

Chemical Composition

All types of standard copper nickel alloys (CuNi 90/10) comparison of chemical composition

	SHIHANG CuNi 90/10	DIN 86019 2.1972	Bs2871 Cn102	EEMUA 144-1987 UNS C7060X	ASTM B466 C70600	GB5234-85 BFe10-1-1
Cu%	rem.	rem.	rem.	rem.	rem.	rem.
Ni%	10.0-11.0	9.0-11.0	10.0-11.0	10.0-11.0	9.0-11.0	9.0-11.0
Fe%	1.5-1.8	1.5-1.8	1.0-2.0	1.5-2.0	1.0-1.8	1.0-1.5
Mn%	max.1.00	0.5-1.0	0.5-1.0	0.5-1.0	max.1.00	0.5-1.0
C%	max.0.05	max. 0.05	max.0.05	max.0.05	max.0.05	max.0.05
Pb%	max.0.02	max.0.01	max.0.01	max.0.01	max.0.02	max.0.02
S%	max.0.02	max.0.005	max.0.05	max.0.02	max.0.02	max.0.01
P%	max.0.02	max.0.02	-	max.0.02	max.0.02	max.0.006
Zn%	max.0.20	max.0.05	-	max.0.20	max.0.50	max.0.30
Other	-	max.0.20	max.0.30	max.0.30	-	max.0.70

All types of standard copper nickel alloys (CuNi 70/30) comparison of chemical composition

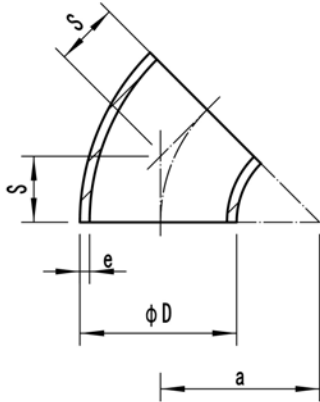
	SHIHANG CuNi 70/30	DIN 17664 2.0882	BS 2871 CN 107	MIL-T-16420K ASTM B466 C71500	JIS H 3300 C7150T
Cu%	rem.	rem.	rem.	rem.	rem.
Ni%	30.0-32.0	30.0-32.0	30.0-32.0	29.0-33.0	29.0-33.0
Fe%	0.4-0.7	0.4-1.0	0.4-1.0	0.4-1.0	0.4-1.0
Mn%	0.5-1.0	0.5-1.5	0.5-1.5	max.1.00	0.2-1.0
C%	max.0.05	max.0.05	max.0.06	max.0.05	-
Pb%	max.0.02	max.0.03	max.0.01	max.0.02	max.0.05
S%	max.0.02	max.0.02	max.0.08	max.0.02	-
P%	max.0.02	max.0.02	-	max.0.02	-
Zn%	max.0.20	max.0.50	-	max.0.50	max.0.05
Other	max.0.30	max.0.30	-	-	Cu+Ni+Fe+Mn:min99.5

Elbows Short Radius

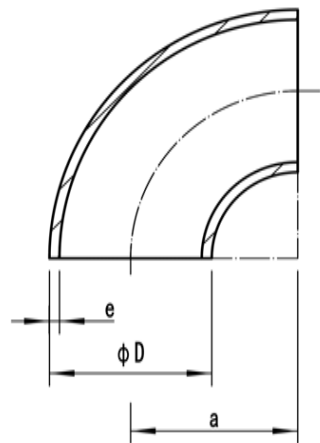
10Bar

14Bar

Material: CuNi 90/10
CuNi 70/30



Outside diameter of pipe		DIN 86090							
		10Bar				14Bar			
ØD		Wall thickness	Radius		Theoretical weight	Wall thickness	Radius		Theoretical weight
nominal	actual	e	a	s	Kg/piece	e	a	s	Kg/piece
inch	mm	mm	mm	mm		mm	mm	mm	
1	30	1.5	30	12	0.02	1.5	30	12	0.02
1.25	38	1.5	32.5	14	0.04	1.5	32.5	14	0.04
1.5	44.5	1.5	40	17	0.06	1.5	40	17	0.06
2	57	1.5	52.5	22	0.1	1.5	52.5	22	0.1
2.5	76.1	2	70	29	0.22	2	70	29	0.22
3	88.9	2	82.5	34	0.32	2.5	82.5	34	0.4
4	108	2.5	100	41	0.58	2.5	100	41	0.58
5	133	2.5	125	52	0.9	3	125	52	1.08
6	159	2.5	150	62	1.3	3	150	62	1.56
7	193.7	2.5	180	75	1.9	3.5	180	75	2.66
8	219.1	3	210	87	3	3.5	210	87	3.5
10	267	3	255	106	4.4	4	255	106	5.87
12	323.9	4	305	126	8.6	5	305	126	10.75
14	368	4	352.5	146	11.3	5.5	352.5	146	15.54
16	419.1	4	400	166	16.4	6	400	166	21.87
18	457.2	4	455	188	20.4	6	455	188	30.6
20	508	4.5	505	209	28.1	6.5	505	209	42.15
24	610	5	610	253	40.9	8	610	253	65.45



Outside diameter of pipe		DIN 86090							
		10Bar				14Bar			
ØD		Wall thickness	Radius		Theoretical weight	Wall thickness	Radius		Theoretical weight
nominal	actual	e	a		Kg/piece	e	a		Kg/piece
inch	mm	mm	mm			mm	mm		
1	30	1.5	30	-	0.04	1.5	30	-	0.04
1.25	38	1.5	32.5	-	0.08	1.5	32.5	-	0.08
1.5	44.5	1.5	40	-	0.12	1.5	40	-	0.12
2	57	1.5	52.5	-	0.2	1.5	52.5	-	0.2
2.5	76.1	1.5	70	-	0.44	1.5	70	-	0.44
3	88.9	2	82.5	-	0.64	2.5	82.5	-	0.8
4	108	2.5	100	-	1.16	2.5	100	-	1.16
5	133	2.5	125	-	1.8	3	125	-	2.16
6	159	2.5	150	-	2.6	3	150	-	3.12
7	193.7	2.5	180	-	3.8	3.5	180	-	5.32
8	219.1	3	210	-	6	3.5	210	-	7
10	267	3	255	-	8.8	4	255	-	11.74
12	323.9	4	305	-	17.2	5	305	-	21.5
14	368	4	352.5	-	22.6	5.5	352.5	-	31.08
16	419.1	4	400	-	32.8	6	400	-	43.74
18	457.2	4	455	-	40.8	6	455	-	61.2
20	508	4.5	505	-	56.2	6.5	505	-	84.3
24	610	5	610	-	81.8	8	610	-	130.9

Pipe Fittings



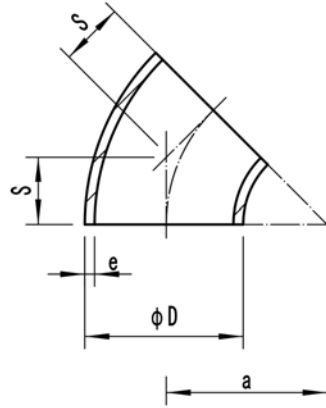
Shanghai Shihang Copper Nickel Pipe Fittings Co., Ltd.

