Butt Weld Pipe Fitting Product Weight/Volume Chart

Instructions for Use

1. The weights listed in this table are calculated based on the outer diameter and wall thickness specified in relevant standards such as ASME B16.9. The calculations appropriately account for the impact of material selection and manufacturing conditions on product weight (e.g., thickness compensation). Therefore, the weights provided represent approximate net weights per piece and are for reference only.

Pipe schedule numbers marked with "S" in the table indicate stainless steel pipe fitting weights; others represent carbon steel weights. When consulting stainless steel weights, note that wall thickness values for the same pipe schedule number may differ between carbon steel and stainless steel.

2. Weight calculation formula for 90° elbows: $W = 9.685 \times 10^{-6} R(D^2 - d^2)$

Where: W - Weight of 90° elbow, kg;

R - Curvature radius of the elbow (structural dimension), mm;

D - Elbow outer diameter, mm;

d - Inner diameter of the elbow, mm.

The formula uses the density of carbon steel, 7.85 kg/dm³.

The weights of 45° and 180° elbows are calculated as half and twice the weight of a 90° elbow, respectively.

3. Steel pipe weight calculation formula: $W = 0.02466T (D - T)$

Where: W - Weight per meter of steel pipe, kg/m;

T - Steel pipe wall thickness, mm;

D - Outer diameter of the steel pipe, mm.

The steel pipe weight formula uses the density of carbon steel, i.e., 7.85 kg/dm³. The weight of austenitic stainless steel pipes is 1.015 times the weight calculated by the above formula.

4. The weight table for butt-welded pipe fittings lists weights for commonly used specifications. For products with the same nominal diameter but different wall thicknesses not included in the table, the approximate weight can be estimated using the following formula:

Q = Wt / T Where: Q - Estimated weight of the butt-welded pipe fitting, kg;

W - Weight of the product with the same nominal diameter and listed wall thickness in the table, kg;

t - Estimated wall thickness of the butt-welded pipe fitting, mm;

T - Wall thickness value of the product with the same nominal diameter and listed wall thickness in the table, mm.

5. The volumes listed in this table represent the external contour volume of a single product and account for space occupied during packaging. The approximate volumes shown are indicative of the packaging space required per unit for reference purposes. When using these values, consider factors such as volume calculations for nested packaging and whether small product volumes need to be factored in.

BW 90° L/R ELBOW

Nominal Size		Approximate weight kg						Approximate volume m^3
DN	NPS	SCH10S	SCH20	STD	SCH40	XS	SCH80	
15	1/2	0.06	-	0.08	0.08	0.10	0.10	$0.038*10^{-3}$
20	3/4	0.08	-	0.11	0.11	0.13	0.13	$0.061*10^{-3}$
25	1	0.13	-	0.15	0.15	0.21	0.21	$0.095*10^{-3}$
32	1-1/4	0.21	-	0.25	0.25	0.36	0.36	$0.193*10^{-3}$
40	1-1/2	0.28	-	0.39	0.39	0.52	0.52	$0.301*10^{-3}$
50	2	0.47	-	0.66	0.66	0.96	0.96	$0.623*10^{-3}$
65	2-1/2	0.79	-	1.37	1.37	1.80	1.80	$1.143*10^{-3}$
80	3	1.16	-	2.19	2.19	2.87	2.87	$2.034*10^{-3}$
90	3-1/2	1.55	-	2.96	2.96	4.06	4.06	$3.099*10^{-3}$
100	4	2.02	-	4.13	4.13	5.60	5.60	$4.483*10^{-3}$
125	5	3.46	-	6.89	6.89	9.62	9.62	$8.564*10^{-3}$
150	6	4.98	-	10.7	10.7	16.5	16.5	0.014
200	8	9.57	16.5	21.6	21.6	31.6	31.6	0.033
250	10	16.7	25.8	37.0	37.0	49.9	60.7	0.064
300	12	25.9	36.1	56.0	61.0	71.6	97.4	0.108
350	14	34.7	60.2	71.4	85.1	92.0	139	0.152
400	16	45.4	78.0	93.6	121	121	200	0.227
450	18	56.2	87.7	119	176	153	287	0.323
500	20	82.2	147	147	232	190	396	0.443

