

## Conley Product Data

### RUGGED TOP OF THE LINE PERFORMANCE ~ AFFORDABLE COST

#### Description



- Heavy duty filament wound piping for service up to 150 psi
- 60 mil double Nexus® reinforced corrosion barrier (inner liner)
- Premium Vinyl Ester liner for operating temperatures up to 230°F
- Carrier sizes available from 1-1/2" through 24"
- Complete line of filament wound fittings available
- In house fabrication facilities "From your blueprints to pipe assemblies"
- Color coding available
- Patented interlocking union for thermal expansion (US Patent #5449204 & 5368338)
- See Series 60/60 Vinyl Ester Piping Specification
- See Series 60 Product Data Sheet

#### Typical Applications



- Acid and alkali resistant
- Brine and brackish water
- Solvents such as methanol, MEK, and monochlorobenzene
- Abrasive brines and slurries
- Chemical Processing
- Cooling water
- Odor control
- Food and beverages
- Potable water

#### Performance

- Excellent chemical resistance inside and outside to a variety of acid and alkali ~ See the chemical resistance chart for fluid services
- Superior elasticity (7-8% tensile elongation)
- External UV/Corrosion barrier minimum 20 mil on all pipe and fittings
- 25 year guarantee against '*fiber blooming*' on all pipe and fittings
- Straight socket joining system (No expensive tapering tools required)

#### Specifications

- ASTM D2996 Filament-Wound "Fiberglass" Pipe
- ASTM D2310 Classification for Machine-Made "Fiberglass" Pipe
- ASTM D3567 Determining Dimensions of "Fiberglass" Pipe and Fittings
- ASTM D4024 Machine Made "Fiberglass" Flanges
- ASTM D5685 "Fiberglass" Pressure Pipe Fittings

#### Codes & Standards

- AWWA C950 Fiberglass Pressure Pipe Standards
- ASME B31.1 Power Piping Code
- ASME B31.3 Process Piping Code



**Schedule 60/60  
Pipe Dimensional Data\*  
And Pressure Ratings (1)  
from -50° to 230°F**

(1) Static pressure rating; steady (stationary) pressure is created when using a gear pump, turbine pump, centrifugal pump, etc.

(2) Vacuum Service: A full vacuum within the pipe is equivalent to 14.7 psi external pressure at sea level. Contact Conley for higher external pressure ratings.



NOM SIZE	ANNULUS CLEAR (IN)	SPIDER MIN. OPENING (IN)	ANNULUS VOLUME (GAL/FT)	COMBINED EMPTY WEIGHT (LB/FT)	ANNULUS PRESS (PSI) †	ANNULUS VAC PRESS (PSI) (2) †
1-1/2"/3"	0.56	0.5	.22	2.95	150	160
2"/4"	0.81	0.6	0.51	3.92	150	123
2"/6"	1.81	1.6	1.32	5.87	150	82
3"/6"	1.27	1.0	1.10	6.44	150	82
3"/8"	2.27	2.0	2.24	8.21	150	45
4"/8"	1.76	1.5	1.96	8.86	150	45
6"/10"	1.72	1.5	2.61	13.40	150	22.9
8"/12"	1.83	1.6	3.51	18.25	100	24.8
10"/14"	1.79	1.5	4.20	22.73	100	16.1
12"/16"	1.63	1.4	4.65	27.71	100	11.1
14"/18"	1.63	1.4	5.30	31.49	100	7.9
16"/20"	1.63	1.4	5.96	34.23	100	5.9
18"/24"	2.63	2.0	10.40	43.82	100	5.9
20"/24"	1.65	1.4	7.26	44.66	100	5.9
20"/30"	4.77	2.0	21.22	54.85	100	4.8
24"/30"	2.70	2.0	13.96	63.18	100	4.8

† Maximum differential pressure of the jacketed system shall not exceed the vacuum pressure rating of the carrier pipe. For carrier pipe ratings, see Series 60 Product Data.

\*All values are nominal. Minimum wall thickness shall not be less than 87.5% of nominal wall thickness in accordance with ASTM D2996.

**NOTES:**

For carrier pipe dimensions, see Series 60 Pipe Dimensional Data Table  
For containment pipe dimensions, see Series 60 Pipe Dimensional Data Table  
Consult Factory for additional carrier / containment size combinations



**Support Spans (FT)**



NOM SIZE	FOR CARRIER PIPE AT AMBIENT TEMPERATURE	
	Water Filled Carrier and Containment Pipes	Water Filled Carrier Pipe Only
1-1/2"/3"	12.7	14.1
2"/4"	14.5	16.6
2"/6"	17.4	21.8
3"/6"	17.3	20.2
3"/8"	19.2	24.3
4"/8"	19.12	22.9
6"/10"	20.2	23.2
8"/12"	22.5	25.5
10"/14"	23.5	26.1
12"/16"	24.3	26.5
14"/18"	25.1	27.1
16"/20"	25.9	27.8
18"/24"	28.4	31.3
20"/24"	28.4	30.1
20"/30"	31.4	36.7
24"/30"	31.3	34.0

