

Flanges for data center cooling

Pipe schedule chart: wall thickness, inside diameter and weight

The schedule is the part of a pipe order that sets its wall, its bore and its weight, and the bore of every weld neck flange on the line.

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In short

A pipe schedule sets the wall thickness of a pipe of a given nominal size. Each nominal pipe size (NPS) has one outside diameter, so a higher schedule means a thicker wall, a smaller inside diameter and more weight. The chart lists every schedule of ASME B36.10M (carbon steel) and ASME B36.19M (stainless steel, the S schedules) from NPS 1/2 to 24, with the wall, the inside diameter and the weight in carbon steel and in 316L stainless steel.

01

Pipe schedule chart, NPS 1/2 to 3

Table 1. Pipe schedules NPS 1/2 to 3 (DN 15 to 80): outside diameter, wall, inside diameter and weight, mm (in); weight kg/m (lb/ft)

NPS	Outside diameter	Schedule	Wall	Inside diameter	Weight carbon steel	Weight stainless 316L
1/2 DN 15	21.3 0.840	Sch 5S / Sch 5	1.65 0.065	18.0 0.710	0.80 0.54	0.82 0.55
		Sch 10S / Sch 10	2.11 0.083	17.1 0.674	1.00 0.67	1.02 0.68
		Sch 30	2.41 0.095	16.5 0.650	1.13 0.76	1.15 0.77
		Sch 40S / STD / Sch 40	2.77 0.109	15.8 0.622	1.27 0.85	1.29 0.87
		Sch 80S / XS / Sch 80	3.73 0.147	13.9 0.546	1.62 1.09	1.65 1.11
		Sch 160	4.78 0.188	11.8 0.464	1.95 1.31	1.99 1.34
		XXS	7.47 0.294	6.4 0.252	2.55 1.72	2.60 1.75
3/4 DN 20	26.7 1.050	Sch 5S / Sch 5	1.65 0.065	23.4 0.920	1.02 0.68	1.04 0.70
		Sch 10S / Sch 10	2.11 0.083	22.5 0.884	1.28 0.86	1.30 0.87
		Sch 30	2.41 0.095	21.8 0.860	1.44 0.97	1.47 0.99
		Sch 40S / STD / Sch 40	2.87 0.113	20.9 0.824	1.68 1.13	1.72 1.15
		Sch 80S / XS / Sch 80	3.91 0.154	18.8 0.742	2.20 1.48	2.24 1.50
		Sch 160	5.56 0.219	15.5 0.612	2.90 1.95	2.95 1.98
		XXS	7.82 0.308	11.0 0.434	3.64 2.44	3.71 2.49

NPS	Outside diameter	Schedule	Wall	Inside diameter	Weight carbon steel	Weight stainless 316L
1 DN 25	33.4 1.315	Sch 5S / Sch 5	1.65 0.065	30.1 1.185	1.29 0.87	1.32 0.89
		Sch 10S / Sch 10	2.77 0.109	27.9 1.097	2.09 1.41	2.13 1.43
		Sch 30	2.90 0.114	27.6 1.087	2.18 1.46	2.22 1.49
		Sch 40S / STD / Sch 40	3.38 0.133	26.6 1.049	2.50 1.68	2.55 1.71
		Sch 80S / XS / Sch 80	4.55 0.179	24.3 0.957	3.24 2.17	3.30 2.22
		Sch 160	6.35 0.250	20.7 0.815	4.24 2.85	4.32 2.90
		XXS	9.09 0.358	15.2 0.599	5.45 3.66	5.56 3.73
1-1/4 DN 32	42.2 1.660	Sch 5S / Sch 5	1.65 0.065	38.9 1.530	1.65 1.11	1.68 1.13
		Sch 10S / Sch 10	2.77 0.109	36.6 1.442	2.69 1.81	2.74 1.84
		Sch 30	2.97 0.117	36.2 1.426	2.87 1.93	2.93 1.97
		Sch 40S / STD / Sch 40	3.56 0.140	35.1 1.380	3.39 2.28	3.45 2.32
		Sch 80S / XS / Sch 80	4.85 0.191	32.5 1.278	4.46 3.00	4.55 3.06
		Sch 160	6.35 0.250	29.5 1.160	5.61 3.77	5.72 3.84
		XXS	9.70 0.382	22.8 0.896	7.77 5.22	7.92 5.32
1-1/2 DN 40	48.3 1.900	Sch 5S / Sch 5	1.65 0.065	45.0 1.770	1.90 1.28	1.93 1.30
		Sch 10S / Sch 10	2.77 0.109	42.7 1.682	3.11 2.09	3.17 2.13
		Sch 30	3.18 0.125	41.9 1.650	3.53 2.37	3.60 2.42
		Sch 40S / STD / Sch 40	3.68 0.145	40.9 1.610	4.05 2.72	4.13 2.77
		Sch 80S / XS / Sch 80	5.08 0.200	38.1 1.500	5.41 3.64	5.51 3.70
		Sch 160	7.14 0.281	34.0 1.338	7.24 4.86	7.38 4.96
		XXS	10.16 0.400	27.9 1.100	9.55 6.41	9.73 6.54

