

Boiler Tube & Pipe

宝钢锅炉管

产品手册



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宝钢锅炉管

Steel Boiler Tube & Pipe

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简介 | Introduction

宝山钢铁股份有限公司无缝钢管生产系统拥有宝钢分公司钢管厂、特钢分公司钢管厂、烟台鲁宝钢管有限责任公司、上海钢管有限公司等四家钢管生产厂，以先进技术、设备、管理、良好的信誉以及强大的研发能力，保证提供高质量的产品和服务，令客户满意。我公司已贯彻了行之有效的质量控制和质量保证体系，长远规划、保持、控制并改进产品的质量。

衷心感谢您对宝钢高压锅炉管的关注和使用，竭诚欢迎您对本公司产品和服务提出宝贵意见。

如您所需产品的品种、规格、特殊要求在本产品样册中未覆盖，本公司将予以即时答复。

For the purpose of satisfying customers, we supply products and services at a high quality level based on our advanced equipment, technical knowledge, management, and high credit. We have implemented an efficient quality assurance system, permanently planned, maintained, controlled and continuous.

Its personal are sincerely grateful for your concern and use of our products, and you are welcome to put forward valuable suggestion on our products and services.

If the type, size and special requirements of products are not covered herein, please don't hesitate to contact us, and we will reply promptly.



质量保证 | Quality Assurance System

质量管理体系

宝钢采用国际先进的质量管理体系，主要产品均获得国际权威机构认可。公司获得了英国BSI公司颁发的质量、环保和安全综合管理体系证书IMS (ISO 9001、ISO/TS 16949、ISO 14001、ISO 18001)、华夏认证中心(CCCI)颁发的ISO14001环境管理体系证书以及国家质量监督检验检疫总局颁发的完善计量检测体系证书。锅炉管获得德国TÜV公司颁发的TÜV认证证书和PED认证证书。



Quality Management System

Based on the advanced quality management system, main products of Baosteel obtained the certification of the international authoritative institution. Our company have passed IMS ISO9001 ISO/TS16949 ISO14001 ISO18001 ISO14001. Boiler tube & pipe have passed the TÜV certification and PED certification.





