

ASK

AWAJI SANGYO K.K.

STEEL BUTTWELDING FITTINGS





BRAND STEEL BUTTWELDING FITTINGS

1. Feature of ASK Brand Steel Buttwelding Fittings

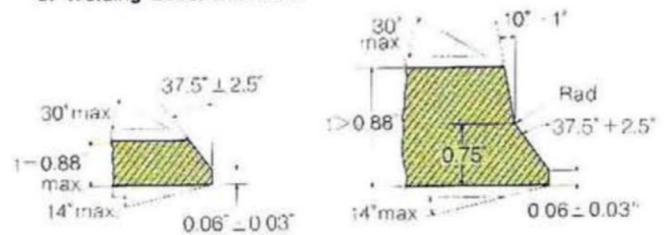
Manufactured from steel pipe materials supplied by Nippon Steel Corporation exactly supporting the standards and specifications as listed hereinunder
Any line of products not listed therein may be suppliable on enquiry

2. Applicable Standard of Steel Buttwelding Fittings

- (1) ASTM Standards
A234 Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures
- (2) American National Standards Institute
ANSI B16.9 Factory-Made Wrought Steel Buttwelding Fittings

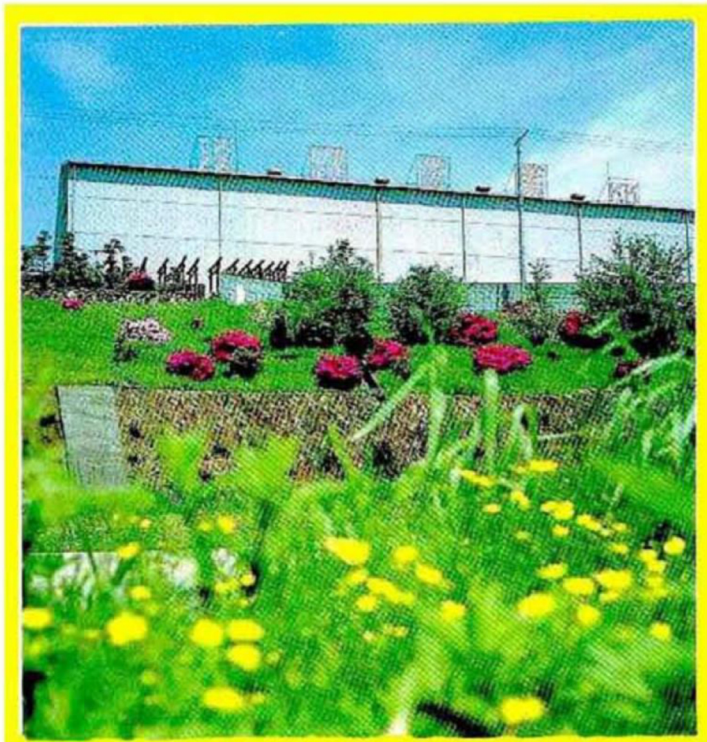
ANSI B 16.28 Wrought Steel Buttwelding Short Radius Elbows and Return
- (3) Manufacturers Standardization Society of the Valve and Fittings Industry Standards.
MSS SP-25 Standard Marking System for Valves, Fittings, Flanges and Unions

3. Welding Bevel Standard



4. Material Specification for Products

Material	Marking Symbol	ASTM Spec. (Pipe)
Carbon steel	WPA	A-106-A
Carbon steel	WPB	A-106-B
Carbon steel	WPC	A-106-C
Carbon steel	WPL6	A-333-6
3-1/2 Ni steel	WPL3	A-333-3
Carbon-Mo steel	WP1	A-335-P1
1Cr-1/2Mo steel	WP12	A-335-P12
1-1/4Cr-1/2Mo steel	WP11	A-335-P11
2-1/4Cr-1-Mo steel	WP22	A-335-P22
5Cr-1/2Mo Steel	WP5	A-335-P5
9Cr-1Mo steel	WP9	A-335-P9
18Cr-8Ni Austenitic stainless steel	WP304	A-312-TP304
18Cr-12Ni-Mo Austenitic stainless steel	WP316	A-312-TP316
18Cr-8Ni-Ti Austenitic stainless steel	WP321	A-312-TP321
25Cr-20Ni Austenitic stainless steel	WP310	A-312-TP310



