

SPECIFICATION CHART OF TUBES AND PIPES

CHEMICAL COMPOSITION													MECHANICAL PROPERTIES			
CS :- Carbon Steel													AS :- Alloy Steel			
SPECIFICATION	TYPE	C %	Mn%	P % MAX	S% MAX	Si %	Cr %	Cu % MAX	Mo % MAX	Ni % MAX	Va&	MPa	MPa	50mmMIN Longitudinal	-50°1 40x10	
STANDARD SPECIFICATION OF CARBON STEEL SEAMLESS TUBES / PIPES FOR HEAT EXCHANGER AND CONDENSER																
	ASTM A179	CS	0.06-0.18	0.27-0.63	0.035	0.035	-	-	-	-	-	180MIN	325MIN	35.0	-	
STANDARD SPECIFICATION OF CARBON STEEL SEAMLESS BOILER TUBES/PIPES FOR HIGH PRESSURE SERVICES																
	ASTM A192	CS	0.06-0.18	0.27-0.63	0.035	0.035	0.25MAX	-	-	-	-	180MIN	325MIN	35.0	-	
STANDARD SPECIFICATION OF CARBON STEEL SEAMLESS TUBES/PIPES FOR HIGH TEMPERATURE SERVICES																
1	ASTM A53/A	CS	0.25MAX	0.95MAX	0.050	0.060	-	-	-	-	-	205MIN	330MIN	36.0	-	
2	ASTM A53/B		0.30MAX	1.20MAX	0.050	0.060	-	-	-	-	-	240MIN	415MIN	29.5	-	
3	ASTM A106/A	CS	0.25MAX	0.27-0.93	0.035	0.035	0.10MIN	0.40MAX	0.40	0.15MAX	0.40	0.080	205MIN	330MIN	35.0	-
4	ASTM A106/B		0.30MAX	0.29-1.06	0.035	0.035	0.10MIN	0.40MAX	0.40	0.15MAX	0.40	0.080	240MIN	415MIN	30.0	-
5	ASTM A106/C		0.35MAX	0.29-1.06	0.035	0.035	0.10MIN	0.40MAX	0.40	0.15MAX	0.40	0.080	275MIN	485MIN	30.0	-
STANDARD SPECIFICATION OF SEAMLESS CARBON-MOLYBDENUM ALLOY-STEEL BOILER AND SUPER HEATER TUBES																
8	ASTM A209/T1	AS	0.10-0.20	0.30-0.80	0.025	0.025	0.10-0.50	-	-	0.44-0.65	-	-	205MIN	380MIN	30.0	-
9	ASTM A209/T1A		0.15-0.25	0.30-0.80	0.025	0.025	0.10-0.50	-	-	0.44-0.65	-	-	195MIN	365MIN	30.0	-
10	ASTM A209/Tb		0.14MAX	0.30-0.80	0.025	0.025	0.10-0.50	-	-	0.44-0.65	-	-	220MIN	415MIN	30.0	-
STANDARD SPECIFICATION OF CARBON STEEL BOILER AND SUPER HEATER TUBES																
11	ASTM A210/A1	CS	0.27MAX	0.93MAX	0.035	0.035	0.10MIN	-	-	-	-	255MIN	415MIN	30.0	-	
12	ASTM A210/C		0.35MAX	0.29-1.06	0.035	0.035	0.10MIN	-	-	-	-	275MIN	485MIN	30.0	-	
STANDARD SPECIFICATION OF CARBON STEEL BOILER AND SUPER HEATER TUBES																
13	ASTM A213/T2	AS	0.10-0.20	0.30-0.60	0.025	0.025	0.10-0.30	0.50-0.81	-	0.44-0.65	-	-	205MIN	415MIN	30.0	-
14	ASTM A213/T5		0.15MAX	0.30-0.60	0.025	0.025	0.50MAX	4.00-6.00	-	0.45-0.65	-	-	205MIN	415MIN	30.0	-
15	ASTM A213/T11		0.05-0.15	0.30-0.60	0.025	0.025	0.50-1.00	1.00-1.50	-	0.44-0.65	-	-	205MIN	415MIN	30.0	-
16	ASTM A213/T12		0.05-0.15	0.30-0.61	0.025	0.025	0.50MAX	0.80-1.25	-	0.44-0.65	-	-	205MIN	415MIN	30.0	-
17	ASTM A213/T22		0.05-0.15	0.30-0.60	0.025	0.025	0.50MAX	1.90-2.60	-	0.87-1.13	-	-	205MIN	415MIN	30.0	-

