



Boiler and Heat-Exchanger Tubes

GRADE A-1 / A-SA 210
GRADE B / A-SA 106
GRADE 6 / A-SA 333
GRADE T 11 / A-SA 213
GRADE P 22 / A-SA 335

Boiler and Heat-Exchanger Tubes

Seamless steel tubes for pressure purposes, both non-alloyed and alloyed, with specified low or high temperature properties.

SIZE RANGE:

Outside Diameter:

1.059 to 7.000 inches (26.9 to 177.8 mm)

Wall thickness:

0.102 to 0.787 inches (2.6 to 20.0 mm)

(up to 0.984 inches / 25.0 mm upon request)

LENGTHS:

Production lengths or fixed lengths up to 56.7 feet (17.3 m)

CERTIFICATES:

ISO 9001, ISO 14001, OHSAS 18001

TÜV PED 97/23/EG Part 1 § 4.3

TÜV AD 2000 W0 / TRD 100

(AD 2000 W4, TRB 100, TRD 102)

MARKING AND TESTING:

According to standards or to customer specification

PRODUCTION RANGE ACCORDING TO EN 10216-2

		WALL THICKNESS											
mm		2.60	2.90	3.20	3.60	4.00	4.50	5.00	5.60	6.30	7.10	8.00	8.80
OUTSIDE DIAMETER	26.90	1.56	1.72	1.87	2.07	2.26	2.49						
	30.00	1.76	1.94	2.11	2.34	2.56	2.83						
	31.80	1.87	2.07	2.26	2.50	2.74	3.03	3.30					
	32.00	1.89	2.08	2.27	2.52	2.76	3.05	3.33					
	33.70	1.99	2.20	2.41	2.67	2.93	3.24	3.54					
	35.00	2.08	2.30	2.51	2.79	3.06	3.38	3.70	4.06				
	38.00	2.27	2.51	2.75	3.05	3.35	3.72	4.07	4.47				
	40.00	2.40	2.65	2.90	3.23	3.55	3.94	4.32	4.75	5.24	5.76		
	42.40	2.55	2.82	3.09	3.44	3.79	4.21	4.61	5.08	5.61	6.18	6.79	7.29
	44.50	2.69	2.98	3.26	3.63	4.00	4.44	4.87	5.37	5.94	6.55	7.20	7.75
	48.30	2.93	3.25	3.56	3.97	4.37	4.86	5.34	5.90	6.53	7.21	7.95	8.57
	51.00	3.10	3.44	3.77	4.21	4.64	5.16	5.67	6.27	6.94	7.69	8.48	9.16
	54.00		3.65	4.01	4.47	4.93	5.49	6.04	6.68	7.41	8.21	9.08	9.81
	57.00		3.87	4.25	4.74	5.23	5.83	6.41	7.10	7.88	8.74	9.67	10.46
	60.30		4.11	4.51	5.03	5.55	6.19	6.82	7.55	8.39	9.32	10.32	11.18
	63.50		4.33	4.76	5.32	5.87	6.55	7.21	8.00	8.89	9.88	10.95	11.87
	70.00		4.80	5.27	5.90	6.51	7.27	8.01	8.89	9.90	11.01	12.23	13.28
	73.00		5.01	5.51	6.16	6.81	7.60	8.38	9.31	10.36	11.54	12.82	13.93
	76.10		5.24	5.75	6.44	7.11	7.95	8.77	9.74	10.84	12.08	13.44	14.61
	82.50			6.26	7.00	7.74	8.66	9.56	10.62	11.84	13.20	14.70	15.99
	88.90			6.76	7.57	8.38	9.37	10.35	11.50	12.83	14.32	15.96	17.38
	101.60				8.70	9.63	10.78	11.91	13.26	14.81	16.55	18.47	20.14
	108.00				9.27	10.26	11.49	12.70	14.14	15.80	17.67	19.73	21.53
	114.30				9.83	10.88	12.19	13.48	15.01	16.78	18.77	20.97	22.90
	127.00					12.13	13.59	15.04	16.77	18.75	20.99	23.48	25.65
	133.00					12.73	14.26	15.78	17.59	19.69	22.04	24.66	26.95
	139.70					13.39	15.00	16.61	18.52	20.73	23.22	25.98	28.41
	141.30						15.18	16.81	18.74	20.97	23.50	26.30	28.76
	152.40						16.41	18.18	20.27	22.70	25.44	28.49	31.16
	159.00						17.15	18.99	21.19	23.72	26.60	29.79	32.60
	168.30						18.18	20.14	22.47	25.17	28.23	31.63	34.61
	177.80											33.50	36.68

Other pipe sizes and specialities may be furnished by agreement.

