Pegasus hydraulics

Tube and pipe

16

Product Groups	Page
General information	16.02
Metric OD tube	16.03
Imperial OD tube	16.04
Nominal bore pipe	16.06

Types

We supply three types of stainless steel tube and pipe - metric and imperial OD (outside diameter) tube and nominal bore (NB) pipe. Stainless steel metric OD tube and stainless steel imperial OD tube is manufactured in accordance with ASTM A269 and ASTM A511. Stainless steel nominal bore pipe is manufactured in accordance with ANSI/ASME B36.19M. We recommend that you consult the technical standards which are available for purchase from the standardising bodies to discover further information regarding tolerances on specifications such as outside diameter, wall thickness, out-of-roundness and alignment.

Pressure-handling capabilities

Barlow's formula is commonly used to calculate the theoretical burst pressure of a tube or pipe.

P=(2*S*t)/D

Where P = pressure (psig), S = tensile strength of the material (psi), t = nominal wall thickness (inches), D = outside diameter (inches).

Note - in codes like ASME B31.3 modified versions of the Barlow's formula - like the Boardman formula and the Lame formula - are used to calculate burst and allowable pressures and minimum wall thickness.

Bending

It is recommended that, when bending stainless steel tube and stainless steel pipe, that the minimum bend radius should be at least three times the outside diameter (OD) of the tube or pipe.

Pressure reduction

Bear in mind that the nominal working pressure of stainless steel tube and stainless steel pipe has an inverse relationship with medium temperature.

We stock a large range of metric OD tube.We can also supply a full range of imperial OD tube and nominal bore pipe in various gauges and schedules.

Please ask us for more details.

Tube O.D mm	Wall mm	Part code
4	1	S316-4x1
6	1	S316-6x1
6	1.5	S316-6x1.5
8	1	S316-8x1
8	1.5	S316-8x1.5
10	1	S316-10x1
10	1.5	S316-10X1.5
10	2	S316-10x2
12	1	S316-12x1
12	1.5	S316-12x1.5
12	2	S316-12x2
14	2	S316-14x2
15	1	S316-15x1
15	1.5	S316-15x1.5
15	2	S316-15x2
16	1.5	S316-16x1.5
16	2	S316-16x2
16	2.5	S316-16x2.5
16	3	S316-16x3
18	1.5	S316-18x1.5
18	2	S316-18x2
20	1.5	S316-20x1.5
20	2	S316-20x2
20	2.5	S316-20x2.5
20	3	S316-20x3
22	1.5	S316-22x1.5
22	2	S316-22x2
22	3	S316-22x3
25	2	S316-25x2
25	2.5	S316-25x2.5
25	3	S316-25x3
28	1.5	S316-28x1.5
28	2	S316-28x2
28	3	S316-28x3
30	3	S31630x3
30	4	S316-30x4
35	2	S316-35x2
35	5	S316-35x2
38	4	S316x38x4
38	5	S316-38x5
42	2	S316-42x2
42	3	S316-42x3
50	5	S316-50x5

Part code is simply formed as follows...

example: S316-12x1.5

S = seamless

316 - the grade of stainless steel

12 - mm OD

1.5 - mm wall thickness

Stainless steel imperial tube dimensions and weights per metre

OD	Wall thickness, in												
	0.020	0.022	0.028	0.035	0.036	0.048	0.064	0.080	0.104	0.125	0.188	0.250	0.375
in	Weight, kg/m (conventional weights)												
1/8	0.034	0.037	0.044		0.052								
3/16		0.059	0.072		0.088	0.109							
1/4	0.075	0.081	0.101		0.125	0.157	0.193						
5/16			0.129		0.161	0.206	0.258						
3/8			0.157		0.200	0.254	0.323	0.383		0.507			
7/16					0.234		0.390						
1/2			0.214	0.264	0.273	0.352	0.452	0.545		0.760			
5/8					0.344	0.449	0.582	0.714		1.01			
3/4					0.417	0.546	0.712	0.869	1.09	1.27	1.71		
7/8						0.643	0.841	1.03		1.52			
1					0.563	0.741	0.971	1.19	1.51	1.77	2.48	3.04	3.80
1 1/8						0.838	1.10						
1 1/4						0.944	1.23	1.52		2.28			
1 3/8					0.781		1.36						
1 1/2					0.854		1.49	1.84		2.79	4.00	5.07	
1 5/8							1.62						
1 3/4						1.32	1.75			3.29			
2							2.01			3.80		7.09	
2 1/4										4.31		8.11	
2 1/2							2.53			4.81		9.12	
2 3/4							2.79						
3							3.05	3.79		5.83		11.1	
3 1/2												13.2	
4										7.85		15.2	
5												19.4	
6												23.5	