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SPECIFICATION	TYPE	C %	Mn%	P % MAX	S% MAX	Si %	Cr %	Cu % MAX	Mo % MAX	Ni % MAX	Va&	YIELD STRESS MPa	TENSILE STRENGTH MPa	ELONGATION IN 50mmMIN Longitudinal	IMPACT TEST -50°1 40x10	
23	ASTM A335/P2		0.10-0.20	0.30-0.61	0.025	0.025	0.10-0.30	0.50-0.81	-	0.44-0.65	-	-	205MIN	380MIN	30.0	-
24	ASTM A335/P5		0.15MAX	0.30-0.60	0.025	0.025	0.50MAX	4.00-6.00	-	0.45-0.65	-	-	205MIN	415MIN	30.0	-
25	ASTM A335/P11		0.05-0.15	0.30-0.60	0.025	0.025	0.50-1.00	1.00-1.50	-	0.44-0.65	-	-	205MIN	415MIN	30.0	-
26	ASTM A335/P12		0.05-0.15	0.30-0.60	0.025	0.025	0.50MAX	0.80-1.25	-	0.44-0.65	-	-	220MIN	415MIN	30.0	-
27	ASTM A335/P22		0.05-0.15	0.30-0.60	0.025	0.025	0.50MAX	1.90-2.60	-	0.87-1.13	-	-	205MIN	415MIN	30.0	-
STANDARD SPECIFICATION OF CARBON STEEL BOILER AND SUPER HEATER																
28	BS/3059 /1/ 320	CS	0.16MAX	0.30-0.70	0.050	0.050	-	-	-	-	-	-	195MIN	320-480	25.0	-
29	BS/3059 /2/ 360	CS	0.17MAX	0.40-0.80	0.045	0.045	0.35MAX	-	-	-	-	-	215MIN	360-500	24.0	-
30	BS/3059 / 440	CS	0.12-0.18	0.90-1.20	0.040	0.035	0.10-0.35	-	-	-	-	-	245MIN	440-560	21.0	-
32	BS/3059/2/ 620	AS	0.12-0.15	0.40-0.70	0.040	0.040	0.10-0.35	0.70-1.10	-	0.45-0.65	-	-	180 MIN	460-640	22.0	-
31	BS/3059/2/ 622	AS	0.08-0.15	0.40-0.70	0.040	0.040	0.10-0.35	2.00-2.50	-	0.90-1.20	-	-	275MIN	490-640	20.0	-
STANDARD SPECIFICATION FOR SEAMLESS ALLOY STEEL TUBES FOR BOILER, PIPELINES, PRESSURE VESSEL FOR TEMPRATURE UP TO 6000C																
33	DIN/17175 ST35.8	CS	0.17MAX	0.40-0.80	0.040	0.040	0.10-0.35	-	-	-	-	-	235MIN	340-441	25.0	-
34	DIN/17175 ST45.8	CS	0.21 MAX	0.40-1.20	0.040	0.040	0.10-0.35	-	-	-	-	-	235MIN	441-540	25.0	-
35	DIN/17175 15M03	AS	0.12-0.20	0.40-0.80	0.035	0.035	0.10-0.35	-	-	0.25-0.35	-	-	285MIN	441-540	21.0	-
36	DIN/17175 13CM044	AS	0.10-0.18	0.40-0.70	0.035	0.035	0.10-0.35	0.70-1.00	-	0.45-0.65	-	-	294MIN	441-570	22.0	-
36	DIN/17175 10CrMo910	AS	0.15MAX	0.40-0.80	0.035	0.035	0.10-0.35	2.00-2.50	-	0.90-1.10	-	-	265MIN	441-590	20.0	-
STANDARD SPECIFICATION FOR SEAMLESS CARBON STEEL TUBES																
37	JIS3445 STKM 11A		0.12MAX	0.60MAX	0.040	0.040	0.35MAX	-	-	-	-	-	294MIN	35.0	35.0	-
38	JIS3445 STKM 12A		0.20MAX	0.60MAX	0.040	0.040	0.35MAX	-	-	-	-	-	177MIN	344MIN	35.0	-

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CS :- Carbon Steel													AS :- Alloy Steel			
													YIELD STRESS	TENSILE STRENGTH	ELONGATION IN	IMPACT TEST
SPECIFICATION	TYPE	C %	Mn%	P % MAX	S% MAX	Si %	Cr %	Cu % MAX	Mo % MAX	Ni % MAX	Va&	MPa	MPa	50mmMIN Longitudinal	-50°1 40x10	
39	JIS3445 STKM 12B	CS	0.20MAX	0.60MAX	0.040	0.040	0.35MAX	-	-	-	-	-	274MIN	393MIN	25.0	-
40	JIS3445 STKM 12C		0.20MAX	0.60MAX	0.040	0.040	0.35MAX	-	-	-	-	-	353MIN	470MIN	20.0	-
41	JIS3445 STKM 13C		0.25MAX	0.30MAX	0.040	0.040	0.35MAX	-	-	-	-	-	216MIN	373MIN	30.0	-
42	JIS3445 STKM 13B		0.25MAX	0.30-0.90	0.040	0.040	0.35MAX	-	-	-	-	-	304MIN	442MIN	20.0	-
43	JIS 3461 STB42		0.32MAX	0.30-0.80	0.035	0.035	0.35MAX	-	-	-	-	-	255MIN	412MIN	30.0	-
44	JIS 3461 STB35		0.18MAX	0.30-0.60	0.035	0.035	0.35MAX	-	-	-	-	-	177MIN	344MIN	30.0	-
45	ASTM A 519 SAE 1010	CS	0.08-0.13	0.30-0.60	0.040	0.050	-	-	-	-	-	-	-	-	-	-
46	ASTM A 519 SAE 1015		0.13-0.18	0.30-0.60	0.040	0.050	-	-	-	-	-	-	-	-	-	-
47	ASTM A 519 SAE 1020		0.18-0.23	0.30-0.60	0.040	0.050	-	-	-	-	-	-	-	-	-	-
48	ASTM A 519 SAE 1025	CS	0.22-0.28	0.30-0.60	0.040	0.050	-	-	-	-	-	-	-	-	-	-
49	ASTM A 519 SAE 1030		0.28-0.34	0.60-0.90	0.040	0.050	-	-	-	-	-	-	-	-	-	-
50	ASTM A 519 SAE 1035		0.32-0.38	0.60-0.90	0.040	0.050	-	-	-	-	-	-	-	-	-	-
51	ASTM A 519 SAE 1040		0.37-0.44	0.60-0.90	0.040	0.050	-	-	-	-	-	-	-	-	-	-
52	ASTM A 519 SAE 1045		0.43-0.50	0.60-0.90	0.040	0.050	-	-	-	-	-	-	-	-	-	-
53	ASTM A 519 SAE 1050		0.48-0.55	0.60-0.90	0.040	0.050	-	-	-	-	-	-	-	-	-	-