采用标准 | Standard

中国国家标准

Chinese National Standards

- GB 3087
- GB 5310
- GB 13296

美国机械工程协会标准

American society of mechanical engineers

- ASME SA-106
- ASME SA-192M
- ASME SA-209M
- ASME SA-210M
- ASME SA-213M

美国材料试验协会标准

American society of testing materials

- ASTM A 213M

德国工业标准

Deutsche industrie normen

- DIN 17175

日本工业标准

Japaneses industrial standards

- JIS G3461
- JIS G3462
- JIS G3463

生产工艺流程 | Process Flowchart



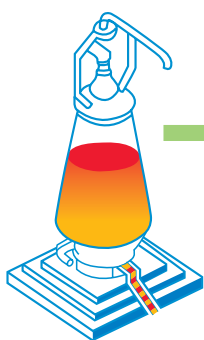
电炉
Blast Furnace

AOD+VOD

模铸
Blast Furnace



初轧
Blooming Mill

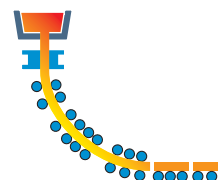


高炉
Blast Furnace



电炉
Blast Furnace

LF+VOD



连铸
Continuous Casting



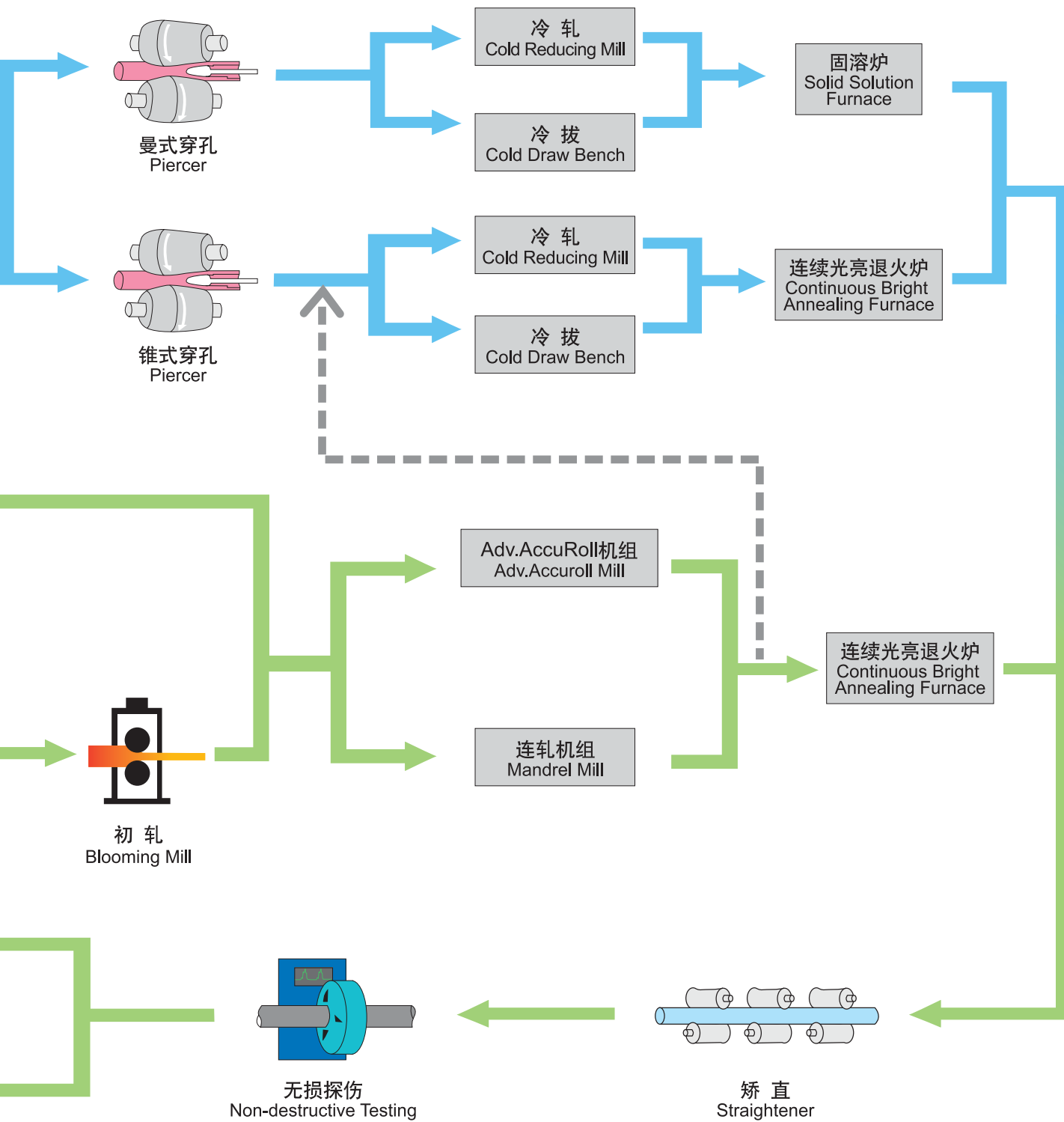
转炉
Blast Furnace

LF+RH

模铸
Blast Furnace

冷轧成品
Cold Finished Seamless
Steel Tubes and Pipe

热轧成品
Hot Finished Seamless
Steel Tubes and Pipe



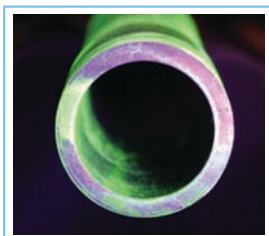
主要设备 | Main Equipment

宝钢全部装备技术建立在当代钢铁冶炼、冷热加工、液压传感、电子控制、计算机和信息通讯等先进技术的基础上，具有大型化、连续化、自动化的特点。通过引进并对其不断进行技术改造，保持着世界最先进的技术水平。

宝钢锅炉管是在宝钢的统一质量保证和质量控制标准下进行，从原料到成品的每一环节均采用先进的超声波、涡流、漏磁、磁粉和其他无损检测设备和方法进行严格的控制，确保了质量水平的稳定。宝钢锅炉管产品钢质纯净，成分均匀稳定，表面质量好，几何尺寸精度高，综合力学性能及工艺性能优良。



A-1



A-2



A-3

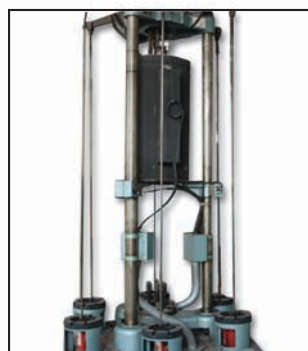
先进的在线
检测设备
以保证产品的
高质量

All the facilities the company possesses are based on the advanced technologies of contemporary steel smelting, cold and hot rolling processing, hydraulic sensing, real-time detection, electronic control, computer and information communications. They feature large-scale, continuity and automation and keep the most advanced technology in the world through constant technical modification and innovation.

To insure the steady quality level, Baosteel boiler tube & pipe are all produced in the uniform quality assurance system of Baosteel company. From the raw material to finished product, we inspect and control by the advanced testing methods, such as Ultrasonic testing Eddy current testing-non-destructive testing methods. Baosteel boiler tube & pipe have clean and steady chemical components; good exterior quality, dimension precision and mechanical properties.



B-1



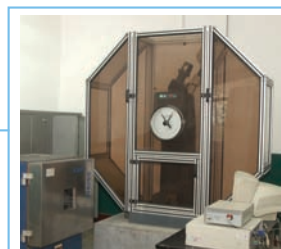
B-2

先进的 试验设备

- A-1、超声波涡流联合探伤机组
- A-2、管端磁粉探伤
- A-3、水压机
- B-1、单头持久蠕变试验机
- B-2、多头持久蠕变试验机
- C-1、拉伸试验机
- C-2、冲击试验机
- C-3、金相试验设备



C-1



C-2



C-3

主要产品及用途

Main Products and Applications

钢种 Steel Grade	标准 Standard			应用 Applications
	GB (CHINA)	ASTM (U.S.A)	DIN (GERMANY)	
碳钢 Carbon steel	10 20 20G 20MnG 25MnG	SA-106B SA-192 SA-210A1 SA-106C SA-210C	St35.8 St45.8	省煤器 水冷壁管 Economizer tube Water wall tube
Mo Steel	15MoG 20MoG		15Mo3	水冷壁管 过热器 再热器 Water wall tube superheater tube reheater tube
Cr-Mo Steel	12CrMoG 12Cr2MoG 12Cr1MoVG 15CrMoG 10Cr9MoVNB	T11 T22 T24 T91	12Cr1MoV 14MoV63 10CrMo910 X10CrMoVNB91	过热器 再热器 superheater tube reheater tube
Cr-Mo-W steel	12Cr2MoWVTiB	T23 T911 T92 T122		过热器 再热器 superheater tube reheater tube
奥氏体不锈钢 Austenitic stainless steel		TP304 Tp304H TP321 TP321H TP347 TP347H TP316 TP316H S30432 TP310HCbN		过热器 再热器 superheater tube reheater tube