Nominal Size		Approximate weight kg						Approximate volume m^3
DN	NPS	SCH10S	SCH20	STD	SCH40	XS	SCH80	
550	22	99.6	178	178	-	230	515	0.591
600	24	136	212	212	377	275	635	0.762
650	26	-	323	249	-	323	-	0.974
700	28	-	375	290	-	375	-	1.217
750	30	265	431	333	-	431	-	1.498
800	32	-	491	379	675	491	-	1.814
850	34	-	555	428	762	555	-	2.182
900	36	-	622	480	950	622	-	2.587
950	38	-	-	535	-	694	-	3.044
1000	40	-	-	594	-	769	-	3.551
1050	42	-	-	655	-	849	-	4.112
1100	44	-	-	718	-	932	-	4.729
1150	46	-	-	786	-	1019	-	5.399
1200	48	-	-	865	-	1110	-	6.136
1300	52	-	-	1006	-	-	-	7.805
1400	56	-	-	1183	-	-	-	9.715
1500	60	-	-	1341	-	-	-	11.98
1600	64	-	-	1526	-	-	-	14.44
1700	68	-	-	1723	-	-	-	17.44
1800	72	-	-	1933	-	-	-	20.72
1900	76	-	-	2154	-	-	-	24.35
2000	80	-	-	2388	-	-	-	28.41

Note: The approximate weight of ≥DN1300 (NPS52) calculated based on a nominal wall thickness of 10mm is listed under the STD column.

BW 90° S/R ELBOW

Nominal Size		Approximate weight kg						Approximate volume m^3
DN	NPS	SCH10S	SCH20	STD	SCH40	XS	SCH80	
25	1	0.08	-	0.11	0.11	0.13	0.13	$0.063*10^{-3}$
32	1-1/4	0.14	-	0.17	0.17	0.24	0.24	$0.127*10^{-8}$
40	1-1/2	0.19	-	0.24	0.24	0.34	0.34	$0.200*10^{-8}$
50	2	0.32	-	0.44	0.44	0.68	0.68	$0.418*10^{-3}$
65	2-1/2	0.53	-	0.91	0.91	1.18	1.18	$0.770*10^{-3}$
80	3	0.78	-	1.36	1.36	1.91	1.91	$1.356*10^{-3}$
90	3-1/2	1.04	-	1.96	1.96	2.58	2.58	$2.074*10^{-3}$
100	4	1.35	-	2.77	2.77	3.54	3.54	$3.001*10^{-3}$
125	5	2.32	-	4.40	4.40	6.46	6.46	$5.725*10^{-3}$
150	6	3.31	-	7.12	7.12	10.6	10.6	$9.720*10^{-3}$
200	8	6.38	11.0	14.1	14.1	21.1	21.1	0.022
250	10	11.2	16.8	24.6	24.6	33.2	40.4	0.042
300	12	17.3	24.1	37.0	40.6	47.7	65.0	0.072
350	14	23.2	40.2	42.6	54.5	61.3	92.4	0.101
400	16	30.2	51.9	62.2	80.4	80.4	133	0.151
450	18	38.3	65.7	79.1	117	102	184	0.215
500	20	54.9	97.9	97.9	155	126	255	0.295
550	22	66.5	119	119	-	154	333	0.394
600	24	90.6	142	142	251	183	424	0.512

Nominal Size		Approximate weight kg						Approximate volume m^3
DN	NPS	SCH10S	SCH20	STD	SCH40	XS	SCH80	
650	26	-	-	167	-	-	-	0.649
700	28	-	-	194	-	-	-	0.811
750	30	-	-	222	-	-	-	0.998
800	32	-	-	253	438	-	-	1.208
850	34	-	-	286	495	-	-	1.456
900	36	-	-	320	607	-	-	1.723
950	38	-	-	357	-	-	-	2.028
1000	40	-	-	396	-	-	-	2.367
1050	42	-	-	437	-	-	-	2.742
1100	44	-	-	480	-	-	-	3.155
1150	46	-	-	524	-	-	-	3.597
1200	48	-	-	571	-	-	-	4.089
1300	52	-	-	671	-	-	-	5.204
1400	56	-	-	776	-	-	-	6.464
1500	60	-	-	894	-	-	-	7.991
1600	64	-	-	1010	-	-	-	9.599
1700	68	-	-	1149	-	-	-	11.62
1800	72	-	-	1289	-	-	-	13.81
1900	76	-	-	1436	-	-	-	16.23
2000	80	-	-	1592	-	-	-	18.94

