

FIBERBOND® Piping Specification - Series 110FW

Rev: C

Rating:	ANSI B16.5 150# FF - FIBERBOND® FRP/GRP
Service:	Chemical services Chemical process industry, pulp & paper industry, acid lines Caustic / chlorine industries, fertilizer industry, organics

Pressure:	150psig (13.8barg) up to 24"
Temp:	Up to 250F (121c)

1"	1.5"	2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
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Pipe	FIBERBOND® Series 110FW, plain ends, ASTM D2310 / D2996 RTRP-12ET1 or RTRP-11FT1; 150psig up to 24"; all pipes have plain ends suitable for composite butt welding. ASTM F1173 / ISO15840 Type I, Resin 2, Class B, Rating Method 1. Series 110FW can be provided as a custom product with various options for specific applications. Options include BPO/DMA liner, post cure, and special epoxy vinyl ester resins.													
Min. Thk	0.24"	0.24"	0.24"	0.24"	0.24"	0.30"	0.36"	0.42"	0.48"	0.53"	0.59"	0.65"	0.71"	0.83"
Nom. Thk	0.25"	0.25"	0.25"	0.25"	0.25"	0.31"	0.38"	0.44"	0.50"	0.56"	0.63"	0.69"	0.75"	0.88"
Nom. I.D.	1.00"	1.50"	2.00"	3.00"	4.00"	6.00"	8.00"	10.00"	12.00"	14.25"	16.25"	18.25"	20.25"	24.25"
Nom. O.D.	1.50"	2.00"	2.50"	3.50"	4.50"	6.62"	8.75"	10.88"	13.00"	15.38"	17.50"	19.63"	21.75"	26.00"
Flanges	FIBERBOND® Series 110FW, long welding neck, ANSI B16.5 150# drilling, flange thicknesses differ from 150#; ASTM D5421 CM-B4I; ASTM D4024 RTR-111C													
Nom. Thk	0.50"	0.50"	0.69"	0.81"	0.94"	1.19"	1.25"	1.44"	1.75"	1.75"	1.94"	2.00"	2.13"	2.38"
Neck Lg	6"	6"	6"	6"	6"	8"	8"	10"	10"	12"	12"	12"	15"	15"
Torque	32ft-lbs	33ft-lbs	65ft-lbs	66ft-lbs	34ft-lbs	61ft-lbs	64ft-lbs	69ft-lbs	73ft-lbs	109ft-lbs	86ft-lbs	121ft-lbs	123ft-lbs	147ft-lbs
Elbows	FIBERBOND® Series 110FW, Fig.20 90degree elbows and Fig.30 45degree elbows with plain ends; ASTM D5685 54K4D (up to 24"). These elbows have long radius dimensions. Other special angle elbows are available. Mitered elbows are available. Short radius elbows are available up to 12" diameter.													
Tees	FIBERBOND® Series 110FW, Fig.40 Tee, plain ends; ASTM D5685 RTRF 54K4D (up to 24"). Fig.40PPF and Fig.40F3 may also be used.													
Couplings	Couplings are not required in FIBERBOND® piping systems.													
Reducing Branches	FIBERBOND® Series 110FW, Fig.46 Flanged End "Olet" and Fig.48 Plain End "Olet".													
Reducers	FIBERBOND® Series 110FW, Fig.60 Concentric Reducer and Fig.61 Eccentric Reducer, plain ends; ASTM D5685 RTRF 54K4D (up to 24").													
Threaded Branches	FIBERBOND® Series 110FW, Fig.47JF Threaded Alloy (316SS, 90/10 Cu-Ni, Gr2 Ti, Monel, etc.) MNPT Olet is available. Fig.47JF limited to 2" MNPT and smaller and is limited to certain applications (See Fittings Guide). If this is not suitable, a Fig.46 Flanged End Olet should be used with an alloy blind flange bolted to it; the alloy blind flange would be drilled-and-tapped for the necessary NPT size. A 2in. Fig.46 Flanged End Olet is recommended as this is more durable than the 1" size; however, a 1" size can be used. A FRP MNPT connection is not available. A Fig.97 Threaded FRP FNPT Olet is also available, however, Fig.97 is limited to 2" FNPT and smaller, 150psig and lower, and to certain applications.													
Laterals	FIBERBOND® Series 110FW, Fig.80 Lateral, plain ends; pressure rating limited to 100psig (up to 16") and 50psig (above 16"). Fig.88 Reducing Laterals are also available.													

