



## 环保造纸行业用钢

STEEL FOR ENVIRONMENTAL PROTECTION  
AND PAPER MAKING INDUSTRY

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.

### ◆ 环保造纸行业用钢概况

不锈钢在环保行业广泛应用于水处理、固废处理、空气净化、消音降噪、环境监测、环卫设施、节能等方面。

太钢长期致力于环保行业用钢的研究与开发，在常规产品304系列、316系列大量使用的基础上，先后开发了双相钢不锈钢、超级奥氏体不锈钢，并应用于污水处理、化工、造纸等制造行业。结束了我国目前烟气脱硫、化工等装备制造行业用钢依赖高价进口的历史。

### ◆ 与行业客户的合作关系

目前，我公司与国内主要的大型加工中心及经销用户均建立了长期合作关系，产品定位为中高端废水、废气及废渣处理设备制造行业。公司产品大量供应安德里茨、中原环保、天津创业环保、北京海斯顿环保设备有限公司、合加资源、武汉凯迪电力、浙江菲达环保、福建龙净环保、晨鸣纸业等重点环保企业，产品市场占有率第一。

### ◆ Brief on environmental protection and paper making industry steel

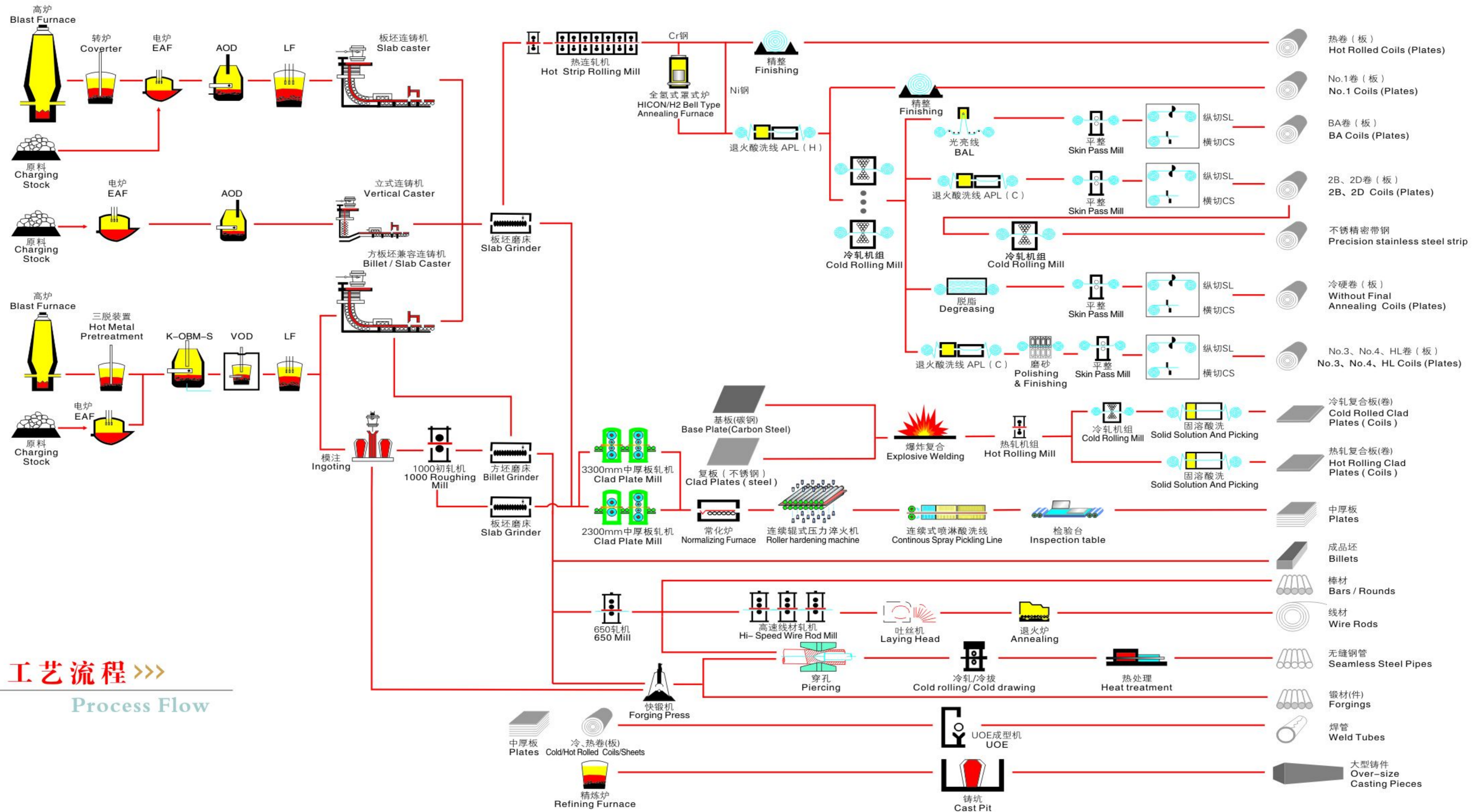
Stainless steel is widely used in environmental protection industry and served as water treatment, solid waste treatment, air purification, noise reduction, environmental monitoring, sanitation facility and energy saving and so on.