Note: The approximate weight of ≥DN1300 (NPS52) calculated based on a nominal wall thickness of 10mm is listed under the STD column.

BW STRAIGHT TEE

Nominal Size		Approximate weight kg						Approximate volume m^3
DN	NPS	SCH10S	SCH20	STD	SCH40	XS	SCH80	
15	1/2	0.12	-	0.16	0.16	0.20	0.20	$0.037*10^{-3}$
20	3/4	0.14	-	0.20	0.20	0.30	0.30	$0.065*10^{-3}$
25	1	0.25	-	0.28	0.28	0.45	0.45	$0.138*10^{-8}$
32	1-1/4	0.46	-	0.60	0.60	0.70	0.70	$0.279*10^{-3}$
40	1-1/2	0.70	-	0.92	0.92	1.25	1.25	$0.446*10^{-3}$
50	2	1.20	-	1.48	1.48	2.15	2.15	$0.726*10^{-3}$
65	2-1/2	2.45	-	2.68	2.68	2.95	2.95	$1.248*10^{-3}$
80	3	1.90	-	3.76	3.76	4.35	4.35	$1.994*10^{-8}$
90	3-1/2	2.60	-	4.62	4.62	5.85	5.85	$2.814*10^{-3}$
100	4	3.10	-	6.50	6.50	7.66	7.66	$3.892*10^{-3}$
125	5	5.20	-	9.66	9.66	13.5	13.5	$6.821*10^{-8}$
150	6	7.20	-	14.0	14.0	19.3	19.3	0.011
200	8	11.5	17.5	24.5	24.5	34.5	34.5	0.022
250	10	19.2	28.0	41.3	41.3	58.4	67.5	0.042
300	12	30.5	42.6	65.0	69.0	76.5	105	0.068
350	14	40.5	64.5	83.0	96.0	104	142	0.091
400	16	48.0	78.2	110	120	120	187	0.126
450	18	58.0	102	132	170	159	263	0.179
500	20	85.0	168	168	240	192	356	0.245

Nominal Size		Approximate weight kg						Approximate volume m^3
DN	NPS	SCH10S	SCH20	STD	SCH40	XS	SCH80	
550	22	92.0	185	185	-	209	416	0.327
600	24	138	222	222	345	251	548	0.388
650	26	-	340	240	-	340	-	0.539
700	28	-	390	251	-	390	-	0.649
750	30	224	420	280	-	420	-	0.800
800	32	-	480	315	504	480	-	0.972
850	34	-	540	351	561	540	-	1.170
900	36	-	610	396	790	610	-	1.390
950	38	-	-	437	-	727	-	1.637
1000	40	-	-	488	-	792	-	1.913
1050	42	-	-	513	-	836	-	2.203
1100	44	-	-	560	-	925	-	2.401
1150	46	-	-	631	-	995	-	2.751
1200	48	-	-	683	-	1080	-	3.137
1300	52	-	-	798	-	-	-	4.014
1400	56	-	-	906	-	-	-	4.952
1500	60	-	-	1018	-	-	-	6.058

Note: The approximate weight of ≥DN1300 (NPS52) calculated based on a nominal wall thickness of 10mm is listed under the STD column.

