

Brief Explanation of ASTM Standard Specifications

How They Relate To Plastic Valves

ASTM D-1784 "Rigid Poly (Vinyl Chloride) (PVC) Compounds"

This specification covers rigid plastic compounds composed of poly (vinyl chloride), or vinyl copolymers, and the necessary compounding ingredients. The compounding ingredients may consist of lubricants, stabilizers, nonpoly (vinyl chloride) resin modifiers, and pigments essential for processing, property control, and coloring.

ASTM D-2464 "Threaded Poly (Vinyl Chloride) (PVC) Plastic Pipe Fitting, Schedule 80"

This specification covers poly (vinyl chloride) (PVC) threaded Schedule 80 pipe fittings. Included are requirements for materials, workmanship, dimensions and burst pressure.

The tapered pipe threads in this specification refer to ANSI B2.1 and it is this portion to which all plastic valves comply.

ASTM D-2467 "Socket Type Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80"

This specification covers poly (vinyl chloride) (PVC) Schedule 80 socket type pipe fittings. Included are requirements for materials, workmanship, dimensions and burst pressure.

The tapered pipe sockets in this specification refer to ANSI B2.1 and it is this portion to which all plastic valves comply.

ANSI B16.5 American National Standard "Pipe Flanges and Flanged Fittings"

This standard covers flanges and flanged fittings in all pressure classes. Bolt hole circle diameters and bolt hole diameters are called out as well as other dimensions. It is the 150# class in which plastic valves comply, where applicable.

Description of Individual Plastics

PTFE (Polytetrafluoroethylene)

PTFE is resistant to practically every known chemical or solvent in combination with the highest useful temperature limit of commercially available plastics. Fabricated PTFE has a useful temperature range from -436°F (-260°C) to 500°F (260°C).

PVC (Polyvinyl Chloride)

PVC is the largest volume of the vinyl family of plastics. Overall it has excellent basic properties, may be easily processed and welded, and is exceptionally economical in cost. Chlorinated PVC, in which the chlorine content is increased from 56.8% to about 67%, increases the heat deflection temperature at 264 psi from 155°F (68°C) to 218°F (103°C).

PP (polypropylene)

Polypropylene is the lightest of the most common thermoplastics. The key properties are its high heat resistance, stiffness, and chemical resistance. It may be usable for low stress structural applications up to 275°F (135°C) but for piping applications has an upper limit of 212°F (100°C).

ETFE (ethylene tetrafluoroethylene)

ETFE retains good mechanical properties to an upper limit of 350°F (177°C). It has a continuous working temperature limit of 300°F (149°C). ETFE is a tough plastic with good tensile strength, and high impact resistance. It lacks the full chemical resistance properties of PTFE.

Abbreviations used for Plastics

*ABS	Acrylonitrile-butadiene-styrene
*CPVC	Chlorinated polyvinyl chloride
*CR	Chloroprene rubber (Neoprene®)
*CSM	Chlorine sulphonyl polyethylene (Hypalon®)
*EP	Epoxide, epoxy
*EPDM	Ethylene propylene rubber
*FKM	Flouro Carbon (Viton®)
*FPM	Fluorine rubber (Viton®)
*HDPE	High-density polyethylene
*IIR	Isobutene isoprene (butyl) rubber
*NBR	Nitrile (butadiene) rubber
*NR	Natural rubber
*PA	Polyamide
*PB	Polybutylene
*PC	Polycarbonate
*PCTFE	Polychlorotrifluoroethylene
*PF	Phenol-formaldehyde
*POM	Polyoxymethylene (Kematal®)
*PP	Polypropylene
*PTFE	Polytetrafluoroethylene (Teflon®)
*PVC	Polyvinyl chloride
PVDF	Polyvinylidene fluoride
* used in pipeline construction	