



锅炉压力容器行业用钢

BOILER AND PRESSURE VESSEL STEEL

太钢产品分行业系列册 Products Serial Catalogs Of Tisco For Different Industries

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太原钢铁(集团)有限公司
Taiyuan Iron & Steel(Group) Co., Ltd.

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太钢简介

BRIEF ON TISCO

太原钢铁（集团）有限公司（简称太钢）是中国特大型钢铁联合企业和全球产能最大、工艺技术装备水平最高、品种规格最全的不锈钢企业。经过70年发展，已具备1000万吨以上钢、铁、材的生产能力，其中不锈钢产能达300万吨。

太钢是中国第一炉不锈钢、第一炉硅钢、第一张硅钢片的诞生地。拥有铁矿石等钢铁冶炼原料的采掘与加工、钢铁冶炼、钢铁材料压力加工、冶金设备及备品备件制造等方面先进技术和装备，主要产品有不锈钢、冷轧硅钢片（卷）、热连轧卷板、车轴钢、合金模具钢、军工钢等。产品广泛应用于石油化工、交通运输、建筑装饰、家用电器、医疗食品等行业及神舟系列飞船、嫦娥一号、“东风”系列火箭等高端领域，进入三峡水利、西气东输、奥运场馆等国家重点工程。



太钢的发展目标是，加快建设全球最具竞争力的不锈钢企业，到2010年，以不锈钢为主的品种、质量、成本、研发、节能、环保、效率、服务等各项指标达到国际一流水平，建设具有国际竞争力的大企业集团。

Taiyuan Iron and Steel (Group) Co. Ltd. (TISCO) is a gigantic steel complex in China and a world leading stainless steel producer with largest capacity, full range of products and state of the art facility. With 70 years development, the capacity of pig iron, crude steel and rolled products increased over 10 million ton, including 3 million tons of stainless steel.

TISCO produced the first heat of stainless steel, first heat of silicon steel and first sheet of silicon steel. It is well equipped for mining and beneficiation (such as iron ores), ironmaking, steelmaking, rolling and manufacture of metallurgical equipment and spare parts. Main products include cold rolled stainless and silicon sheet/coil, hot rolled coil, axle steel, die steel and military steel. They are widely used in petrochemical industry, transportation, construction, decoration, home appliance, medical apparatus and food industry, they are also used for high-end application and national key projects as Shenzhou spaceship, Chang'e-1 Moon Detector, Dongfeng rocket series, Three Gorges project, West-East natural gas transmission project and Olympic games facility.

Our goal in development is to expedite building TISCO as the most competitive stainless steel producer in the world, holding the world leading position by 2010 in terms of range, quality, cost, R&D, energy saving, environment protection, efficiency and service, Our target is to create an international enterprises group of strong competitive edges out of Taigang.

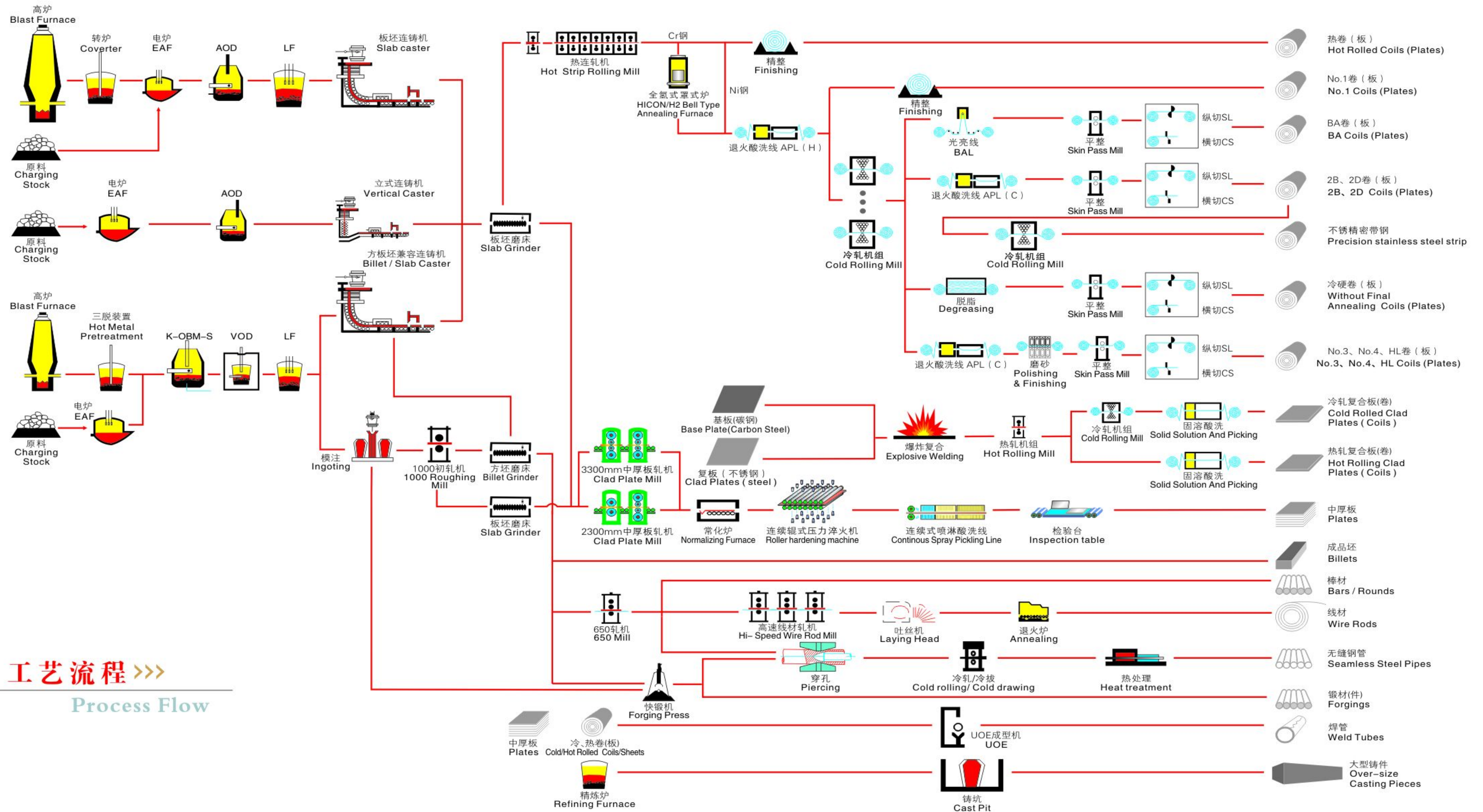
◆ 锅炉压力容器行业用钢概况

太钢作为全国最大的特殊钢生产基地，以精良的生产装备以及强有力的研发能力为依托，在锅炉压力容器行业致力于走国产化的开发道路，产品主要有不锈钢、耐热合金钢、复合板、低合金钢及特殊用普碳钢，并着力于Cr-Mo钢系列品种在发电设备制造行业的应用。近几年，板、管、带各类Cr-Mo钢系列产品为国内三大动力发展大容量高参数机组，特别是超（超）临界机组火力、水电发电以及上海森松压力容器有限公司、宜兴北海封头有限公司等重点企业三类压力容器用钢的研制得到广泛应用。同时在石化储油、焦炭塔、加氢反应器、化工容器等建设中提供了优质钢材，为振兴民族工业做出了新贡献。

◆ Brief on boiler and pressure vessel industry steel

As the biggest special steel production base in China, with its superior equipments and great research and development power, TISCO has devoted itself in the localization of boiler and pressure vessel industry, its main products including stainless steel, heat-resistance alloy steel, composite plate, low-alloy steel and ordinary carbon steel for special application. At the same time, TISCO focuses on the application of Cr-Mo steel products in power station manufacturing industry. During recent years, different Cr-Mo steel series products, in form of plate, pipe and strip, as important materials for big-volume and high configuration power units, especially extra supercritical thermal power and waterpower, are successfully developed and widely used in some well-known enterprises such as Shanghai Morimatsu Pressure Vessel Co., Ltd. and Hokkai Heads. Also, TISCO supply premium steel for petrification oil storage, coke tower, Hydrogenation reactor, chemical industry vessel and etc, making great contribution to the prosperity of national industry.