BW REDUCER

Nominal Size		Approximate weight kg						Approximate volume m^3
DN	NPS	SCH10S	SCH20	STD	SCH40	XS	SCH80	
20	3/4	0.05	-	0.08	0.08	0.10	0.10	$0.027*10^{-3}$
25	1	0.10	-	0.17	0.17	0.20	0.20	$0.057*10^{-3}$
32	1-1/4	0.13	-	0.21	0.21	0.25	0.25	$0.091*10^{-3}$
40	1-1/2	0.20	-	0.29	0.29	0.35	0.35	$0.149*10^{-3}$
50	2	0.28	-	0.42	0.42	0.58	0.58	$0.276*10^{-3}$
65	2-1/2	0.45	-	0.80	0.80	1.03	1.03	$0.474*10^{-8}$
80	3	0.55	-	1.05	1.05	1.42	1.42	$0.703*10^{-3}$
90	3-1/2	0.74	-	1.36	1.36	1.89	1.89	$1.053*10^{-3}$
100	4	0.84	-	1.63	1.63	2.27	2.27	$1.333*10^{-3}$
125	5	1.38	-	2.77	2.77	3.93	3.93	$2.536*10^{-3}$
150	6	1.85	-	3.96	3.96	5.95	5.95	$3.965*10^{-3}$
200	8	2.80	-	6.31	6.31	9.26	9.26	$7.297*10^{-3}$
250	10	4.60	7.85	10.7	10.7	14.5	17.5	0.013
300	12	7.00	11.2	15.8	16.3	20.9	25.1	0.021
350	14	14.0	25.6	28.8	32.1	37.1	56.5	0.042
400	16	17.5	30.5	38.5	48.8	48.8	79.0	0.060
450	18	21.5	35.2	44.5	64.3	58.5	102	0.080
500	20	36.0	62.7	62.7	98.5	80.4	165	0.131
550	22	38.0	72.6	72.6	-	93.8	181	0.159

Nominal Size		Approximate weight kg						Approximate volume m^3
DN	NPS	SCH10S	SCH20	STD	SCH40	XS	SCH80	
600	24	47.5	97.1	79.1	142	101	226	0.189
650	26	-	130	99.9	-	130	-	0.266
700	28	-	142	110	-	142	-	0.308
750	30	85.0	152	119	-	152	-	0.354
800	32	-	151	125	208	151	-	0.402
850	34	-	171	132	231	171	-	0.456
900	36	-	180	140	262	180	-	0.510
950	38	-	-	148	-	194	-	0.568
1000	40	-	-	156	-	203	-	0.630
1050	42	-	-	178	-	235	-	0.695
1100	44	-	-	189	-	244	-	0.763
1150	46	-	-	199	-	257	-	0.970
1200	48	-	-	210	-	269	-	1.056
1300	52	-	-	223	-	-	-	1.241
1400	56	-	-	241	-	-	-	1.433
1500	60	-	-	258	-	-	-	1.651

Note: The approximate weight of ≥DN1300 (NPS52) calculated based on a nominal wall thickness of 10mm is listed under the STD column.

BW CAP

Nominal Size		Approximate weight kg						Approximate volume m^3
DN	NPS	SCH10S	SCH20	STD	SCH40	XS	SCH80	
15	1/2	0.03	-	0.04	0.04	0.06	0.06	$0.011*10^{-3}$
20	3/4	0.04	-	0.05	0.05	0.07	0.07	$0.018*10^{-3}$
25	1	0.09	-	0.12	0.12	0.15	0.15	$0.042*10^{-3}$
32	1-1/4	0.12	-	0.15	0.15	0.22	0.22	$0.068*10^{-8}$
40	1-1/2	0.13	-	0.18	0.18	0.25	0.25	$0.089*10^{-3}$
50	2	0.17	-	0.25	0.25	0.36	0.36	$0.160*10^{-3}$
65	2-1/2	0.24	-	0.42	0.42	0.60	0.60	$0.272*10^{-3}$
80	3	0.38	-	0.69	0.69	0.98	0.98	$0.506*10^{-3}$
90	3-1/2	0.52	-	1.05	1.05	1.50	1.50	$0.785*10^{-3}$
100	4	0.61	-	1.20	1.20	1.75	1.75	$0.993*10^{-3}$
125	5	1.05	-	2.00	2.00	2.95	2.95	$1.777*10^{-3}$
150	6	1.42	-	3.10	3.10	4.60	4.60	$2.521*10^{-3}$
200	8	2.50	4.25	5.30	5.30	8.20	8.20	$4.897*10^{-3}$
250	10	4.18	6.40	9.35	9.35	13.0	17.6	0.011
300	12	6.50	9.98	13.9	15.2	18.5	29.2	0.019
350	14	8.60	14.5	17.6	21.0	22.9	39.5	0.024
400	16	7.98	17.9	22.0	26.8	28.6	54.0	0.034
450	18	9.08	22.7	28.0	44.0	36.7	79.0	0.048
500	20	12.5	33.8	33.8	56.0	44.6	106	0.066

