



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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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销量最大、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余年发展，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。2009年生产不锈钢248万吨，产量世界第一！

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”系列火箭及核电站等高端领域，进入三峡水利、西气东输、奥运场馆及世博场馆等国家重点工程。2009年在国家认定的575所企业技术中心中，太钢技术中心排名第二，位钢铁行业首位。太钢拥有以不锈钢为核心的745项具有自主知识产权的核心技术，其中100多项达到国际先进水平。

太钢拥有目前世界上规模最大、设备最先进的不锈钢无缝钢管生产线，设计年生产能力5万吨，产品品种规格齐全，覆盖电站、锅炉、石油、化工、国防、核电等高端不锈钢无缝钢管领域。企业通过了ISO9001质量体系认证，是中石化和中石油的一级网络供应商，其流体输送用不锈钢焊管荣获“冶金产品实物质量金杯奖”，产品通过了CCS（中国船级社）、德劳、英劳认证，是中国特钢协会推荐产品。不锈钢管主要业绩有：泰山核电站、大亚湾核电站、三峡工程、北京奥运主体场馆及中石油、中石化和中海油下属的福建大炼油、青岛大炼油、惠州大炼油等大型重点工程。

太钢的发展战略是，加快建设全球最具竞争力的不锈钢企业，实现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，进而建设具有国际竞争力的大企业集团。

Taiyuan Iron and Steel (Group) Co. Ltd. (TISCO) is one of the steel giants in China and, the largest stainless producer in the world in term of output and sales equipped with the most advanced facilities covering pretty wide product range. After over 70 years development TISCO has the capacity of 10 million tons of steel, which includes 3 million tons of stainless. The year of 2009 saw TISCO become No.1 stainless producer in the world with production of 2.48 million tons of stainless.

In TISCO came out the first heat of stainless steel and first heat of silicon steel as well as the first sheet of silicon in the history of China steel industry. TISCO is well equipped for mining and iron ore refining, iron and steel making, rolling and forging, metallurgical equipment and spare parts manufacturing. TISCO's products cover stainless steel of cold and hot rolling, cold rolled silicon, hot rolled coil, axle steel, die steel and steel for military purpose etc. TISCO's products are widely used in petrochemical industry, transportation, construction decoration, home appliance, medical and food industry. TISCO's products can be also found in the national key projects such as Shenzhou spaceship, Chang'e-1 Moon Detector, Dongfeng rocket series and nuclear power, Three Gorges, West-East natural gas transmission, and Olympic game facility as well as Shanghai world expos. In 2009 TISCO technology centre ranked No.2 among the 575 state acknowledged enterprise technology institutions, and No.1 among the steel industry. TISCO owns 745 core patents in the field of stainless and over 100 patents are taken as the world class.

TISCO is equipped with the largest and most advanced stainless seamless pipe production line, the designing production capacity is 50,000 tons, the products have a full variety, applicable in the top advanced fields such as electricity station, boiler, petroleum, chemical, state guard, nuclear power etc. The company has been certified by ISO 9001 quality system and is the first supplier of CNPC and CPCC; The stainless steel welding pipe for fluid transportation is awarded "the gold cup of metallurgical products quality". The products have been approved by CCS, GL, LR, and are listed as the recommended products by China Specialty Steel Association. The major references of the application include the projects of Qinshan nuclear station, Da ya bay nuclear station, hree gorges, and center palaestra of Beijing Olympic games The capital airport, the large important projects of Fujian oil refining corporation, Qingdao oil refining corporation, Huizhou oil refining corporation affixed to CNPC, CPCC and CNOOC.

TISCO is aiming to become the most competitive stainless producer in the world, and achieve the first class stainless product in terms of product range, quality, cost, R&D, energy saving, environment protection, efficiency and service. For this goal TISCO is trying the first world class level and build itself into the world competitive large group company.