SERVICE:

- Special grades and customer specifications
- Transport to processing facilities
(by truck, train or vessel)
- Offers for finned/studded tubes or accessories
available upon request
- Welding expertise and other materials
available on the following web page
www.bohlerwelding.com

10.00	11.00	12.50	14.20	16.00	17.50	20.00	22.50	25.00
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- ☐ Tolerance on the outside diameter +/- 0.50 mm
- ☐ Tolerance on the outside diameter +/- 1.00 %
- ☒ Tolerance on the wall thickness +/- 0.40 mm
- ☐ Tolerance on the wall thickness +/- 12.50 %
- ☐ Upon request

	7.99							
	8.51	9.09						
	9.45	10.12						
	10.11	10.85						
	10.85	11.66						
	11.59	12.48						
	12.40	13.37	14.74					
	13.19	14.24	15.72					
	14.80	16.01	17.73					
	15.54	16.82	18.65	20.59				
	16.30	17.66	19.61	21.68				
	17.88	19.40	21.58	23.92	26.24			
	19.46	21.13	23.55	26.16	28.77	30.81		
	22.59	24.58	27.47	30.61	33.78	36.30		
	24.17	26.31	29.44	32.85	36.30	39.06		
	25.72	28.02	31.38	35.05	38.79	41.78		
	28.85	31.47	35.30	39.50	43.80	47.26	52.78	
	30.33	33.10	37.15	41.60	46.17	49.85	55.73	
	31.99	34.91	39.21	43.95	48.81	52.74	59.04	
	32.38	35.35	39.71	44.51	49.44	53.43	59.83	
	35.12	38.36	43.13	48.40	53.82	58.22	65.30	
	36.75	40.15	45.16	50.71	56.43	61.07	68.56	
	39.04	42.67	48.03	53.96	60.10	65.08	73.15	
	41.38	45.25	50.96	57.29	63.84	69.18	77.83	

Values shown in table are [kg/m]



Remarks to outside diameter and wall thickness:

The mentioned values are standards according to EN/DIN. Other pipe sizes and wall thicknesses may be furnished by agreement.

Remarks to the outside diameter:

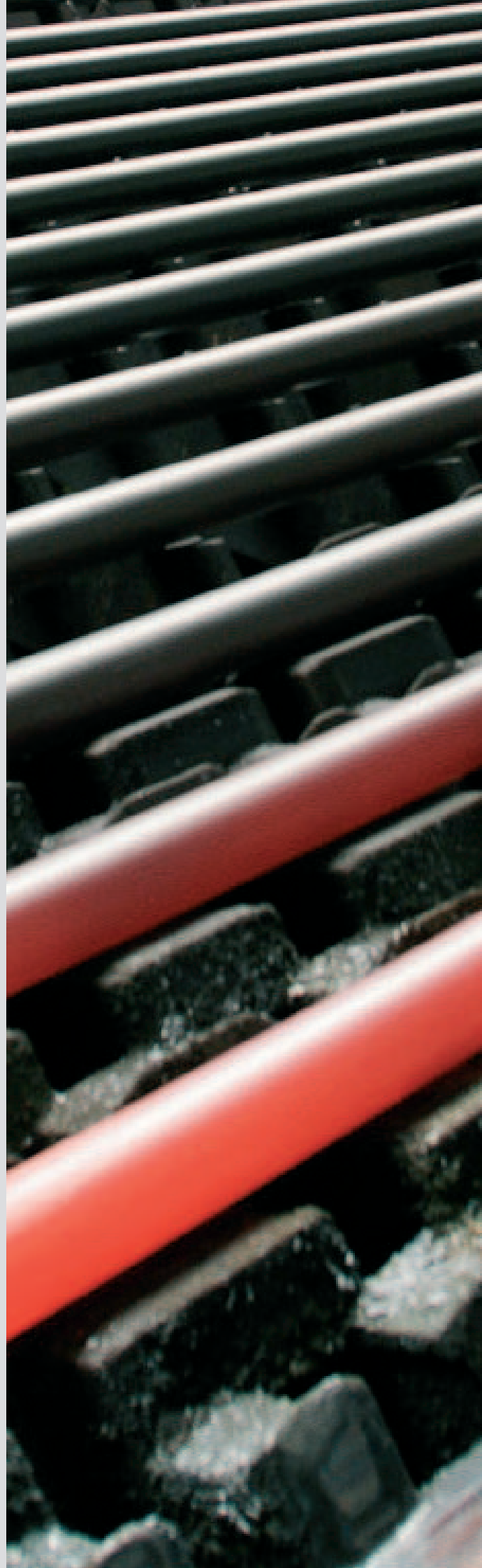
Up to 100 mm outside diameter tighter tolerances (+/-0.30 mm) available upon request (voestalpine Tubulars Special).