TEL:86-21-58050989 FAX:86-21-68291168 E-mail:sales@shshihang.com Website:www.shshihang.com

45° Elbows Long Radius

10Bar 14Bar 16Bar 20Bar

Material: CuNi 90/10
CuNi 70/30



Outside diameter of pipe		DIN 86090								EEMUA 146							
		10Bar				14Bar				16Bar				20Bar			
ØD		Wall thickness	Radius		Theoretical weight	Wall thickness	Radius		Theoretical weight	Wall thickness	Radius		Theoretical weight	Wall thickness	Radius		Theoretical weight
nominal	actual	e	a	s	Kg/piece	e	a	s	Kg/piece	e	a	s	Kg/piece	e	a	s	Kg/piece
inch	mm	mm	mm	mm		mm	mm	mm		mm	mm	mm		mm	mm	mm	
0.5	20	1	25	10.4	0.01	1	25	10.4	0.01	-	-	-	-	-	-	-	-
0.75	25	1.5	27.5	11.4	0.02	1.5	27.5	11.4	0.02	-	-	-	-	-	-	-	-
1	30	1.5	33.5	14	0.03	1.5	33.5	14	0.03	2.5	38	22	0.06	2.5	38	22	0.06
1.25	38	1.5	45	19	0.05	1.5	45	19	0.05	2.5	48	25	0.09	2.5	48	25	0.09
1.5	44.5	1.5	51	21	0.07	1.5	51	21	0.07	2.5	57	29	0.13	2.5	57	29	0.13
2	57	1.5	72	30	0.13	1.5	72	30	0.13	2.5	76	35	0.23	2.5	76	35	0.23
2.5	76.1	2	95	39	0.3	2	95	39	0.3	2.5	95	44	0.38	2.5	95	44	0.38
3	88.9	2	114.5	47	0.43	2.5	114.5	47	0.54	2.5	114	51	0.54	2.5	114	51	0.54
4	108	2.5	142.5	59	0.82	2.5	142.5	59	0.82	3	152	64	1.05	3	152	64	1.05
5	133	2.5	181	75	1.29	3	181	75	1.55	-	-	-	-	-	-	-	-
6	159	2.5	216	89	1.85	3	216	89	2.22	3	229	95	2.35	3.5	229	95	2.74
7	193.7	2.5	270	112	2.82	3.5	270	112	3.94	-	-	-	-	-	-	-	-
8	219.1	3	305	126	4.33	3.5	305	126	5.04	4	305	127	5.75	4.5	305	127	6.47
10	267	3	378	157	6.55	4	378	157	8.73	4.5	381	159	9.85	5.5	381	159	12.04
12	323.9	4	457	189	12.8	5	457	189	16	5.5	457	190	17.53	7	457	190	22.3
14	368	4	533.5	221	17	5.5	533.5	221	23.37	6.5	533	222	27.46	8	533	222	33.8
16	419.1	4	609.5	252	29.9	6	609.5	252	33.2	7	610	254	38.5	9	610	254	49.5
18	457.2	4	686	284	30.7	6	686	284	46.05	8	686	286	54.1	9.5	686	286	64.25
20	508	4.5	762	316	41.9	6.5	762	316	62.85	8.5	762	318	70.93	11	762	318	91.8
24	610	5	915	379	60.62	8	915	379	97	10.5	914	381	126.42	13	914	381	156.6

Pipe Fittings

90° Elbows Long Radius

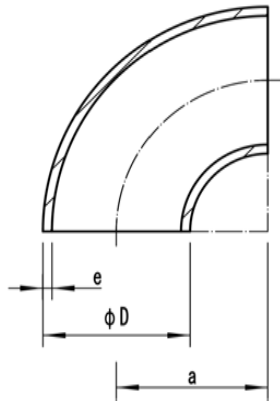
10Bar

14Bar

16Bar

20Bar

Material: CuNi 90/10
CuNi 70/30



Outside diameter of pipe		DIN 86090						EEMUA 146					
		10Bar			14Bar			16Bar			20Bar		
∅D		Wall thickness	Radius	Theoretical weight	Wall thickness	Radius	Theoretical weight	Wall thickness	Radius	Theoretical weight	Wall thickness	Radius	Theoretical weight
nominal	actual	e	a	Kg/piece	e	a	Kg/piece	e	a	Kg/piece	e	a	Kg/piece
inch	mm	mm	mm		mm	mm		mm	mm		mm	mm	
0.5	20	1	25	0.02	1	25	0.02	-	-	-	-	-	-
0.75	25	1.5	27.5	0.04	1.5	27.5	0.04	2	31.2	0.076	2	31.2	0.076
1	30	1.5	33.5	0.06	1.5	33.5	0.06	2.5	38	0.12	2.5	38	0.12
1.25	38	1.5	45	0.1	1.5	45	0.1	2.5	48	0.18	2.5	48	0.18
1.5	44.5	1.5	51	0.14	1.5	51	0.14	2.5	57	0.26	2.5	57	0.26
2	57	1.5	72	0.26	1.5	72	0.26	2.5	76	0.46	2.5	76	0.46
2.5	76.1	2	95	0.61	2	95	0.61	2.5	95	0.76	2.5	95	0.76
3	88.9	2	114.5	0.87	2.5	114.5	1.08	2.5	114	1.08	2.5	114	1.08
4	108	2.5	142.5	1.64	2.5	142.5	1.64	3	152	2.1	3	152	2.1
5	133	2.5	181	2.58	3	181	3.1	-	-	-	-	-	-
6	159	2.5	216	3.7	3	216	4.44	3	229	4.7	3.5	229	5.48
7	193.7	2.5	270	5.65	3.5	270	7.88	-	-	-	-	-	-
8	219.1	3	305	8.66	3.5	305	10.08	4	305	11.5	4.5	305	12.94
10	267	3	378	13.1	4	378	17.46	4.5	381	19.7	5.5	381	24.08
12	323.9	4	457	25.61	5	457	32	5.5	457	35.06	7	457	44.6
14	368	4	533.5	34	5.5	533.5	46.74	6.5	533	54.92	8	533	67.6
16	419.1	4	609.5	39.4	6	609.5	66.4	7	610	77	9	610	99
18	457.2	4	686	48.4	6	686	72.63	8	686	108.2	9.5	686	128.5
20	508	4.5	762	75.62	6.5	762	125.7	8.5	762	141.86	11	762	183.6
24	610	5	915	121.24	8	915	194	10.5	914	252.94	13	914	313.3

Pipe Fittings



Shanghai Shihang Copper Nickel Pipe Fittings Co., Ltd.