**NOTE:** Assumes continuous supports, mid-span deflection = 1/2" and fluid of 1.0 specific gravity

**Span multipliers for fluids of different specific gravities**

FLUID SPECIFIC GRAVITY							
AIR	0.75	0.9	1.0	1.1	1.25	1.5	2.0
1.40	1.07	1.02	1.0	0.98	0.95	0.90	0.84
(MULTIPLIER FOR CORRECTED SPAN LENGTHS)							

**Span multipliers for fluids at different temperatures**

FLUID TEMPERATURE					
75°F	100°F	150°F	175°F	200°F	225°F
1.0	0.98	0.93	0.91	0.88	0.84
(MULTIPLIER FOR CORRECTED SPAN LENGTHS)					



**Anchor Loads Due to  
Restrained Thermal  
Expansion (LBS)**

NOM SIZE	TEMPERATURE CHANGE IN CONTAINMENT PIPE			
	1°F	25°F	50°F	75°F
1-1/2" / 3"	500	1,050	2,070	3,100
2" / 4"	519	1,535	2,923	4,385
2" / 6"	547	2,232	5,145	7,720
3" / 6"	751	2,436	5,145	7,720
3" / 8"	774	3,003	7,153	10,730
4" / 8"	1,004	3,233	7,153	10,730
6" / 10"	1,754	5,349	10,100	15,150
8" / 12"	2,412	6,798	13,600	20,400
10" / 14"	3,377	8,888	15,754	23,632
12" / 16"	4,500	10,770	17,910	26,863
14" / 18"	5,243	13,215	21,519	30,095
16" / 20"	5,950	14,782	23,981	33,181
18" / 24"	6,775	19,288	32,323	45,728
20" / 24"	7,071	19,584	32,618	45,728
20" / 30"	7,306	25,461	44,372	63,284
24" / 30"	10,258	28,413	47,325	66,236

**NOTE:** Thermal end loads on anchors are independent of the carrier pipe temperature. The loads are based on the change in temperature of the containment pipe plus 10% or the maximum load from the carrier pipe at 150°F with uninsulated containment pipe assuming an installation temperature of 75°F.

## Typical Properties

TEMPERATURE	75°F	250°F	
PROPERTY	VALUE	VALUE	METHOD
AXIAL TENSILE STRENGTH	14,200 psi	10,650 psi	ASTM D2105
AXIAL TENSILE DESIGN STRENGTH	3,550 psi	2,660 psi	ASTM D2105
AXIAL MODULUS OF ELASTICITY	1.75 x 10 <sup>6</sup> psi	1.30 x 10 <sup>6</sup> psi	ASTM D2105
COMPRESSIVE STRENGTH	22,750 psi	17,000 psi	ASTM D695
COMPRESSIVE DESIGN STRENGTH	5,685 psi	4,250 psi	ASTM D695
COMPRESSION MODULUS	2.80 x 10 <sup>6</sup> psi	2.10 x 10 <sup>6</sup> psi	ASTM D695
POISSON'S RATIO $V_{a/h}$ ( $V_{h/a}$ )	0.33 (0.23)		*CONLEY METHOD #20
BEAM BENDING, ULTIMATE STRESS	30,000 psi	22,500 psi	CONLEY METHOD 8
BEAM BENDING, DESIGN STRESS <sup>(1)</sup>	3,750 psi	2,810 psi	CONLEY METHOD 8
SHEAR MODULUS	1.30 x 10 <sup>6</sup> psi	1.00 x 10 <sup>6</sup> psi	*CONLEY METHOD #9
HYDROSTATIC DESIGN BASIS	16,000 psi	8,000 psi	ASTM D2992 PROCEDURE B
HYDROSTATIC BURST (WALL STRESS @ 72°F)	32,000 psi	24,000 psi	ASTM D1599
CIRCUMFERENTIAL MODULUS OF ELASTICITY	2.50 x 10 <sup>6</sup> psi	1.87 x 10 <sup>6</sup> psi	ASTM D1599
FLEXURAL MODULUS OF ELASTICITY	1.75 x 10 <sup>6</sup> psi	1.30 x 10 <sup>6</sup> psi	ASTM 2790
COEFFICIENT OF LINEAR THERMAL EXPANSION	9.5 x 10 <sup>-6</sup> IN IN- °F		CONLEY METHOD 3
COEFFICIENT OF THERMAL CONDUCTIVITY	2.9 BTU/HR-IN FT <sup>2</sup> - °F		CONLEY METHOD 16
SPECIFIC GRAVITY	1.85		
DENSITY	0.067 LB/CU IN		
DIELECTRIC STRENGTH	535 VOLTS MIL		ASTM D149
DEGREE OF CURE	175°C (347°F) Tg		DMA
HEAT DEFLECTION TEMPERATURE	150°C (302°F)		ISO 75-3
FLOW FACTOR (HAZEN-WILLIAMS)	150		
SURFACE ROUGHNESS	1.7 X 10 <sup>-5</sup> FEET		
MANNING'S "n"	0.009 INCH		
<sup>(1)</sup> Beam bending design stress is 1/8 of ultimate to allow for combined stress (bending and pressure)			



ISO 9001:2015  
CERTIFIED  
Conley  
Composites  
Kentwood, MI

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