工艺流程 >>>
Process Flow



研发能力 >>>

Research and Development

国家级实验室 National level laboratory



2007年在国家认定的438家企业技术中心中，太钢技术中心排名第4位。
Tisco technology center ranks 4th among enterprise-based 438 technology centers accredited by the state in 2007.



企业荣誉 >>>

Honors & Awards

- ◆ 《高质量不锈钢板材技术开发》获国家科技进步二等奖；
- ◆ 《AOD炉炉龄、工艺技术开发》等三项成果获山西省科技进步一、二等奖；
- ◆ 《太钢含氮不锈钢研制》等九项成果获冶金科学技术进步一、二、三等奖；
- ◆ 《双相不锈钢复合板》等六种产品分别获得国家重点新产品奖、山西省优秀新产品奖；
- ◆ 不锈钢2B板被科技部认定为国家高新技术产品；
- ◆ 《AOD炉用氮气进行氮合金化工艺》《VOD冶炼不锈钢高碳区脱氮方法》等专利80余项；
- ◆ 不锈钢中板通过了TUV认证，并获得了冶金实物质量金杯奖；
- ◆ 双相不锈钢通过了中国船级社CCS认证。
- ◆ "Technical development of high quality stainless steel flat product" won second prize of state technical progresses.
- ◆ "AOD campaign, production technology development" and other two won the first and second prizes of Shanxi technical progresses.
- ◆ "Production technology and new grade development of Nitrogen-containing stainless steel by TISCO" won second prize of state technical progresses.
- ◆ Duplex stainless steel clad plate and so on six products were honored as among statewide new products and Shanxi great new products, respectively.
- ◆ Stainless steel 2B grade was approved by the Ministry of Science & Technology as the state hi-tech products.
- ◆ More than 80 patents such as "Nitrogen alloying process by nitrogen gas in AOD" and "Denitrification process in the phase of high carbon of stainless steel smelting in VOD).
- ◆ Stainless steel plate passed TUV examination and was rewarded Golden Cup of physical quality of metallurgical product.
- ◆ Duplex stainless steel passed CCS, China Classification Society, examination.



扫描电镜
Scanning Electron Microscope



热模拟试验机
Thermal Simulating Tester



透射电镜
Transition Electron Microscope



全自动电子拉伸试验机
Automatic electronic tensile tester



质量保证体系 >>>

Quality Assurance System



常规产品 >>>

Conventional Products

◆ 不锈钢、碳钢部分
Stainless steel, Carbon steel

钢种 Steel grade	牌号 Grade	规格 (mm) Specifications		单重 Weight t	标准 Standard	主要用途 Application	
		直径 Diameter	长度 Length				
不锈钢 Stainless steel	冷热板卷 Cold/Hot coils	0Cr25Ni20 (310S)	冷轧 厚: 0.5~8 Cold rolled Thickness: 0.5~8	宽: 1000~2000 Width: 1000~2000	单张中板: 0~12吨 冷卷: 0~25吨 热卷: 0~40吨 Weight of single plate: 0~12 ton Cold coil: 0~25 ton Hot coil: 0~40 ton	GB/T4237 ASTM A240 ASME SA-240 EN10028 EN10088	用于制造加热炉的各种构件。 Components of heating furnace.
		1Cr25Ni20Si2 (314)					用于制造加热炉的各种构件,如合成氨设备高温炉管、辐射管、加热炉辊筒及燃烧室构件等。 Components of heating furnace, e.g. high-temperature furnace tubes of making ammonia synthesis unit, radiant tube, roller set, combustion cabinet, and etc.
		1Cr20Ni14Si2	用于锅炉吊挂和加热炉构件等的制作。 Hanging and suspending parts of boiler and components of heating furnace.				
		0Cr23Ni13 (309S)	制造在850~1050℃范围工作的各种耐热构件,如炉内支架、传送带、退火炉罩、热裂解管等。 Heat resistant component working in temperature range of 850~1050℃, e.g. the bracket inside the furnace, conveyer, annealing furnace cover, pyrolysis tube, and etc.				
		S30815	超超临界发电锅炉循环硫化床的旋风分离器。 Cyclone separator of circulation sulfuration bed of ultra supercritical power generating boiler.				
		0Cr18Ni9 (304)	热轧 厚: 3~60 Hot rolled Thickness: 3~60	宽: 1000~3000 Width: 1000~3000			用于制造压力容器耐高温、耐腐蚀部件。 Heat-resistant and anti-corrosion parts of pressure vessel.
		00Cr19Ni10 (304L)					
		1Cr18Ni9Ti					
		00Cr17Ni12Mo2 (316L)					
		型材 Profile and wire	T91	60~110			8200
T92	60~110		8200	0.2~0.6	Q/太新083-2009		
钢管 Steel pipe	TP304H	外径: φ22~108 Outer diameter: φ22~108		-	HG C8B21-2005a (哈标)	高温过热器、再热器。 Super-heater and re-heater.	
	TP347H						
	TP310HC3N						
	S30432	外径: φ6~159 壁厚: 1~14 Outer diameter: φ6~159 Wall thickness: 1~14		-	GB 13296-2007	热交换器、冷凝器。 Heat exchanger and condenser.	
	304						
316							
316L							
347							

钢种 Steel grade	牌号 Grade	规格 (mm) Specifications		单重 Weight t	标准 Standard	主要用途 Application	
		直径 Diameter	长度 Length				
不锈钢 Stainless steel	复合板 Clad plate	405/410S/ 304 (L)/321/ 316 (L)317L/ 310S/2205+ Q345R/Q245R/ Q235/Q345/ 15CrMoR/ 14Cr1MoR/ 20g/16Mn		(8-66) × 2500下 × 12000下, 复材厚度2-6mm, 基材厚度6-60mm, 基复比大于3管板直径3000下, 复材厚度8-14mm, 基材厚度80-120mm (8-66) × 2500 or less × 12000 or less; cladding material thickness: 2-6mm; base material thickness: 6-60mm; the rate of base material to cladding material is above 3; pipe plate diameter: 3000 or less; cladding material thickness: 8-14mm; base material thickness: 80-120mm.	1.0~3.0	GB/T8165-2008 或JB4733-1996 GB/T8165-2008 或JB4733-1996	石油炼化项目延迟焦化装置、焦炭塔、加氢反应器。 Used for making delayed coking unit, coking tower and Hydrogenation reactor of petroleum refining project.
碳钢 Carbon steel	锅炉压力容器 Pressure vessel of boiler	Q345R	6.0-25	1000-2130	5	GB713-2008	一、二类压力容器 Grade one & two pressure vessel
			6.0-25	1500-2850	9	GB713-2008	一、二类压力容器 Grade one & two pressure vessel
			25-80	1500-3000	9	GB713-2008	一、二类压力容器 Grade one & two pressure vessel
		Q245R	6.0-25	1000-2130	5	GB713-2008	一、二类压力容器 Grade one & two pressure vessel
			6.0-25	1500-2850	9	GB713-2008	一、二类压力容器 Grade one & two pressure vessel
			25-80	1500-3000	9	GB713-2008	一、二类压力容器 Grade one & two pressure vessel
		Q245R、Q345R	6.0-40	1500-2000	5	GB713-2008	一、二类压力容器 Grade one & two pressure vessel
		Q370R	6.0-40	1500-2000	5	GB713-2008	三类压力容器 Grade three pressure vessel
		18MnMoNbR	6.0-40	1500-2000	5	GB713-2008	三类压力容器 Grade three pressure vessel
		13MnNiMoR	6.0-40	1500-2000	5	GB713-2008	三类压力容器 Grade three pressure vessel
		14Cr1MoR	6.0-40	1500-2000	5	GB713-2008	三类压力容器 Grade three pressure vessel
			6.0-25	1500-2850	9	GB713-2008	三类压力容器 Grade three pressure vessel
			25-80	1500-3000	9	GB713-2008	三类压力容器 Grade three pressure vessel
		15CrMoR	6.0-40	1500-2000	5	GB713-2008	三类压力容器 Grade three pressure vessel
			6.0-25	1500-2850	9	GB713-2008	三类压力容器 Grade three pressure vessel
25-80	1500-3000		9	GB713-2008	三类压力容器 Grade three pressure vessel		