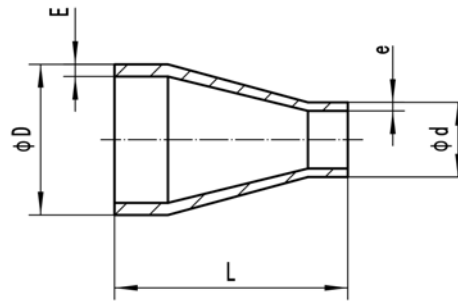
TEL:86-21-58050989 FAX:86-21-68291168 E-mail:sales@shshihang.com Website:www.shshihang.com

Concentric Reducers

10Bar

14Bar

Material: CuNi 90/10
CuNi 70/30



Outside diameter						DIN 86089							
						10Bar				14Bar			
∅D x ∅d		∅D x ∅d				Wall thickness		Length	Theoretical weight	Wall thickness		Length	Theoretical weight
nominal		actual				E	e	L	Kg/piece	E	e	L	Kg/piece
inch		mm				mm	mm	mm		mm	mm	mm	
0.5	x	0.38	20	x	16	1	1	30	0.01	1	1	30	0.01
0.75	x	0.38	25	x	16	1.5	1	30	0.02	1.5	1	30	0.02
0.75	x	0.5	25	x	20	1.5	1	30	0.03	1.5	1	30	0.03
1	x	0.38	30	x	16	1.5	1	35	0.03	1.5	1	35	0.03
1	x	0.5	30	x	20	1.5	1	35	0.04	1.5	1	35	0.04
1	x	0.75	30	x	25	1.5	1.5	35	0.05	1.5	1.5	35	0.05
1.25	x	0.38	38	x	16	1.5	1	50	0.05	1.5	1	50	0.05
1.25	x	0.5	38	x	20	1.5	1	50	0.06	1.5	1	50	0.06
1.25	x	0.75	38	x	25	1.5	1.5	50	0.07	1.5	1.5	50	0.07
1.25	x	1	38	x	30	1.5	1.5	50	0.08	1.5	1.5	50	0.08
1.5	x	0.5	44.5	x	20	1.5	1	80	0.09	1.5	1	80	0.09
1.5	x	0.75	44.5	x	25	1.5	1.5	80	0.11	1.5	1.5	80	0.11
1.5	x	1	44.5	x	30	1.5	1.5	80	0.12	1.5	1.5	80	0.12
1.5	x	1.25	44.5	x	38	1.5	1.5	80	0.13	1.5	1.5	80	0.13
2	x	0.75	57	x	25	1.5	1.5	80	0.13	1.5	1.5	80	0.13
2	x	1	57	x	30	1.5	1.5	80	0.14	1.5	1.5	80	0.14
2	x	1.25	57	x	38	1.5	1.5	80	0.15	1.5	1.5	80	0.15
2	x	1.5	57	x	44.5	1.5	1.5	80	0.16	1.5	1.5	80	0.16
2.5	x	1	76.1	x	30	2	1.5	90	0.24	2	1.5	90	0.24
2.5	x	1.25	76.1	x	38	2	1.5	90	0.25	2	1.5	90	0.25
2.5	x	1.5	76.1	x	44.5	2	1.5	90	0.26	2	1.5	90	0.26
2.5	x	2	76.1	x	57	2	1.5	90	0.29	2	1.5	90	0.29
3	x	1.25	88.9	x	38	2	1.5	90	0.29	2.5	1.5	90	0.33
3	x	1.5	88.9	x	44.5	2	1.5	90	0.3	2.5	1.5	90	0.35
3	x	2	88.9	x	57	2	1.5	90	0.32	2.5	1.5	90	0.38
3	x	2.5	88.9	x	76	2	2	90	0.4	2.5	2	90	0.48
4	x	1.5	108	x	44.5	2.5	1.5	100	0.46	2.5	1.5	100	0.46
4	x	2	108	x	57	2.5	1.5	100	0.48	2.5	1.5	100	0.48
4	x	2.5	108	x	76.1	2.5	2	100	0.57	2.5	2	100	0.57
4	x	3	108	x	88.9	2.5	2	100	0.61	2.5	2.5	100	0.61
5	x	2	133	x	57	2.5	1.5	140	0.8	3	1.5	140	0.86
5	x	2.5	133	x	76.1	2.5	2	140	0.93	3	2	140	1.06
5	x	3	133	x	88.9	2.5	2	140	0.98	3	2.5	140	1.13
5	x	4	133	x	108	2.5	2.5	140	1.16	3	2.5	140	1.34
6	x	2.5	159	x	76.1	2.5	2	150	1.13	3	2	150	1.35
6	x	3	159	x	88.9	2.5	2	150	1.19	3	2.5	150	1.42
6	x	4	159	x	108	2.5	2.5	150	1.38	3	2.5	150	1.65
6	x	5	159	x	133	2.5	2.5	150	1.51	3	3	150	1.81
7	x	3	193.7	x	88.9	2.5	2	155	1.39	3.5	2.5	155	1.94
7	x	4	193.7	x	108	2.5	2.5	155	1.58	3.5	2.5	155	2.21
7	x	5	193.7	x	133	2.5	2.5	155	1.71	3.5	3	155	2.39
7	x	6	193.7	x	159	2.5	2.5	155	1.86	3.5	3	155	2.6

Pipe Fittings

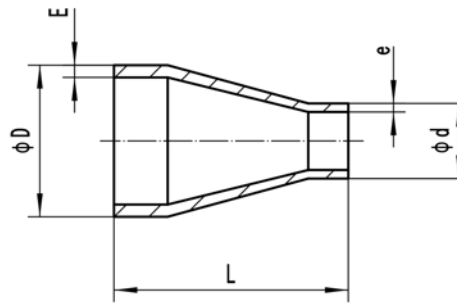


Shanghai Shihang Copper Nickel Pipe Fittings Co., Ltd.

Concentric Reducers

10Bar 14Bar

Material: CuNi 90/10
CuNi 70/30



Outside diameter						DIN 86089							
						10Bar			14Bar				
ØD x Ød		ØD x Ød				Wall thickness		Length	Theoretical weight	Wall thickness		Length	Theoretical weight
nominal inch		actual mm				E	e	L	Kg/piece	E	e	L	Kg/piece
						mm	mm	mm		mm	mm	mm	
8	x	4	219.1	x	108	3	2.5	155	2.47	3.5	2.5	155	2.88
8	x	5	219.1	x	133	3	2.5	155	2.6	3.5	3	155	3.03
8	x	6	219.1	x	159	3	2.5	155	2.74	3.5	3	155	3.2
8	x	7	219.1	x	193.7	3	2.5	155	2.93	3.5	3.5	155	3.42
10	x	5	267	x	133	3	2.5	210	3.3	4	3	210	4.4
10	x	6	267	x	159	3	2.5	210	3.49	4	3	210	4.65
10	x	7	267	x	193.7	3	2.5	210	3.75	4	3.5	210	5
10	x	8	267	x	219.1	3	3	210	4.25	4	3.5	210	5.65
12	x	5	323.9	x	133	4	2.5	210	5.3	5	3	210	6.62
12	x	6	323.9	x	159	4	2.5	210	5.6	5	3	210	7
12	x	7	323.9	x	193.7	4	2.5	210	6.02	5	3.5	210	7.52
12	x	8	323.9	x	219.1	4	3	210	6.3	5	3.5	210	7.9
12	x	10	323.9	x	267	4	3	210	6.88	5	4	210	8.6
14	x	6	368	x	159	4	2.5	300	8.75	5.5	3	300	12.03
14	x	7	368	x	193.7	4	2.5	300	9.34	5.5	3	300	12.84
14	x	8	368	x	219.1	4	3	300	9.76	5.5	3.5	300	13.42
14	x	10	368	x	267	4	3	300	10.57	5.5	4	300	14.53
14	x	12	368	x	323.9	4	4	300	11.53	5.5	5	300	15.85
16	x	7	419.1	x	193.7	4	2.5	325	11.04	6	3.5	325	16.56
16	x	8	419.1	x	219.1	4	3	325	11.5	6	3.5	325	17.25
16	x	10	419.1	x	267	4	3	300	12.38	6	4	325	18.57
16	x	12	419.1	x	323.9	4	4	300	13.42	6	5	325	20.13
16	x	14	419.1	x	368	4	4	300	14.22	6	5.5	325	21.33
18	x	8	457.2	x	219.1	4	3	350	13.14	6	3.5	350	19.7
18	x	10	457.2	x	267	4	3	350	14.08	6	4	350	21.1
18	x	12	457.2	x	323.9	4	4	350	15.2	6	5	350	22.8
18	x	14	457.2	x	368	4	4	350	16.06	6	5.5	350	24.1
18	x	16	457.2	x	419.1	4	4	350	17.07	6	6	350	25.8
20	x	10	508	x	267	4.5	3	375	18.07	6.5	4	375	26.1
20	x	12	508	x	323.9	4.5	4	375	19.42	6.5	5	375	28.05
20	x	14	508	x	368	4.5	4	375	20.47	6.5	5.5	375	29.6
20	x	16	508	x	419.1	4.5	4	375	21.68	6.5	6	375	31.3
20	x	18	508	x	457.2	4.5	4	375	22.57	6.5	6	375	32.6
24	x	14	508	x	368	5	4	400	27.19	8	5.5	400	43.5
24	x	16	610	x	419.1	5	4	400	28.62	8	6	400	45.8
24	x	18	610	x	457.2	5	4	400	29.69	8	6	400	47.5
24	x	20	610	x	508	5	4.5	400	31.12	8	6.5	400	49.8