5. Inspection

Appearance inspections is done by visual observation
Special attention is given to insure that the inside and outside surfaces of fittings are smooth.
Dimensional inspection is done according to tolerance table mentioned main table.

6. Marking

- Marking of products
- (1) Manufacturer's name of Trade mark
 - (2) Material Designation
 - (3) Rating Designation
 - (4) Size

7. Coating

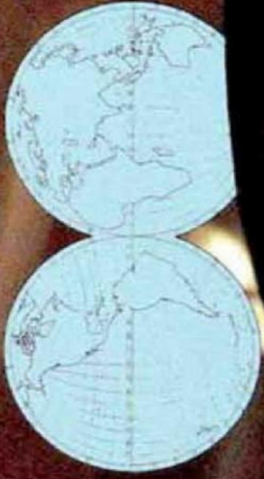
Carbon steel and alloy steel fittings are painted with clear lacquer or black lacquer

8. Packing

Fitting shall be packed in wooden cases (crate) or gunny bags



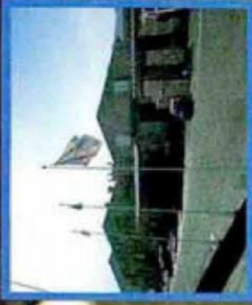
BRAND STEEL BUTTWELDING FITTINGS GO ROUND THE WORLD.



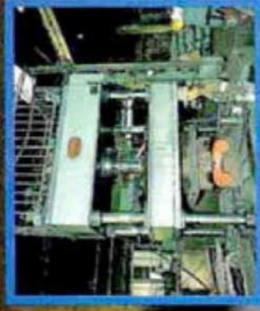
ASK brand
Manufacturing Process of
Steel Buttwelding Fitting