钢种 Steel grade	牌号 Grade	规格 (mm) Specifications		单重 Weight t	标准 Standard	主要用途 Application	
		直径 Diameter	长度 Length				
碳钢 Carbon steel	锅炉压力容器 Pressure vessel of boiler	Q370R	6-25	1500-2850	9	GB713-2008	三类压力容器 Grade three pressure vessel
			25-80	1500-3000	9	GB713-2008	三类压力容器 Grade three pressure vessel
		18MnMoNbR	6.0-25	1500-2850	9	GB713-2008	三类压力容器 Grade three pressure vessel
			25-80	1500-3000	9	GB713-2008	三类压力容器 Grade three pressure vessel
		13MnNiMoR	6.0-25	1500-2850	9	GB713-2008	三类压力容器 Grade three pressure vessel
			25-80	1500-3000	9	GB713-2008	三类压力容器 Grade three pressure vessel
		SA516Gr.70	6.0-40	1500-2000	5	ASME SA-516M-2004A	出口压力容器设备 Pressure vessel for exporting
		16MnDR	6.0-40	1500-2000	5	GB3531-1996	低温液体储存容器 Low-temperature liquid storage container
			6.0-25	1500-2850	9	GB3531-1996	低温液体储存容器 Low-temperature liquid storage container
			25-80	1500-3000	9	GB3531-1996	低温液体储存容器 Low-temperature liquid storage container
		15MnNiDR	6.0-40	1500-2000	5	GB3531-1996	低温液体储存容器 Low-temperature liquid storage container
			6.0-25	1500-2850	9	GB3531-1996	低温液体储存容器 Low-temperature liquid storage container
			25-80	1500-3000	9	GB3531-1996	低温液体储存容器 Low-temperature liquid storage container
		09MnNiDR	6.0-40	1500-2000	5	GB3531-1996	低温液体储存容器 Low-temperature liquid storage container
			6.0-25	1500-2850	9	GB3531-1996	低温液体储存容器 Low-temperature liquid storage container
25-80	1500-3000		9	GB3531-1996	低温液体储存容器 Low-temperature liquid storage container		
气瓶钢 Gas bottle steel	HP245-345	2.5-12	900-2130	18-20 28-30	GB6653-1994	焊接气瓶用钢 Welding gas bottle steel	
电站用钢 Power station steel	T91	60-110	8200	0.2-0.6	Q/太新028-2007	制造电站锅炉用高压锅炉管 High pressure boiler tube for power station boiler	
型材 Profile and wire	T92	60-110	8200	0.2-0.6	Q/太新071-2009		

◆ 不锈钢板材
Stainless steel plate

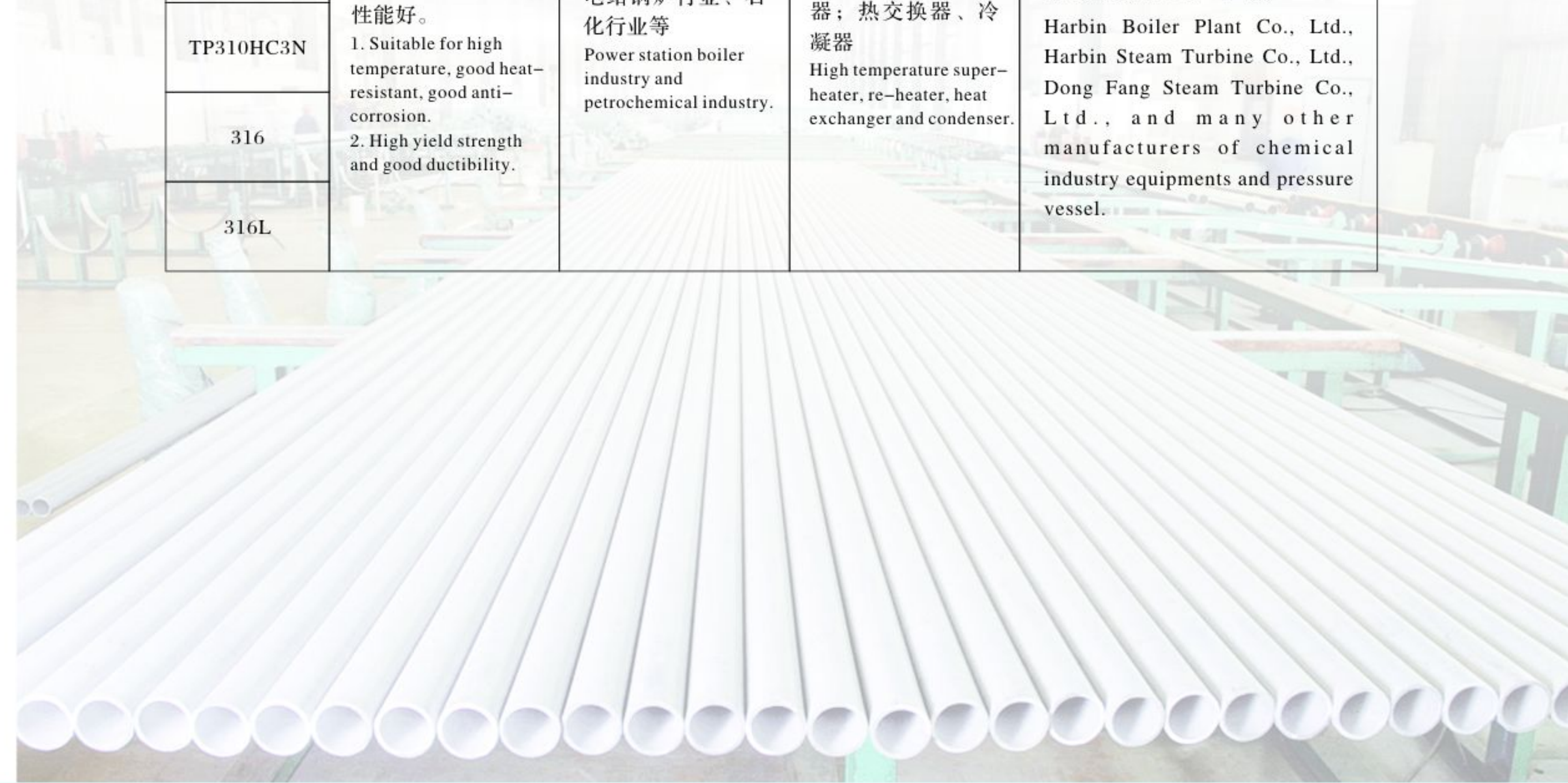
钢种 Steel grade	特点 Features	应用领域 Applications	主要用途 Main usage	应用业绩 Reference
0Cr25Ni20 (310S)	纯奥氏体组织，有较好的抗氧化性及高温使用性能，连续使用最高温度1150℃，是耐热钢系列的主流钢种。 With pure austenite structure, good anti-oxide property and better high temperature performance, maximum working temperature of 1150℃ in continuous application. It is a mainstream steel grade among the heat-resistant steel series.	电站锅炉行业、罩式炉、环形加热炉等 Power station boiler industry, bell-type furnace, circular heating furnace, and etc.	用于制造加热炉的各种构件。 Used for making different components of heating furnace.	主要应用于国内三大电站锅炉超临界、超超临界30万千瓦、60万千瓦、100万千瓦制造。 It is mainly used for making supercritical and extra supercritical 300 thousand kW, 600 thousand kW and 1 million kW of three domestic power stations boilers.
1Cr25Ni20Si2 (314)	抗氧化性、抗渗碳性优于310S，有较好抗一般腐蚀性，最高使用温度1200℃，韧性、可焊性较310S略差，连续使用最高温度1150℃，间歇使用最高温度1050-1100℃。 Its anti-oxide and anti-carburization properties are better than that of 310S. It has relatively good anti-corrosion property, with max. working temperature of 1200℃. The toughness and welding performance is relatively worse, with max. continuous working temperature of 1150℃, and intermittent working temperature of 1050-1100℃.		用于制造加热炉的各种构件，如合成氨设备高温炉管、辐射管、加热炉辊筒及燃烧室构件等。 It is used for making various components of heating furnace, e.g. high-temperature furnace tubes of making ammonia synthesis unit, radiant tube, roller set, firebox parts, and etc.	
1Cr20Ni14Si2	属于含2%Si的奥氏体型耐热钢，具有高抗氧化性，用于高温下（1050℃）的低负荷构件，在600-800℃有σ相的析出倾向。 It belongs to the catalogue of heat-resistant austenite with 2% Si-content. It has good anti-oxide performance, suitable for making low-load components under high temperature (1050℃), with σ phase precipitation tendency under temperature of 600-800℃.		用于锅炉吊挂和加热炉构件等的制作。 Used for making hanging and suspending parts of boiler and components of heating furnace.	
0-1Cr23Ni13 (309S)	属于奥氏体型耐热钢，抗氧化性好于321，最高工作温度为1050℃，在650-700℃可以较大负荷长期使用。 It is a kind of heat resistant austenite steel, with better anti-oxide property than 321. Its maximum working temperature is 1050℃, suitable for long time usage with high load under temperature of 650-700℃.		制造在850-1050℃范围工作的各种耐热构件，如炉内支架、传送带、退火炉罩、热裂解管等。 It is used for making different heat-resistant components whose working temperature ranges from 850 to 1050℃, for example, the bracket inside the furnace, conveyer, annealing furnace hood, pyrolysis tube, and etc.	
253MA	属于奥氏体型耐热钢，在1150℃仍具有良好的抗氧化性能，Ce改善高温蠕变塑性，N对脆性的σ相析出有延缓作用，提高了材料在高温条件下的组织稳定性。 It is a kind of heat-resistant austenite steel, with good anti-oxide property even under temperature of 1150℃, in which Ce has the effect of improving creep plasticity under high temperature, and N has function to decrease the speed of brittle σ phase precipitation and increase the material structure stability under high temperature.		超临界发电锅炉循环硫化床的旋风分离器。 Cyclone separator of circulation sulfurization bed of ultra supercritical power generating boiler.	