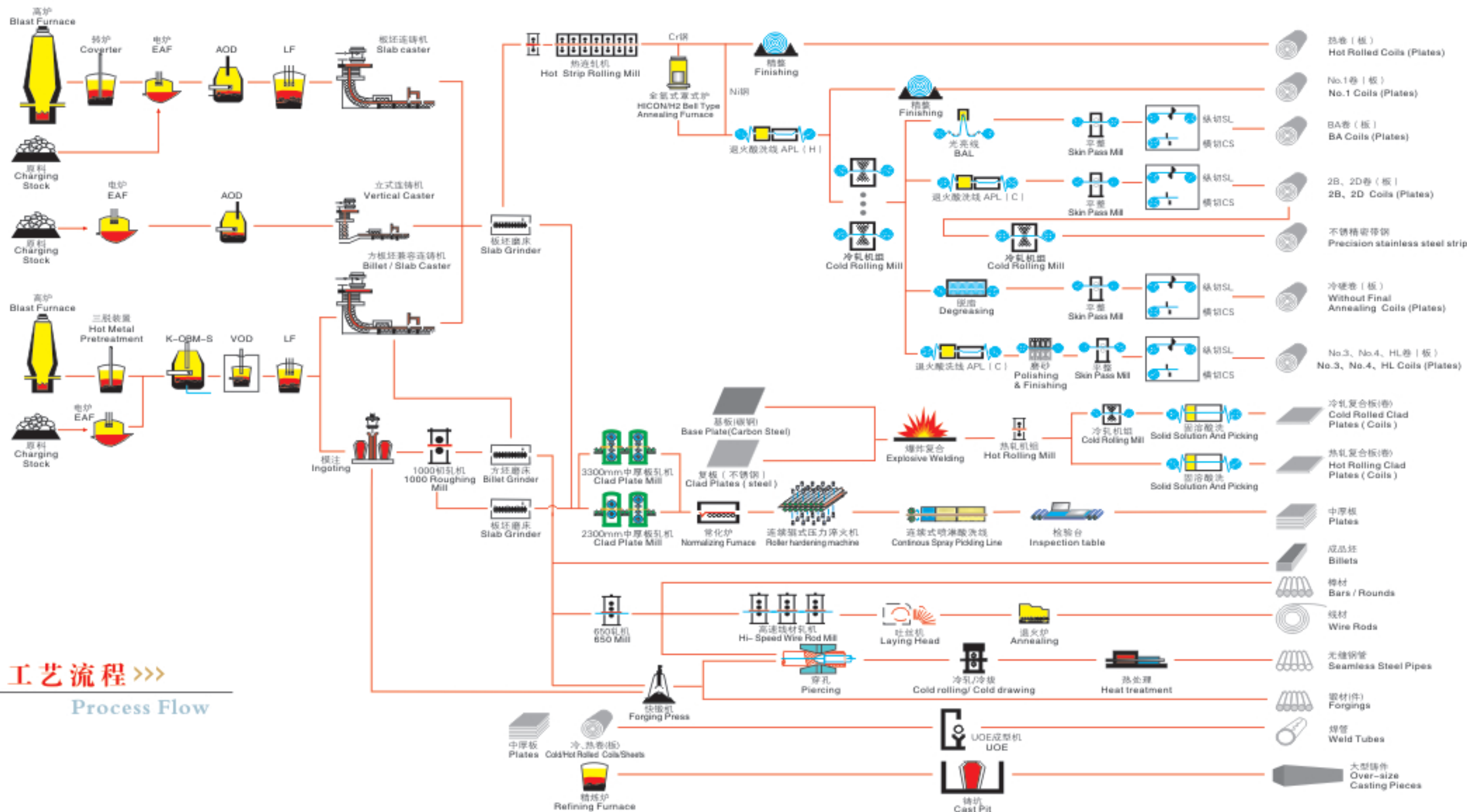
◆ 锅炉压力容器行业用钢概况

太钢致力于不锈钢、特殊钢和高等级碳素钢的研究开发和生产加工，以精良的生产装备以及雄厚的研发能力为依托，在锅炉压力容器行业坚持走国产化的开发道路，主要产品有不锈钢双相、不锈钢耐热钢、不锈钢复合板、碳钢耐热合金结构钢、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、压力容器行业的应用，近几年，板材、管材、型材系列产品为国内上锅、哈锅、东锅三大动力发展大容量高参数机组，特别是超（超）临界机组火力发电用钢以及中石油、中石化、中海油、上海森松压力容器有限公司、宜兴北海封头有限公司、北京天海工业有限公司等重点企业石油、液化天然气（LNG）大型储罐用钢和三类压力容器的研制得到广泛应用，为振兴民族工业做出了新贡献。

◆ Brief on boiler and pressure vessel industry steel

With its superior equipments and great research and development power, TISCO has devoted itself in the research, development, production and process of stainless steel, special steel and high-class carbon steel and insisted the localization of boiler and pressure vessel industry. The main products including duplex, heat-resistance, composite plate of stainless steel and heat-resistance alloy steel, low-alloy steel and ordinary carbon steel for special application. At the same time, TISCO focuses on the application in Cr-Mo steel products in power station manufacturing industry and pressure vessel industry. During recent years, a series of products such as plate, pipe, section, as important materials for big-volume and high configuration power units of Shanghai Boiler, Harbin Boiler and Dongfang Boiler, especially extra supercritical thermal power is successfully developed and widely used in some well-know enterprises such as CNPC, SINOPEC, CNOOC, Shanghai Morimatsu Pressure Vessel Co., and HOKKAI, BTIC, 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



2009年在国家认定的575家企业技术中心中，太钢技术中心排名第2位。

Tisco technology center ranks 2th among enterprise-based 575 technology centers accredited by the state in 2009.