Cutting



Factory



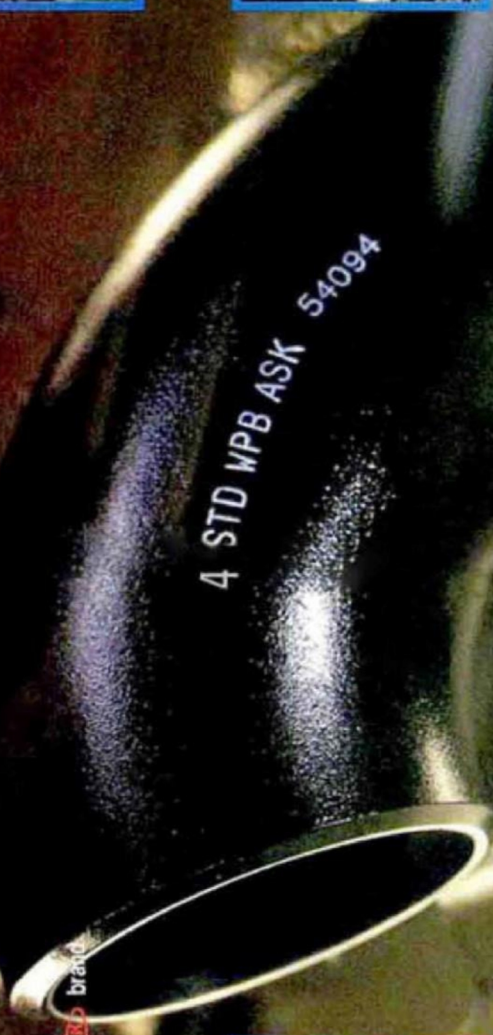
Bending



Pipe Yard



Bevel Cutting

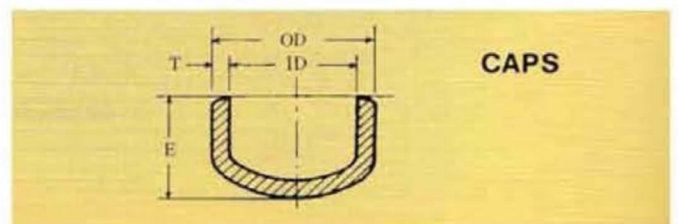
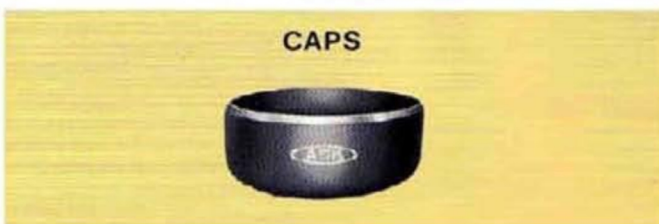
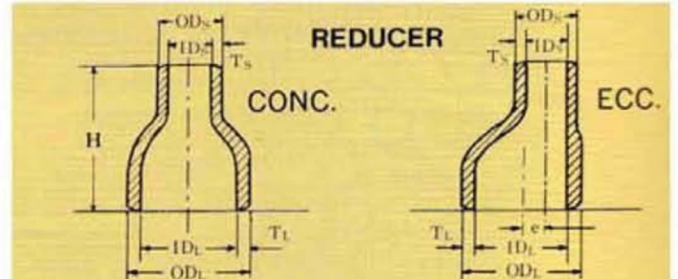
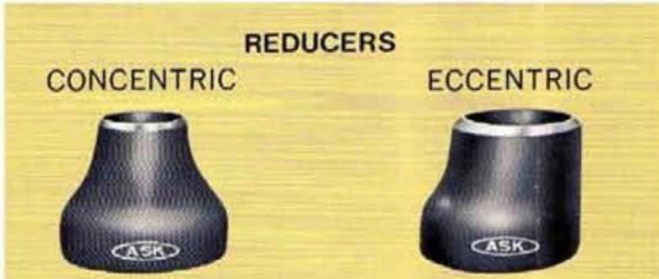
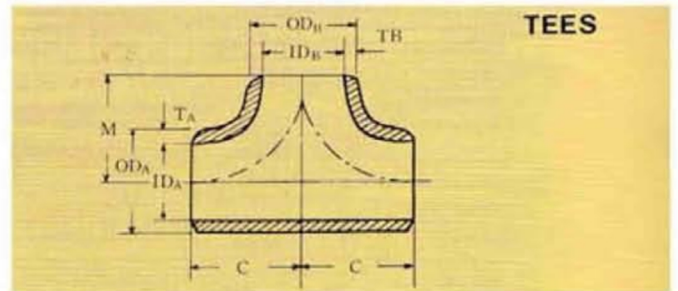