Pipe Fittings



Shanghai Shihang Copper Nickel Pipe Fittings Co., Ltd.

TEL:86-21-58050989 FAX:86-21-68291168 E-mail:sales@shshihang.com Website:www.shshihang.com

Equal Tees

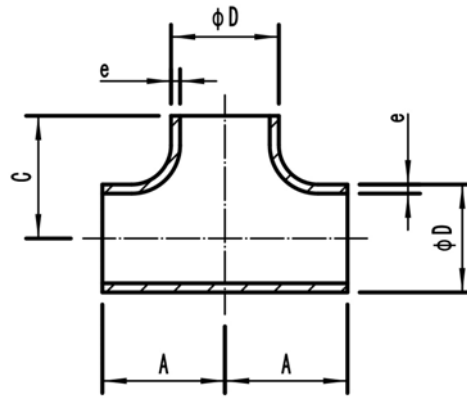
10Bar

14Bar

16Bar

20Bar

Material: CuNi 90/10
CuNi 70/30



Outside diameter of pipe		DIN 86088								EEMUA 146							
		10Bar				14Bar				16Bar				20Bar			
øD	Wall	A	C	Theoretical	Wall	A	C	Theoretical	Wall	A	C	Theoretical	Wall	A	C	Theoretical	
	thickness			weight	thickness			weight	thickness			weight	thickness			weight	
nominal	e	mm	mm	Kg/piece	e	mm	mm	Kg/piece	e	mm	mm	Kg/piece	e	mm	mm	Kg/piece	
inch	mm				mm				mm				mm				mm
0.5	20	1	25	25	0.05	1	25	25	0.05	-	-	-	-	-	-	-	-
0.75	25	1.5	29	29	0.07	1.5	29	29	0.07	-	-	-	-	-	-	-	-
1	30	1.5	38	38	0.1	1.5	38	38	0.1	2.5	38	38	0.18	2.5	38	38	0.18
1.25	38	1.5	48	48	0.13	1.5	48	48	0.13	2.5	48	48	0.29	2.5	48	48	0.29
1.5	44.5	1.5	57	57	0.19	1.5	57	57	0.19	2.5	57	57	0.43	2.5	57	57	0.43
2	57	1.5	64	64	0.29	1.5	64	64	0.29	2.5	64	64	0.57	2.5	64	64	0.57
2.5	76.1	2	76	76	0.65	2	76	76	0.65	2.5	76	76	0.88	2.5	76	76	0.88
3	88.9	2	86	86	0.82	2.5	86	86	1.03	2.5	86	86	1.16	2.5	86	86	1.16
4	108	2.5	105	105	1.6	2.5	105	105	1.6	3	105	105	2.09	3	105	105	2.09
5	133	2.5	124	124	2.8	3	124	124	3.36	-	-	-	-	-	-	-	-
6	159	2.5	143	143	4.4	3	143	143	5.28	3	143	143	4.07	3.5	143	143	4.74
7	193.7	2.5	157	157	4.7	3	157	157	6.6	-	-	-	-	-	-	-	-
8	219.1	3	178	178	12.8	3.5	178	178	14.95	4	178	178	17	4.5	178	178	19.1
10	267	3	216	216	16.6	4	216	216	22.1	4.5	216	216	24.9	5.5	216	216	30.4
12	323.9	4	254	254	31.5	5	254	254	39.4	5.5	254	254	43.3	7	254	254	55.1
14	368	4	279	279	39.4	5.5	279	279	54.2	6.5	279	279	64.05	8	279	279	78.8
16	419.1	4	305	305	55.1	6	305	305	82.65	7	305	305	96.4	9	305	305	124
18	457.2	4	343	343	67.65	6	343	343	101.5	8	343	343	135.3	9.5	343	343	160.65
20	508	4.5	381	381	92.8	6.5	381	381	134.1	8.5	381	381	175.3	11	381	381	226.9
24	610	5	432	432	126.6	8	432	432	202.6	10.5	432	432	265.9	13	432	432	329.2

Pipe Fittings



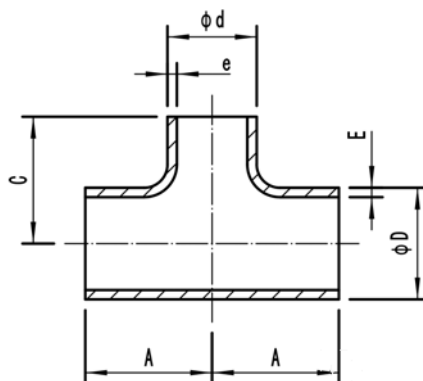
Shanghai Shihang Copper Nickel Pipe Fittings Co., Ltd.