6

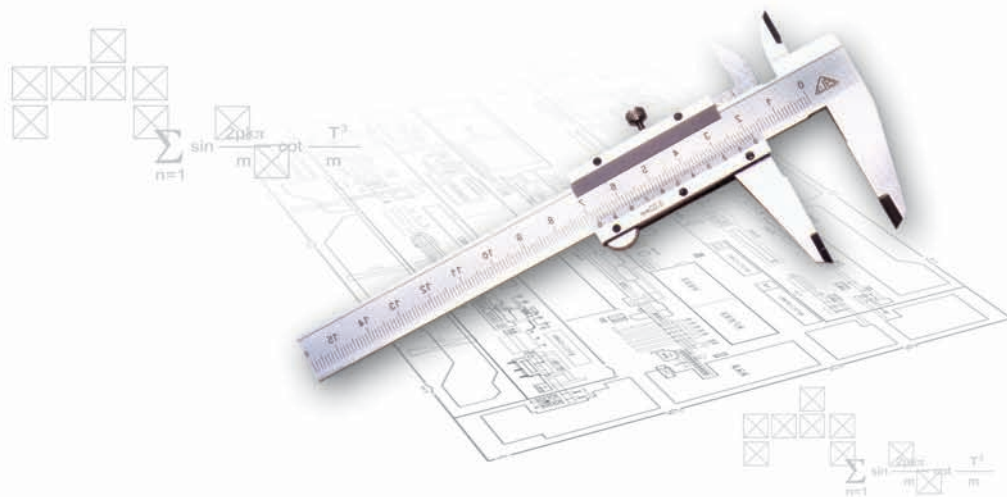
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Steel Boiler Tube & Pipe

热轧规格表 Hot Finished Seamless Steel Tube and Pipe

外径 O.D.		壁厚 Wall Thickness, (mm)																																		
(mm)		2.0	2.5	2.8	3.0	3.2	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
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180.0																																				
194.0																																				
203.0																																				
219.0																																				
245.0																																				
273.0																																				
299.0																																				

尺寸公差 | Tolerances on Dimensions



外径公差 Tolerances on Out Diameter

标准 Standard	热轧管 Hot Finished Seamless Tube		冷拔（轧）管 Cold Finished Seamless Tube	
	外径 Outside Diameter (mm)	允许偏差 Tolerance	外径 Outside Diameter (mm)	允许偏差 Tolerance
EN 10216-1 EN 10216-2 DIN 17175	≤ 100	± 0.75% (min. ± 0.5mm)	所有	± 0.5% (min. ± 0.30mm)
	> 100	± 0.90%		
GB 3087	≤ 159	+1.25%, -1.0%	10~30	± 0.40mm
			> 30~50	± 0.45mm
			> 50	± 1.0%
GB 5310	≤ 50	± 0.50mm	≤ 30	± 0.20mm
	> 50	± 1.0%	> 30~50	± 0.30mm
			> 50	± 0.8%
ASME SA-179M ASME SA-192M ASME SA-209M ASME SA-210M ASME SA-213M JIS G 3461 JIS G 3462	≤ 101.6	+0.4, -0.8mm	<25.4	± 0.10mm
	101.6~190.5	+0.4, -1.2mm	> 25.4~38.1	± 0.15mm
			> 38.1~50.8	± 0.20mm
			> 50.8~63.5	± 0.25mm
			> 63.5~76.2	± 0.30mm
			> 76.2	± 0.38mm
ASME SA-106	≤ 48.3	± 0.40mm	≤ 48.3	± 0.40mm
	48.3~114.3	± 0.79mm		
	114.3~219.1	+1.59, -0.79mm	> 48.3	± 0.79mm
	219.1~323.9	+2.38, -0.79mm		

壁厚公差 Tolerances on Out Diameter

标准 Standard	热轧管 Hot Finished Seamless Tube			冷拔(轧)管 Cold Finished Seamless Tube		
	外径 Outside Diameter OD (mm)	壁厚 Wall Thickness T (mm)	壁厚允许偏差 Tolerance	外径 Outside Diameter OD (mm)	壁厚 Wall Thickness T (mm)	壁厚允许偏差 Tolerance
EN 10216-1 EN 10216-2 DIN 17175	≤ 130	$S \leq 2S_n$	+15%, -10%	—	All	± 10% (min. ± 0.2mm)
		$2S_n < S \leq 4S_n$	+12.5%, -10%			
		$S > 4S_n$	± 9%			
	> 130	$S \leq 0.05da$	+17.5%, -12.5%			
		$0.05da < S \leq 0.11da$	± 12.5%			
		$S > 0.11da$	± 10%			
GB 3087	—	≤ 20	+15%, -12.5% (min.+0.45, -0.35mm)	—	1.0~3.0	+15%, -10%
		> 20	± 12.5%	—	> 3	+12.5%, -10%
GB 5310	—	< 3.5	+15%, -10% (min.+0.48, -0.32mm)	—	2~3	+12%, -10%
		3.5-20	+15%, -10%	—	> 3	± 10%
		> 20	± 10%			
ASME SA179M ASME SA-192M ASME SA-209M ASME SA-210M ASME SA-213M JIS G 3461 JIS G 3462	—	2.41-3.8	+35%, -0%	≤ 38.1	—	+20%, -0%
		3.8-4.6	+33%, -0%	> 38.1	—	+22%, -0%
		> 4.6	+28%, -0%	—	—	—
ASME SA-106	—	All	± 12.5%	—	All	± 10%