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Other Special Fittings	Refer to the FIBERBOND® Fittings Guide for other fittings. These include Fig.10-O Orifice Flanges, Fig.11 Vanstone "Stub" Flanges, Fig.17 Bleed Rings, Fig.19 Blind Flanges with NPT, and Fig.90 & Fig.91 "Dummy Legs"
Valves	Per customer specifications.
Unions	Unions are not available.
Plugs	Fig.16 Blind Flanges are available in all sizes. Fig.19 Blind Flange with a center- or high-point NPT connection is also available. Thicknesses match flange thicknesses. Fig.96 Hemicaps are available in sizes 2" and larger. Threaded NPT plugs are not available - use alloy materials such as 316SS or 90/10 Cu-Ni.
Bolting	Per customer specifications. Either heavy hex or hex nuts may be used. SAE "Narrow" series washers must be used with FIBERBOND® flanges. USS washers will not fit.
Gaskets	1/8" thick full-face rubber gaskets, such as "SBR" red rubber or "CR" neoprene, are suitable for all sizes. Garlock "Stress Saver" or CTG "ET-Energizer" gaskets are suitable for all sizes. Certain gasket materials may be required depending upon the fluid.
Notes	<ol style="list-style-type: none"> 1. Larger sizes are available (30", 36", 42", 48", and 60"; other custom sizes may be available). 2. All components have an external corrosion barrier pigmented "red" with UV absorbers. 3. FIBERBOND® flanges can be bolted to raised-face flanges, however, care should be taken when torquing these flanges. 4. A "filler" ring, made out of teflon or other suitable material, may be used to "shim" the raised-face flange. 5. Lower torque values may be needed for bolting to raised-face surfaces; higher values may be needed for flat-face surfaces.

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Branch Size	Header (Run) Size													
	1"	1.5"	2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
0.50"	NPT	NPT	NPT	NPT	NPT	NPT	NPT	NPT	NPT	NPT	NPT	NPT	NPT	NPT
.75"	NPT	NPT	NPT	NPT	NPT	NPT	NPT	NPT	NPT	NPT	NPT	NPT	NPT	NPT
1"	TEE	RS/NPT	RS/NPT	RS/NPT	RS/NPT	RS/NPT	RS/NPT	RS/NPT	RS/NPT	RS/NPT	RS/NPT	RS/NPT	RS/NPT	RS/NPT
1.5"		TEE	RS/NPT	RS/NPT	RS/NPT	RS/NPT	RS/NPT	RS/NPT	RS/NPT	RS/NPT	RS/NPT	RS/NPT	RS/NPT	RS/NPT
2"			TEE	RS/NPT	RS/NPT	RS/NPT	RS/NPT	RS/NPT	RS/NPT	RS/NPT	RS/NPT	RS/NPT	RS/NPT	RS/NPT
3"				TEE	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS
4"					TEE	RS	RS	RS	RS	RS	RS	RS	RS	RS
6"						TEE	RS	RS	RS	RS	RS	RS	RS	RS
8"							TEE	RS	RS	RS	RS	RS	RS	RS
10"								TEE	RS	RS	RS	RS	RS	RS
12"									TEE	RS	RS	RS	RS	RS
14"										TEE	RS	RS	RS	RS
16"											TEE	RS	RS	RS
18"												TEE	RS	RS
20"													TEE	RS
24"														TEE

- TEE FIBERBOND® Fig.40 Tee, plain ends. Fig.40PPF and Fig.40F3 can also be used.
- RT FIBERBOND® Fig.43 Reducing Tee
- RS FIBERBOND® Fig.46 Flanged End Olet (Saddle) or Fig.48 Plain End Olet (Saddle)
- MNPT FIBERBOND® Fig.47JF Metallic MNPT Olet (Saddle) (limited applications)
- FNPT FIBERBOND® Fig.97 FRP FNPT Olet (Saddle) (limited pressure rating and applications)
- NPT Either the Fig.47JF Metallic MNPT Olet or the Fig.97 FRP FNPT Olet