



Specifications for TP PVC-U Metric Piping Systems

1. Scope

This specification covers requirements for the TP PVC-U Piping System intended for several application areas such as public and private swimming pools, water treatment, building services and irrigation. The components of the PVC-U piping systems are in accordance with the following standards.

2. Basic System Data

2.1 Material Specification for Un-plasticised Polyvinylchloride (PVC-U)

PVC-U TP branded fittings and valves from Georg Fischer TPA shall be manufactured from unplasticised polyvinylchloride, of which valves and fittings are designed for 25 years of operation with water as medium (20°C). PVC-U has also an optimal chemical resistance against many mineral acids, bases and salt solutions. The raw material used shall be material designed for use with pressure bearing piping systems with long term hydrostatic properties in accordance with EN ISO 15493, as supplied by Georg Fischer TPA.

2.1 Characteristics of PVC-U Material (reference values)

EXAMINATION	TEST STANDARD	PARAMETERS OF TEST	
		VALUE	UNIT OF MEASURE
RAW MATERIAL			
Density	EN ISO 1183-1	1,38	g/cm ³
Yield stress at 23° C	EN ISO 527-1	≥ 52	N/mm ²
Tensile e-module at 23° C	EN ISO 527-1	≥ 2500	N/mm ²
Charpy notched impact strength at 23° C	EN ISO 179-1/1eA	≥ 6	K/Jm ²
Charpy notched impact strength at 0° C	EN ISO 179-1/1eA	≥ 3	K/Jm ²
Ball indentation hardness (358N)	EN ISO 2039-1	≥ 105	MP
Heat distortion temperature HDTA 1.80 Mpa	EN ISO 75-2	66	°C
Vicat heat distortion temperature B/50N	ISO 306	≥ 76	°C
Thermal expansion coefficient	DIN 53752	0,07...0,08	Mm/m K
Heat conductivity at 23 °C	EN12664	0,15	W/m K
Water absorption at 23°C	EN ISO 62	≤ 0,1	%
Limit oxygen index (LOI)	ISO 4589-1	42	%

2.2 PVC-U Dimensional Range & Pressure** (at 20 °C)

Product	bar/ d	16	20	25	32	40	50	63	75	90	110	125	140	160	180	200	225	250	280	315	
Fittings	16																				
	10																				
	6																				
Ball valve*	10																				
Butterfly valve*	10																				
Flange*	16																				
	10																				
Gaskets*	16																				

* for detailed information please consult the TP catalogue

** values in table at the max. pressure in units of bar, at 20°C

*** PN6 by solvent cementing size 315

2.3 Approvals

A list of the different approvals is available in our approvals database on the TP website www-tp-piping.com.

Approvals	ACS	CSTB	KIWA	IIP	BV	RINA
					ship building	
Raw material						
Fittings						
Valves						
Flange						

3. Fittings

All **PVC-U** fittings shall be metric sizes manufactured by Georg Fischer TPA, and shall be of a type suitable for solvent cementing, with dimensions and tolerances in accordance with EN 1452-1 & 3, EN ISO 15493 and ISO 727-1. They need to be tested according to EN 10204. All threaded connections shall have pipe threads in accordance with the requirements of ISO 7-1.

3.1 Packaging and Labelling

The packaging must ensure that the fittings are not damaged during transportation.

Packaging and labelling must meet the following requirements:

- Identification of the content, in type, quantity and product details
- Information about standards and approvals covered by the product
- Content of the label has to accomplish legal requirements
- Labels must be EAN coded for automatic identification

4. Accessories

4.1 Flanges

All PVC-U backing flanges in metric sizes DN 15-300 shall be designed according to EN ISO 15493, in a thermo plastic-oriented design. The backing flanges shall be marked with dimension, PN-value, standards, brand and lot number. Connecting dimensions metric according to ISO 7005, EN 1092; Bolt circle diameter PN 10; Inch: ANSI B 16.5, BS 1560; class 150.

4.2 Gaskets

Gaskets in metric sizes DN10 – 200 shall consist of elastomeric material according to EN681 for use with solvent cementing flange adaptors according to EN ISO 15493

5. Valves

All **PVC-U** valves shall be metric sizes manufactured by Georg Fischer TPA in accordance with EN ISO 16135 and following, tested according to the same standard.

5.1. Ball Valves

All **PVC-U** ball valves with metric sizes DN 15 - 100 mm, shall be TP VSA/VSI type double or single union design manufactured by Georg Fischer Piping Systems in accordance with EN ISO 16135.

Ball valves type VSA22 shall be provided with a threaded support for an increased valve safety and possibility to adjust the ball seat.

The double union design combined with the safe block support allows fast and safe radial mounting and dismounting of the valve during installation or maintenance work. Ball seats shall be PE/PTFE. Backing rings and seals shall be EPDM. The handle shall include in its design an integrated tool for removal of the threaded support.

Ball valves type VSA21 have same features of VSA22 except for the ball support, which is not threaded.

5.2. Butterfly Valves

All **PVC-U** butterfly valves, metric sizes DN 75 (3") – 200 (8") mm, shall be TP Type VFA wafer type with a dynamic gasket design manufactured by Georg Fischer Piping Systems in accordance with EN ISO 16136. Seals shall be in EPDM and the external gasket in Santoprene. The lever handle shall be lockable in 10 positions. The hand lever shall be manufactured of PVC-U and be provided of a special housing to store the safety stop tool.

The centring slots in the lower part of the body shall be open for granting an easier positioning during assembly and a fast disassembly in case of maintenance. Butterfly valves shall have low actuation torque to enable easy operation. All butterfly valves Type VFA manufactured by Georg Fischer Piping Systems are designed for a nominal pressure rate of 10 bar.

5.3. Check Valves

All **PVC-U** check valves, according to EN ISO 16137, metric sizes DN 15-80 mm metric, shall be Type VRO true double union design. Spring and seals shall be EPDM. The Rubber Spring Check valves manufactured by Georg Fischer Piping Systems are designed for a nominal pressure rate of 16 bar up to 63 mm and 10 bar for sizes 75 and 90 mm.

7. Quality

7.1 Production Conditions

Fittings and valves shall be manufactured in an environment operating a Quality Assurance System to ISO 9001 and an Environmental Management System conform to ISO 14001.

7.2 Marking

All products are embossed with a permanent identification during the production process to ensure full traceability. The following information will be mentioned:

- Manufacturer's name or trade mark
- Production lot number
- Material
- Dimension
- Pressure rating

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