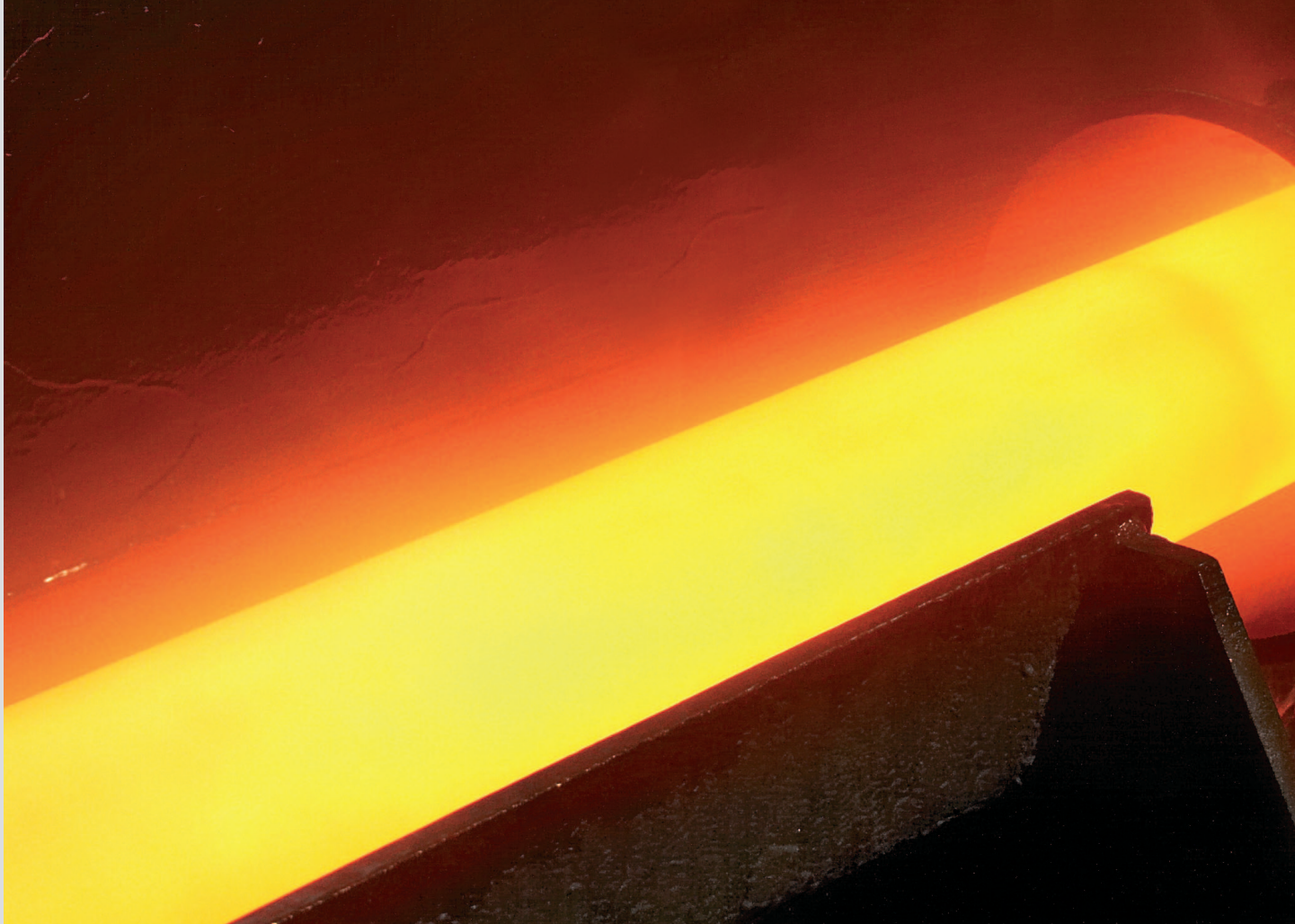
PRODUCTION RANGE ACCORDING TO ASTM

NOMINAL PIPE SIZE	OUTSIDE DIAMETER		WALL THICKNESS		SCHEDULE		SCHEDULE	
					STD / 40		XS / 80	
	mm	inch	mm	inch	kg/m	ppf	kg/m	ppf
3/4	26.70	1.050	2.87	0.113	1.69	1.13		
			3.91	0.154			2.20	1.47
1	33.40	1.315	3.38	0.133	2.50	1.68		
			4.55	0.179			3.24	2.17
			6.35	0.250				
1 1/4	42.20	1.660	3.56	0.140	3.39	2.27		
			4.85	0.191			4.47	3.00
			6.35	0.250				
			9.70	0.382				
1 1/2	48.30	1.900	3.68	0.145	4.05	2.72		
			5.08	0.200			5.41	3.63
			7.14	0.281				
			10.15	0.400				
2	60.30	2.375	3.91	0.154	5.44	3.66		
			5.54	0.218			7.48	5.03
			8.74	0.344				
			11.07	0.436				
2 1/2	73.00	2.875	5.16	0.203	8.63	5.80		
			7.01	0.276			11.41	7.67
			9.53	0.375				
			14.02	0.552				
3	88.90	3.500	5.49	0.216	11.29	7.58		
			7.62	0.300			15.27	10.26
			11.13	0.438				
			15.24	0.600				
3 1/2	101.60	4.000	5.74	0.226	13.57	9.12		