Reducing Tees

10Bar

14Bar

Material: CuNi 90/10
CuNi 70/30



Outside diameter of pipe						DIN86088									
						10Bar					14Bar				
ØD x Ød		ØD x Ød				Wall		Centre		Theoretical	Wall		Centre		Theoretical
						thickness		to face			thickness		to face		
nominal		actual				E	e	A	C	Kg/piece	E	e	A	C	Kg/piece
inch		mm				mm	mm	mm	mm		mm	mm	mm	mm	
1.25	x	1	38	x	30	1.5	1.5	48	42	0.1	1.5	1.5	48	42	0.1
1.5	x	1	44.5	x	30	1.5	1.5	57	45	0.21	1.5	1.5	57	45	0.21
1.5	x	1.25	44.5	x	38	1.5	1.5	57	51	0.21	1.5	1.5	57	51	0.21
2	x	1	57	x	30	1.5	1.5	64	51	0.32	1.5	1.5	64	51	0.32
2	x	1.25	57	x	38	1.5	1.5	64	57	0.32	1.5	1.5	64	57	0.32
2	x	1.5	57	x	44.5	1.5	1.5	64	63	0.32	1.5	1.5	64	63	0.32
2.5	x	1	76.1	x	30	2	1.5	76	56	0.65	2	1.5	76	56	0.65
2.5	x	1.25	76.1	x	38	2	1.5	76	62	0.65	2	1.5	76	62	0.65
2.5	x	1.5	76.1	x	44.5	2	1.5	76	71	0.67	2	1.5	76	71	0.67
2.5	x	2	76.1	x	57	2	1.5	76	73	0.67	2	1.5	76	73	0.67
3	x	1.25	88.9	x	38	2	1.5	86	73	0.87	2.5	1.5	86	73	1.08
3	x	1.5	88.9	x	44.5	2	1.5	86	76	0.87	2.5	1.5	86	76	1.08
3	x	2	88.9	x	57	2	1.5	86	80	0.89	2.5	1.5	86	80	1.1
3	x	2.5	88.9	x	76.1	2	2	86	83	0.92	2.5	2	86	83	1.15
4	x	1.5	108	x	44.5	2.5	1.5	105	89	1.6	2.5	1.5	105	89	1.6
4	x	2	108	x	57	2.5	1.5	105	90	1.6	2.5	1.5	105	90	1.6
4	x	2.5	108	x	76.1	2.5	2	105	92	1.65	2.5	2	105	92	1.65
4	x	3	108	x	88.9	2.5	2	105	96	1.65	2.5	2.5	105	96	1.65
5	x	2	133	x	57	2.5	1.5	124	98	3	3	1.5	124	98	3.6
5	x	2.5	133	x	76.1	2.5	2	124	105	3.1	3	2	124	105	3.7
5	x	3	133	x	88.9	2.5	2	124	108	3.25	3	2.5	124	108	3.9
5	x	4	133	x	108	2.5	2.5	124	117	3.3	3	2.5	124	117	3.95
6	x	2.5	159	x	76.1	2.5	2	143	118	4.4	3	2	143	118	5.25
6	x	3	159	x	88.9	2.5	2	143	121	4.5	3	2.5	143	121	5.4
6	x	4	159	x	108	2.5	2.5	143	130	4.6	3	2.5	143	130	5.5
6	x	5	159	x	133	2.5	2.5	143	136	4.6	3	3	143	136	5.5
8	x	4	219.1	x	108	3	2.5	178	156	12.6	3.5	2.5	178	156	14.75
8	x	5	219.1	x	133	3	2.5	178	162	12.7	3.5	3	178	162	14.85
8	x	6	219.1	x	159	3	2.5	178	168	12.8	3.5	3	178	168	14.95

Pipe Fittings



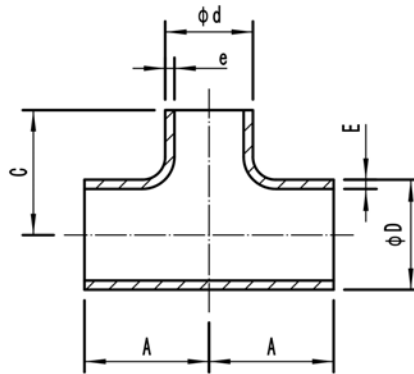
Shanghai Shihang Copper Nickel Pipe Fittings Co., Ltd.

TEL:86-21-58050989 FAX:86-21-68291168 E-mail:sales@shshihang.com Website:www.shshihang.com

Reducing Tees

10Bar 14Bar

Material: CuNi 90/10
CuNi 70/30



Outside diameter of pipe						DIN86088										
						10bar					14bar					
ØD x ød		ØD x ød				Wall thickness		Centre to face		Theoretical weight Kg/piece	Wall thickness		Centre to face		Theoretical weight Kg/piece	
nominal inch		actual mm				E mm	e mm	A mm	C mm		E mm	e mm	A mm	C mm		
10	x	4	267	x	108	3	2.5	194	209	12.5	4	2.5	194	209	16.7	
10	x	5	267	x	133	3	2.5	217	219	13.5	4	3	217	219	18	
10	x	6	267	x	159	3	2.5	240	229	14.8	4	3	240	229	19.75	
10	x	7	267	x	193.7	3	2.5	267	243	15.2	4	3.5	267	243	20.25	
10	x	8	267	x	219.1	3	3	290	259	16.6	4	3.5	290	259	22.1	
12	x	5	323.9	x	133	4	2.5	217	247	28.6	5	3	217	247	35.75	
12	x	6	323.9	x	159	4	2.5	240	257	30.45	5	3	240	257	38	
12	x	7	323.9	x	193.7	4	2.5	267	272	32.6	5	3.5	267	272	40.75	
12	x	8	323.9	x	219.1	4	3	290	287	34.6	5	3.5	290	287	43.25	
12	x	10	323.9	x	267	4	3	324	317	37.8	5	4	324	317	47.25	
14	x	6	368	x	159	4	2.5	240	279	37.4	5.5	3	240	279	51.4	
14	x	7	368	x	193.7	4	2.5	267	294	39.85	5.5	3.5	267	294	54.8	
14	x	8	368	x	219.1	4	3	290	309	42.1	5.5	3.5	290	309	57.9	
14	x	10	368	x	267	4	3	324	339	45.55	5.5	4	324	339	62.65	
14	x	12	368	x	323.9	4	4	380	369	52	5.5	5	380	369	71.5	
16	x	7	419.1	x	193.7	4	2.5	267	319	49.1	6	3.5	267	319	73.65	
16	x	8	419.1	x	219.1	4	3	290	335	52.1	6	3.5	290	335	78.15	
16	x	10	419.1	x	267	4	3	324	365	56.4	6	4	324	365	84.6	
16	x	12	419.1	x	323.9	4	4	380	395	64.8	6	5	380	395	97.2	
16	x	14	419.1	x	368	4	4	407	410	68.9	6	5.5	407	410	103.35	
18	x	10	457.2	x	267	4	3	324	383	55.7	6	4	324	383	83.55	
18	x	12	457.2	x	323.9	4	4	380	413	64.6	6	5	380	413	96.9	
18	x	14	457.2	x	368	4	4	407	428	68.9	6	5.5	407	428	103.35	
18	x	16	457.2	x	419.1	4	4	440	453	74.6	6	6	440	453	111.9	
20	x	12	508	x	323.9	4.5	4	380	439	72.5	6.5	5	380	439	104.7	
20	x	14	508	x	368	4.5	4	407	454	77.4	6.5	5.5	407	454	111.8	
20	x	16	508	x	419.1	4.5	4	440	479	83.9	6.5	6	440	479	121.2	
20	x	18	508	x	457.2	4.5	4	500	509	94.1	6.5	6	500	509	135.9	
24	x	14	610	x	368	5	4	407	505	109.95	8	5.5	407	505	175.9	
24	x	16	610	x	419.1	5	4	440	530	117.85	8	6	440	530	188.55	
24	x	18	610	x	457.2	5	4	500	555	130.35	8	6	500	555	208.6	
24	x	20	610	x	508	5	4.5	540	580	141.85	8	6.5	540	580	226.95	

Pipe Fittings

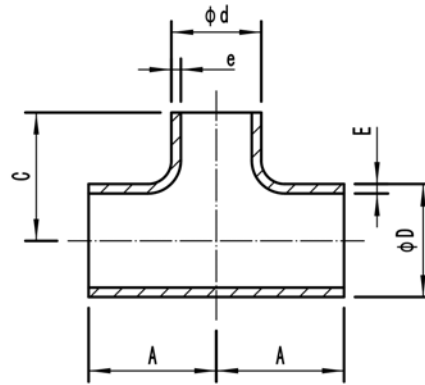


Shanghai Shihang Copper Nickel Pipe Fittings Co., Ltd.