NPS	Outside diameter	Schedule	Wall	Inside diameter	Weight carbon steel	Weight stainless 316L
2 DN 50	60.3 2.375	Sch 5S / Sch 5	1.65 0.065	57.0 2.245	2.39 1.61	2.43 1.64
		Sch 10S / Sch 10	2.77 0.109	54.8 2.157	3.93 2.64	4.00 2.69
		Sch 30	3.18 0.125	54.0 2.125	4.47 3.01	4.56 3.06
		Sch 40S / STD / Sch 40	3.91 0.154	52.5 2.067	5.44 3.66	5.55 3.73
		Sch 80S / XS / Sch 80	5.54 0.218	49.3 1.939	7.48 5.03	7.62 5.12
		Sch 160	8.74 0.344	42.8 1.687	11.12 7.47	11.33 7.61
		XXS	11.07 0.436	38.2 1.503	13.45 9.04	13.71 9.21
2-1/2 DN 65	73.0 2.875	Sch 5S / Sch 5	2.11 0.083	68.8 2.709	3.69 2.48	3.76 2.52
		Sch 10S / Sch 10	3.05 0.120	66.9 2.635	5.26 3.53	5.36 3.60
		Sch 30	4.78 0.188	63.5 2.499	8.04 5.40	8.19 5.50
		Sch 40S / STD / Sch 40	5.16 0.203	62.7 2.469	8.63 5.80	8.80 5.91
		Sch 80S / XS / Sch 80	7.01 0.276	59.0 2.323	11.41 7.67	11.63 7.82
		Sch 160	9.53 0.375	54.0 2.125	14.92 10.02	15.20 10.21
		XXS	14.02 0.552	45.0 1.771	20.40 13.71	20.79 13.97
3 DN 80	88.9 3.500	Sch 5S / Sch 5	2.11 0.083	84.7 3.334	4.51 3.03	4.60 3.09
		Sch 10S / Sch 10	3.05 0.120	82.8 3.260	6.45 4.34	6.58 4.42
		Sch 30	4.78 0.188	79.3 3.124	9.91 6.66	10.10 6.78
		Sch 40S / STD / Sch 40	5.49 0.216	77.9 3.068	11.29 7.58	11.50 7.73
		Sch 80S / XS / Sch 80	7.62 0.300	73.7 2.900	15.27 10.26	15.57 10.46
		Sch 160	11.13 0.438	66.6 2.624	21.34 14.34	21.75 14.61
		XXS	15.24 0.600	58.4 2.300	27.68 18.60	28.21 18.96

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Pipe schedule chart, NPS 4 to 12

Table 2. Pipe schedules NPS 4 to 12 (DN 100 to 300): outside diameter, wall, inside diameter and weight, mm (in); weight kg/m (lb/ft)