Part code is simply formed as follows...

example: S316-1/2OD18G

S = seamless

316 = the grade of stainless steel

1/2OD = outside diameter in inches

18G = 18 gauge

Stainless steel imperial outside diameter (OD) tube wall thicknesses can be referred to as Standard Wire Gauge (SWG) and Birmingham Wire Gauge (BWG). See the following table for the metric equivalent of these terms.

Notes – Conventional weights are quoted in table above. For austenitic and duplex steels multiply the quoted weight by 1.014. For ferritic and martensitic steels multiply the quoted weight by 0.985.

Standard Wire Gauge (formerly Imperial Wire Gauge) SWG		
SWG	Wall Thickness	
	in	mm
0 SWG	0.324	8.23
1 SWG	0.300	7.62
2 SWG	0.276	7.01
3 SWG	0.252	6.40
4 SWG	0.232	5.89
5 SWG	0.212	5.38
6 SWG	0.192	4.88
7 SWG	0.176	4.47
8 SWG	0.160	4.06
9 SWG	0.144	3.66
10 SWG	0.128	3.25
11 SWG	0.116	2.95
12 SWG	0.104	2.64
13 SWG	0.092	2.34
14 SWG	0.080	2.03
15 SWG	0.072	1.83
16 SWG	0.064	1.63
17 SWG	0.056	1.42
18 SWG	0.048	1.22
19 SWG	0.040	1.02
20 SWG	0.036	0.91
21 SWG	0.032	0.81
22 SWG	0.028	0.71
23 SWG	0.024	0.61
24 SWG	0.0220	0.56
25 SWG	0.0200	0.51
26 SWG	0.0180	0.46
27 SWG	0.0164	0.42
28 SWG	0.0148	0.38
29 SWG	0.0136	0.35
30 SWG	0.0124	0.31
31 SWG	0.0116	0.29
32 SWG	0.0108	0.27
33 SWG	0.0100	0.25
34 SWG	0.0092	0.23
35 SWG	0.0084	0.21
36 SWG	0.0076	0.19
37 SWG	0.0068	0.17
38 SWG	0.0060	0.15
39 SWG	0.0052	0.13
40 SWG	0.0048	0.12

Birmingham Wire Gauge BWG		
BWG	Wall Thickness	
	in	mm
0 BWG	0.340	8.64
1 BWG	0.300	7.62
2 BWG	0.284	7.21
3 BWG	0.259	6.58
4 BWG	0.238	6.05
5 BWG	0.220	5.59
6 BWG	0.203	5.16
7 BWG	0.180	4.57
8 BWG	0.165	4.19
9 BWG	0.148	3.76
10 BWG	0.134	3.40
11 BWG	0.120	3.05
12 BWG	0.109	2.77
13 BWG	0.095	2.41
14 BWG	0.083	2.11
15 BWG	0.072	1.83
16 BWG	0.065	1.65
17 BWG	0.058	1.47
18 BWG	0.049	1.24
19 BWG	0.042	1.07
20 BWG	0.035	0.89
21 BWG	0.032	0.81
22 BWG	0.028	0.71
23 BWG	0.025	0.64
24 BWG	0.022	0.56
25 BWG	0.020	0.51
26 BWG	0.018	0.46
27 BWG	0.016	0.41
28 BWG	0.014	0.36
29 BWG	0.013	0.33
30 BWG	0.012	0.30
31 BWG	0.010	0.25
32 BWG	0.009	0.23
33 BWG	0.008	0.20
34 BWG	0.007	0.18
35 BWG	0.005	0.13
36 BWG	0.004	0.10