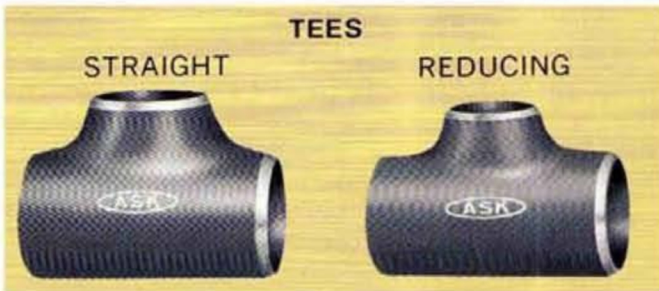
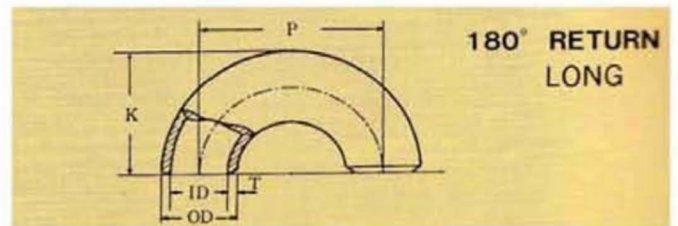
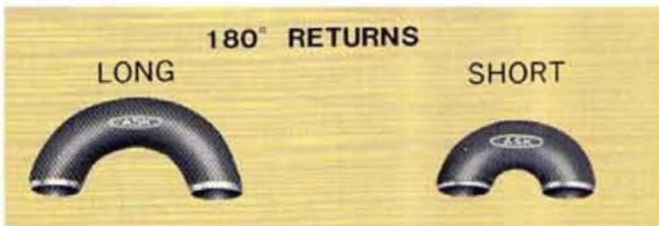
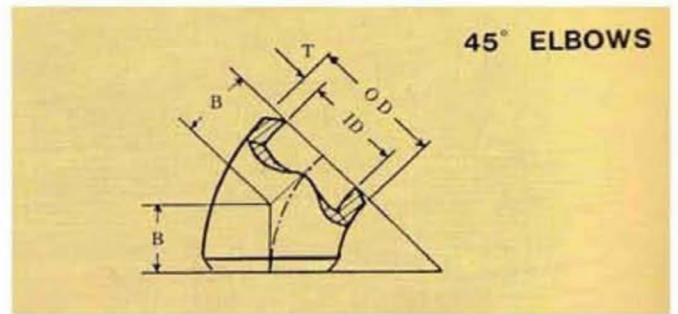
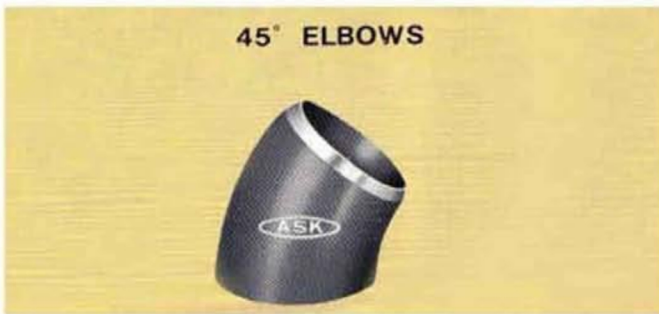
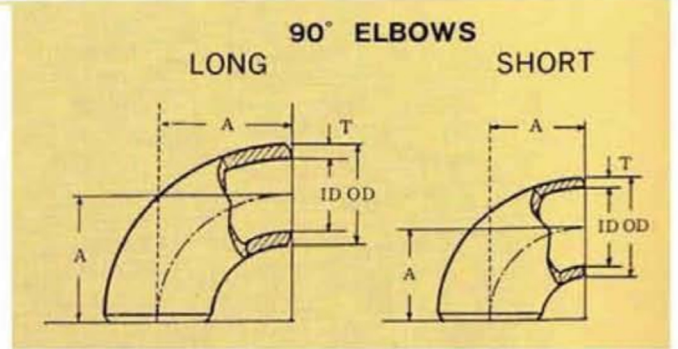
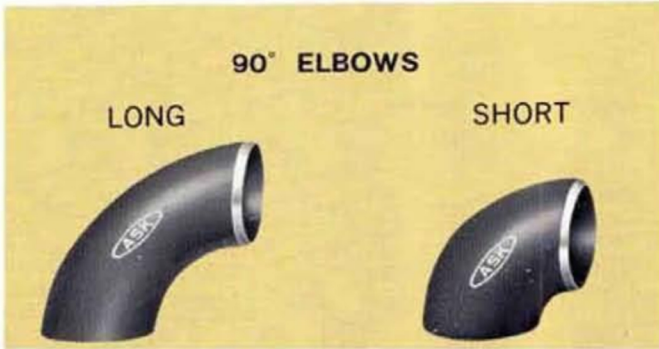