NPS	Outside diameter	Schedule	Wall	Inside diameter	Weight carbon steel	Weight stainless 316L
4 DN 100	114.3 4.500	Sch 5S / Sch 5	2.11 0.083	110.1 4.334	5.83 3.92	5.94 3.99
		Sch 10S / Sch 10	3.05 0.120	108.2 4.260	8.36 5.62	8.52 5.73
		Sch 30	4.78 0.188	104.7 4.124	12.90 8.67	13.14 8.83
		Sch 40S / STD / Sch 40	6.02 0.237	102.3 4.026	16.07 10.80	16.38 11.01
		Sch 80S / XS / Sch 80	8.56 0.337	97.2 3.826	22.32 15.00	22.75 15.29
		Sch 120	11.13 0.438	92.0 3.624	28.31 19.02	28.85 19.39
		Sch 160	13.49 0.531	87.3 3.438	33.53 22.53	34.17 22.96
		XXS	17.12 0.674	80.1 3.152	41.03 27.57	41.81 28.10
5 DN 125	141.3 5.563	Sch 5S / Sch 5	2.77 0.109	135.8 5.345	9.46 6.36	9.64 6.48
		Sch 10S / Sch 10	3.40 0.134	134.5 5.295	11.57 7.78	11.80 7.93
		Sch 40S / STD / Sch 40	6.55 0.258	128.2 5.047	21.78 14.63	22.19 14.91
		Sch 80S / XS / Sch 80	9.53 0.375	122.3 4.813	30.95 20.80	31.55 21.20
		Sch 120	12.70 0.500	115.9 4.563	40.28 27.07	41.05 27.58
		Sch 160	15.88 0.625	109.6 4.313	49.10 33.00	50.04 33.63
		XXS	19.05 0.750	103.2 4.063	57.43 38.59	58.53 39.33

NPS	Outside diameter	Schedule	Wall	Inside diameter	Weight carbon steel	Weight stainless 316L
6 DN 150	168.3 6.625	Sch 5S / Sch 5	2.77 0.109	162.7 6.407	11.30 7.59	11.52 7.74
		Sch 10S / Sch 10	3.40 0.134	161.5 6.357	13.84 9.30	14.10 9.48
		Sch 40S / STD / Sch 40	7.11 0.280	154.1 6.065	28.27 18.99	28.81 19.36
		Sch 80S / XS / Sch 80	10.97 0.432	146.3 5.761	42.57 28.60	43.38 29.15
		Sch 120	14.27 0.562	139.7 5.501	54.21 36.43	55.25 37.13
		Sch 160	18.26 0.719	131.7 5.187	67.56 45.40	68.85 46.27
		XXS	21.95 0.864	124.4 4.897	79.20 53.22	80.71 54.23
8 DN 200	219.1 8.625	Sch 5S / Sch 5	2.77 0.109	213.5 8.407	14.77 9.92	15.05 10.11
		Sch 10S / Sch 10	3.76 0.148	211.6 8.329	19.96 13.41	20.34 13.67
		Sch 20	6.35 0.250	206.4 8.125	33.31 22.39	33.95 22.81
		Sch 30	7.04 0.277	205.0 8.071	36.79 24.72	37.49 25.20
		Sch 40S / STD / Sch 40	8.18 0.322	202.7 7.981	42.54 28.58	43.35 29.13
		Sch 60	10.31 0.406	198.5 7.813	53.09 35.68	54.11 36.36
		Sch 80S / XS / Sch 80	12.70 0.500	193.7 7.625	64.64 43.43	65.87 44.26
		Sch 100	15.09 0.594	188.9 7.437	75.90 51.00	77.35 51.98
		Sch 120	18.26 0.719	182.5 7.187	90.44 60.77	92.17 61.94
		Sch 140	20.62 0.812	177.8 7.001	100.94 67.83	102.87 69.12
		XXS	22.23 0.875	174.6 6.875	107.89 72.50	109.96 73.89
		Sch 160	23.01 0.906	173.1 6.813	111.27 74.77	113.40 76.20