			8.08	0.318			18.63	12.52
			16.15	0.636				
4	114.30	4.500	6.02	0.237	16.07	10.80		
			8.56	0.337			22.32	15.00
			11.13	0.438				
			13.49	0.531				
			17.12	0.674				
5	141.30	5.563	6.55	0.258	21.77	14.63		
			9.53	0.375			30.97	20.80
			12.70	0.500				
			15.88	0.625				
			19.05	0.750				
6	168.30	6.625	7.11	0.280	28.26	18.99		
			10.97	0.432			42.56	28.60
			14.27	0.562				
			18.26	0.719				
			21.95	0.864				

Other pipe sizes and specialities may be furnished by agreement.

PLAIN END WEIGHT					
SCHEDULE 120		SCHEDULE 160		SCHEDULE XXS	
kg/m	ppf	kg/m	ppf	kg/m	ppf
		4.24	2.85		
		5.61	3.76		
				7.77	5.22
		7.25	4.86		
				9.56	6.41
		11.11	7.47		
				13.44	9.04
		14.92	10.02		
				20.39	13.71
		21.35	14.34		
				27.68	18.60
				34.03	22.87
28.32	19.02				
		33.54	22.53		
				41.03	27.57
40.28	27.06				
		49.11	32.99		
				57.43	38.59
54.20	36.43				
		67.56	45.39		
				79.22	53.21