BRAND STEEL BUTTWELDING FITTINGS

FIGURE

SECTION





BRAND STEEL BUTTWELDING FITTINGS

DIMENSION OF WELDING FITTINGS

ANSI B16.9 & ANSI B16.28 ANSI B36.10

Nominal Pipe Size	Outside Diameter	LONG				SHORT			TEES		CAPS	REDUCERS	Nominal Pipe Size
		90° ELBOWS	45° ELBOWS	180° RETURNS		90° ELBOWS	180° RETURNS		Center to End				
		Center to End	Center to End	Center to Center	Back to Face	Center to End	Center to Center	Back to Face	Run	*1 Outlet	*2 Back to Face	End to End	
D	O.D.	A	B	P	K	A	P	K	C	M	E	H	D
1/2	0.84	1.50	0.62	3.00	1.88	—	—	—	1.00	1.00	1.00	—	0.84
3/4	1.05	1.12	0.44	2.25	1.69	—	—	—	1.12	1.12	1.00	1.50	1.05
1	1.32	1.50	0.88	3.00	2.19	1.00	2.00	1.62	1.50	1.50	1.50	2.00	1
1-1/4	1.66	1.88	1.00	3.75	2.75	1.25	2.50	2.06	1.88	1.88	1.50	2.00	1-1/4
1-1/2	1.90	2.25	1.12	4.50	3.25	1.50	3.00	2.44	2.25	2.25	1.50	2.50	1-1/2
2	2.38	3.00	1.38	6.00	4.19	2.00	4.00	3.19	2.50	2.50	1.50	3.00	2
2-1/2	2.88	3.75	1.75	7.50	5.19	2.50	5.00	3.94	3.00	3.00	1.50	3.50	2-1/2
3	3.50	4.50	2.00	9.00	6.25	3.00	6.00	4.75	3.38	3.38	2.00	3.50	3
3-1/2	4.00	5.25	2.25	10.50	7.25	3.50	7.00	5.50	3.75	3.75	2.50	4.00	3-1/2
4	4.50	6.00	2.50	12.00	8.25	4.00	8.00	6.25	4.12	4.12	2.50	4.00	4
5	5.56	7.50	3.12	15.00	10.31	5.00	10.00	7.75	4.88	4.88	3.00	5.00	5
6	6.62	9.00	3.75	18.00	12.31	6.00	12.00	9.31	5.62	5.62	3.50	5.50	6
8	8.62	12.00	5.00	24.00	16.31	8.00	16.00	12.31	7.00	7.00	4.00	6.00	8
10	10.75	15.00	6.25	30.00	20.38	10.00	20.00	15.38	8.50	8.50	5.00	7.00	10
12	12.75	18.00	7.50	36.00	24.38	12.00	24.00	18.38	10.00	10.00	6.00	8.00	11
14	14.00	21.00	8.75	42.00	28.00	14.00	28.00	21.00	11.00	11.00	6.50	13.00	14
16	16.00	24.00	10.00	48.00	32.00	16.00	32.00	24.00	12.00	12.00	7.00	14.00	16
18	18.00	27.00	11.25	54.00	36.00	18.00	36.00	27.00	13.50	13.50	8.00	15.00	18
20	20.00	30.00	12.50	60.00	40.00	20.00	40.00	30.00	15.00	15.00	9.00	20.00	20
24	24.00	36.00	15.00	72.00	48.00	24.00	48.00	36.00	17.00	17.00	10.50	20.00	24

*1. Straight Tees

*2. Applies for thickness not exceeding "Limiting Wall Thickness."