Reducing Tees

16Bar 20Bar

Material: CuNi 90/10
CuNi 70/30



Outside diameter of pipe						EEMUA 146									
						16Bar					20Bar				
ØD x ød		ØD x ød				Wall thickness		Centre to face		Theoretical weight	Wall thickness		Centre to face		Theoretical weight
nominal		actual				E	e	A	C	Kg/piece	E	e	A	C	Kg/piece
inch		mm				mm	mm	mm	mm		mm	mm	mm	mm	
1	x	0.75	30	x	25	2.5	2	38	38	0.17	2.5	2	38	38	0.17
1.25	x	0.75	38	x	25	2.5	2	48	48	0.28	2.5	2	48	48	0.28
1.25	x	1	38	x	30	2.5	2.5	48	48	0.28	2.5	2.5	48	48	0.28
1.5	x	0.75	44.5	x	25	2.5	2	57	57	0.37	2.5	2	57	57	0.37
1.5	x	1	44.5	x	30	2.5	2.5	57	57	0.4	2.5	2.5	57	57	0.4
1.5	x	1.25	44.5	x	38	2.5	2.5	57	57	0.41	2.5	2.5	57	57	0.41
2	x	1	57	x	30	2.5	2.5	64	51	0.51	2.5	2.5	64	51	0.51
2	x	1.25	57	x	38	2.5	2.5	64	57	0.54	2.5	2.5	64	57	0.54
2	x	1.5	57	x	44.5	2.5	2.5	64	60	0.55	2.5	2.5	64	60	0.55
2.5	x	1.25	76.1	x	38	2.5	2.5	76	64	0.83	2.5	2.5	76	64	0.83
2.5	x	1.5	76.1	x	44.5	2.5	2.5	76	67	0.84	2.5	2.5	76	67	0.84
2.5	x	2	76.1	x	57	2.5	2.5	76	70	0.85	2.5	2.5	76	70	0.85
3	x	1.5	88.9	x	44.5	2.5	2.5	86	73	1.1	2.5	2.5	86	73	1.1
3	x	2	88.9	x	57	2.5	2.5	86	76	1.12	2.5	2.5	86	76	1.12
3	x	2.5	88.9	x	76.1	2.5	2.5	86	83	1.15	2.5	2.5	86	83	1.15
4	x	2	108	x	57	3	2.5	105	89	1.9	3	2.5	105	89	1.9
4	x	2.5	108	x	76.1	3	2.5	105	95	1.92	3	2.5	105	95	1.92
4	x	3	108	x	88.9	3	2.5	105	98	1.95	3	2.5	105	98	1.95
6	x	2.5	159	x	76.1	3	2.5	143	121	3.95	3.5	2.5	143	121	4.6
6	x	3	159	x	88.9	3	2.5	143	124	4	3.5	2.5	143	124	4.65
6	x	4	159	x	108	3	3	143	130	4.05	3.5	3	143	130	4.72
8	x	3	219.1	x	88.9	4	2.5	178	152	16.6	4.5	2.5	178	152	18.7
8	x	4	219.1	x	108	4	3	178	156	16.9	4.5	3	178	156	19
8	x	6	219.1	x	159	4	3	178	168	17	4.5	3.5	178	168	19.1

Pipe Fittings



Shanghai Shihang Copper Nickel Pipe Fittings Co., Ltd.

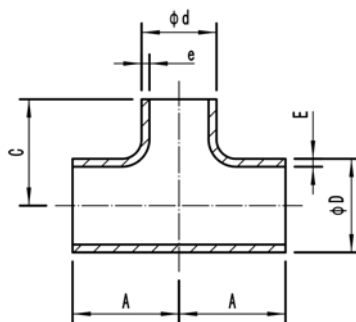
TEL:86-21-58050989 FAX:86-21-68291168 E-mail:sales@shshihang.com Website:www.shshihang.com

Reducing Tees

16Bar

20Bar

Material: CuNi 90/10
CuNi 70/30



Outside diameter of pipe						EEMUA 146									
						16Bar					20Bar				
ØD x Ød		ØD x Ød				Wall thickness		Centre to face		Theoretical weight Kg/piece	Wall thickness		Centre to face		Theoretical weight Kg/piece
nominal		actual				E	e	A	C		E	e	A	C	
inch		mm				mm	mm	mm	mm	mm	mm	mm	mm	mm	
10	x	4	267	x	108	4.5	3	216	184	21.6	5.5	3	216	184	26.4
10	x	6	267	x	159	4.5	3	216	194	21.75	5.5	3.5	216	194	26.6
10	x	8	267	x	219.1	4.5	4	216	203	21.9	5.5	4.5	216	203	26.75
12	x	6	323.9	x	159	5.5	3	254	219	38.5	7	3.5	254	219	49
12	x	8	323.9	x	219.1	5.5	4	254	229	39.6	7	4.5	254	229	50.4
12	x	10	323.9	x	267	5.5	4.5	254	241	40.7	7	5.5	254	241	51.8
14	x	8	368	x	219.1	6.5	4	279	248	58.8	8	4.5	279	248	72.35
14	x	10	368	x	267	6.5	4.5	279	257	59.7	8	5.5	279	257	73.5
14	x	12	368	x	323.9	6.5	5.5	279	270	61.5	8	7	279	270	75.7
16	x	10	419.1	x	267	7	4.5	305	283	89.6	9	5.5	305	283	115.2
16	x	12	419.1	x	323.9	7	5.5	305	295	91.4	9	7	305	295	117.5
16	x	14	419.1	x	368	7	6.5	305	305	93.5	9	8	305	305	120.2
18	x	12	457.2	x	323.9	8	5.5	343	321	126.3	9.5	7	343	321	150
18	x	14	457.2	x	368	8	6.5	343	330	128.3	9.5	8	343	330	152.35
18	x	16	457.2	x	419.1	8	7	343	330	129.9	9.5	9	343	330	154.25
20	x	14	508	x	368	8.5	6.5	381	356	162	11	8	381	356	209.65
20	x	16	508	x	419.1	8.5	7	381	356	164.2	11	9	381	356	212.5
20	x	18	508	x	457.2	8.5	8	381	368	168.3	11	9.5	381	368	217.8
24	x	16	610	x	419.1	10.5	7	432	406	248.3	13	9	432	406	307.4
24	x	18	610	x	457.2	10.5	8	432	419	251.7	13	9.5	432	419	311.6
24	x	20	610	x	508	10.5	8.5	432	432	255.3	13	11	432	432	316.1
28	x	18	711	x	457.2	12	8	521	470	394.6	15	9.5	521	470	493.25
28	x	20	711	x	508	12	8.5	521	483	398.2	15	11	521	483	497.75
28	x	24	711	x	610	12	10.5	521	508	409.9	15	13	521	508	512.4
32	x	20	813	x	508	13.5	8.5	597	533	495	17	11	597	533	623.3
32	x	24	813	x	610	13.5	10.5	597	559	506.8	17	13	597	559	638.2
32	x	28	813	x	711	13.5	12	597	572	518.8	17	15	597	572	653.3
36	x	24	914	x	610	15.5	10.5	673	610	723.6	19	13	673	610	887
36	x	28	914	x	711	15.5	12	673	622	735.4	19	15	673	622	901.45
36	x	32	914	x	813	15.5	13.5	673	648	754.4	19	17	673	648	924.75

Pipe Fittings



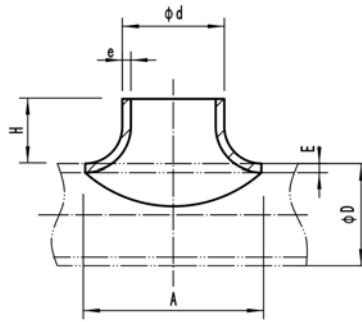
Shanghai Shihang Copper Nickel Pipe Fittings Co., Ltd.