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

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.



质量保证体系 >>>

Quality Assurance System



常规产品 >>>

Conventional Products

◆ 不锈钢部分 Stainless steel

钢种 Steel grade	钢种 Grade	规格 (mm) Specifications		单重 Weight t	标准 Standard	主要用途 Main usage	
		直径 Diameter	宽度 Width				
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	1000~2000	中板≤12 冷卷≤25 热卷≤40	GB/T4237 GB/T4238 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.
		0Cr19Ni14 (TD305B)	热 轧 厚: 3~60 Hot rolled Thickness: 3-60	1000~3000			制造在850~1050℃范围工作的各种耐热构件,如炉内支架、输送带、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.
		0Cr19Ni13 (309S)					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.
		0Cr21Ni11NCe (S30815-253MA)					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.
		0Cr18Ni9 (304)					
		0Cr20Ni25Mo4.5Cu (904L)					
		1Cr18Ni9Ti					
		00Cr17Ni12Mo2 (316L)					
型 线 材 Profile material	TP304H	Φ65 ~ 130	6000 (上)	0.3 ~ 1.5	Q/TB3071-2007	用于高温高压锅炉管	
	TP347H				Q/太新019-2006	For high temperature and high pressure boiler tube	
钢 管 Pipe	TP304H/TP347H	外 径: φ6.0~630 壁 厚: 0.08~40 Outer diameter: φ6.0~630 Wall thickness: 0.08~40	4000 - 12000	-	HG C8B21-2005a (哈标) ASTM SA-213 GB 13296-2007	高温过热器、再热器。 Super-heater and re-heater.	
	TP347HFG					热交换器、冷凝器、石油炼化项目 Heat exchanger and condenser.	
	TP310HCbN (HR3C)						
	Super304						
304/316/316L/347							

常规产品 >>>

Conventional Products

◆ 不锈钢部分 Stainless steel

钢种 Grade	牌号 Grade	规格 (mm) Specifications		单重 Weight t	标准 Standard	主要用途 Application
		直径 Diameter	宽度 Width			
奥氏体 Clad plate	405/410S/304/304L	厚8~66×宽2500下×长12000下, 复材厚度2~6, 基材厚度6~60, 基复比大于3, 管板直径3000下, 复材厚度8~14, 基材厚度80~120		1.0~3.0	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.
	321/316/316L/317L					
	310S/2205+Q235	(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.				
	Q345/15CrMoR					
	14Cr1Mo&20p/16Mn					

◆ 碳钢部分 Carbon Steel

钢类 Steel grade	牌号 Grade	规格 (mm) Specifications		单重 Weight t	标准 Standard	主要用途 Application
		直径 Diameter	宽度 Width			
碳 钢 Carbon steel	Q345R/Q245R	6.0-25	1000-2130	5-9	GB713-2008	一、二类压力容器 Grade one & two pressure vessel
		25-80	1500-2850	5-9		
	18MnMoNbR 13MnNiMoR	6.0-40	1500-2000	≤ 5		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 export
	14Cr1Mo&15CrMo&	6.0-80	1500-3000	5-9	GB713-2008	三类压力容器 Grade three pressure vessel
	Q370R/18MnMoNbR 13MnNiMoR 12Cr1MoVR	6-25	1500-2850	≤ 9	GB713-2008	
		25-80	1500-3000			
	16MnDR/15MnNiDR 49MnNiDR/9Ni9	6.0-40	1500-2000	≤ 5	GB713-2008	低温液体储存容器 Low-temperature liquid storage container
		6.0-25	1500-2850	≤ 9	GB3531-1996 Q/大新061-2008	
		25-80	1500-3000	≤ 9		