Stainless steel nominal bore pipe dimensions and weights per metre

Nominal Pipe Size	OD		Schedule 5S[1]			Schedule 10S[1]		
	in	mm	in	mm	kg/m	in	mm	kg/m
1/8	0.405	10.3	-	-	-	0.049	1.24	0.28
1/4	0.540	13.7	-	-	-	0.065	1.65	0.49
3/8	0.675	17.1	-	-	-	0.065	1.65	0.63
1/2	0.840	21.3	0.065	1.65	0.80	0.083	2.11	1.00
3/4	1.050	26.7	0.065	1.65	1.03	0.083	2.11	1.28
1	1.315	33.4	0.065	1.65	1.30	0.109	2.77	2.09
1 1/4	1.660	42.2	0.065	1.65	1.65	0.109	2.77	2.70
1 1/2	1.900	48.3	0.065	1.65	1.91	0.109	2.77	3.11
2	2.375	60.3	0.065	1.65	2.40	0.109	2.77	3.93
2 1/2	2.875	73.0	0.083	2.11	3.69	0.120	3.05	5.26
3	3.500	88.9	0.083	2.11	4.51	0.120	3.05	6.45
3 1/2	4.000	101.6	0.083	2.11	5.18	0.120	3.05	7.40
4	4.500	114.3	0.083	2.11	5.84	0.120	3.05	8.36
5	5.563	141.3	0.109	2.77	9.47	0.134	3.40	11.57
6	6.625	168.3	0.109	2.77	11.32	0.134	3.40	13.84
8	8.625	219.1	0.109	2.77	14.79	0.148	3.76	19.96
10	10.750	273.1	0.134	3.40	22.63	0.165	4.19	27.78
12	12.750	323.9	0.156	3.96	31.25	0.180	4.57	36.00
14	14.000	355.6	0.156	3.96	34.36	0.1882	4.782	41.302
16	16.000	406.4	0.165	4.19	41.56	0.1882	4.782	47.292
18	18.000	457	0.165	4.19	46.81	0.1882	4.782	53.262
20	20.000	508	0.188	4.78	59.25	0.2182	5.542	68.612
22	22.000	559	0.188	4.78	65.24	0.2182	5.542	75.532
24	24.000	610	0.218	5.54	82.47	0.250	6.35	94.45
30	30.000	762	0.250	6.35	118.31	0.312	7.92	147.36

Nominal Pipe Size	Schedule 40S			Schedule 80S		
	in	mm	kg/m	in	mm	kg/m
1/8	0.068	1.73	0.37	0.095	2.41	0.47
1/4	0.088	2.24	0.63	0.119	3.02	0.80
3/8	0.091	2.31	0.84	0.126	3.20	1.10
1/2	0.109	2.77	1.27	0.147	3.73	1.62
3/4	0.113	2.87	1.69	0.154	3.91	2.20
1	0.133	3.38	2.50	0.179	4.55	3.24
1 1/4	0.140	3.56	3.39	0.191	4.85	4.47
1 1/2	0.145	3.68	4.05	0.200	5.08	5.41
2	0.154	3.91	5.44	0.218	5.54	7.48
2 1/2	0.203	5.16	8.63	0.276	7.01	11.41
3	0.216	5.49	11.29	0.300	7.62	15.27
3 1/2	0.226	5.74	13.57	0.318	8.08	18.63
4	0.237	6.02	16.07	0.337	8.56	22.32
5	0.258	6.55	21.77	0.375	9.53	30.97
6	0.280	7.11	28.26	0.432	10.97	42.56
8	0.322	8.18	42.55	0.500	12.70	64.64
10	0.365	9.27	60.31	0.5002	12.702	96.012
12	0.3752	9.532	73.882	0.5002	12.702	132.082

Part code is simply formed as follows...

example:
S316-NB-1/2-40S

S = seamless

316 = the grade of stainless steel

NB = nominal bore

1/2 = nominal bore pipe size in inches

40S= schedule size

Notes

1 Schedules 5S and 10S wall thicknesses do not permit threading in accordance with ANSI/ASME B1.20.1.

2 These dimensions and weights do not conform to ANSI/ASME B36.10M.
- The suffix 'S' after the schedule number indicates that the pipe dimensions and weight are in compliance with this stainless steel pipe specification, ANSI/ASME B36.19M-1985, and not the more general ANSI/ASME B36.10M-1995 specification.
- Although this specification is applicable to stainless steel, quoted weights are for carbon steel pipe and should be multiplied by 1.014 for austenitic and duplex steels, or by 0.985 for ferritic and martensitic steels.