Nominal Size		Approximate weight kg						Approximate volume m^3
DN	NPS	SCH10S	SCH20	STD	SCH40	XS	SCH80	
550	22	22.9	39.5	39.5	-	52.5	120	0.079
600	24	17.5	47.6	47.6	95.0	63.0	181	0.113
650	26	-	68.5	51.0	-	68.5	-	0.118
700	28	-	77.0	58.4	-	77.0	-	0.136
750	30	52.5	85.0	64.0	-	85.0	-	0.157
800	32	-	96.0	75.0	130	96.0	-	0.178
850	34	-	109	82.0	150	109	-	0.202
900	36	-	120	91.0	178	120	-	0.226
950	38	-	-	99.0	-	130	-	0.284
1000	40	-	-	106	-	142	-	0.315
1050	42	-	-	115	-	150	-	0.347
1100	44	-	-	132	-	172	-	0.381
1150	46	-	-	140	-	186	-	0.416
1200	48	-	-	152	-	199	-	0.453

LAP JOINT STUB END

Nominal Size		Approximate weight kg						Approximate volume m3	
DN	NPS	SCH10S	SCH20	STD	SCH40	XS	SCH80		
15	1/2	0.07	0.09	0.09	0.12	0.12	0.16	$0.062*10^{-3}$	$0.093*10^{-3}$
20	3/4	0.09	0.12	0.12	0.16	0.15	0.21	$0.094*10^{-3}$	$0.141*10^{-3}$
25	1	0.15	0.25	0.18	0.32	0.24	0.43	$0.133*10^{-8}$	$0.265*10^{-3}$
32	1-1/4	0.19	0.34	0.25	0.43	0.33	0.57	$0.209*10^{-3}$	$0.418*10^{-3}$
40	1-1/2	0.22	0.39	0.31	0.52	0.43	0.75	$0.280*10^{-8}$	$0.559*10^{-3}$
50	2	0.35	0.71	0.52	1.02	0.73	1.49	$0.542*10^{-3}$	$1.287*10^{-3}$
65	2-1/2	0.46	0.95	0.81	1.60	1.10	2.22	$0.706*10^{-3}$	$1.676*10^{-3}$
80	3	0.62	1.22	1.10	2.11	1.50	2.98	$1.032*10^{-3}$	$2.452*10^{-3}$
90	3-1/2	0.70	1.36	1.52	2.55	2.09	3.65	$1.499*10^{-3}$	$2.979*10^{-3}$
100	4	0.94	1.59	1.80	3.05	2.58	4.44	1.910*10-3	3.795*10-3
125	5	1.30	2.80	2.25	5.42	3.60	7.86	$2.645*10^{-3}$	$7.023*10^{-3}$
150	6	1.75	3.30	3.59	7.02	5.76	11.3	$4.152*10^{-3}$	$9.471*10^{-3}$
200	8	2.90	4.95	5.98	10.6	9.18	16.2	$7.434*10^{-3}$	$14.80*10^{-3}$
250	10	4.79	8.50	10.2	18.4	13.7	24.9	0.013	0.027
300	12	7.20	10.9	14.9	22.8	19.5	30.2	0.022	0.037
350	14	7.95	15.0	-	-	-	-	0.026	0.052
400	16	9.50	17.3	-	-	-	-	0.034	0.067
450	18	11.1	19.8	-	-	-	-	0.044	0.087
500	20	14.1	25.9	-	-	-	-	0.052	0.104
550	22	-	28.2	-	-	-	-	0.063	0.125
600	24	19.8	35.0	-	-	-	-	0.073	0.146