产品化学成分 | Available Steel Grades

GRADE		C	Si	Mn	S	P	Cr	Mo	V	Ti	B	W	Ni	Al	Nb	N	其他
标准 Standard	钢种 Steel Grade				max.												
GB 3087	10	0.07-0.13	0.17-0.37	0.35-0.65	0.020	0.025	≤0.15										
	20	0.07-0.13	0.17-0.37	0.35-0.65	0.020	0.025	≤0.25										
DIN 17175	St35.8	≤0.17	0.10-0.35	0.40-0.80	0.020	0.025											
	St45.8	≤0.21	0.10-0.35	0.40-1.20	0.020	0.025											
	15Mo3	0.12-0.20	0.10-0.35	0.40-0.80	0.020	0.025		0.25-0.35									
	13CrMo44	0.10-0.18	0.10-0.35	0.40-0.70	0.020	0.025	0.70-1.10	0.45-0.65									
	10CrMo910	0.08-0.15	≤0.50	0.40-0.70	0.020	0.025	2.00-2.50	0.90-1.20									
	14MoV63	0.10-0.18	0.10-0.35	0.40-0.70	0.020	0.025	0.30-0.60	0.50-0.70	0.22-0.32								
	12Cr1MoV	0.08-0.15	0.17-0.37	0.40-0.70	0.020	0.025	0.90-1.20	0.25-0.35	0.15-0.30								
GB5310-95	20G	0.17-0.24	0.17-0.37	0.35-0.65	0.020	0.025											
	25MnG	0.22-0.30	0.17-0.37	0.70-1.00	0.020	0.025											
	15MoG	0.12-0.20	0.17-0.37	0.40-0.80	0.020	0.025		0.25-0.35									
	20MoG	0.15-0.25	0.17-0.37	0.40-0.80	0.020	0.025		0.44-0.65									
	12CrMoG	0.08-0.15	0.17-0.37	0.40-0.70	0.020	0.025	0.40-0.70	0.40-0.55									
	15CrMoG	0.12-0.18	0.17-0.37	0.40-0.70	0.020	0.025	0.80-1.10	0.40-0.55									
	12Cr2MoG	0.08-0.15	≤0.50	0.40-0.70	0.020	0.025	2.00-2.50	0.90-1.20									
	12Cr1MoVG	0.08-0.15	0.17-0.37	0.40-0.70	0.020	0.025	0.90-1.20	0.25-0.35	0.15-0.30								
	12Cr2MoWVTiB	0.08-0.15	0.45-0.75	0.45-0.65	0.020	0.025	1.60-2.10	0.50-0.65	0.28-0.42	0.08-0.18	0.002-0.008	0.30-0.55					
	10Cr9Mo1VNb	0.08-0.12	0.20-0.50	0.30-0.60	0.010	0.020	8.00-9.50	0.85-1.05	8.00-11.00				≤0.040	≤0.040	0.06-0.10	0.030-0.070	
	1Cr18Ni9	0.04-0.10	≤1	≤2	0.030	0.035	17.00-19.00		9.00-13.00				0.18-0.25				
	1Cr19Ni11Nb	0.04-0.10	≤1	≤2	0.030	0.030	17.00-20.00										Nb+Ta ≥ 8°C%-1.00

GRADE		C	Si	Mn	S	P	Cr	Mo	V	Ti	B	W	Ni	Al	Nb	N	其他
标准 Standard	钢种 Steel Grade				max.												
ASME SA-179M	SA-179	0.06- 0.18		0.27- 0.63	0.020	0.025											
ASME SA-192M	SA-192	0.06- 0.18	≤0.25	0.27- 0.63	0.020	0.025											
ASME SA-106	SA-106B	≤0.30	≥0.10	0.29- 1.06	0.020	0.025											
	SA-106C	≤0.35	≥0.10	0.29- 1.06	0.020	0.025											
ASME SA-209M	SA-209 T1	0.10- 0.20	0.10- 0.50	0.30- 0.80	0.020	0.025		0.44- 0.65									
	SA-209 T1b	≤0.14	0.10- 0.50	0.30- 0.80	0.020	0.025		0.44- 0.65									
	SA-209 T1a	0.15- 0.25	0.10- 0.50	0.30- 0.80	0.020	0.025		0.44- 0.65									
ASME SA-210M	SA-210A1	≤0.27	≥0.10	≤0.93	0.020	0.025											
	SA-210C	≤0.35	≥0.10	0.29- 1.06	0.020	0.025											
ASME SA-213	SA-213 T2	0.10- 0.20	0.10- 0.30	0.30- 0.61	0.020	0.025	0.50- 0.81	0.44- 0.65									
	SA-213 T11	0.05- 0.15	0.50- 1.00	0.30- 0.60	0.020	0.025	1.00- 1.50	0.44- 0.65									
	SA-213 T12	≤0.15	≤0.50	0.30- 0.61	0.020	0.025	0.80- 1.25	0.44- 0.65									
	SA-213 T22	0.05- 0.15	≤0.50	0.30- 0.60	0.020	0.025	1.90- 2.60	0.87- 1.13									
	SA-213 T23	0.04- 0.10	≤0.50	0.10- 0.60	0.020	0.025	1.90- 2.60	0.05- 0.30	0.20- 0.30		0.0005- 0.006	1.45- 1.75		≤0.030	0.02- 0.08	≤0.030	Cu 0.30 -1.70
	SA-213 T24	0.05- 0.10	0.15- 0.45	0.30- 0.70	0.020	0.025	2.20- 2.60	0.70- 1.10	0.20- 0.30	0.06- 0.10	0.0015- 0.0020			≤0.020		≤0.012	
	SA-213 T91	0.08- 0.12	0.20- 0.50	0.30- 0.60	0.020	0.025	8.00- 9.50	0.85- 1.05	0.18- 0.25				≤0.40	≤0.040	0.06- 0.10	0.030- 0.070	
	SA-213 T911	0.09- 0.13	0.10- 0.50	0.30- 0.60	0.020	0.025	8.50- 10.50	0.90- 1.10	0.18- 0.25		0.0003- 0.006	0.90- 1.10	≤0.40	≤0.040	0.06- 0.10	0.040- 0.090	
	SA-213 T92	0.07- 0.13	≤0.50	0.30- 0.60	0.020	0.025	8.50- 9.50	0.30- 0.60	0.15- 0.25		0.001- 0.006	1.50- 2.00	≤0.40	≤0.040	0.04- 0.09	0.030- 0.070	
	SA-213 T122	0.07- 0.14	≤0.50	≤0.70	0.020	0.025	10.00- 12.50	0.25- 0.60	0.15- 0.30		0.0005- 0.005	1.50- 2.50	≤0.50	≤0.040	0.04- 0.10	0.04- 0.10	
	TP304H	0.04- 0.10	≤1.0	≤2.0	0.040	0.030	18.00- 20.00						8.00- 11.00				
	TP321H	0.04- 0.10	≤1.0	≤2.0	0.040	0.030	17.00- 19.00		4*(C%+N%) -0.70				9.00- 12.00				
	TP347H	0.04- 0.10	≤1.0	≤2.0	0.040	0.030	17.00- 19.00						9.00- 12.00				Nb+Ta ≥ 8°C%-1.00
	S30432	0.07- 0.13	≤0.30	≤1.0	0.040	0.010	17.00- 19.00				0.001- 0.010		7.50- 10.50	0.003- 0.030	0.30- 0.60	0.05- 0.12	Cu 2.50 -3.50
	TP310HCBN	0.04- 0.10	≤1.0	≤2.0	0.045	0.030	24.00- 26.00						19.00- 22.00		0.20- 0.60	0.15- 0.35	