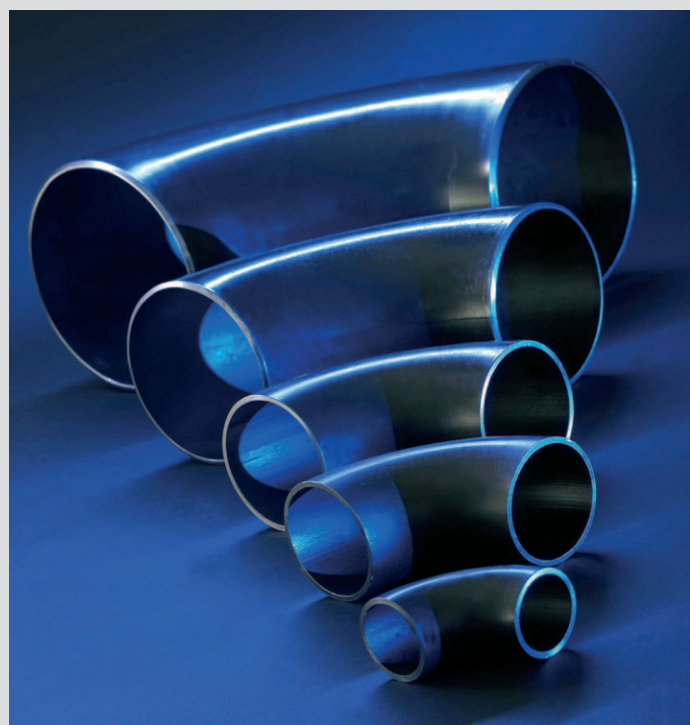
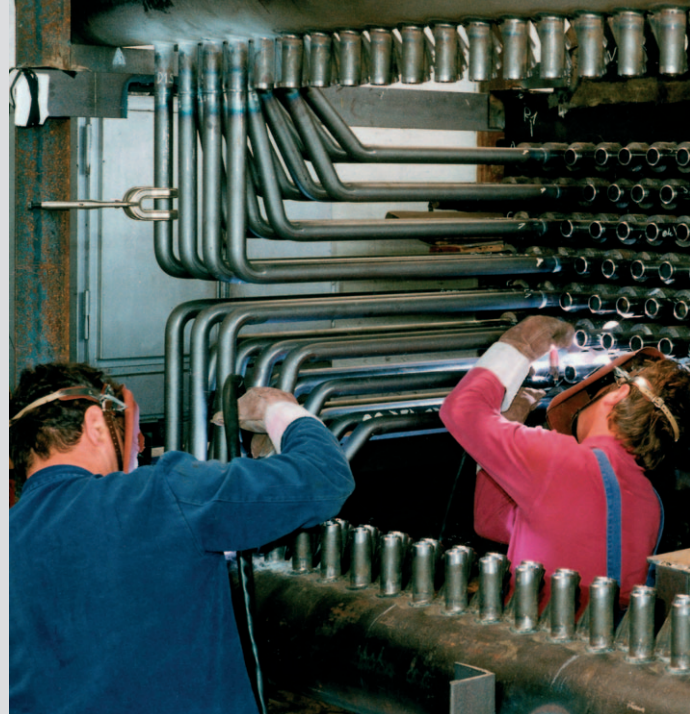
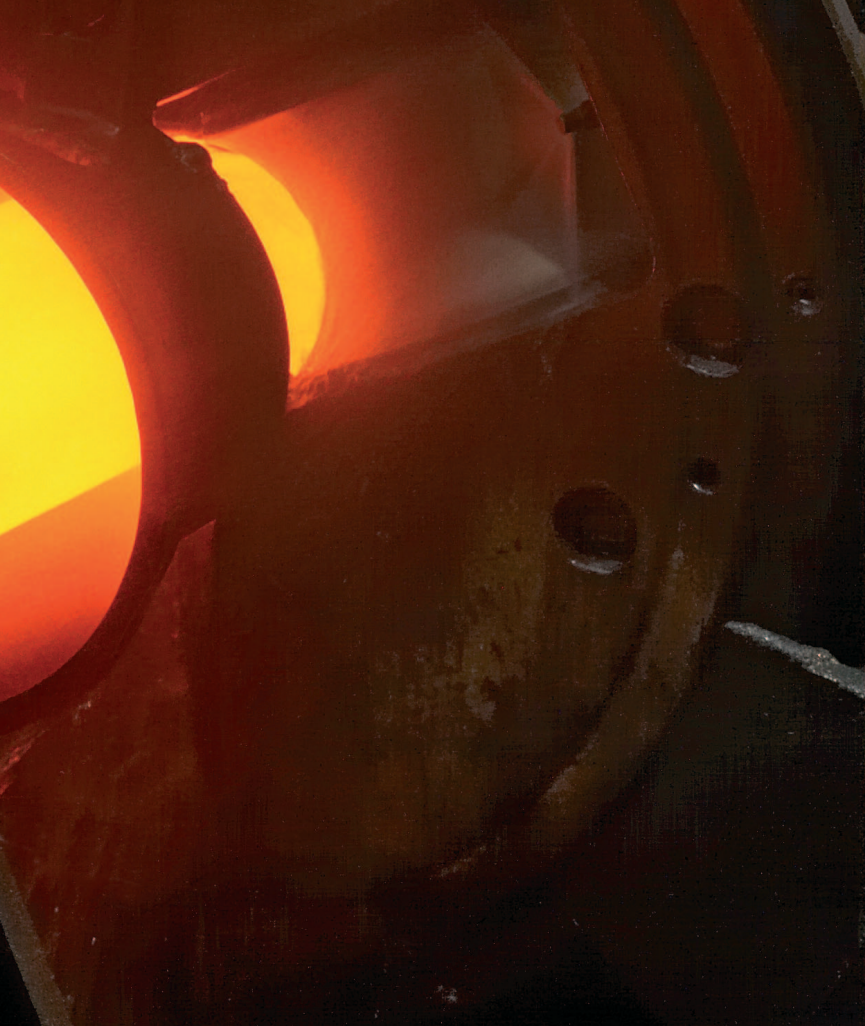