NPS	Outside diameter	Schedule	Wall	Inside diameter	Weight carbon steel	Weight stainless 316L
10 DN 250	273.1 10.750	Sch 5S / Sch 5	3.40 0.134	266.2 10.482	22.63 15.21	23.07 15.50
		Sch 10S / Sch 10	4.19 0.165	264.7 10.420	27.79 18.67	28.32 19.03
		Sch 20	6.35 0.250	260.4 10.250	41.77 28.07	42.56 28.60
		Sch 30	7.80 0.307	257.5 10.136	51.01 34.28	51.98 34.93
		Sch 40S / STD / Sch 40	9.27 0.365	254.5 10.020	60.31 40.53	61.46 41.30
		Sch 60 / Sch 80S / XS	12.70 0.500	247.7 9.750	81.54 54.79	83.10 55.84
		Sch 80	15.09 0.594	242.9 9.562	95.98 64.50	97.82 65.73
		Sch 100	18.26 0.719	236.5 9.312	114.75 77.11	116.94 78.58
		Sch 120	21.44 0.844	230.2 9.062	133.02 89.39	135.57 91.10
		Sch 140 / XXS	25.40 1.000	222.3 8.750	155.13 104.24	158.09 106.23
		Sch 160	28.58 1.125	215.9 8.500	172.28 115.77	175.57 117.98

NPS	Outside diameter	Schedule	Wall	Inside diameter	Weight carbon steel	Weight stainless 316L
12 DN 300	323.9 12.750	Sch 5S / Sch 5	3.96 0.156	315.9 12.438	31.26 21.01	31.86 21.41
		Sch 10S / Sch 10	4.57 0.180	314.7 12.390	36.00 24.19	36.69 24.65
		Sch 20	6.35 0.250	311.2 12.250	49.72 33.41	50.67 34.05
		Sch 30	8.38 0.330	307.1 12.090	65.21 43.82	66.46 44.66
		Sch 40S / STD	9.53 0.375	304.8 12.000	73.84 49.61	75.25 50.56
		Sch 40	10.31 0.406	303.2 11.938	79.74 53.58	81.26 54.61
		Sch 80S / XS	12.70 0.500	298.5 11.750	97.45 65.49	99.31 66.74
		Sch 60	14.27 0.562	295.3 11.626	108.98 73.23	111.06 74.63
		Sch 80	17.48 0.688	288.9 11.374	132.04 88.72	134.56 90.42
		Sch 100	21.44 0.844	281.0 11.062	159.88 107.43	162.94 109.49
		Sch 120 / XXS	25.40 1.000	273.1 10.750	186.95 125.62	190.52 128.02
		Sch 140	28.58 1.125	266.7 10.500	208.08 139.82	212.06 142.50
		Sch 160	33.32 1.312	257.2 10.126	238.77 160.44	243.33 163.51

03

Pipe schedule chart, NPS 14 to 24

Table 3. Pipe schedules NPS 14 to 24 (DN 350 to 600): outside diameter, wall, inside diameter and weight, mm (in); weight kg/m (lb/ft)

NPS	Outside diameter	Schedule	Wall	Inside diameter	Weight carbon steel	Weight stainless 316L
14 DN 350	355.6 14.000	Sch 5S / Sch 5	3.96 0.156	347.7 13.688	34.36 23.09	35.02 23.53
		Sch 10S	4.78 0.188	346.0 13.624	41.31 27.76	42.10 28.29
		Sch 10	6.35 0.250	342.9 13.500	54.69 36.75	55.74 37.45
		Sch 20	7.92 0.312	339.8 13.376	67.95 45.66	69.25 46.53
		Sch 30 / Sch 40S / STD	9.53 0.375	336.6 13.250	81.29 54.63	82.85 55.67
		Sch 40	11.13 0.438	333.3 13.124	94.51 63.51	96.32 64.72
		Sch 80S / XS	12.70 0.500	330.2 13.000	107.40 72.17	109.45 73.55
		Sch 60	15.09 0.594	325.4 12.812	126.70 85.14	129.12 86.76
		Sch 80	19.05 0.750	317.5 12.500	158.11 106.25	161.13 108.28
		Sch 100	23.83 0.938	307.9 12.124	194.94 130.99	198.66 133.50
		Sch 120	27.79 1.094	300.0 11.812	224.64 150.95	228.94 153.84
		Sch 140	31.75 1.250	292.1 11.500	253.58 170.39	258.42 173.65
		Sch 160	35.71 1.406	284.2 11.188	281.73 189.32	287.12 192.93