DIMENSIONAL TOLERANCE

ANSI B16.9 & ANSI B16.28

Nominal Pipe Size	ALL FITTINGS			90°/45° TEES	REDUCER	180° RETURNS			CAPS
	O.D. at Bevel	I.D. at End	Wall Thickness	Center to End	Overall Length	Center to Center	Back to Face	Alignments of Ends	Overall Length
1/2-2-1/2	+0.06 -0.03	±0.03	Not Less Than 87.5 Percent of Nominal Thickness	±0.06	±0.06	±0.25	±0.25	±0.03	±0.12
3-4	±0.06	±0.06							
5-8	+0.09 -0.06	±0.06							
10-18	+0.16 -0.12	±0.12							
20-24	+0.25 -0.19	±0.19		±0.09	±0.09	±0.38		±0.06	±0.25



BRAND STEEL BUTTWELDING FITTINGS

FUNDAMENTAL DIMENSION OF WELDING FITTINGS

ANSI B36.10

in inches

Nominal Pipe Size	Outside Dia.	Nominal Wall Thickness					
		Std. Wall	Sch. 40	Extra Strong	Sch. 80	Sch. 160	XX. Strong
1/2	0.84	0.109	0.109	0.147	0.147	0.188	0.294
3/4	1.05	0.113	0.113	0.154	0.154	0.219	0.308
1	1.315	0.133	0.133	0.179	0.179	0.250	0.358
1-1/4	1.660	0.140	0.140	0.191	0.191	0.250	0.382
1-1/2	1.900	0.145	0.145	0.200	0.200	0.281	0.400
2	2.375	0.154	0.154	0.218	0.218	0.343	0.436
2-1/2	2.875	0.203	0.203	0.276	0.270	0.375	0.552
3	3.500	0.216	0.216	0.300	0.300	0.438	0.600
3-1/2	4.000	0.226	0.226	0.318	0.318	0.500	0.636
4	4.500	0.237	0.237	0.337	0.337	0.531	0.674
5	5.563	0.258	0.258	0.375	0.375	0.625	0.750
6	6.625	0.280	0.280	0.432	0.432	0.718	0.864
8	8.625	0.322	0.322	0.500	0.500	0.906	0.875
10	10.750	0.365	0.365	0.500	0.593	1.125	1.000
12	12.750	0.375	0.406	0.500	0.687	1.312	1.000
14	14.000	0.375	0.438	0.500	0.750	1.406	
16	16.000	0.375	0.500	0.500	0.843	1.593	
18	18.000	0.375	0.562	0.500	0.937	1.781	
20	20.000	0.375	0.593	0.500	1.031	1.968	
24	24.000	0.375	0.687	0.500	1.218		

in mm

Nominal Pipe Size	Outside Dia.	Nominal Wall Thickness					
		Std. Wall	Sch. 40	Extra Strong	Sch. 80	Sch. 160	XX. Strong
1/2	21.3	2.77	2.77	3.73	3.73	4.78	7.47
3/4	26.7	2.87	2.87	3.91	3.91	5.56	7.82
1	33.40	3.38	3.38	4.55	4.55	6.35	9.09
1-1/4	42.16	3.56	3.56	4.85	4.85	6.35	9.70
1-1/2	48.26	3.68	3.68	5.08	5.08	7.14	10.16
2	60.32	3.91	3.91	5.54	5.54	8.71	11.07
2-1/2	73.02	5.16	5.16	7.01	7.01	9.52	14.02
3	88.90	5.49	5.49	7.62	7.62	11.13	15.24
3-1/2	101.60	5.74	5.74	8.08	8.08	12.70	16.15
4	114.30	6.02	6.02	8.56	8.56	13.49	17.12
5	141.30	6.55	6.55	9.52	9.52	15.87	19.05
6	168.27	7.11	7.11	10.97	10.97	18.24	21.95
8	219.07	8.18	8.18	12.70	12.70	23.01	22.22
10	273.05	9.27	9.27	12.70	15.06	28.57	25.40
12	323.85	9.52	10.31	12.70	17.45	33.32	25.40
14	355.60	9.52	11.12	12.70	19.05	35.71	
16	406.40	9.52	12.70	12.70	21.41	40.46	
18	457.20	9.52	14.27	12.70	23.80	45.24	
20	508.00	9.52	15.06	12.70	26.19	49.99	
24	609.60	9.52	17.45	12.70	30.94		