Saddles With Equal Or Reduced Branch

10Bar

14Bar

Material: CuNi 90/10
CuNi 70/30



Outside diameter of pipe						DIN 86087									
ØD x ød		ØD x ød				10Bar					14Bar				
						Wall thickness		Centre to face			Theoretical weight	Wall thickness		Centre to face	
nominal		actual				E	e	H	A	Kg/piece	E	e	H	A	Kg/piece
inch		mm				mm	mm	mm	mm		mm	mm	mm	mm	
0.5	x	0.5	20	x	20	1	1	20	32	0.05	1	1	20	32	0.05
0.75	x	0.5	25	x	20	1.5	1	20	40	0.05	1.5	1	20	40	0.05
0.75	x	0.75	25	x	25	1.5	1.5	22	40	0.06	1.5	1.5	22	40	0.06
1	x	0.75	30	x	25	1.5	1.5	22	40	0.06	1.5	1.5	22	40	0.06
1	x	1	30	x	30	1.5	1.5	30	50	0.1	1.5	1.5	30	50	0.1
1.25	x	1	38	x	30	1.5	1.5	30	50	0.1	1.5	1.5	30	50	0.1
1.25	x	1.25	38	x	38	1.5	1.5	35	64	0.11	1.5	1.5	35	64	0.11
1.5	x	1.25	44.5	x	38	1.5	1.5	35	64	0.14	1.5	1.5	35	64	0.14
1.5	x	1.5	44.5	x	44.5	1.5	1.5	35	74	0.15	1.5	1.5	35	74	0.15
2	x	1.25	57	x	38	1.5	1.5	35	64	0.15	1.5	1.5	35	64	0.15
2	x	1.5	57	x	44.5	1.5	1.5	35	74	0.17	1.5	1.5	35	74	0.17
2	x	2	57	x	57	1.5	1.5	40	97	0.25	1.5	1.5	40	97	0.25
2.5	x	1.25	76.1	x	38	2	1.5	35	64	0.3	2	1.5	35	64	0.3
2.5	x	1.5	76.1	x	44.5	2	1.5	35	74	0.34	2	1.5	35	74	0.34
2.5	x	2	76.1	x	57	2	1.5	40	97	0.48	2	1.5	40	97	0.48
2.5	x	2.5	76.1	x	76.1	2	2	50	126	0.52	2	2	50	126	0.52
3	x	1.25	88.9	x	38	2	1.5	35	64	0.36	2	1.5	35	64	0.36
3	x	1.5	88.9	x	44.5	2	1.5	35	74	0.44	2	1.5	35	74	0.44
3	x	2	88.9	x	57	2	1.5	40	97	0.5	2	1.5	40	97	0.5
3	x	2.5	88.9	x	76.1	2	2	50	126	0.56	2	2	50	126	0.56
3	x	3	88.9	x	88.9	2	2	55	149	0.76	2.5	2.5	55	149	0.95
3	x	1.25	88.9	x	38	2.5	1.5	35	64	0.45	2.5	1.5	35	64	0.45
3	x	1.5	88.9	x	44.5	2.5	1.5	35	74	0.55	2.5	1.5	35	74	0.55
3	x	2	88.9	x	57	2.5	1.5	40	97	0.62	2.5	1.5	40	97	0.62
3	x	2.5	88.9	x	76.1	2.5	2	50	126	0.7	2.5	2	50	126	0.7
4	x	1.5	108	x	44.5	2.5	1.5	35	74	0.32	2.5	1.5	35	74	0.32
4	x	2	108	x	57	2.5	1.5	40	97	0.4	2.5	1.5	40	97	0.4
4	x	2.5	108	x	76.1	2.5	2	50	126	0.65	2.5	2	50	126	0.65
4	x	3	108	x	88.9	2.5	2	55	149	0.79	2.5	2	55	149	0.79
4	x	4	108	x	108	2.5	2.5	75	188	1.3	2.5	2.5	75	188	1.3
5	x	2	133	x	57	2.5	1.5	40	97	0.4	3	1.5	40	97	0.48
5	x	2.5	133	x	76.1	2.5	2	50	126	0.8	3	2	50	126	0.96
5	x	3	133	x	88.9	2.5	2	55	149	1	3	2.5	55	149	1.2
5	x	4	133	x	108	2.5	2.5	75	188	1.2	3	2.5	75	188	1.44
5	x	5	133	x	133	2.5	2.5	85	233	1.7	3	3	85	233	2.04
6	x	2.5	159	x	76.1	2.5	2	50	126	0.65	3	2	50	126	0.78
6	x	3	159	x	88.9	2.5	2	55	149	1	3	2.5	55	149	1.2
6	x	4	159	x	108	2.5	2.5	75	188	1.2	3	2.5	75	188	1.44
6	x	5	159	x	133	2.5	2.5	85	233	2	3	3	85	233	2.4
6	x	6	159	x	159	2.5	2.5	95	279	2.6	3	3	95	279	3.12
7	x	2.5	193.7	x	76.1	2.5	2	50	126	0.95	3.5	2.5	50	126	1.33
7	x	3	193.7	x	88.9	2.5	2	55	149	1.3	3.5	2.5	55	149	1.82
7	x	4	193.7	x	108	2.5	2.5	75	188	1.4	3.5	2.5	75	188	1.96
7	x	5	193.7	x	133	2.5	2.5	85	233	1.9	3.5	3	85	233	2.66
7	x	6	193.7	x	159	2.5	2.5	95	279	2.5	3.5	3	95	279	3.5
7	x	7	193.7	x	193.7	2.5	2.5	110	334	3.2	3.5	3.5	110	334	4.48

Pipe Fittings



Shanghai Shihang Copper Nickel Pipe Fittings Co., Ltd.

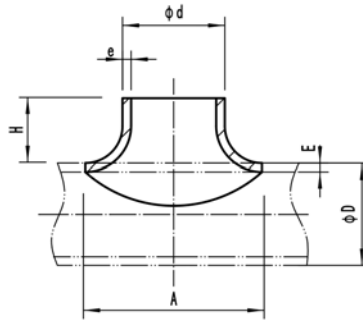
TEL:86-21-58050989 FAX:86-21-68291168 E-mail:sales@shshihang.com Website:www.shshihang.com