常规产品 >>>

Conventional Products

◆ 碳钢部分 Carbon Steel

钢类 Steel grade	牌号 Grade	规格 (mm) Specifications		单重 Weight t	标准 Standard	主要用途 Main usage
		厚度 Thickness	宽(长)度 Width/Length			
碳 钢 Carbon steel	12Cr1MoV	2.0-2.75	870-1260	15-30	Q/TX3278-2007	应用于电站(火电)锅炉用一般耐热结构件、支撑件、锅炉辅机结构件及加氢反应器。 Used for thermal power unit, normal heat-resistant structural parts and supporting parts of power station boiler, auxiliary unit structural parts, hydrogenation reactor and etc.
		5.0-20.0	1000-2000			
		6.0-60	1500-2700	1-9	Q/大新051-2008	
	CORTEN B	3.0-12	870-1380	15-30	Q/TX3128-2005	
		6.0-32	1500-3000	15-30		
	15CrMo(g)	2.85-25.4	870-2130	15-30	Q/TX3205-2006	
	15CrMo	6.0-60	1500-2700	1-9	Q/大新051-2008	
	1Cr6Si2Mo	3.0-10	870-1900	15-30	Q/大新029-2005	
	12Cr2Mo1R	6.0-40	1600-1900	15-30	Q/TX3222-2006	
	12Cr2Mo1	6.0-50	1500-2700	1-9	Q/大新031-2008	
	10Cr9Mo1VNbN (T91)	25-90	1250-3000	1-9	Q/大新012-2006	
	SA-387Gr91	8.0-100	1250-3150	1-9	Q/大新104-2008	
	SA204	6.0-40	1500-1900	1-5	Q/大新043-2007	
	SA387Gr12CL2 SA387Gr22CL2	10-60	1600-2700	1-9	Q/大新016-2008	
	焊瓶钢 Welding wire	HP245-345	2.5-12	900-2130	18-20 28-30	
焊丝材料 Welding wire	T91	60-110	8200	0.2-0.6	Q/大新028-2007	制造电站锅炉用高压锅炉管。 High-pressure boiler tube for power station.
	T92	60-110	8200	0.2-0.6	Q/大新083-2009	
	30CrMoA	200-300	6000(上)	2-2.2	Q/TB3041-2005	三类压力容器 Grade three pressure vessel
	30CrMo4				Q/大新102-2010	
	37Mn				Q/TB140000 3001-2004	
34Mn2V	Q/TB3005-2003					

产品特点及用途 >>>

Characteristic And Applications

◆ 不锈钢板材 Stainless steel plate

钢种 Steel grade	特点 Features	主要用途 Main usage	应用领域 Applications	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.	用于制造加热炉的各种构件。 Used for making different components of heating furnace.	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.	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、可塑性较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 (S30815)	属于奥氏体型耐热钢，在1150℃仍具有良好的抗氧化性能，Ce改善高温蠕变性能，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上 Heated parts inside of supercritical, extra supercritical boiler.	太钢管还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

钢种 Grade	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 superheater, 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				
TP347HFG				
316/316L				
TP310HCbN				
Super304H				

已通过中国机械工业联合会组织的技术评审，不久会在电站锅炉企业应用，替代进口
It has passed the technical review organized by CMIF (China Machinery Industry Federation), and will be applied to power plant boiler, substitutes for imported goods.



