology D 1600, where “PP” is the abbreviation for polypropylene.

1.3 The plastic-lined flanged pipe and fitting assemblies are limited to temperatures shown in Table 2. End users should consult with manufacturers as to the likely result of using a particular lined piping component at temperatures below the rated minimum.

NOTE 2—The temperature limitations are based on noncorrosive test conditions. Use in specific aggressive environments may alter temperature limitations. In such instances, specific temperature limits shall be established by mutual agreement between the purchaser and the manufacturer.

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

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the*

TABLE 1 Specification Coverage

Material	ANSI Class	Nominal Pipe Size, in. (mm)
Ethylene Tetrafluoroethylene Copolymer (ETFE)	150/300	1 to 10 (25 to 254)
Perfluoro (Alkoxyalkane) Copolymer (PFA)	150/300	½ to 12 (13 to 305)
Perfluoro (Ethylene-Propylene) Copolymer (FEP)	150/300	1 to 12 (25 to 305)
Poly(Vinylidene Chloride) (PVDC)	125/150/300	1 to 8 (25 to 203)
Poly(Vinylidene Fluoride) (PVDF)	150/300	1 to 10 (25 to 254)
Poly(Vinylidene Fluoride) Copolymer (PVDF)	150/300	1 to 10 (25 to 254)
Polytetrafluoroethylene (PTFE)	150/300	½ to 24 (13 to 610)
Propylene and Polypropylene (PP)	125/150/300	½ to 16 (13 to 406)

TABLE 2 Temperature Specifications

Material	Temperature Range, °F (°C)
Ethylene Tetrafluoroethylene Copolymer (ETFE)	–20 to 300 (–29 to 149)
Perfluoro (Alkoxyalkane) Copolymer (PFA)	–20 to 500 (–29 to 260)
Perfluoro (Ethylene-Propylene) Copolymer (FEP)	–20 to 300 (–29 to 149)
Poly(Vinylidene Chloride) (PVDC) ⁴	0 to 175 (–18 to 79)
Poly(Vinylidene Fluoride) (PVDF)	0 to 275 (–18 to 135)
Poly(Vinylidene Fluoride) Copolymer (PVDF)	–20 to 275 (–29 to 135)
Polytetrafluoroethylene (PTFE)	–20 to 500 (–29 to 260)
Propylene and Polypropylene (PP)	0 to 225 (–18 to 107)

⁴ Storage or handling below 20°F (–7°C) of uninstalled 4, 6, and 8-in. components should be avoided.

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:

- A 48 Specification for Gray Iron Castings²
- A 53 Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless³
- A 105 Specification for Forgings, Carbon Steel, for Piping Components³
- A 106 Specification for Seamless Carbon Steel Pipe for High-Temperature Service³
- A 126 Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings²
- A 135 Specification for Electric-Resistance-Welded Steel Pipe³

¹ This specification is under the jurisdiction of ASTM Committee F-17 on Plastic Piping Systems and is the direct responsibility of Subcommittee F17.11 on Composites.

Current edition approved Nov. 10, 1997. Published August 1998. Originally published as F 1545 – 95. Last previous edition F 1545 – 96.

² Annual Book of ASTM Standards, Vol 01.02.

³ Annual Book of ASTM Standards, Vol 01.01.