◆ 不锈钢型材
Stainless steel profile

牌号 Grade	主要特性及特点 Main properties and features	应用领域 Applications	主要用途 Main usage	应用业绩 Reference
TP304H	较低温度和压力下，耐热不锈钢管使用 Used for heat-resistant stainless steel tube under relative low temperature and pressure.	电站锅炉行业、石化行业等 Power station boiler industry and petrochemical industry.	超临界、超超临界锅炉的炉内受热面部件 Heated parts inside of supercritical, extra supercritical boiler.	太钢管坯是国内三大锅炉厂指定用料 TISCO's tube billet is dedicated material used by three big domestic boiler plants.
TP347H	较好的高温蠕变性能 Relative better high temperature creep performance.			

◆ 不锈钢管材
Stainless steel tube

牌号 Grade	主要特性及特点 Main properties and features	应用领域 Applications	主要用途 Main usage	应用业绩 Reference
TP304H	1、高温、耐热、耐腐蚀性较强。 2、屈服点高、延展性能好。 1. Suitable for high temperature, good heat-resistant, good anti-corrosion. 2. High yield strength and good ductibility.	电站锅炉行业、石化行业等 Power station boiler industry and petrochemical industry.	高温过热器、再热器；热交换器、冷凝器 High temperature super-heater, re-heater, heat exchanger and condenser.	哈尔滨锅炉厂有限责任公司、哈尔滨汽轮机厂有限责任公司、东方汽轮机有限公司、众多化工设备、压力容器生产单位。 Harbin Boiler Plant Co., Ltd., Harbin Steam Turbine Co., Ltd., Dong Fang Steam Turbine Co., Ltd., and many other manufacturers of chemical industry equipments and pressure vessel.
TP347H				
TP310HC3N				
316				
316L				



◆ 复合板
Clad plate

牌号 Grade	主要特性及特点 Main properties and features	应用领域 Applications	主要用途 Main usage	应用业绩 Reference
0Cr18Ni9 (304)	<p>(1) 生产成本低: 节约贵重金属。(2) 使用性能好: 具有不锈钢、有色金属及碳钢的多重优点, 尤其在某些特殊行业是不可代替的。(3) 涉及的钢种多: 可以根据用户的使用要求选择不同的组合。(4) 界面结合强度高: 两种金属锯齿原子间结合, 确保性能。(5) 界面结合率高: 可实现20m2板幅的100%结合。</p> <p>(1) low cost: saving expensive metal; (2) good performance: combining the advantages of stainless steel, nonferrous metal and carbon steel, non-replaceable in some special fields; (3) multiple steel grade: different combination according to user's demands available; (4) high integrating intensity between interfaces: saw tooth atom integrating of two kinds of metal; (5) high integrating rate between interfaces: 100% integrating of 20m2 plate is possible.</p>	石油、石化、化工、锅炉、水利、金属镁等行业。 Petroleum, petrochemical, chemical industry, Boiler, water conservancy, magnesium industries, etc.	适用于制造化工、化肥、石油、印染、原子能等领域的工业设备、容器、管道、热交换器等。 Suitable for making industry equipment, vessel, pipe and heat exchanger of different industries, such as chemical, chemical fertilizer, petroleum, printing and dyeing, atom energy, and etc.	石油、石化及其机械制造焦化塔、分馏塔、汽提塔、常减压塔; 核能源工业换热器、冷凝器等重点工程。 Petroleum, petrochemical and related machines, coking tower, fractionating tower, stripping column, atmospheric and vacuum distillation tower; heat exchanger and condenser of nuclear energy industry.
0Cr19Ni9N (304N)			适用于锅炉、金属镁等行业的设备制造。 Suitable for equipment manufacturing of boiler and magnesium industry.	
00Cr19Ni10 (304L)			主要用于耐水蒸汽、碳酸氢氨母液、热的含硫石油腐蚀的部件和设备(如延迟焦化的焦碳塔)。 Mainly used for making parts and equipments (e.g. coke coal tower of delayed coking) required for anti-corrosion of steam, ammonium bicarbonate mother solution and sulfur-contained hot petroleum.	
1Cr18Ni9Ti 0Cr18Ni10Ti (321)			适用于耐热设备的制作。 Suitable for making heat-resistant equipments.	
00Cr17Ni12Mo2 (316L)			耐氯化物应力腐蚀性能好, 耐磨性好, 用于水利、石化领域的反应器、热交换器、冷凝器以及造船部件的制作。 Nice chloride stress corrosion-resistance, good wearing resistance, suitable for making reactor, heat exchanger and condenser in fields of water conservancy and petrification industry, as well as shipping components.	
00Cr19Ni13Mo3 (317L)				
0Cr25Ni20 (310S)				
0Cr13 (410S)				
0Cr13Al (405)				
00Cr18Mo2 (444)				
00Cr18Ni5Mo3Si2 (3Re60)				
00Cr22Ni5Mo3N (S31830)				
00Cr20Ni25Mo4.5Cu (904L)	用于耐硫酸的腐蚀及常压任何温度醋酸的腐蚀。 Vitriolic corrosion resistance and acetic acid corrosion resistance under any atmospheric any temperature.			