TISCO has been devoting himself to the research and development of steel for environmental protection industry. Based on wide application of conventional products of 304 series and 316 series, TISCO has developed successively duplex stainless steel and super austenitic stainless steel which are applied for sewage treatment, chemical engineering and paper making industries, and thus put an end to the dependence on expensive imported steel for equipment manufacturing industries such as flue gas desulphurization and chemical engineering.

### ◆ Cooperative relationship with industrial customers

At present, our company has built up the long-term cooperative relations with major large-scale machining centers and dealers of China. Product is orientated to manufacturing of middle and high end equipment for waste water, waste gas and waste slag treatment. Our company supplied a large number of its products with top market share for key environmental protection enterprises such as Andritz, Zhongyuan Environment-protection Co. Ltd., Tianjin Chuangye Environmental Protection Co. Ltd. (TCEPC), Beijing Hi-standard Environmental Protection Equipment Co. Ltd., Eguard Resources Development Co. Ltd., Wuhan Kaidi Electric Power Co., Ltd, Zhejiang Feida Environment-protection Co. Ltd., Fujian Longjing Environmental Protection and Chenming Paper.





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.



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

认证、荣誉 >>>

Certification & Honors



- ◆ 《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.



常规产品 >>>

Conventional Products

◆ 在环保、造纸行业可生产的不锈钢常规产品  
Conventional stainless steel for environmental protection and paper making industries

钢种 Steel grade	牌号 Grade	规格 (mm) Specifications		单重 Weight t	标准 Standard	主要用途 Application		
		厚度 Thickness	宽度 Width					
冷轧不锈钢 Cold rolled stainless steel	0Cr18Ni9 00Cr19Ni10	0.3~8.0	1000~2000	12~38	GB/T3280-2007 ASTM A240/240M JIS G4305 EN 10088-2	深冲型部件和输酸管道、容器等。 Deep drawing parts, acid conveying pipe and container.		
	0Cr18Ni10Ti 1Cr18Ni9Ti					耐酸容器和设备的衬里和管道等。 Lining of acid resistant container and equipment and pipe.		
	0Cr17Ni12Mo2 00Cr17Ni14Mo2					耐点蚀, 可用于耐硫酸、磷酸、甲酸、乙酸的设备。 Pitting corrosion resistant: suitable for sulfuric acid, phosphoric acid, methane acid, and acetic acid resistant equipment.		
	0Cr18Ni12Mo2Ti 1Cr18Ni12Mo2Ti					适用于使用含氯水溶液或微咸水作为冷却介质的热交换器, 烟气脱硫装置出口烟道。 Heat exchanger with cooling media of chlorine-aqueous solution or brackish water, and outlet flue of flue gas desulphurization.		
	00Cr22Ni5Mo3N 00Cr18Ni5Mo3Si2					有良好的抗氯离子腐蚀性能, 适用于水箱等。 Anti-chloride ion corrosion, suitable for water tank.		
	00Cr18Mo2					热处理炉、热交换机、焚化炉等。 Heat treatment furnace, heat exchanger and burn furnace.		
	0Cr25Ni20					0.3~8.0	1000~2000	冷凝器管。 Condenser tube.
	00Cr19Ni13Mo3					0.5~3.0	1000~1219	
热轧不锈钢 Hot rolled stainless steel	0Cr18Ni9	2~14	1000~2000 (含毛边)	12~38	GB/T4237-2007 ASTM/ASME JIS G4304 EN	用于食品设备、一般化工设备等。 Foodstuff equipment, normal chemical processing equipment.		
	1Cr18Ni9Ti 0Cr18Ni10Ti					耐晶间腐蚀性较好。 Good inter-granular corrosion resistance.		
	0Cr17Ni12Mo2 00Cr17Ni14Mo2	3~14	1000~2000 (含毛边)			耐点蚀, 可用于耐硫酸、磷酸、甲酸、乙酸的设备。 Anti-pit corrosion: for sulfuric acid, phosphoric acid, methane acid, acetic acid resistant equipment.		
	0Cr18Ni12Mo2Ti 1Cr18Ni12Mo2Ti					适用于烟气脱硫设备。 Flue gas desulphurization equipment.		
	00Cr22Ni5Mo3N	5~10	1500~2000					
	0Cr18Ni9 (封头)	3.0~5.0	1000~2000 (含毛边)			Q/TB3060-2008	适用于制作罐体封头等。 Can topping.	
1Cr18Ni9Ti (封头)								