NPS	Outside diameter	Schedule	Wall	Inside diameter	Weight carbon steel	Weight stainless 316L
16 DN 400	406.4 16.000	Sch 5S / Sch 5	4.19 0.165	398.0 15.670	41.57 27.93	42.37 28.47
		Sch 10S	4.78 0.188	396.8 15.624	47.30 31.78	48.20 32.39
		Sch 10	6.35 0.250	393.7 15.500	62.65 42.10	63.85 42.90
		Sch 20	7.92 0.312	390.6 15.376	77.88 52.33	79.37 53.33
		Sch 30 / Sch 40S / STD	9.53 0.375	387.4 15.250	93.23 62.65	95.01 63.84
		Sch 40 / Sch 80S / XS	12.70 0.500	381.0 15.000	123.31 82.86	125.66 84.44
		Sch 60	16.66 0.656	373.1 14.688	160.15 107.62	163.21 109.67
		Sch 80	21.44 0.844	363.5 14.312	203.52 136.76	207.41 139.37
		Sch 100	26.19 1.031	354.0 13.938	245.55 165.00	250.24 168.15
		Sch 120	30.96 1.219	344.5 13.562	286.68 192.64	292.16 196.32
		Sch 140	36.53 1.438	333.3 13.124	333.17 223.88	339.54 228.16
		Sch 160	40.49 1.594	325.4 12.812	365.36 245.51	372.34 250.20

NPS	Outside diameter	Schedule	Wall	Inside diameter	Weight carbon steel	Weight stainless 316L
18 DN 450	457.2 18.000	Sch 5S / Sch 5	4.19 0.165	448.8 17.670	46.82 31.46	47.72 32.06
		Sch 10S	4.78 0.188	447.6 17.624	53.28 35.80	54.30 36.49
		Sch 10	6.35 0.250	444.5 17.500	70.60 47.44	71.95 48.35
		Sch 20	7.92 0.312	441.4 17.376	87.81 59.00	89.48 60.13
		Sch 40S / STD	9.53 0.375	438.2 17.250	105.16 70.66	107.17 72.01
		Sch 30	11.13 0.438	434.9 17.124	122.39 82.24	124.73 83.81
		Sch 80S / XS	12.70 0.500	431.8 17.000	139.22 93.55	141.88 95.34
		Sch 40	14.27 0.562	428.7 16.876	155.93 104.78	158.91 106.78
		Sch 60	19.05 0.750	419.1 16.500	205.84 138.32	209.78 140.96
		Sch 80	23.83 0.938	409.5 16.124	254.64 171.11	259.50 174.38
		Sch 100	29.36 1.156	398.5 15.688	309.81 208.18	315.73 212.16
		Sch 120	34.93 1.375	387.4 15.250	363.71 244.40	370.66 249.07
		Sch 140	39.67 1.562	377.9 14.876	408.52 274.52	416.33 279.76
		Sch 160	45.24 1.781	366.7 14.438	459.59 308.83	468.38 314.73

NPS	Outside diameter	Schedule	Wall	Inside diameter	Weight carbon steel	Weight stainless 316L
20 DN 500	508.0 20.000	Sch 5S / Sch 5	4.78 0.188	498.4 19.624	59.26 39.82	60.39 40.58
		Sch 10S	5.54 0.218	496.9 19.564	68.61 46.11	69.93 46.99
		Sch 10	6.35 0.250	495.3 19.500	78.56 52.79	80.06 53.80
		Sch 20 / Sch 40S / STD	9.53 0.375	489.0 19.250	117.09 78.68	119.33 80.19
		Sch 30 / Sch 80S / XS	12.70 0.500	482.6 19.000	155.13 104.24	158.09 106.23
		Sch 40	15.09 0.594	477.8 18.812	183.40 123.24	186.91 125.60
		Sch 60	20.62 0.812	466.8 18.376	247.90 166.58	252.63 169.76
		Sch 80	26.19 1.031	455.6 17.938	311.16 209.09	317.11 213.09
		Sch 100	32.54 1.281	442.9 17.438	381.52 256.37	388.81 261.27
		Sch 120	38.10 1.500	431.8 17.000	441.52 296.69	449.96 302.36
		Sch 140	44.45 1.750	419.1 16.500	508.15 341.46	517.86 347.98
		Sch 160	50.01 1.969	408.0 16.062	564.88 379.58	575.67 386.83