产品特点及用途 >>>

Characteristic And Applications

◆ 复合板 Clad plate

钢种	特点 Main properties and features	主要用途 Main usage	应用领域 Applications	应用业绩 Reference
0Cr18Ni9 (304)	生产成本低; 节约贵重金属; 使用性能好; 具有不锈钢、有色金属及其碳钢的多重优点, 尤其在某些特殊行业是不可代替的; 涉及的钢种多; 可以根据用户的使用要求选择不同的组合; 界面结合强度高; 两种金属锯齿原子间结合, 确保性能; 界面结合率高; 可实现20m2板幅的100%结合。 low cost; saving expensive metal; good performance; combining the advantages of stainless steel, nonferrous metal and carbon steel, non-replaceable in some special fields; multiple steel grade; different combination according to user's demands available; high integrating intensity between interfaces; saw tooth atom integrating of two kinds of metal; high integrating rate between interfaces; 100% integrating of 20m2 plate is possible.	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.	锅炉、水利、石化、金属镁等行业。开发出包括00Cr22Ni5Mo3 N双相钢复合板等在内的十余个不锈钢复合板品种。广泛应用于石油、化工、制盐等诸多领域及长江三峡工程等国家重点工程和行业。	石油、石化及其机械制造焦化塔、分馏塔、汽提塔、常减压塔; Al-钢、Ti-钢、Cu-钢复合板成功应用于广州地铁4、5号线轨道直机电机感应板; 核能工业换热器、冷凝器等重点工程。 Petroleum, petrochemical and related machines, coking tower, fractionating tower, stripping column, atmospheric and vacuum distillation tower; Al-Steel, Ti-Steel and Cu-steel clad have been applied to Guangzhou Subway line No.4 and No.5, and the heater and the condensers of nuclear energy industry.
0Cr19Ni9N (304N)				
00Cr19Ni10 (304L)				
1Cr18Ni9Ti 0Cr18Ni10Ti (321)				
00Cr17Ni12Mo2 (316L)				
00Cr19Ni13Mo3 (317L)				
0Cr25Ni20 (310S)	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.	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.	Water conservancy boiler petrochemical and magnesium industry. More than a dozen stainless steel clad including duplex clad of 00Cr22Ni5Mo3N have been developed, and it is widely used in petroleum, chemical, salt industry and the Three Gorges Project.	
0Cr13 (410S)				
0Cr13Al (405)	适用于耐热设备的制作。 Suitable for making heat-resistant equipments.	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 petrifaction industry, as well as shipping components.		
00Cr18Mo2 (444)				
00Cr18Ni5Mo3Si2 (3Re60)	用于耐硫酸的腐蚀及常压任何温度醋酸的腐蚀。 Vitreous corrosion resistance and acetic acid corrosion resistance under any atmospheric any temperature.			
00Cr22Ni5Mo3N (UNS S31830)				
00Cr20Ni25Mo4.5Cu (904L)				

◆ 碳钢板材 Carbon steel plate

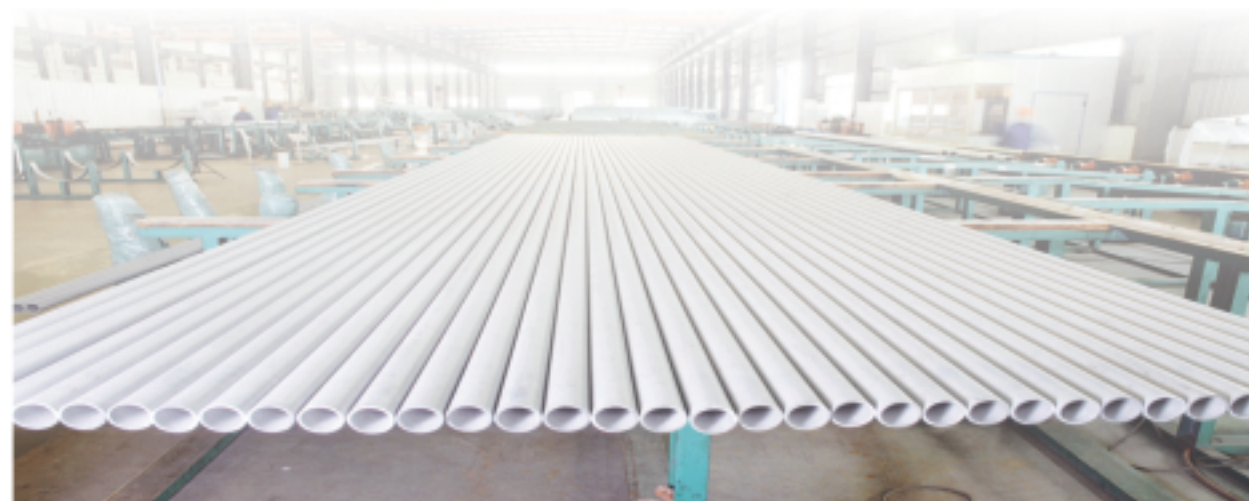
牌号 Steel grade	特点 Features	主要用途 Main usage	应用领域 Applications	应用业绩 Reference
Q345R/Q245R/Q370R	内在质量好, 性能稳定。可为用户提供正火、一、二、三级探伤板材。 厚度公差适中, 正公差轧制后理论重量增加的厚度附加值与实物基本吻合; 可为用户提供中板、卷切板产品, 满足客户个性化需求。	压力容器钢板是制造压力容器的主要材料。低温容器板用于LNG项目、乙烯容器和石油储罐等。 Steel plate for pressure vessel is the main raw material of Making pressure vessels. The plates of low temperature pressure vessel was used in LNG project, ethene vessel, petroleum tank	广泛应用于石油、天然气LNG储罐、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, Gas LNG tanks, chemical industry, construction, shipping and medical treatment.	成功用于LNG江苏如东、辽宁大连项目16万“四个储罐, 国内首创, 打破了长期依赖进口局面; 舟山世纪太平洋90万立方米化工、石油储罐项目。该项目属民营企业开发, 服务于中石油、中石化、中海油的国家大型项目。 It have been successfully used in Jiangsu Rudong, Liaoning Dalian LNG Projects, four storage tank of 160,000 cubic metres, initiation in China; Zhoushan century pacific 4,000,000 cubic metres chemical petrochem projects, which is developed by private enterprise, and service for big national projects of CNPC, SINOPEC, CNOOC;
18MnMoNbR 15MnNiMoR				
SA516Gr.70	It has good inner quality and reliable performance, gh, high toughness and high strength. We can offer the plates after normalizing and defectoscopy class 1, 2, 3. The tolerance of thickness is moderate, We can supply PMP and CMP products so that we can meet individual demands of different clients.	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 Herbin Electric Corporation, and developed a new steel grade for power station as a substitute for imported product, realizing 100% localization.
14Cr1MoR/15CrMoR				
16MnDR/15MnNiDR 09MnNiDR	内在质量好, 性能稳定。无夹杂、无裂纹, 具有蠕变极限与持久强度数值相近。产品纵向、纵向拉伸性能优良; 高韧性、高强度, 良好的耐高温氧化、耐高温蒸汽腐蚀性能; 良好的焊接和冷、热加工性能	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。		
12MnNiVR/06Ni9				
12Cr1MoV (g)	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.			
15CrMo (g)				
1Cr6Si2Mo	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.			
CORTEN-B				
12Cr2Mo1	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.			
SA387系列				
SA204B (C)	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.			
S275NL/T91				

