

# BOILER, AIR HEATER & CORTEN STEEL ERW TUBES

Specification	Mechanical Properties			Chemical Composition (Max unless range is given)				
	Tensile strength min (Mpa)	Yield strength min (Mpa)	Elongation max (%)	C (%)	Si (%)	Mn (%)	P (%)	S (%)
BS 3059 : Part 1 : 1987 ERW320	320	195	25	0.16	0.35	0.30 - 0.70	0.040	0.040
BS 3059 : Part 2 : 1987 ERW360	360	235	24	0.17	0.10 - 0.35	0.40 - 0.80	0.036	0.035
BS 6323 : Part 5 : 1982 ERW1K M	300	200	20	0.13	-	0.60	0.050	0.050
BS 6323 : Part 5 : 1982 ERW1 NKM	280	155	25	0.13	-	0.60	0.050	0.050
BS 6323 : Part 5 : 1982 ERW2 KM	340	250	15	0.16	-	0.70	0.050	0.050
BS 6323 : Part 5 : 1982 ERW2 NKM	320	195	25	0.16	-	0.70	0.050	0.050
ASTM A 423 Grade 1	415	255	25	0.2	0.1	0.55	0.06 - 0.16	0.06

SPECIFICATION OF EQUIVALENT STANDARDS					
EQ. STANDARD INDUSTRY	INDIAN IS	BRITISH BS	JAPANESE JIS	GERMAN DIN	AMERICAN ASTM
BOILER TUBES	IS 1914	BS 3059 PT - 1 BS 3059 PT - 2	JIS G 3461	DIN 17177 EN 10217 PT - 1 & 2	ASTM A53 ASTM A178 ASTM A214
AIR-HEATER TUBES		BS 6323	JIS G 3461	DIN 17177 EN 10305 PT - 2 & 3 EN 10217 PT - 1 & 2	ASTM A214 ASTM A423 Gr1 ASTM A714

## Other available specifications/grades :

- Heat exchanger tubes as per SA 214 Grade A, ASTM A 178 Grade A & Grade C • Boiler tubes as per BS 3059 • Airheater tubes as per BS 6323 and Corten Airheater tubes as per ASTM A 423 Grade 1
- ERW Boiler Pipes as per ASTM A 53 with IBR TC meeting properties of SA 106 Grade B for header pipe application

## SEAMLESS GRADES AND SPECIFICATIONS

SPECIFICATION OF EQUIVALENT STANDARDS														
USA						EUROPEAN UNION			GERMANY			JAPAN		UK
ASME/ASTM						EN			DIN			JIS		BS
SA / A106				SA/A 209	SA/A 210	SA/A 213 SA/A 335	EN 10216-2	EN 10216-4	DIN 17173	DIN 17176	DIN 17175	3461	3456	
Gr.A	SA/A 179	SA/A 192					P 235 GH				St.35.8	STPT 38	3458	3059/2 - 360
														3059/1 - 360
Gr.B					SA/A 210Gr.A1		P265 GH				St.45.8			3059/2 - 440
Gr.C					SA/A 210Gr.C						17Mo4			
							16Mo3				15Mo3			3059/2 - 243
				T1 / T1A		P1	16Mo3				16Mo3	STBA 12	STPA 12	3606 - 245
						T5 / P5	X11CrMo5			12CrMo195		STBA 25	STPA 25	3604 - 625
							X11CrMo5			X12CrMo5				3606 - 625
						T9 / P9	X11CrMo9-10			X12CrMo9-1		STBA 26	STPA 26	3059/2 - 629-590
														3604 - 629-590
						T11 / P11	10CrMo5-5					STBA 23	STPA 23	3604 - 621
														3606 - 621
						T12 / P12	13CrMo4-5				13CrMo4-4	STBA 22	STPA 22	3059/2-620
														3606 - 620
						T22 / P22	10CrMo9-10				10CrMo9-10	STBA 24	STPA 24	3059/2 - 622-490
														3604 - 622
						T91/P91	X10CrMoVNb9-1				X10CrMoVNb9-1	STBA 28	STPA 28	3059/2 - 91
						T92/P92	X10CrWMoVNb9-2					STBA 22	STPA 29	
						T23/P23	7CrWMoNb9-6							
						T36/P36	15NiCuMoNb5-6-4							
				SA/A 333 Gr1				P215NL / P255 QL	TTSt35N/V					
				SA/A 333 Gr6										3603:1991 - 43-LT