◆ 碳钢板材
Carbon steel plate

牌号 Grade	主要特性及特点 Main properties and features	应用领域 Applications	主要用途 Main usage	应用业绩 Reference
12Cr1MoV (g)	<p>内在质量好, 性能稳定。良好的耐高温氧化、耐高温蒸汽腐蚀性; 良好的焊接和冷、热加工性能; 产品横向、纵向拉伸性能优良; 无夹杂、无裂纹、具有蠕变极限与持久强度数值相近; 高韧性、高强度。</p> <p>It has good inner quality and reliable performance, with good anti-oxide and anti-steam-corrosion property under high temperature; upstanding welding performance, cold and hot machining performance; excellent transversal and longitudinal stretching performance. It is featured with impurity-free, crack-free, similar creep limit and perduring strength, high toughness and high strength.</p>	应用于石油、化工设备、建材机械、船舶设备、医疗设备等机械设备的制造。 Used for making machines and equipments in fields including petrochemical, chemical industry, construction, shipping and medical treatment.	应用于火电、水电设备, 电站锅炉用一般耐热结构件、支撑件、锅炉辅机结构件、风力发电塔架及部分核心部件。 Used for making thermal power and water power equipments, general heat-resistant structural parts and supporting parts of power station boiler, structural parts of boiler auxiliary machine, wind power generation tower and some of its key parts.	与上电、东电、哈电三大动力集团共同开发电站用钢新产品, 替代进口, 实现产品100%国产化。 TISCO has cooperated with Shanghai Electric, East Power Industrial Co. and Harbin Electric Corporation, and developed a new steel grade for power station as a substitute for imported product, realizing 100% localization.
15CrMo (g)				
1Cr6Si2Mo				
CORTEN-B				
12Cr2Mo1				
SA387系列				
S275NL				
SA204B (C)				
T91				

◆ 碳钢型材
Carbon steel profile

牌号 Grade	主要特性及特点 Main properties and features	应用领域 Applications	主要用途 Main usage	应用业绩 Reference
T91	<p>钢质纯净、组织均匀、表面车光。 Pure quality, uniform structure, polished surface.</p>	<p>东锅、哈锅、上锅等电站锅炉制造企业。 Power station boiler manufacturers, including Dongfang Boiler Co., Ltd., Harbin Boiler Co., Ltd., and Shanghai Boiler Co., Ltd</p>	<p>主要用在炉内受热面部件上, 作为热量吸收和传导功能的元件, 应用于水冷壁、省煤器、过热器和再热器。 As heat absorbing and transferring elements, it is mainly used for making heated parts inside furnace, water-cooling wall, economizer, super-heater and re-heater.</p>	<p>太钢的高压锅炉管坯用钢批量应用于超临界、超超临界锅炉的制造。 TISCO's high pressure boiler tube billet is widely used in manufacturing of supercritical and extra supercritical boilers.</p>
T92				



反应器
Reactor



甲醇反应器
Methanol reactor



湖北蓝天盐矿蒸发罐
Evaporation tank of Lantian Salt Ore, Hubei



低温液体储罐，内胆材质为16MnDR
Low-temperature liquid storage tank, whose inner bladder is made of 16MnDR



液化气瓶
Liquid gas bottle



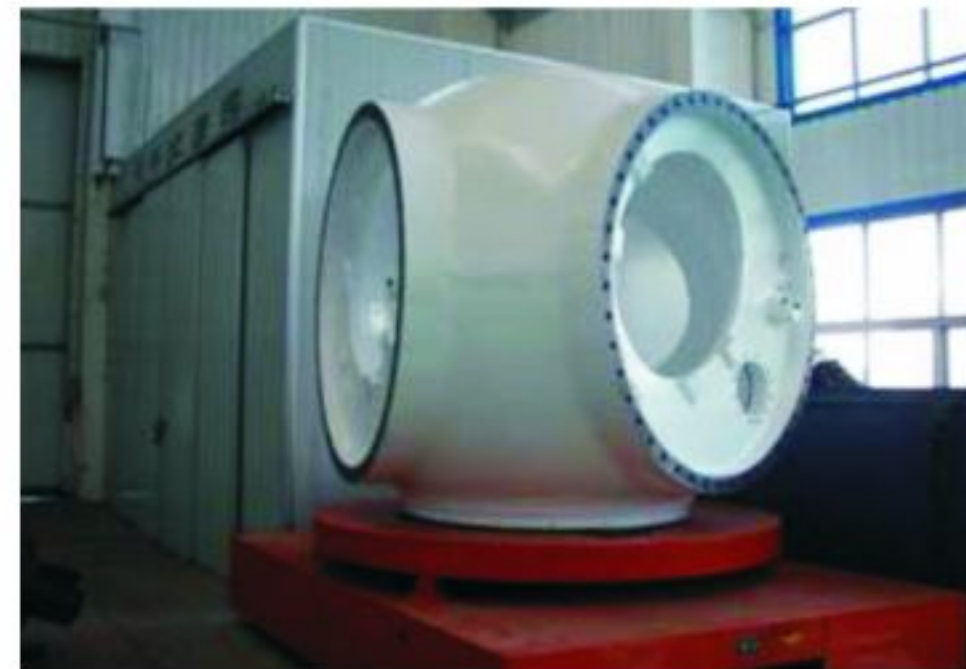
火电用钢
Thermal power steel



风力发电
Wind power generation



整体（机仓）总装中
Integrated (engine chamber) assembling



球铁轮毂
SG wheel hub

◆ 化学成分（典型值）
Chemical composition (Typical value)

1、不锈钢板卷 Stainless steel coil / plate

牌号 Grade	化学成分 (%) Chemical composition									执行 标准 Standard
	C	Si	Mn	P	S	Cr	Ni	N	Ce	
0Cr25Ni20 (310S)	0.06	1.20	1.45	0.028	0.003	24.80	19.90	-	-	GB EN JIS AISI
1Cr25Ni20Si2 (314)	0.080	1.85	0.90	0.030	0.003	24.50	19.15	-	-	
1Cr20Ni14Si2	0.065	1.90	0.95	0.028	0.003	19.80	13.30	-	-	
0Cr23Ni13 (309S)	0.054	0.54	1.33	0.027	0.002	22.60	13.35	-	-	
S30815	0.07	1.60	0.60	0.028	0.001	21.50	11.00	0.15	0.04	

2、不锈钢管坯 Stainless steel tube billet

牌号 Grade	化学成分 (%) Chemical composition								其它 Others
	C	Si	Mn	P	S	Ni	Cr	Mo	
TP304H	0.04~0.10	≤0.75	≤2.00	≤0.030	≤0.020	9.00~11.00	18.00~20.00	-	-
TP347H	0.04~0.10	≤0.75	≤2.00	≤0.030	≤0.020	9.00~13.00	17.00~20.00		Nb+Ta≥8×C% ~ 1.00
S30432	0.07~0.13	≤0.30	≤1.00	≤0.030	≤0.010	7.50~10.50	17.00~19.00		
TP310HC3N	0.06~0.10	≤0.75	≤2.00	≤0.030	≤0.025	17.00~23.00	24.00~26.00		

3、不锈钢管 Stainless steel tube

牌号 Grade	化学成分 (%) Chemical composition									
	C	Si	Mn	P	S	Ni	Cr	N	Cu	Nb+Ta
TP304H	0.04~0.10	≤0.75	≤2.00	≤0.040	≤0.030	8.00~11.00	18~20		≤0.25	-
TP347H	0.04~0.10	≤0.75	≤2.00	≤0.040	≤0.030	9.00~13.00	17~20		≤0.25	≥8×C-1.0
S30432	0.07~0.13	≤0.30	≤1.00	≤0.030	≤0.010	7.50~10.50	17~19	0.05~0.12	2.50~3.50	
TP310HC3N	0.06~0.10	≤0.75	≤2.00	≤0.030	≤0.025	17.00~23.00	24~26	0.15~0.35	≤0.25	0.20~0.60
316	≤0.08	≤1.00	≤2.00	≤0.035	≤0.030	11.00~14.00	16~18			
316L	≤0.030	≤1.00	≤2.00	≤0.035	≤0.030	12.00~15.00	16~18			