产品特点及用途 >>>

Characteristic And Applications

◆ 碳钢型材 Carbon steel profile

钢种	特点 Main properties and features	主要用途 Main usage	应用领域 Applications	应用业绩 Reference
T91 T92	钢质纯净、组织均匀、表面车光。 Pure quality, uniform structure, polished surface.	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.	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.	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.
30CrMoA 34CrMo4	钢质纯净、组织均匀 Pure quality, uniform structure,	北京天海、沈阳东基集团等国内气瓶企业 Pressure vessel company in China such as Beijing Tianhai, Shenyang Dongji Group,	医用、工业气瓶及车载(包括消防)气瓶等领域 in the field of medical, industrial pressure vessel, on board (including fire control) pressure vessel.	出口美洲市场占有率50%、国内钢质无缝车用LNG气瓶国内占有率90% Export share to America market is 50%, Domestic share in LNG vessel tank used for steel seamless vehicle is 90%
37Mn 34Mn2V		用于生产国内用高压气瓶和出口发展中国家的气瓶 Be used for high pressure tank in Domestic and export to developing country.		奥运场馆建设、京沪高铁等重点工程占有率100% The share is 100% in some key projects, such as Beijing Olympic venues and Beijing-Shanghai High Speed Railway



产品性能 >>>

Performance of Production

◆ 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 (%)									执行标准 Standard
	C	Si	Mn	P	S	Cr	Ni	N		
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	≤0.08	≤0.75	≤2.00	≤0.030	≤0.020	9.00~11.00	18.00~20.00	-	-
TP347H	≤0.08	≤0.75	≤2.00	≤0.030	≤0.020	9.00~13.00	17.00~20.00		Nb+Ta ≥ 8 × C% ~ 1.00

3、不锈钢管 Stainless steel tube

牌号 Grade	化学成分 (%)									
	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
TP347HFG	0.06~0.10	≤0.75	≤2.00	≤0.040	≤0.030	9.00~13.00	17~20		≤0.25	≥ 8 × C-1.0
TP310HCbN	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			

产品性能 >>>

Performance of Production

4、复合板 Cladding plate

牌号 Grade	化学成分 (%) Chemical composition							
	C	Si	Mn	P	S	Cr	Ni	*
0Cr19Ni9N	0.02	0.38	1.48	0.03	0.007	18.34	8.98	0.14 (N)
0Cr13AL	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	Cr	Mo	Ni	Cu	V	Nb	Al
12Cr1MoV	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				
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					
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				
T91	C	Si	Mn	P	S	Cr	Ni	Mo	V	Nb	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	
S275NL	C	Si	Mn	P	S	Al	Nb	N	CEV			
	≤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			

6、热轧卷板 Hot rolled coiled steel

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

产品性能 >>>

Performance of Production

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%。								

8、碳钢冲压气瓶钢(型材) Stamping gas bottle steel(profiles)