GRADE		C	Si	Mn	S	P	Cr	Mo	V	Ti	B	W	Ni	Al	Nb	N	其他
标准 standard	钢种 Steel grade				max.												
EN10216-2	P195GH	≤0.13	≤0.35	≤0.70	0.020	0.025	≤0.30	≤0.08	≤0.02	≤0.040			≤0.30	≤0.020	≤0.010		Cr+Cu+Mo+Ni ≤0.70
	P235GH	≤0.16	≤0.35	≤1.20	0.020	0.025	≤0.30	≤0.08	≤0.02	≤0.040			≤0.30	≤0.020	≤0.010		Cr+Cu+Mo+Ni ≤0.70
	P265GH	≤0.20	≤0.40	≤1.40	0.020	0.025	≤0.30	≤0.08	≤0.02	≤0.040			≤0.30	≤0.020	≤0.010		Cr+Cu+Mo+Ni ≤0.70
	16Mo3	0.12- 0.20	≤0.35	0.40- 0.90	0.020	0.025	≤0.30	0.25- 0.35					≤0.30	≤0.040			Cu ≤0.30
	10CrMo5-5	≤0.15	0.50- 1.00	0.30- 0.60	0.020	0.025	1.00- 1.50	0.45- 0.65					≤0.30	≤0.040			Cu ≤0.30
	13CrMo4-5	0.10- 0.17	≤0.35	0.40- 0.70	0.020	0.025	0.70- 1.15	0.40- 0.60					≤0.30	≤0.040			Cu ≤0.30
	10CrMo9-10	0.08- 0.14	≤0.50	0.30- 0.70	0.020	0.025	2.00- 2.50	0.90- 1.10					≤0.30	≤0.040			Cu ≤0.30
	X10CrMoVNb9-1	0.08- 0.12	0.20- 0.50	0.30- 0.60	0.010	0.020	8.00- 9.50	0.85- 1.05	0.18- 0.25				≤0.40	≤0.040	0.06- 0.10	0.030- 0.070	Cu ≤0.30
JIS G3461	STBA 12	0.10- 0.20	0.10- 0.50	0.30- 0.80	0.020	0.025		0.45- 0.65									
	STBA 13	0.15- 0.25	0.10- 0.50	0.30- 0.80	0.020	0.025		0.45- 0.65									
	STBA 20	0.10- 0.20	0.10- 0.50	0.30- 0.60	0.020	0.025	0.50- 0.80	0.40- 0.65									
	STBA 22	≤0.15	≤0.50	0.30- 0.60	0.020	0.025	0.80- 1.25	0.45- 0.65									
	STBA 23	≤0.15	0.50- 1.00	0.30- 0.60	0.020	0.025	1.00- 1.50	0.45- 0.65									
	STBA 24	≤0.15	≤0.50	0.30- 0.60	0.020	0.025	1.90- 2.60	0.87- 1.13									
	STBA 26	≤0.15	0.25- 1.00	0.30- 0.60	0.020	0.025	8.00- 10.0	0.90- 1.10									
JIS G3463-84	SUS304HTB	0.04- 0.10	≤2	≤0.75	0.020	0.025	18.00- 20.00						8.00- 11.00				
	SUS321HTB	0.04- 0.10	≤2	≤0.75	0.020	0.025	17.00- 20.00		4°C%-0.60				9.00- 13.00				
GB13296-91	0Cr18Ni9	0.070	≤1	≤2	0.030	0.035	17.00- 19.00						8.00- 11.00				
	1Cr18Ni9	0.04- 0.10	≤1	≤2	0.030	0.035	18.00- 20.00						8.00- 11.00				
	00Cr19Ni10	0.030	≤1	≤2	0.030	0.035	18.00- 20.00						8.00- 12.00				
	2Cr23Ni13	0.200	≤1	≤2	0.030	0.035	2.00- 24.00						12.00- 15.00				
	0Cr23Ni13	0.080	≤1	≤2	0.030	0.035	22.00- 24.00						12.00- 15.00				
	2Cr25Ni20	0.250	≤1	≤2	0.030	0.035	24.00- 26.00						19.00- 22.00				