Saddles With Equal Or Reduced Branch

10Bar

14Bar

Material: CuNi 90/10
CuNi 70/30



Outside diameter of pipe						DIN 86087									
						10Bar					14Bar				
ØD x ød		ØD x ød				Wall thickness		Centre to face		Theoretical weight Kg/piece	Wall thickness		Centre to face		Theoretical weight Kg/piece
nominal inch		actual mm				E mm	e mm	H mm	A mm		E mm	e mm	H mm	A mm	
8	x	3	219.1	x	88.9	3	2	55	149	1.3	3.5	2.5	55	149	1.52
8	x	4	219.1	x	108	3	2.5	75	188	1.8	3.5	2.5	75	188	2.1
8	x	5	219.1	x	133	3	2.5	85	233	2.7	3.5	3	85	233	3.15
8	x	6	219.1	x	159	3	2.5	95	279	3.8	3.5	3	95	279	4.43
8	x	7	219.1	x	193.7	3	2.5	110	334	4.5	3.5	3.5	110	334	5.25
8	x	8	219.1	x	219.1	3	3	125	379	5.7	3.5	3.5	125	379	6.65
10	x	4	267	x	108	3	2.5	75	188	1.8	4	2.5	75	188	2.4
10	x	5	267	x	133	3	2.5	85	233	2.3	4	3	85	233	3.06
10	x	6	267	x	159	3	2.5	95	279	3.7	4	3	95	279	4.93
10	x	7	267	x	193.7	3	2.5	110	334	4.7	4	3.5	110	334	6.27
10	x	8	267	x	219.1	3	3	125	379	6.1	4	3.5	125	379	8.13
10	x	10	267	x	267	3	3	155	447	8.7	4	4	155	447	11.6
12	x	5	323.9	x	133	4	2.5	85	233	2.6	5	3	85	233	3.25
12	x	6	323.9	x	159	4	2.5	95	279	3.8	5	3	95	279	4.75
12	x	7	323.9	x	193.7	4	2.5	110	334	4.9	5	3.5	110	334	6.2
12	x	8	323.9	x	219.1	4	3	125	379	7.7	5	3.5	125	379	9.6
12	x	10	323.9	x	267	4	3	155	447	10	5	4	155	447	12.5
12	x	12	323.9	x	323.9	4	4	185	560	13	5	5	185	560	16.25
14	x	6	368	x	159	4	2.5	95	279	3.85	5.5	3	95	279	5.3
14	x	7	368	x	193.7	4	2.5	110	334	4.2	5.5	3.5	110	334	5.8
14	x	8	368	x	219.1	4	3	125	379	4.35	5.5	3.5	125	379	6
14	x	10	368	x	267	4	3	155	447	7.3	5.5	4	155	447	10
14	x	12	368	x	323.9	4	4	185	560	9.45	5.5	5	185	560	13
14	x	14	368	x	368	4	4	200	613	12.35	5.5	5.5	200	613	17
16	x	8	419.1	x	219.1	4	3	125	379	4.35	6	3.5	125	379	6.5
16	x	10	419.1	x	267	4	3	155	447	6.65	6	4	155	447	10
16	x	12	419.1	x	323.9	4	4	185	560	9.35	6	5	185	560	14
16	x	14	419.1	x	368	4	4	200	613	12	6	5.5	200	613	18
16	x	16	419.1	x	419.1	4	4	225	680	17.35	6	6	225	680	26
18	x	10	457.2	x	267	4	3	155	447	6.3	6	4	155	447	9.45
18	x	12	457.2	x	323.9	4	4	185	560	8	6	5	185	560	12
18	x	14	457.2	x	368	4	4	200	613	9.7	6	5.5	200	613	14.6
18	x	16	457.2	x	419.1	4	4	225	680	14.85	6	6	225	680	22.3
18	x	18	457.2	x	457.2	4	4	250	800	21.7	6	6	250	800	32.6
20	x	12	508	x	323.9	4.5	4	185	560	9	6.5	5	185	560	13
20	x	14	508	x	368	4.5	4	200	613	10.8	6.5	5.5	200	613	15.6
20	x	16	508	x	419.1	4.5	4	225	680	16.8	6.5	6	225	680	24.3
20	x	18	508	x	457.2	4.5	4	250	800	22.8	6.5	6	250	800	32.95
20	x	20	508	x	508	4.5	4.5	275	880	28.8	6.5	6.5	275	880	41.6
24	x	14	610	x	368	5	4	200	613	11.1	8	5.5	200	613	17.77
24	x	16	610	x	419.1	5	4	225	680	17.25	8	6	225	680	27.55
24	x	18	610	x	457.2	5	4	250	800	22.8	8	6	250	800	36.45
24	x	20	610	x	508	5	4.5	275	880	26.7	8	6.5	275	880	42.65
24	x	24	610	x	610	5	5	300	1020	47.2	8	8	300	1020	75.5

Pipe Fittings



Shanghai Shihang Copper Nickel Pipe Fittings Co., Ltd.

End Caps

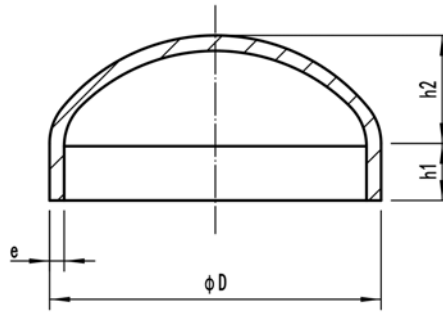
10Bar

14Bar

16Bar

20Bar

Material: CuNi 90/10
CuNi 70/30



Outside dia- meter of pipe		DIN 28011								EEMUA 146					
		10Bar				14Bar				16Bar			20Bar		
∅D		Wall thickness	Heigh		Theoretical weight	Wall thickness	Heigh		Theoretical weight	Wall thickness	Heigh	Theoretical weight	Wall thickness	Heigh	Theoretical weight
nominal	actual	e	h1	h2	Kg/piece	e	h1	h2	Kg/piece	e	h1 + h2	Kg/piece	e	h1 + h2	Kg/piece
inch	mm	mm	mm	mm		mm	mm	mm		mm	mm		mm	mm	
1	30	1.5	14	5	0.07	1.5	14	5	0.07	-	-	-	-	-	-
1.25	38	1.5	14	6.5	0.1	1.5	14	6.5	0.1	-	-	-	-	-	-
1.5	44.5	1.5	14	8	0.12	1.5	14	8	0.12	2.5	19.6	0.13	2.5	19.6	0.13
2	57	1.5	18	10	0.18	1.5	18	10	0.18	2.5	22	0.19	2.5	22	0.19
2.5	76.1	2	18	14	0.31	2	18	14	0.31	2.5	25.7	0.31	2.5	25.7	0.31
3	88.9	2	20	16	0.39	2.5	20	16	0.53	2.5	28.2	0.4	2.5	28.2	0.4
4	108	2.5	20	20	0.75	2.5	20	20	0.75	3	31.7	0.75	3	31.7	0.75
5	133	2.5	20	24	0.95	3	20	24	1.2	-	-	-	-	-	-
6	159	2.5	20	29	1.35	3	20	29	1.6	3	41	1.5	3.5	44	1.75
7	193.7	2.5	20	36	1.95	3.5	20	36	2.4	-	-	-	-	-	-
8	219.1	3	20	41	2.6	3.5	20	41	3.1	4	55	2.75	4.5	60	3.1
10	267	3	20	50	3.85	4	20	50	4.85	4.5	69	4.9	5.5	69	5.96
12	323.9	4	20	61	6.6	5	20	61	8.2	5.5	80	9.17	7	85	11.68
14	368	4	20	69	8.8	5.5	20	69	12.6	6.5	93	14.05	8	103	17.3
16	419.1	4	20	79	12.2	6	25	79	17.4	7	102	18.6	9	112	23.9
18	457.2	4	20	87	12.55	6	25	87	17.9	8	119	22.75	9.5	119	27
20	508	4.5	20	96	18.8	6.5	25	96	26.35	8.5	129	31.7	11	139	41
24	610	5	20	115	26.7	8	35	115	49.6	10.5	148	55.16	13	163	68.3