NPS	Outside diameter	Schedule	Wall	Inside diameter	Weight carbon steel	Weight stainless 316L
24 DN 600	609.6 24.000	Sch 5S / Sch 5	5.54 0.218	598.5 23.564	82.49 55.43	84.06 56.49
		Sch 10S / Sch 10	6.35 0.250	596.9 23.500	94.47 63.48	96.27 64.69
		Sch 20 / Sch 40S / STD	9.53 0.375	590.6 23.250	140.96 94.72	143.65 96.53
		Sch 80S / XS	12.70 0.500	584.2 23.000	186.95 125.62	190.52 128.02
		Sch 30	14.27 0.562	581.1 22.876	209.58 140.83	213.58 143.52
		Sch 40	17.48 0.688	574.6 22.624	255.18 171.48	260.06 174.75
		Sch 60	24.61 0.969	560.4 22.062	355.08 238.60	361.86 243.16
		Sch 80	30.96 1.219	547.7 21.562	441.84 296.90	450.28 302.57
		Sch 100	38.89 1.531	531.8 20.938	547.33 367.79	557.78 374.81
		Sch 120	46.02 1.812	517.6 20.376	639.68 429.85	651.90 438.06
		Sch 140	52.37 2.062	504.9 19.876	719.74 483.64	733.49 492.88
		Sch 160	59.54 2.344	490.5 19.312	807.65 542.72	823.08 553.09

04

What the schedule numbers mean

- **Schedules 5 to 160** come from ASME B36.10M, the standard for welded and seamless wrought steel pipe. A larger number is a thicker wall for the same size, but the walls are not proportional between sizes.
- **STD, XS and XXS** (standard, extra strong and double extra strong) are the older weight classes, also in B36.10M. STD is the same wall as Schedule 40 up to NPS 10 and is 9.53 mm (0.375 in) from NPS 12 up; XS is the same as Schedule 80 up to NPS 8 and is 12.70 mm (0.500 in) from NPS 8 up.
- **5S, 10S, 40S and 80S** are the stainless steel schedules of ASME B36.19M. 40S always equals STD and 80S always equals XS; 10S equals Schedule 10 up to NPS 12 and is thinner from NPS 14 to 20.
- **The outside diameter** is fixed for each size: up to NPS 12 it is larger than the nominal size (NPS 4 is 114.3 mm (4.500 in)), and from NPS 14 it equals the nominal size in inches. DN is the metric name of the same pipe, so DN 100 is NPS 4.

05

The schedule and the flange bore

A weld neck flange is bored to the inside diameter of the pipe it is welded to, so the purchase order names the schedule as well as the size and class. If the bore does not match, the two walls meet with a step inside the weld: a flange bored too small has to be taper bored to the pipe's inside diameter, and one bored too large leaves the pipe wall standing proud inside

the joint, where it disturbs the flow and traps debris. Slip-on and socket weld flanges fit over the outside diameter, which every schedule shares, so their bore does not change with the schedule; a socket weld flange still has a bore matched to the schedule beyond the socket.

Our weld neck drawings give the bore for every schedule of each size, with the flange weight for each, in the flange drawing tool and in the PDF of every size and class. A line item reads, for example, *Weld neck flange, ASME B16.5, NPS 6, Class 150 RF, bore Sch 10S, ASTM A182 F316L*.