GRADE		C	Si	Mn	S	P	Cr	Mo	V	Ti	B	W	Ni	Al	Nb	N	其他
标准 standard	钢种 Steel grade				max.												
GB13296-91	0Cr25Ni20	0.080	≤1	≤2	0.030	0.035	24.00-26.00						19.00-22.00				
	0Cr17Ni12Mo2	0.080	≤1	≤2	0.030	0.035	16.00-18.50	2.00-3.00					10.00-14.00				
	1Cr17Ni12Mo2	0.04-0.10	≤0.75	≤2	0.030	0.035	16.00-18.00	2.00-3.00					11.00-14.00				
	1Cr17Ni14Mo2	0.030	≤1	≤2	0.030	0.035	16.00-18.00	2.00-3.00					12.00-15.00				
	0Cr19Ni13Mo3	0.080	≤1	≤2	0.030	0.035	18.00-20.00	3.00-4.00					11.00-15.00				
	00Cr19Ni13Mo3	0.030	≤1	≤2	0.030	0.035	18.00-20.00	3.00-4.00					11.00-15.00				
	1Cr18Ni9Ti	0.120	≤1	≤2	0.030	0.035	17.00-19.00			5*(C%-0.02)-0.80			8.00-11.00				
	0Cr18Ni10Ti	0.080	≤1	≤2	0.030	0.035	17.00-19.00			≥5*C%			9.00-12.00				
	1Cr18Ni11Ti	0.04-0.10	≤0.75	≤2	0.030	0.035	17.00-20.00			4*C%-0.60			9.00-13.00				
	0Cr18Ni11Nb	0.080	≤1	≤2	0.030	0.035	17.00-19.00						9.00-13.00		≥10*C%		
	1Cr19Ni11Nb	0.04-0.10	≤1	≤2	0.030	0.035	17.00-20.00						9.00-13.00				Nb+Ta ≥ 8*C%-1.00
	0Cr18Ni13Si4	0.080	3.00-5.00	≤2	0.030	0.035	15.00-20.00						11.00-15.00				
	0Cr18Ni12Mo2Ti	0.080	≤1	≤2	0.030	0.035	16.00-19.00			5*(C%-0.70)			11.00-14.00				
	1Cr18Ni12Mo2Ti	0.120	≤1	≤2	0.030	0.035	16.00-19.00			5*(C%-0.02)-0.80			11.00-14.00				
	1Cr18Ni12Mo3Ti	0.120	≤1	≤2	0.030	0.035	16.00-19.00			5*(C%-0.02)-0.80			11.00-14.00				
	1Cr18Ni12Mo3Ti	0.120	≤1	≤2	0.030	0.035	16.00-19.00			5*(C%-0.02)-0.80			11.00-14.00				

产品性能 | Mechanical Properties

标准 standard	牌号 grade	抗拉强度 Tensile Strength Mpa	屈服强度 Yield Point Mpa 不小于 not less than		伸长率 Elongation % 不小于 not less than	冲击功 Impact J 不小于 not less than	硬度 不大于 Hardness not less than
			< 15mm	≥ 15mm			
GB 3087	10	333~490	196		24	—	—
	20	392~588	245	225	20	—	—
DIN 17175			≤ 16mm	> 16mm			
	St35.8	360~480	235	225	25		
	St45.8	410~530	255	245	21		
	15Mo3	450~600	270		22		
	13CrMo44	440~590	290		22		
	10CrMo910	450~600	280		20		
	14MoV63	460~610	320		20	55	
	12Cr1MoV	470~640	255		21	41	
GB 5310	20G	410~550	245		24	35	
	25MnG	≥ 485	275		20	35	
	15MoG	450~600	270		22	35	
	20MoG	≥ 415	220		22	35	
	12CrMoG	410~560	205		21	35	
	12Cr2MoG	450~600	280		20	35	
	12Cr1MoVG	470~640	255		21	35	
	12Cr2MoWVTiB	540~735	345		18	35	
	10Cr9Mo1VNb	≥ 585	415		20	35	
	1Cr18Ni9	≥ 520	206		35		
	1Cr19Ni11Nb	≥ 520	206		35		
GB 13296	1Cr19Ni9	≥ 520	206		35		90HRB
	1Cr18Ni9Ti	≥ 550	205		40		90HRB
	1Cr19Ni11Nb	≥ 520	206		35		90HRB
	1Cr17Ni12Mo2	≥ 520	206		35		90HRB
	2Cr25Ni20	≥ 520	205		35		90HRB
	1Cr18Ni12Mo2Ti	≥ 540	215		35		90HRB
ASME SA-192M	SA-192	≥ 325	180		35		77HRB(137HBW)

