

BS 3059 STEEL BOILER AND SUPERHEATER TUBES
PART 1-87 LOW TENSILE CARBON STEEL TUBE WITHOUT SPECIFIED ELEVATED TEMPERATURE PREPERTIES

1. SCOPE

PART 1

Low tensile carbon steel tubes without specified elevated temperature properties.

Requirements for plain end, seamless and welded tubes, not exceeding 127mm outside diameter and not exceeding 12.5mm thickness. for use in boilers and super heaters.

Chemical Composition

Grade	Mfg. Process	Chemical Composition (%)								
		C	Si	Mn	P	S	Ni	Cr	Mo	Others
HFS320	S	0.16Max		0.30~0.70	0.050Max	0.050Max	-	-	-	-
CFS320	E	0.16Max								
ERW320	S	0.017Max	0.35Max	0.40~0.80	0.045Max	0.045Max	-	-	-	-
CEW320	E									

Mechanical Properties

Grade	Tensile Test MPa or N/mm ²		Remarks (Similar to JIS)	
	Min Yield point	Tensile Strength		
HFS320	195	325~480	(STB35)	SRM SEAMLESS
CFS320				SEAMLESS
ERW320	215	360~500	(STB35)	-
CEW320				ERW

	2.0	2.3	2.6	2.9	3.2	3.6	4.0	4.5	5.0	5.6	6.3	7.1	8.0	8.8	10.0	11.0	12.5
mm	kg/m	kg/m	kg/m	kg/m	kg/m	kg/m	kg/m	kg/m	kg/m	kg/m	kg/m	kg/m	kg/m	kg/m	kg/m	kg/m	kg/m
25.4	1.15	1.31	1.46	1.61	1.75	1.94	2.11	2.32	2.52								
26.9	1.23	1.40	1.56	1.72	1.87	2.07	2.26	2.49	2.70								
31.8	1.47	1.67	1.87	2.07	2.26	2.50	2.74	3.03	3.30	3.62	3.96						
33.7	1.56	1.78	1.99	2.20	2.41	2.67	2.93	3.24	3.54	3.88	4.26						
38	1.78	2.02	2.27	2.51	2.75	3.05	3.35	3.72	4.07	4.47	4.93	5.41	5.92				

42.4		2.27	2.55	2.82	3.09	3.44	3.79	4.21	4.61	5.08	5.61	6.18	6.79				
44.5		2.39	2.69	2.98	3.26	3.63	4.00	4.44	4.87	5.37	5.94	6.55	7.20	7.75			
48.3		2.61	2.93	3.25	3.56	3.97	4.37	4.86	5.34	5.90	6.53	7.21	7.95	8.57			
51		2.76	3.10	3.44	3.77	4.21	4.64	5.16	5.67	6.27	6.94	7.69	8.48	9.16	10.1		
57			3.49	3.87	4.25	4.74	5.23	5.83	6.41	7.10	7.88	8.74	9.67	10.5	11.6		
60.3			3.70	4.11	4.51	5.03	5.55	6.19	6.82	7.55	8.39	9.32	10.3	11.2	12.4	13.4	
63.5			3.90	4.33	4.76	5.32	5.87	6.55	7.21	8.00	8.89	9.88	10.9	11.9	13.2	14.2	
70			4.32	4.80	5.27	5.90	6.51	7.27	8.01	8.89	9.90	11.0	12.2	13.3	14.8	16.0	
76.1				5.24	5.75	6.44	7.11	7.95	8.77	9.74	10.8	12.1	13.4	14.6	16.3	17.7	19.6
82.5					6.26	7.00	7.74	8.66	9.56	10.6	11.8	13.2	14.7	16.0	17.9	19.4	21.6
88.9					6.76	7.57	8.38	9.37	10.3	11.5	12.8	14.3	16.0	17.4	19.5	21.1	23.6
101.6						8.7	9.63	10.8	11.9	13.3	14.8	16.5	18.5	20.1	22.6	24.6	27.5
114.3							10.9	12.2	13.5	15.0	16.8	18.8	21.0	22.9	25.7	28.0	31.4
127								13.6	15.0	16.8	18.8	21.0	23.5	25.7	28.9	31.5	35.3

Material Comparison Tables (ASTM, KS, JIS, DIN, BS, NF, UNI)

ASTM Standard	UNS NO.	KOREA/JAPANES			GERMAN				BRITISH			FRENCH			ITALIAN		
		KS/JIS Symbol	KS/JIS Number	Remarks	DIN Type	DIN Number	Material Number	Remarks	B.S Number	B.S Grade	Remarks	AFNOR Type	NF Number	Remarks	UNI Type	UNI Number	Remarks
A 178 Carbon Steel Electric-Resistance-Welded Boiler Tubes																	
Grade A	K01200	STBH 340 / STB 35	D3563 / G3461	St 37.8	17177	1.0315	(7)	3059	ERW 320					(3)			(3)
Grade c	K03503	SHBH 410 / STB 42	D3563 / G3461	St 42.8	17177	1.0498	(7)							(3)			(3)

Material Comparison Tables (ASTM, KS, JIS, DIN, BS, NBN, NF, UNI)

ASTM Standard		KOREA/JAPANES	GERMAN	BRITISH	BELGIAN	FRENCH	ITALIAN
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	UNS NO.	KS/JIS Symbol	KS/JIS Number	Remarks	DIN Type	DIN Number	Material Number	Remarks	B.S Number	B.S Grade	Remarks	NBN Type	NBN Grade	Remarks	AFNOR Type	NF Number	Remarks	UNI Type	UNI Number	Remarks
A 192 Seamless C-Steel Boiler Tube for High Pressure Service	K01201	STBH 340 / STB 340	D3563 / G3461	(30)	St 35.8	17175	1.0305		3059	320	(27)(30)	D45	837	(27)	TU 37C	A49-213	(27)	C14	5462	(27)