4、复合板 Cladding plate

牌号 Grade	化学成分 (%) Chemical composition							
	C	Si	Mn	P	S	Cr	Ni	*
0C19Ni9N	0.02	0.38	1.48	0.03	0.007	18.34	8.98	0.14 (N)
0C13AL	0.04	0.99	0.22	0.018	0.004	0.004	13.36	0.25 (Al)
Q245R	0.12	0.28	0.56	0.01	0.004	0.05	0.09	0.16 (Cu)
Q345	0.15	0.45	1.4	0.008	0.015	0.02	0.01	0.01 (Cu)

5、碳钢 Carbon steel

A、常用容器板化学成分 (典型值)
Chemical composition (Typical value) of regular vessel plate

牌号 Grade	化学成分 (%) Chemical composition							
	C	Si	Mn	P	S	Nb	Mo	Cr
Q245R	0.20	0.35	0.50-1.0	0.025	0.015			
Q345R	0.20	0.55	1.20-1.60	0.025	0.015			
Q370R	0.18	0.55	1.20-1.60	0.025	0.015	0.015-0.50		
15CrMoR	0.12-0.18	0.15-0.40	0.40-0.70	0.025	0.01		0.45-0.60	0.80-1.20

B、低温容器板化学成分 (典型值)
Chemical composition (Typical value) of low-temperature vessel plate

牌号 Grade	化学成分 (%) Chemical composition								
	C	Si	Mn	Ni	V	Nb	Als	P	S
16MnDR	≤0.20	0.15-0.50	1.20-1.60	-	-	-	≥0.015	≤0.025	≤0.015
15MnNiDR	≤0.18	0.15-0.50	1.20-1.60	0.20-0.60	≤0.06	-	≥0.015	≤0.025	≤0.015
09MnNiDR	≤0.12	0.15-0.50	1.20-1.60	0.30-0.80	-	≤0.04	≥0.015	≤0.020	≤0.015

C、电站锅炉用钢化学成分 (典型值)
Chemical composition (Typical value) of power station boiler steel

牌号 Grade	化学成分 (%) Chemical composition											
	C	Si	Mn	P	S	Al	Nb	N	CEV			
S275NL	≤0.16	≤0.40	1.0-1.4	≤0.025	≤0.018	≥0.02	≤0.05	≤0.015	≤0.40			
S275NLZ25	≤0.16	≤0.40	1.0-1.4	≤0.020	≤0.010	≥0.02	≤0.05	≤0.015	≤0.40			
12Cr1MoV	C	Si	Mn	P	S	Cr	Mo	V				
	0.08-0.15	0.17-0.37	0.40-0.70	≤0.030	≤0.020	0.90-1.20	0.25-0.35	0.15-0.30				
CortenB	C	Si	Mn	P	S	Cr	Ni	Cu				
	≤0.19	0.30-0.65	0.80-1.25	≤0.035	≤0.035	0.40-0.65	≤0.40	0.25-0.40				
15CrMo	C	Si	Mn	P	S	Cr	Mo					
	0.12-0.18	0.15-0.40	0.40-0.70	≤0.030	≤0.030	0.80-1.20	0.45-0.60					
1Cr6Si2Mo	C	Si	Mn	P	S	Cr	Mo	Ni				
	≤0.15	1.5-2.0	≤0.70	≤0.035	≤0.030	5.0-6.5	0.45-0.60	≤0.60				
12Cr2Mo1R	C	Si	Mn	P	S	Cr	Mo					
	≤0.15	≤0.50	0.30-0.60	≤0.020	≤0.015	2.00-2.50	0.90-1.10					
T91 (10Cr9Mo1VNbN)	C	Si	Mn	P	S	Cr	Ni	Mo	V	Nb	N	Al
	0.08-0.12	0.20-0.50	0.30-0.60	≤0.020	≤0.010	8.00-9.50	≤0.40	0.85-1.05	0.18-0.25	0.06-0.10		≤0.020



电站锅炉
Power station boiler



钢管
Tube

6、热轧卷板 Hot rolled coiled steel

牌号 Grade	化学成分 (%) Chemical composition						
	C	Si	Mn	P	S	P+S	Als
HP245	≤0.16	≤0.35	≤0.6	≤0.035	≤0.035	≤0.06	≥0.015
HP265	≤0.19		≤0.8				
HP295	≤2.0		≤1.0				
HP325			≤1.5				
HP345							
HP365							

7、碳钢型材 Carbon steel profile

牌号 Grade	化学成分 (%) Chemical composition								
	C	Si	Mn	P	S	Cr	Mo		
T91	0.08~0.12	0.20~0.50	0.30~0.60	≤0.020	≤0.010	8.00~9.50	0.85~1.05		
	Ni	Nb	V	Al	Ti	Zr	N		
	≤0.40	0.06~0.10	0.18~0.25	≤0.015	≤0.01	≤0.01	0.030~0.070		
T92	C	Si	Mn	P	S	Cr	Mo	W	Nb
	0.07~0.13	≤0.50	0.30~0.60	≤0.020	≤0.010	8.50~9.50	0.30~0.60	1.50~2.00	0.04~0.09
	V	Al	B	Ni	Ti	Zr	N	Cu	
	0.15~0.25	≤0.02	0.001~0.006	≤0.40	≤0.01	≤0.01	0.03~0.07	≤0.15	
备注 Remark	1、As≤0.015%，Sn≤0.015%，Sb≤0.010%，Pb≤0.008%，Bi≤0.010%。 2、H≤0.0003%，O≤0.0040%。								

◆ 力学性能
Mechanical properties

1、热轧不锈钢 Hot rolled stainless steel

牌号 Grade	机械性能 Mechanical properties				物理常数 Physical index			
	Rm (MPa)	Rp (MPa)	A (%)	HB	比重 Density	比热C Specific heat Cal/g.°C	弹性模量E Elastic modulus 20°C, Kg/mm ²	比电阻20°C Specific resistance Ω .mm ² /m
0Cr25Ni20	≥520	≥205	≥40	≤187	7.93	-	16700	-
1Cr25Ni20Si2	≥540	-	≥35	-	7.93	0.12	20300	0.95
1Cr20Ni14Si2	≥590	-	≥40	-	7.90	0.12	-	-
0Cr23Ni13	≥520	≥205	≥40	≤187	7.90	0.12	21100	0.78
S30815	≥600	≥310	≥40	-	7.90	-	-	-

2、不锈钢管 Stainless steel tube

牌号 Grade	拉伸试验 Tensile test			硬度 Hardness
	Rm, MPa	R _{0.2} , MPa	伸长率A5,% Elongation rate	
TP304H	≥515	≥205	≥35	≤192HB 90HRB
TP347H	≥515	≥205	≥35	≤192HB 90HRB
TP347HFG	≥515	≥205	≥35	≤192HB 90HRB
TP310HCbN	≥655	≥295	≥30	≤256HB100 HRB
316	≥520	≥205	≥35	
316L	≥480	≥175	≥40	

3、复合板 Cladding plate

项目 Item	Rm (MPa)	ReL (MPa)	延伸率 δ5 Elongation rate (%)	冲击功AkV Impact power (J)	剪切强度 σnb Cutting strength (MPa)	τ (MPa)	晶腐 Intergranular corrosion	弯曲 d=3a Bending 180°	σs (MPa)
标准 Standard	375~500	≥235	≥26	≥27	≥300	≥210	合格 Qualified	内弯 Inner bending	外弯 Outer bending
实测 Actual measurement	485	300	40	68~66~68	485/525	350/360	合格 Qualified	完好 Perfect	
备注: 以304+Q235为例 Remark: taking 304+Q235 as example									