牌号 Grade	化学成分%								
	C	Si	Mn	Cr	Mo	P	S	P+S	V
30CrMoA	0.06	0.17	0.40	0.80	0.15	≤0.030	≤0.025	≤0.045	-
	0.34	0.37	0.70	1.10	0.25				
34CrMo4	0.30	0.10	0.06	0.90	0.15	≤0.020	≤0.010	≤0.025	
	0.37	0.40	0.90	1.20	0.30				
37Mn	0.36	0.17	1.45	-	-	≤0.030	≤0.025	≤0.050	-
	0.40	0.37	1.75						
34Mn2V	0.30	0.17	1.45	-	-	≤0.030	≤0.030	≤0.055	0.07
	0.37	0.37	1.75						0.12

◆ 力学性能(典型值) Mechanical properties(Typical Value)

1、不锈钢卷 Stainless steel Plate and coil

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A Elongation rate (%)	冲击功AkV Impact power (J)	抗拉强度σ _{nb} Cutting strength (MPa)	剪切强度τ (MPa)	晶腐 Intergranular corrosion	弯曲 d=3a Bending 180°
标准 Standard	375~500	≥235	≥26	≥27	≥300	≥210	合格 Qualified	内弯 Inner 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

产品性能 >>>

Performance of Production

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A(%) Elongation rate	温度℃ Temperature	V型冲击功Ak _v (纵向)J V-type impacting power Ak _v (transversal) J	
Q245R	热轧 Hot rolled	6-36	400-520	245-235	25	0	31	d=2a
		>36-60		225				
		>60-100	205	390-510	24			
Q345R	控轧式 正火 Controlled rolling type normalizing	6-36	500-640	345-325	21	0	34	d=2a
		>36-60	490-620	315				d=3a
		>60-100	490-620	305				
		>100-120	480-610	285				
Q370R	正火 Normalizing	10-36	530-630	370-360	20	-20	34	d=3a
		>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				
16MnDR		6-36	470-620	295-315	21	-40	27	d=2a
		>36-60	450-580	275		-30		d=3a
		>60-100	450-580	255				
15MnNiDR		6-36	470-630	305-325	20	-45	27	d=3a
		>36-60	460-600	290				
09MnNiDR		6-36	430-570	280-300	23	-70	27	d=2a
		>36-60	430-560	260				

5、焊瓶钢(卷板) Welding gas bottle steel(coil)

牌号 Grade	拉伸试验 Tensile test			180° 冷弯试验 a=试样厚度 180° Bending test a=sample thickness	冲击试验 Impacting test				
	Rm (MPa)	ReL (MPa)	伸长率A(%) 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						
HP325	≥490	≥325	≥21	d=2a			10 × 10		27
HP345	≥510	≥345	≥20						
HP365	≥540	≥365	≥20						

6、碳钢冲压气瓶钢 Stamping gas bottle steel

钢号 Grade	试样状态 Sample state	拉伸试验 Tensile test			断面收缩率 Section shrinding Z %	冲击功AK _u Impact Energy J 常温	热处理制度 Thermo-treatment
		Rm MPa	Rel MPa	A %			
30CrMoA	调质 hardening and tempering	≥930	≥780	≥12	≥50	≥63	880 ± 15℃ 淬火 540 ± 50℃ 回火
34CrMo4	调质 hardening and tempering	≥980	≥835	≥12	≥50	≥63	
34Mn2V	正火 normalization	≥745	≥510	≥16	≥45	≥55	
37Mn	调质 hardening and tempering	≥730	≥610	≥14		≥30 (-20℃)	840 ± 15℃ 淬火 600 ± 50℃ 回火



产品应用 >>>

Product applications

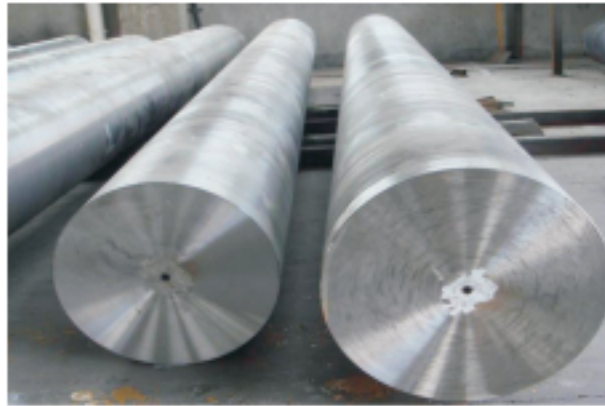


电站锅炉用不锈钢耐热钢309S、310S
Heat-resistance stainless steel in the application of boiler, of power station



电站锅炉用碳钢耐热结构钢
Heat-resistance carbon steel in the application of power station

电站、高压锅炉用碳钢管坯 T91
T91 of carbon steel pipe in the application of power station and high pressure boiler.