标准 standard	牌号 grade	抗拉强度 Tensile Strength Mpa	屈服强度 Yield Point Mpa 不小于 not less than		伸长率 Elongation % 不小于 not less than	冲击功 Impact J 不小于 not less than	硬度 不大于 Hardness not less than
			<15mm	≥15mm			
ASME SA-106	SA-106B	≥415	240				
	SA-106C	≥485	275				
ASME SA-210M	SA-210A1	≥415	255				79HRB(143HBW)
	SA-210C	≥485	275				89HRB(179HBW)
ASME SA-209M	SA-209TI	≥380	205				80HRB(146HBW)
	SA-209 T1b	≥365	195				77HRB(137HBW)
	SA-209T1a	≥415	220				81HRB(153HBW)
ASME SA-213M	SA-213 T2	≥415	205				85HRB(163HBW)
	SA-213T11	≥415	205				85HRB(163HBW)
	SA-213T22	≥415	205				85HRB(163HBW)
	SA-213T23	≥510	400		20		97HRB(220HBW)
	SA-213T24	≥585	415		20		25HRC(250HBW)
	SA-213T91	≥585	415		20		25HRC(250HBW)
	SA-213T911	≥620	440		20		25HRC(250HBW)
	SA-213T92	≥620	440		20		25HRC(250HBW)
	SA-213T122	≥620	400		20		25HRC(250HBW)
	TP304H	≥515	205		35		90HRB(192HBW)
	TP316H	≥515	205		35		90HRB(192HBW)
	TP321H	≥515	205		35		90HRB(192HBW)
	TP347H	≥515	205		35		90HRB(192HBW)
	S30432	≥590	235		35		95HRB(219HBW)
	TP310HCbN	≥655	295		30		100HRB(256HBW)
JIS G 3461	STB 510	≥510	295				
JIS G 3462	STBA 12	≥382	≥206				
	STBA 13	≥412	≥206				
	STBA 20	≥412	≥206				
	STBA 22	≥412	≥206				
	STBA 23	≥412	≥206				
	STBA 24	≥412	≥206				
	STBA 26	≥412	≥206				

标准 standard	牌号 grade	抗拉强度 Tensile Strength Mpa	屈服强度 Yield Point Mpa 不小于 not less than		伸长率 Elongation % 不小于 not less than	冲击功 Impact J 不小于 not less than	硬度 不大于 Hardness not less than
			<15mm	≥15mm			
JIS G3463	SUS 304H TB	≥520	206		35		
	SUS 316H TB	≥520	206		35		
	SUS 321H TB	≥520	206		35		
	SUS 347H TB	≥520	206		35		
EN 10216-2	P195GH	320-440	195		27		
	P235GH	360-500	235		25		
	P265GH	410-570	265		23		
	16Mo3	450-600	280		22		
	10CrMo5-5	410-560	275		22		
	13CrMo4-5	440-590	290		22		
	10CrMo9-10	480-630	280		22		
	X10CrMoVNB9-1	630-830	450		19	41	



特殊产品 | Special Products

内螺纹管

产品适用于制造电站锅炉水冷壁，能有效消除钢管内壁蒸汽膜，提高炉壁热效率。

产品用冷拔方法制造，使钢管内壁形成特殊几何尺寸的内螺旋筋。成品采用保护气体热处理，使钢管具有稳定的性能和良好的表面质量。

产品可按用户设计要求订货。

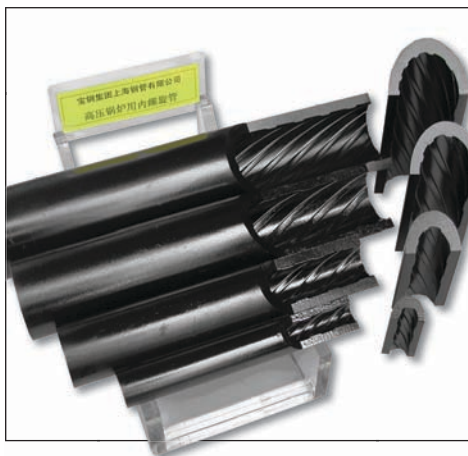
Rifke Tube

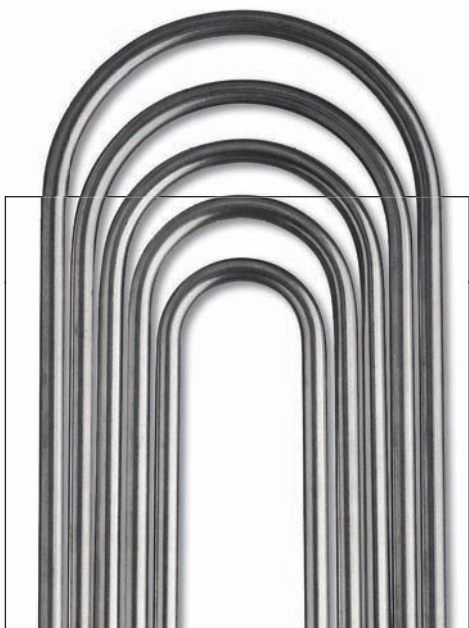
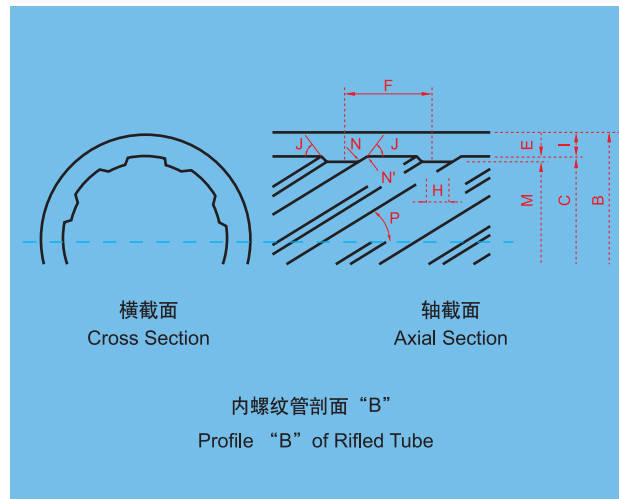
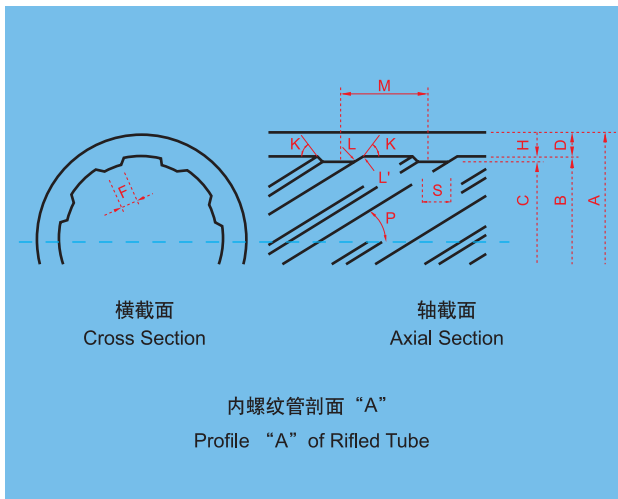
It is used as a water wall tube loaded with a highly heated flux and is also expected to find broadened other uses in the viewpoint of its energy saving effect and higher safety against the overheating damage.