4、常用容器板 Regular vessel plate

牌号 Grade	交货状态 Delivery condition	钢板厚度 Thickness (mm)	拉伸试验 Tensile test			冲击试验 Impacting test		冷弯试验 Bending test
			Rm (MPa)	Rel (MPa)	伸长率δ5% Elongation rate	温度℃ Temperature	V型冲击功Ak _v (横向)J V-type impacting power Ak _v (transversal) J	
Q245R	热轧 Hot rolled	6-16	400-520	245	25	0	31	d=2a
		>16-36		235				
		>36-60		225				
		>60-100	205	390-510	24			
Q345R	控轧式 正火 Controlled rolling type normalizing	6-16	510-640	345	21	0	34	d=2a
		>16-36	500-630	325				
		>36-60	490-620	315				
		>60-100	490-620	305	20			d=3a
		>100-120	480-610	285				
Q370R	正火 Normalizing	10-16	530-630	370	20	-20	34	d=3a
		>16-36		360				
		>36-60	520-620	340				
15CrMoR	正火加 回火 Normalizing and tempering	6-60	450-590	295	19	20	31	d=3a
		>60-100		275				

牌号 Grade	规格 (mm) Specification	拉伸试验 Tensile test			冷弯试验 Bending test
		Rel (MPa)	Rm (MPa)	伸长率 δ5% Elongation rate	
16MnDR	6-16	≥490-620	≥315	21	d=2a
	>16-36	≥470-600	≥295		
	>36-60	≥450-580	≥275		d=3a
	>60-100	≥450-580	≥255		
15MnNiDR	6-16	≥490-630	≥325	20	d=3a
	>16-36	≥470-610	≥305		
	>36-60	460-600	290		
09MnNiDR	6-16	440-570	300	23	d=2a
	>16-36	430-560	280		
	>36-60	430-560	260		

牌号 Grade	钢板厚度mm Thickness	最低试验温度℃ Minimum testing temperature	试样方向 Sample direction	冲击功, Ak _v , J Impact power
16MnDR	6-36	-40	横向 Transversal	≥27
	>36-100	-30		
15MnNiDR	6-60	-45		
09Mn2VDR	6-36	-50		
09MnNiDR	6-60	-70		≥27

5、热轧板卷 Hot rolled coil

牌号 Grade	拉伸试验 Tensile test			180° 冷弯 Bending	纵向 Longitudinal -40℃Ak _v (J)	规格 Specification (mm)
	Rm (MPa)	Rel (MPa)	A (%)	完好 Perfect		
12Cr1MoV	≥440	≥245	≥22	d=2a		
S275NL S275NL-Z25	370-510	≥275	≥24	d=2a	≥31	10.0-16.0
		≥265		d=3a		16.0-40.0
		≥255		d=3a		40.0-50.0
CortenB	≥485	≥345	≥19	d=3a		
15CrMo	≥450-590	295	≥19	d=3a		
12Cr2Mo1R	≥515-690	310	≥18	d=3a	常温 AKV (J) Normal temperature	6-40
T91 (10Cr9Mo1VNbN)	Rm (MPa)	Rel (MPa)	延伸率δ5 (%) Elongation rate	断面收缩ψ (%) Section shrinking	弯曲180° a=钢板厚度 Cold bending a=sample thickness	硬度 (HB) Hardness
	≥590	≥410	≥18	≥40		
1Cr6Si2Mo	Rm (MPa)	Rel (MPa)	A (%)	冷弯 Cold bending		规格 (mm) Specification
	≥490	-	≥18	-		3-10

6、热轧卷板 Hot rolled coil

牌号 Grade	拉伸试验 Tensile test			180° 冷弯试验 d=弯心直径 a=试样厚度 180° Bending test d=Apex diameter a=sample thickness	冲击实验 Impacting test				
	Rm (MPa)	Rel (MPa)	伸长率% Elongation rate		弯度 Bending	方向 Direction	尺寸mm Dimension	冲击功J Impact power	
HP245	≥390	≥245	≥28	d=1.5a	常温 Normal temperature	横向 Transversal	5 × 10	15	
HP265	≥410	≥265	≥27						
HP295	≥440	≥295	≥26	d=2a					
HP325	≥490	≥325	≥21				10 × 10		27
HP345	≥510	≥345	≥20						
HP365	≥540	≥365	≥20						

产品介绍 >>>

Product Introduction

品种 Variety	主要牌号 Main steel grade	典型应用 Typical application
不锈钢板材 Stainless steel plate	0Cr23Ni13 (309S) 0Cr25Ni20 (310S) 0-1Cr25Ni20Si2 0-1Cr20Ni14Si2 S30815 (253MA) 等	应用于锅炉、能源 (核电、火电、燃料电池)、工业炉、焚烧炉、加热炉、化工、石化等重要领域。 Widely used in fields such as boiler, energy resource (nuclear, thermal power, fuel battery), industry furnace, incinerator, heating furnace, chemical industry and petrochemical industry etc.
不锈钢型材 Stainless steel profile	TP304H、TP347H等	大型电站锅炉过热器、再热器炉管。 Big-scale power station boiler super-heater and re-heater tubes.
碳钢板材 Carbon steel plate	Q245R、Q345R、Q370R、15CrMoR等	国家大型石油储备用油罐。 National big-scale petroleum storage oil tank
	12Cr1MoV、S275NL、S275NL-Z25、CortenB、15CrMo、12Cr2Mo1R、T91等	应用于火电、水电设备，电站锅炉用一般耐热结构件、支撑件、锅炉辅机结构件、风力发电塔筒等。 Used for thermal power and waterpower unit, normal heat-resistant structural parts and supporting parts of power station boiler, auxiliary unit structural parts, wind power tower, and etc.
	HP245、HP265、HP295、HP325、HP345	焊瓶。 Welded gas cylinder.
碳钢型材 Carbon steel profile	T91、T92	主要用在制造超临界、超超临界锅炉的炉内受热面部件上，作为热量吸收和传导功能的元件，应用于水冷壁、省煤器、过热器和再热器等部位。 As heat absorbing and transferring elements, it is mainly used for making heated parts inside supercritical boiler and extra supercritical boiler, as well as water-cooling wall, economizer, super-heater and re-heater.
复合板 Cladding plate	304L+16MnR等	石化用出料器、石化用焦炭塔、焦化塔、反应器。 Discharge unit, coke tower and reactor for petrofaction application.
不锈钢无缝管 Seamless stainless steel pipe	TP304H、TP347H等	大型电站锅炉30万千瓦以上超临界、超超临界锅炉的过热器、再热器炉管、冷凝管。 Super-heater, re-heater tube, and condenser tube of supercritical and extra supercritical boilers above 300 thousand kW in big-scale power stations.