COMPARISON OF SPECIFICATIONS AND GRADES

MATERIAL CODE	DIN	GRADE	EN	GRADE	ASTM/ASME	GRADE	
1.0305	17.175	ST35.8	EN 10216-2	P235GH	A/SA 53	A	
					A/SA 106	A	
					A/SA 192	UNALLOYED	
1.1101	17.173	TTST35N/V	EN 10216-4	P215NL/P255QL	A/SA 333	1	
					A/SA 333	6	
1.0405	17.175	ST45.8	EN 10216-2	P265GH	A/SA 53	B	
					A/SA 106	B	
					A/SA 210	A-1	
1.0481	17.175	17MN4			A/SA 106	C	
					A/SA 210	C	
1.5415	17.175	15MO3	EN 10216-2	16MO3	–	–	
1.5423	17.175	16MO3	EN 10216-2	16MO3	A/SA 335	P1	
					A/SA 209	T1	
					A/SA 209	T1A	
					A/SA 209	T1B	
					A/SA 335	P2	
					A/SA 213	T2	
1.7335	17.175	13CRMO44	EN 10216-2	13CRMO4-5	A/SA 335	P12	
					A/SA 213	T12	
					A/SA 335	P11	
					A/SA 213	T11	
1.7380	17.175	10CRMO910	EN 10216-2	10CRMO9-10	A/SA 335	P22	
					A/SA 213	T22	

Comparability to be approved case by case.

Higher alloyed material or special grades available upon request.



	NFA	GRADE	BS	GRADE
	49212	TU37-C	3602/1	HFS 360
	49213	TU37-C	–	–
	49215	TU37-C	3059/2	360
	49212	TU37-C	3059/1	S320
	49215	TU42-BT	3059/2	440
	–	–	–	–
	49212	TU42-C	3602/1	HFS 410
	49213	TU42-C	3602/1	HFS 430
	49213	TU48-C	3059/2	440
	49215	TU48-C	3602/1	460
	49213	TU15-D3	3059/2	243
	–	–	3606	245
	–	–	3606	245
	–	–	–	–
	–	–	–	–
	49213	TU15CD2-05	–	–
	–	–	–	–
	49213	TU13CD4-04	3604	620-460
	–	–	3604	620-440
	49213	TU10CD5-05	3604	621
	–	–	–	–
	49215	TU10CD9-10	3604	622
	49213	TU10CD9-10	3059/2	622-490



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