BRAND STEEL BUTTWELDING FITTINGS

WEIGHT

in kg

Nominal Pipe Size	Elbows(Long Radius)																	
	STD			XS			XXS			S40			S80			S160		
	90°	45°	180°	90°	45°	180°	90°	45°	180°	90°	45°	180°	90°	45°	180°	90°	45°	180°
1/2	0.076	0.038	0.152	0.097	0.048	0.194	0.152	0.076	0.304	0.076	0.038	0.152	0.097	0.048	0.194	0.117	0.058	0.234
3/4	0.075	0.036	0.150	0.098	0.047	0.196	0.163	0.077	0.326	0.075	0.036	0.150	0.098	0.047	0.196	0.130	0.061	0.260
1	0.150	0.106	0.300	0.194	0.137	0.388	0.326	0.231	0.652	0.150	0.106	0.300	0.194	0.137	0.388	0.253	0.180	0.506
1-1/4	0.254	0.163	0.508	0.335	0.215	0.670	0.583	0.374	1.17	0.254	0.163	0.508	0.335	0.215	0.670	0.421	0.270	0.842
1-1/2	0.364	0.218	0.728	0.486	0.292	0.972	0.858	0.515	1.72	0.364	0.218	0.728	0.486	0.292	0.972	0.651	0.391	1.30
2	0.651	0.361	1.30	0.895	0.497	1.79	1.61	0.893	3.22	0.651	0.361	1.30	0.895	0.497	1.79	1.33	0.736	2.66
2-1/2	1.29	0.728	2.58	1.71	0.961	3.42	3.05	1.72	6.10	1.29	0.728	2.58	1.71	0.961	3.42	2.23	1.26	4.46
3	2.03	1.09	4.06	2.74	1.47	5.48	4.97	2.67	9.94	2.03	1.09	4.06	2.74	1.47	5.48	3.83	2.06	7.66
3-1/2	2.84	1.47	5.68	3.90	2.02	7.80	7.13	3.69	14.3	2.84	1.47	5.68	3.90	2.02	7.80	5.83	3.02	11.6
4	3.85	1.94	7.70	5.34	2.69	10.7	9.82	4.94	19.6	3.85	1.94	7.70	5.34	2.69	10.7	8.03	4.04	16.0
5	6.51	3.27	13.0	9.26	4.65	18.5	17.2	8.63	34.4	6.51	3.27	13.0	9.26	4.65	18.5	14.7	7.38	29.4
6	10.1	5.10	20.2	15.3	7.69	30.6	28.4	14.3	56.8	10.1	5.10	20.2	15.3	7.69	30.6	24.2	12.2	48.4
8	20.4	10.2	40.8	30.9	15.6	61.8	51.7	26.0	103.4	20.4	10.2	40.8	30.9	15.6	61.8	53.3	26.8	106.
10	36.1	18.1	72.2	48.8	24.5	97.6	92.8	46.7	185.6	36.1	18.1	72.2	57.3	28.8	114.	103.	51.8	206.
12	53.0	26.7	106.	70.0	35.2	140.	134.	67.5	268.	57.2	28.8	114.	94.7	47.6	189.	171.	86.2	342.
14	68.1	34.2	136.	90.0	45.3	180.				79.1	39.8	158.	132.	66.6	264.	236.	119.	472.
16	89.2	44.9	178.	118.	59.4	236.				118.	59.4	236.	195.	97.9	390.	350.	176.	700.
18	113.	56.9	226.	150.	75.4	300.				168.	84.5	336.	274.	138.	548.	495.	249.	990.
20	140.	70.5	280.	186.	93.4	372.				219.	110.	438.	372.	187.	744.	676.	340.	
24	202.	102.	404.	269.	135.	538.				366.	184.	732.	634.	319.				