用户使用指南 >>>

User Instruction

品种 Variety	主要牌号 Main steel grade	典型应用 Typical application
不锈钢板材 Stainless steel plate	0Cr23Ni13	制造在850-1050℃范围工作的各种耐热构件 Various heat-resistant parts suitable for working under temperature of 850-1050℃.
	0Cr25Ni20	加热炉的各种构件 Various components of heating furnace.
	1Cr25Ni20Si2	加热炉的各种构件,如合成氨设备高温炉管、辐射管、加热炉辊筒及燃烧室构件等 Components of heating furnace, e.g. high-temperature furnace tubes of making ammonia synthesis unit, radiant tube, roller set, combustion cabinet etc.
	1Cr20Ni14Si2	用于锅炉吊挂和加热炉构件等的制作 Hanging and suspending parts of boiler and components of heating furnace.
	S30815	超超临界发电锅炉循环硫化床的旋风分离器 Cyclone separator of circulation sulfuration bed of ultra supercritical power generating boiler.
不锈钢型材 Stainless steel profile	TP304H、TP347H、S30432、HR3C	过热器、再热器高温高压炉管 High temperature and high pressure furnace tube in super-heater and re-heater.
碳钢板材 Carbon steel plate	Q245R	石化行业制作球罐 Sphere tank for petro-chemical industry application.
	Q345R	适用于制造球罐、反应器及石油化工设备，主要为中常温、中低温容器及其配件 Suitable for making petroleum and chemical industry equipments, such as sphere and reactor, of medium and normal temperature as well as medium and low temperature vessels and their components.
	Q370R	主要用于球形储罐，水电站压力钢管 Mainly used for making spherical tank, waterpower station pressure steel tube.
	15CrMoR	主要用于制造壁温小于或等于550℃的加氢反应器换热器、中温变换炉等中温压力容器 Mainly used for making medium temperature pressure vessels, such as hydrogenation reactor heat exchanger with wall temperature less than 550℃, and medium temperature shifting furnace.
	16MnDR	主要用于石化行业制作低温球罐 Mainly used for making low temperature spherical tank for petrification industry application.
碳钢型材 Carbon steel profile	12Cr1MoV、S275NL、S275NL-Z25、CortenB、15CrMo、12Cr2Mo1R、	电站锅炉钢结构 Steel structure of power station boiler.
	HP245、265、295、345	焊瓶 Welded gas cylinder.
	T91、T92	电站锅炉过热器和再热器高温高压无缝钢管 High temperature and high pressure furnace tube of super-heater and re-heater.
复合板 Composite plate	304L+16MnR	出料器、焦炭塔、焦化塔、反应器 Discharge unit, coke tower and reactor.
不锈钢无缝管 Seamless stainless steel pipe	TP304H、TP347H	过热器、再热器高温高压炉管 High temperature and high pressure furnace tube of super-heater and re-heater.

主要特点 >>>

Main Features

品种 Variety	行业发展趋势 Industry developing trends	开发成果及措施 Achievement and Future Target
不锈钢板材 Stainless steel plate	国民经济的快速发展及人民生活水平的不断提高离不开电力工业的发展。发展大容量高参数机组，特别是超（超）临界机组将是我国火力发电“提高发电效率，节约一次能源，改善环境，降低发电成本”的必然趋势。解决超（超）临界发电设备关键材料的唯一方法是立足国内，走国产化的道路。 The prosperity of state economy and improvement of people's living-hood are tightly connected with the development of power industry. In order to realize "elevating efficiency, saving energy, protecting environment and decreasing cost", it is a trend for China to develop big volume and high configuration power unit, especially the (extra) supercritical unit. Aiming at independent manufacturing, the localization of supply chain is the unique method to solve the key materials problem used in (extra) supercritical power unit.	1、我公司已开发出TD305B，成功应用于电站锅炉换热器设备，该产品具有耐高温性能强，加工成型性好等特点。 2、我公司目前正在积极研发超级奥氏体254SMo，654SMo以及镍基合金等产品，将来可满足压力容器行业高端需求。 1. TISCO has gained success in development of steel grade TD305B, which is featured with good heat-resistance and formability, and has successfully put it into application in making power station boiler heat exchanger unit. 2. At present, our company is actively researching and developing super austenite steel 254SMo, 654SMo and nickel-based alloy to meet the high-end demands in pressure vessel industry.
不锈钢型材 Stainless steel profile	不锈钢无缝管在电站锅炉行业应用广泛，未来的趋势是替代进口，走国产化的道路。 Our seamless stainless steel tube is widely applied in power station boiler industry. Localization in manufacturing is a trend in this industry.	我公司已开发出CODE CASE2328-1、CODE CASE2115-1等管坯品种，主要应用于100万KW超超临界电站锅炉的关键部位。 Our company has successfully developed the tube billets, such as CODE CASE2328-1, CODE CASE2115-1 and so on, which are mainly used for making key parts in extra supercritical power station boiler of 1 million kW.
碳钢板材 Carbon steel plate	为适应国家能源战略的要求，建造10~15万m3（或容积更大）的大型原油储罐已经成为主要趋势。 To meet the requirements of national energy strategy, building big-scale crude oil tank with volume ranging from 100,000 to 150,000 m3 or more has become a trend.	我公司在满足GB713、GB3531所有牌号的基础上，正在研发GB19189高强度容器板。如12MnNiVR、07MnCrMoVR、07MnNiCrMoVDR等。 After finishing the development of all types of steel of GB713 and GB353, our company is now dedicated in the research and development of GB19189 high-strength vessel plates, e.g. 12MnNiVR, 07MnCrMoVR, 07MnNiCrMoVDR, and so on.
碳钢型材 Carbon steel profile	国民经济的快速发展及人民生活水平的不断提高离不开电力工业的发展。发展大容量高参数机组，特别是超（超）临界机组将是我国火力发电“提高发电效率，节约一次能源，改善环境，降低发电成本”的必然趋势。解决超（超）临界发电设备关键材料的唯一方法是立足国内，走国产化的道路。 The prosperity of state economy and improvement of people's living-hood are tightly connected with the development of power industry. In order to realize "elevating efficiency, saving energy, protecting environment and decreasing cost", it is a trend for China to develop big volume and high configuration power unit, especially the (extra) supercritical unit. Aiming at independent manufacturing, the localization of material supply chain is the unique method to solve the key materials problem used in (extra) supercritical power unit.	逐步推广T92产品在电站锅炉行业的应用。 Promoting the application of T92 in power station boiler industry.

品种 Variety	行业发展趋势 Industry developing trends	开发成果及措施 Achievement and Future Target
复合板 Cladding plate	在未来的5年内，我公司的复合板在锅炉压力容器行业要做到15000吨，占锅炉压力容器用复合板市场的15%左右，做到市场的有力竞争者，尤其是在制盐制碱行业，力争做到4000吨，打破四川宜宾复合板厂长期垄断的局面，在锅炉行业，力争成为哈汽、上汽、东汽的重要供应商。 Our strategy targets in the next 5 years include: in boiler and pressure vessel industry, we are aiming at selling 15,000 tons cladding plates, which account for 15% market share; in salt production and alkali works industry, we will break through the long-term monopolization of Sichuan Yibin cladding Plate Plant, as a strong competitor, reaching 4000 tons marketing volume; in boiler industry, we will try our best to be an important supplier to Harbin Automobile, Shanghai Automobile and Dongfeng Automobile.	形成以不锈钢复合板为主，其它金属材料（如钛复合板、铜复合板等）为辅的局。 A prospect of taking stainless steel cladding plate as main product and other metal materials (e.g. Titanium cladding plate and copper cladding plate) as supplement products will be formed.
不锈钢无缝管 Seamless stainless steel pipe	国民经济的快速发展及人民生活水平的不断提高离不开电力工业的发展。发展大容量高参数机组，特别是超（超）临界机组将是我国火力发电“提高发电效率，节约一次能源，改善环境，降低发电成本”的必然趋势。解决超（超）临界发电设备关键材料的唯一方法是立足国内，走国产化的道路。 The prosperity of state economy and improvement of people's living-hood are tightly connected with the development of power industry. In order to realize "elevating efficiency, saving energy, protecting environment and decreasing cost", it is a trend for China to develop big volume and high configuration power unit, especially the (extra) supercritical unit. Aiming at independent manufacturing, the localization of material supply chain is the unique method to solve the key materials problem used in (extra) supercritical power unit.	随着5万吨不锈钢无缝钢管项目的陆续投产，研发CODE CASE2328-1、CODE CASE2115-1等高端产品是必然的趋势。 With the start-up of 50,000 tons seamless stainless steel tube project, the research and development of high-end products, including CODE CASE2328-1, CODE CASE2115-1 and so on, is an inevitable trend.

服务承诺 >>>

Service Promise

- 为客户提供个性化成份、性能、包装、卷重、质保书的设计。
- 为客户在选材和加工工艺方面提供技术支持。
- 交货准确及时。
- 对客户异议，在24小时内答复。
- Provide for consumers with the personalized designs on composition, properties, package coil weight and the quality certificate.
- Technical support to customers in material selection and fabrication.
- Accurate and prompt delivery.
- Response to customer's claim within 24 hours.



合作伙伴 >>>

Cooperative Partner



主要业务部门联系方式 >>>

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