JIS Number and Corresponding Foreign Standards

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						"	ERW620-440	CrMo										
						"	CEW620-440	CrMo										
						3606	ERW620	CrMo										
						"	CEW620	CrMo										
						"	CFW620	CrMo										
	STBA23	CrMo	A199	T11	CrMo	3604	HF621	CrMo				A49-213	TU10CD	CrMo				
			A213	T11	CrMo	"	CFS621	CrMo				A49-215	TU10CD5.05	CrMo				
						"	ERW621	CrMo										
						"	CEW621	CrMo										
						3606	ERW621	CrMo										
						"	CEW621	CrMo										
						"	CFS621	CrMo										
	STBA24	CrMo	A199	T22	CrMo	3059	S1-622-440	CrMo	17175	10CrMo910	CrMo	A49-213	Tu10CD9.10	CrMo				
			A213	T22	CrMo	"	S2-622-440	CrMo				A49-215	Tu10CD9.10	CrMo				
						"	S1-622-490	CrMo										
						"	S2-622-490	CrMo										
	STBA25	CrMo	A199	T5	CrMo	3604	HFS625	CrMo							260 4/2	TS37	CrMo	
			A213	T5	CrMo	"	CFS625	CrMo										
						3606	CFS625	CrMo										
	STBA26	CrMo	A199	T9	CrMo	3059	S1-629-470	CrMo				A49-213	TUZ10CD9	CrMo				
			A213	T9	CrMo	"	S2-629-470	CrMo				A49-215	TUZ10CD9	CrMo				
						"	S1-629-470S2-629-590	CrMo										
						"	S2-629-590	CrMo										
						3604	HFS629-470	CrMo										

JIS Number and Corresponding Foreign Standards

JIS	ASTM	BS	DIN	NF	ISO	
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Standard Number	Grade	Type	Standard Number	Grade	Type	Standard Number	Grade	Type	Standard Number	Grade	Type	Standard Number	Grade	Type	Standard Number	Grade	Type	Index Number
G3463			A213	TP304	SUS	3605	304s18	SUS	2462	X5CrNi189	SUS	A49-230	TUZ6CN 18.09	SUS	2604/2	TS48	SUS	C012
	SUS		A249	TP304	SUS	"	304S25	SUS	2463	X5CrNi189	SUS							
	304TB	SUS	A269	TP304	SUS	3606	LWHT304S22	SUS										
			A623	TP304	SUS	3606	LWCF304S22	SUS										
			A688	TP304	SUS	"	LWBC304S25	SUS										
	SUS		A213	TP304H	SUS	3059	CFS304S59	SUS							2604/2	TS48	SUS	
	304HTB	SUS	A249	TP304H	SUS	3606	304S59	SUS										
	SUS		A213	TP304L	SUS	3605	304S14	SUS	2462	X2CrNi189	SUS	A49-207	TSZ2CN 18.10	SUS	2604/2	TS46	SUS	
	304LTB	SUS	A249	TP304L	SUS	"	304S22	SUS	2463	X2CrNi189	SUS	"	TSZ2CN 18.10	SUS				
			A269	TP304L	SUS	3606	LWHT304S22	SUS				A49-230	TSZ2CN 18.10	SUS				
			A632	TP304L	SUS	"	LWCF304S22	SUS										
			A688	TP304L	SUS	"	LWBC304S22	SUS										
						"	CFS304S22	SUS										
	SUS																	
	309TB	SUS																
	SUS																	
	309STB	SUS	A213	TP309S	SUS													
	SUS														2604/2	TS68	SUS	
	310TB	SUS	A632	TP310	SUS													
	SUS																	
	310STB	SUS	A213	TP310S	SUS													
			A213	TP316	SUS				2462	X5CrNiMo	SUS	A49-230	TUZ6CN	SUS	2604/2	TS60	SUS	

	SUS									1810			18.09					
	316TB	SUS	A249	TP316	SUS	3605	316S18	SUS	2463	X5CrNiMo 1810	SUS							
			A269	TP316	SUS				"	X5CrNiMo 1812								
			A632	TP316	SUS	3606	LWHT316S25	SUS	17455	X5CrNiMo 17122								
			A688	TP316	SUS	"	LWCF316S25	SUS	17456	X2CrNiMo 17132								
						"	LWBC316S25	SUS	17457	X5CrNiMo 17122								
						"	CFS316S25	SUS	17458	X2CrNiMo 17132								
						"	LWHT316S30	SUS										
						"	LWCF316S30	SUS										
						"	LWBC316S30	SUS										
						"	CFS316S30	SUS										
	SUS		A213	TP316H	SUS	3059	CFS316S59	SUS	17455	X5CrNiMo 17122					2604/2	TS52	SUS	
	316HTB	SUS	A249	TP316H	SUS				17456						"	TS61	SUS	
	SUS		A213	TP316L	SUS	3605	316S14	SUS	2462	X2CrNiMo 1810	SUS				2604/2	TS57	SUS	
	316LTB	SUS	A249	TP316L	SUS	"	316S22	SUS		X2CrNiMo 1812	SUS				"	TS58	SUS	
			A269	TP316L	SUS	3606	LWHT316S24	SUS	2463	X2CrNiMo 1810	SUS							
			A632	TP316L	SUS	"	LWCF316S24	SUS		X2CrNiMo 1812	SUS							
			A688	TP316L	SUS	"	LWBC316S24	SUS	17457	X5CrNi								

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