in kg

Nominal Pipe Size	Elbows (Short Radius)												Tees		Reducers		Caps	
	STD		XS		XXS		S40		S80		S160		STD	XS	STD	XS	STD	XS
	90°	180°	90°	180°	90°	180°	90°	180°	90°	180°	90°	180°						
1/2	—	—	—	—	—	—	—	—	—	—	—	—	0.085	0.107	—	—	0.036	0.044
3/4	—	—	—	—	—	—	—	—	—	—	—	—	0.125	0.162	0.059	0.075	0.049	0.062
1	0.100	0.200	0.129	0.258	0.217	0.434	0.100	0.200	0.129	0.258	0.169	0.338	0.250	0.318	0.116	0.147	0.109	0.144
1-1/4	0.169	0.338	0.223	0.446	0.388	0.676	0.169	0.338	0.223	0.446	0.280	0.560	0.421	0.554	0.157	0.206	0.145	0.197
1-1/2	0.242	0.484	0.324	0.648	0.572	1.14	0.242	0.484	0.324	0.648	0.434	0.868	0.603	0.805	0.243	0.324	0.171	0.236
2	0.434	0.868	0.597	1.19	1.07	2.14	0.434	0.868	0.597	1.19	0.884	1.77	0.872	1.19	0.372	0.508	0.234	0.330
2-1/2	0.861	1.72	1.14	2.28	2.03	4.06	0.861	1.72	1.14	2.28	1.49	2.98	1.74	2.28	0.723	0.945	0.420	0.565
3	1.35	2.70	1.83	3.66	3.31	6.62	1.35	2.70	1.83	3.66	2.55	5.10	2.41	3.25	0.933	1.25	0.664	0.917
3-1/2	1.89	3.78	2.60	5.20	4.75	9.50	1.89	3.78	2.60	5.20	3.89	7.78	3.17	4.39	1.28	1.77	0.958	1.36
4	2.57	5.14	3.56	7.12	6.55	13.1	2.57	5.14	3.56	7.12	5.35	10.7	4.12	5.76	1.53	2.14	1.17	1.68
5	4.34	8.68	6.17	12.3	11.5	23.0	4.34	8.68	6.17	12.3	9.79	19.6	6.53	9.20	2.50	3.51	1.90	2.73
6	6.77	13.5	10.2	20.4	19.0	38.0	6.77	13.5	10.2	20.4	16.2	32.4	9.58	14.5	3.57	5.38	2.83	4.38
8	13.6	27.2	20.6	41.2	34.4	68.8	13.6	27.2	20.6	41.2	35.5	71.0	17.9	27.1	5.70	8.61	5.11	7.91
10	24.1	48.2	32.5	65.0	61.9	123.	24.1	48.2	38.2	76.4	68.7	137.	30.4	41.0	9.58	12.9	8.92	12.2
12	35.3	70.6	46.6	93.2	89.5	179.	38.2	76.4	63.1	126.	114.	228.	43.6	57.7	13.6	18.0	13.0	17.4
14	45.4	90.8	60.0	120.			52.8	106.	88.3	177.	157.	314.	53.5	70.9	25.4	33.6	15.9	21.2
16	59.5	119.	78.7	157.			78.7	157.	130.	260.	233.	466.	66.1	87.7	31.0	41.1	20.0	26.7
18	75.5	151.	100.	200.			112.	224.	183.	366.	330.	660.	83.9	111.	37.8	50.1	25.5	34.1
20	93.4	186.	124.	248.			146.	292.	248.	496.	451.	902.	104.	138.	56.4	74.9	31.8	42.5
24	135.	270.	179.	358.			244.	488.	423.	846.			139.	185.	65.7	87.1	44.5	60.1