电站锅炉用不锈钢管 TP347H
Grade TP347H of stainless steel pipe in the application of boiler of power station



产品应用 >>>

Product applications



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



热交换器用不锈钢304L
Grade 304L of stainless steel in the application of Heat-Exchanger



医用供氧器用冲压气瓶钢坯
Slab used in stamping cylinder for oxygen of medical

中石油LNG项目 9%Ni
LNG project of sinopec,9%Ni



发展趋势 >>>

Developing Trends

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	<p>为提高电力工业，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；同时广泛应用于石化、化工、化肥、炼油等各行各业制作的三类压力容器</p> <p>In order to advance power industry, developing big-volume and high configuration power unit especially the extra supercritical unit is the necessary trend of "elevating efficiency, saving energy, protecting environment and decreasing cost" in China's thermal power. Aiming at independent manufacturing, the localization of supply chain is the unique method to solve the key materials problem used in supercritical power unit and widely used in pressure vessel of industries such as petrochemical, chemical, fertilizer and refining.</p>	<p>已开发出钢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。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</p> <p>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.</p>
不锈钢型材 Stainless steel profile	<p>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。</p> <p>Our seamless stainless steel tube is widely applied in power station boiler industry. Localization in manufacturing is a trend in this industry.</p>	<p>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。</p> <p>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.</p>
不锈钢无缝管 Seamless stainless steel pipe	<p>我国火力发电的必然趋势“提高发电效率，节约一次能源，改善环境，降低发电成本”。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</p> <p>The develop trend of thermal power is "Promoting efficiency of power generation, Saving one-off energy, Improving environment, Decreasing power generation costs". The only way of solve the key material of super (super) critical power equipment is based on domestic, follow the road of Localization.</p>	<p>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）为辅的格局。</p> <p>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.</p>
复合板 Cladding plate	<p>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，尤其是在石油化工、煤化工、制盐制碱等行业，力争做到4000吨，打破四川宜宾复合板厂长期垄断的局面，在电站锅炉行业，力争成为三大动力的重要供应商</p> <p>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 petrochemical, coal chemical and 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 power station boiler industry, we will try our best to be an important supplier to the Three Powers.</p>	<p>随着5万吨不锈钢无缝管项目的陆续投产，研发 CODE CASE2328-1、CODE CASE2115-1等高端产品是必然的趋势</p> <p>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.</p>

品种 Variety	行业发展趋势 Industry developing trends	开发成果及措施 Achievement and Future Target
碳钢板材 Carbon steel plate	<p>为适应国家能源战略的要求，建造10~15万m³（或容积更大）的大型原油储罐及16万m³ LNG储罐已经成为主要趋势。提高发电效率，节约一次能源，推广应用超（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</p> <p>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.</p>	<p>我公司在满足GB713、GB3531所有牌号的基础上，E研发出GB19189高强度、低温容器板并投入使用。如12MnNiVR、06Ni9、7MnCrMoVR、07MnNiCrMoVDR等。已开发T91、T92板材产品，成功应用于电站行业</p> <p>After finishing the development of all types of steel of GB713 and GB 353, our company has already researched and developed high-strength, low-temperature vessel plates, e.g. 12MnNiVR, 07MnCrMoVR, 07MnNiCrMoVDR, 06Ni9 and so on and developed plate products such as T91, T92 and successfully applied into power station industry.</p>
碳钢型材 Carbon steel profile	<p>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。随着材料科学的发展，冲压气瓶行业对材料的要求不断提高，超高压气瓶（压力大于30MPa）在欧美逐步普及，在同等级别情况下，气体重量增加一倍气瓶，并且气瓶向大口径方向发展，适应各种需求的要求</p> <p>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.</p>	<p>逐步推广T92产品在电站锅炉行业的应用。我公司目前正在研发高压气瓶钢34CrMo4M1（M2）、34CrMo4C以满足欧美市场和国内新兴市场需要</p> <p>Promoting the application of T92 in power station boiler industry.</p> <p>Our company is developing high pressure vessel steel such as 34CrMo4M1 (M2), 34CrMo4C, to meet the needs of market, promoting efficiency of power generation, saving one-off energy, the only way to spread the application of the key material of super (super) critical power equipment is based on domestic, follow the road of Localization.</p>

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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