This has a groove on its inside surface which functions to raise thermal efficiency by disturbing the fluid within the tube, featuring an extremely high thermal conduction property.

可提供的钢种及规格范围 Available Grades and Size Range

钢种 Grade	规格范围 Size range		
	外径 outside diameter (mm)	壁厚 wall thickness T (mm)	螺纹头数 Number of rib
20G、25MnG、15CrMoG、 SA-210A1/C、SA-213 T2/T12	ø22-83	4.5-13	4-14





超长U形管 / 超长管

产品适用于制造高、低压加热器。可生产长度范围为12~24米、高精度、内外表面光洁、焊接性能好的高质量超长U形管。

Long-size U-bend Steel Tubes/ Long-size Tubes

It is used in manufacturing feed water heater. The size range we can provide is 12~24 meters, and we manufacture long-size tube with excellent dimensional accuracy, clean interior and exterior, superior weldability, and high quality.

评估报告 | Evaluation Report

宝钢锅炉管通过中国国家权威机构的评估
和中国所有大型锅炉制造厂的实际使用认可。

It is used as a water wall tube loaded with a highly heated flux and is also expected to find broadened other uses in the viewpoint.



宝钢锅炉管质量评价

为评价宝钢锅炉管与进口锅炉管的质量水平，1997年9~12月，我所有关人员走访了东方锅炉厂、四川锅炉厂、武汉锅炉厂、上海锅炉厂、哈尔滨锅炉厂、北京巴威公司，同时发函至其它一些锅炉厂，对各锅炉厂的材料供应、质量检验、材料研究、工艺、设计等部门进行了调研。对宝钢锅炉管与进口锅炉管的实物质量资料进行了统计分析，得出如下结论：

宝钢锅炉管实物质量符合GB 5310、DIN 17175、ASME等高压锅炉管标准要求，成分控制、尺寸精度、表面质量等方面，在国内均处于先进水平。

宝钢锅炉管与日本住友、川崎、NKK及其它国家进口的同类产品相比：

- 1、化学成分：硫、磷含量低，成分波动小，与进口锅炉管无明显差异；
- 2、常温力学性能：强度略高，伸长率无明显差异；
- 3、尺寸精度：宝钢锅炉管尺寸精度控制得较好，同径或同壁厚的钢管与进口锅炉管相比不分上下；
- 4、表面质量：钢管内外表面质量优良，一些锅炉厂已免检涡流探伤，并减少超声波抽检的数量。表面质量达到进口锅炉管的质量水平；
- 5、金相组织与晶粒度：与进口锅炉管相当。

宝钢锅炉管在锅炉制造业中已取得信誉，各锅炉厂在制造大容量锅炉时，更看中宝钢产品。



上海发电设备成套设计研究所
1999年5月18日



使用业绩 | Performance



宝山钢铁股份有限公司<http://www.baosteel.com>**BAOSHAN IRON & STEEL CO., LTD.**<http://www.baosteel.com>**销售中心
Sales Center**

地址：上海宝山同济路1800号
邮编：201900
电话：021-26645323
传真：021-26648647

**宝钢服务热线
Baosteel Service Hot-line**

800-820-8590
021-26648888

宝钢在线<http://www.baosteel.net.cn>**国内贸易分公司****上海宝钢商贸有限公司**

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传真：021-56126584

上海宝钢钢材贸易有限公司

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电话：020-38730020
传真：020-38730037

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电话：028-85335388
传真：028-85335680

上海宝钢宝山钢材贸易有限公司

电话：021-36014688（转）
传真：021-51266500

亚澳地区 Asia and Australia**宝和通商株式会社
HOWA TRADING CO., LTD.**

TEL: 0081-3-32379121
FAX: 0081-3-32379123

**宝钢澳大利亚贸易有限公司
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TEL: 006189-4810535
FAX: 006189-4810536

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FAX: 0065-6333-6819

**宝和通商首尔事务所
HOWA TRADING CO., LTD., SEOUL OFFICE**

TEL: 0082-2-5080893
FAX: 0082-2-5080891

欧非地区 Europe and Africa**宝钢欧洲贸易公司
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FAX: 0049-40-41994120

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TEL: 001-201-4571144
FAX: 001-201-4570909

**宝钢巴西贸易有限公司
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FAX: 0055-21-5310298