06

Schedules in data center cooling piping

Stainless technology cooling system piping is often Sch 10S, and sometimes 5S, since the pressure is low and stainless steel needs no corrosion allowance; carbon steel facility water mains are often standard wall, which is Schedule 40 up to NPS 10. Thin walls make light pipe, but the water inside weighs more than the pipe: NPS 6 Sch 10S in 316L weighs 14.1 kg/m (9.5 lb/ft), and the water it holds 20.5 kg/m (13.8 lb/ft), which the pipe supports carry together. Where the two systems meet, at a coolant distribution unit or a heat exchanger, flanges on each side are bored to their own schedule; the guide to FWS and TCS loops explains the two systems, and the ASME B31.9 guide the code that governs them.

Ordering pipe with the flanges

We supply pipe, fittings and flanges together as one package, with the certificates for each item. Name the pipe by size, schedule and ASTM specification and grade on the same request as its flanges.

07

How the figures are worked out

Outside diameters and walls are those of ASME B36.10M and B36.19M. The inside diameter is the outside diameter less twice the wall. The weight is the steel in one length, π × (D – t) × t × density: 7.85 g/cm³ for carbon steel, which gives the B36.10M formulas of 10.69 × (D – t) × t lb/ft with D and t in inches and 0.0246615 × (D – t) × t kg/m in millimetres, and 8.0 g/cm³ for 316L, as for the weights on our flange drawings. For 304L, at 7.9 g/cm³, the calculator works it out; it is about 0.6% above carbon steel. The walls are nominal: ASTM A53, A106 and A312 allow the wall to be up to 12.5% under nominal at any point, so the weight of a delivered pipe varies a little from mill to mill.

08

Questions about pipe schedules

What is the difference between Schedule 40 and Schedule 40S?

Up to NPS 10 they are the same wall. From NPS 12, Schedule 40S stays at the standard weight wall of 9.53 mm (0.375 in), while Schedule 40 gets thicker: 10.31 mm (0.406 in) at NPS 12 and 17.48 mm (0.688 in) at NPS 24.

Is Schedule 80 the same as extra strong (XS)?

Up to NPS 8, yes. From NPS 10, Schedule 80 is thicker than XS, which stays at 12.70 mm (0.500 in); Schedule 80S always equals XS.

Does a higher schedule change the outside diameter?

No. Every schedule of one nominal size has the same outside diameter, so the same fittings, flanges and clamps fit the outside; the schedule only changes the wall and the inside diameter.

Which schedule should a line use?

The piping designer sets it from the pressure, temperature, corrosion allowance and the code for the system, ASME B31.9 for building services or B31.3 for process piping. The chart gives the wall and the weight; it does not rate the pipe.

About Rajendra Industrial Corporation

Rajendra Industrial Corporation (RIC) has made stainless steel and carbon steel flanges and forged fittings since 2000, at its works in Umbergaon, Gujarat, India. For data center cooling RIC supplies flanges for facility water, technology cooling and heat rejection loops.

Flanges	Weld neck, slip-on, blind, lap joint, socket weld, threaded and ring type joint flanges to ASME B16.5 (NPS 1/2 to 24, Class 150 to 2500), ASME B16.47 Series A and B, EN 1092-1 and AWWA C207 and C228
Materials	Stainless steel ASTM A182 F304, F304L, F316 and F316L; duplex UNS S32205 and super duplex UNS S32750; carbon steel ASTM A105 and A350 LF2
Works	Forging, heat treatment, pickling, machining on CNC lathes, vertical machining centers and conventional lathes, marking and testing in house at Umbergaon, Gujarat, India
Testing	Tensile, hardness, PMI, dye penetrant and dimensional checks in house; chemical, intergranular corrosion, impact and ultrasonic testing at outside laboratories
Documents	Mill test certificates to EN 10204 3.1 or 3.2; third-party inspection by TÜV, Gulf Lloyds, IRClass, Bureau Veritas or SGS
Certificates	ISO 9001:2015, PED 2014/68/EU, NORSOK M-650, ISO 45001:2018, ISO 29001:2020

Ask for a quote or a drawing

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