

# F-Chem® Product Data

## Applications

- Potable Water
- Brine Solutions
- Chemical Processing
- Crude Oil & Gas
- pH 2-13 Solutions
- Food Processing
- Saltwater Handling
- CO<sub>2</sub>
- Wastewater
- Cooling Water
- Produced Water
- Effluent Drains

## Materials and Construction

All pipe manufactured by filament winding process using vinyl ester thermosetting resin. **F-Chem** pipe can be provided with custom tailored vinyl ester resin systems, reinforced corrosion and abrasion resistant barriers, reinforced structural walls and joining techniques to meet specific project requirements. The pipe is available in 14"-72" diameters.

## Fittings

Fittings are manufactured with the same **chemical/temperature** capabilities as the pipe. Depending on the particular part and size, fittings will be contact molded, hand fabricated or filament wound.

## Joining Systems

### Bell & Spigot

Matched-taper joint secured with epoxy adhesive. Self-locking feature resists movement, facilitating joining runs of pipe without awaiting adhesive cure.



### Butt & Wrap

Plain end pipes or pipe and fittings butted together and wrapped with multiple layers of resin-saturated mat or woven roving.

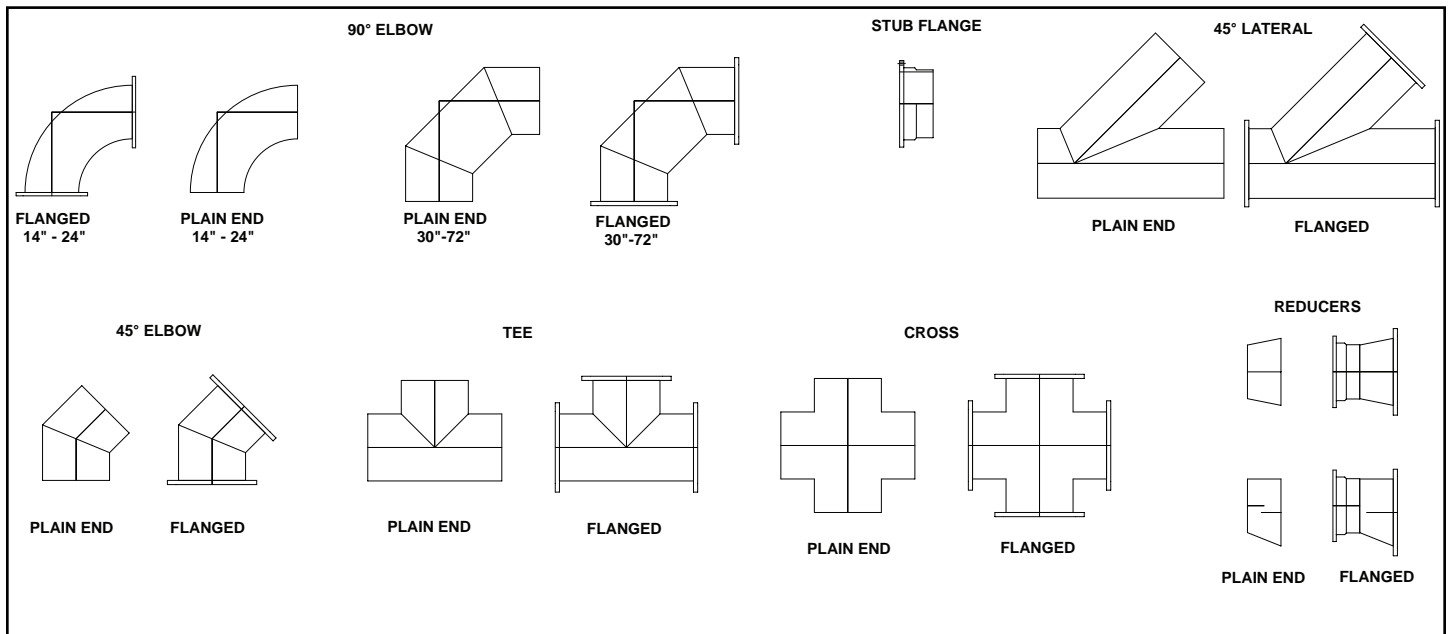


### Flanged

Available for all piping systems and diameters; factory assembled or shipped loose for assembly in the field.



## F-CHEM LARGE DIAMETER FITTINGS



# F-Chem® Product Data

Average Physical Properties				
Property	75°F psi	24°C MPa	175°F psi	79°C MPa
<b>Axial Tensile - ASTM D2105</b>				
Ultimate Stress	9,300	64.1	5,500	37.9
Modulus of Elasticity <sup>(1)</sup>	1.50 x 10 <sup>6</sup>	10,342	1.04 x 6	7,171
<b>Poisson's Ratio <math>\nu_{a/h}</math> (<math>\nu_{h/a}</math>)</b>				
0.33 (0.73)				
<b>Axial Compression - ASTM D695</b>				
Ultimate Stress	17,900	123.0	14,700	101
Modulus of Elasticity	1.40 x 10 <sup>6</sup>	9,653	9.00 x 10 <sup>5</sup>	6,205
<b>Beam Bending - ASTM D2925</b>				
Ultimate Stress	14,500	100.0	8,000	55.2
Modulus of Elasticity (Long Term)	1.99 x 10 <sup>6</sup>	13,721	1.14 x 10 <sup>6</sup>	7,860
<b>Hydrostatic Burst - ASTM D1599</b>				
Ultimate Hoop Tensile Stress	40,000	276	40,000	276
<b>Hydrostatic Design - ASTM D2992, Procedure B - Hoop Tensile Stress</b>				
Static 50 Year Life	14,000	96.5	-	-

<sup>(1)</sup>Consult the factory for Modulus of Elasticity values between 75°F and 175°F.

<b>Thermal Expansion Coefficient - ASTM D696 (Insulated Pipe)</b>	10.5 x 10 <sup>-6</sup> in/in/°F	18.9 x 10 <sup>-6</sup> mm/mm/°C
<b>Thermal Conductivity</b>	0.11 BTU/hr-ft-°F	0.06 W/m-°C
<b>Specific Gravity - ASTM D792</b>	1.8	
<b>Hazen-Williams Coefficient</b>	150	
<b>Absolute Surface Roughness</b>	0.00021 Inch	0.0053 mm
<b>Manning's Roughness Coefficient, n</b>	0.009	

### ASTM D2996 Designation Codes:

14"-24"	RTRP-12EU-3111
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The scope of ASTM D2996 is limited to 24" and smaller

### ASTM D2310 Designation Codes

30"-72"	RTRP-12EU
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Mechanical properties cell classifications shown are minimum. Actual classifications may be higher for some sizes.

### National Specification Compliance:

Pipe is manufactured in compliance with ASTM D2996, ASTM D2310 and ASTM D2992.

The following national specifications are met or exceeded when specified:

Designed in accordance with AWWA M45

Can be manufactured with ANSI/NSF Std. No. 61 approved resin system for potable water usage.

ASTM D6041 fittings

ASME/ANSI B31.3 compliant installation and training.

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