钢类 Steel class	牌号 Grade	规格 (mm) Specifications		单重 Weight t	标准 Standard	主要用途 Application
		厚度 Thickness	宽度 Width			
碳钢卷板 Carbon steel coil	Q195 Q215A Q235A	≥1.5-2.0	900-2130		≤4.0执行 GB/T912-1989 >4.0执行 GB/T3274-1988	一般结构用钢。 Common structural steel.
	16MnR、20R	6.0-20.0	1000-2000		GB6654-1996	中常温压力容器受压元件用。 Compression member of pressure vessel at middle and normal temperature.
不锈钢中板 Stainless steel plate	0Cr18Ni9 00Cr19Ni10	6~80	1500~3000		GB/T4237-2007	用于食品设备、一般化工设备等。 Foodstuff equipment, normal chemical processing equipment.
	1Cr18Ni9Ti 0Cr18Ni10Ti	6~80	1500~3000			耐晶间腐蚀性较好。 Good inter-granular corrosion resistance.
	0Cr17Ni12Mo2 00Cr17Ni14Mo2	6~80	1500~3000			用于抵抗硫酸、磷酸、甲酸、乙酸的设备。 Pitting corrosion resistant suitable for sulfuric acid, phosphoric acid, methane acid, acetic acid resistant equipment.
	0Cr18Ni12Mo2Ti 1Cr18Ni12Mo2Ti					
	00Cr22Ni5Mo3N	6~80	1500~3000			适用于烟气脱硫设备。 Stack gas desulphurization equipment.
	0Cr18Ni9 (封头)	6~20	1600上		Q/TB3060-2008	适用于制作罐体封头等。 Can topping.
	1Cr18Ni9Ti (封头)					
	碳钢中板 Carbon steel plate	Q195-Q235A (B、C)	6.0-80	1400-2900		GB/T274-1988
16MnR、20R		6.0-40	1400-2000		GB6654-1996	中常温压力容器受压元件用。 Compression member of pressure vessel at middle and normal temperature.
复合板 Clad plate	304、316系列	2-14+6-140	1100-3000		GB/T8165-1997	适用制造化工、化肥、工业设备、容器、热交换器等。 Suitable for manufacture of chemical processing equipment, fertilizer equipment and industrial equipment, container, heat exchanger.
无缝管 Seamless pipe	304、316系列 双相钢、T90系列 304, 316 series, duplex steel, T90 series	壁厚0.8~28, 外径6~530 Wall thickness: 0.8-28, outer diameter: 6-530		12-38	GB/T14976等	适用制造化工、化肥、工业设备、容器、热交换器等。 Suitable for manufacture of chemical processing equipment, fertilizer equipment and industrial equipment, container, heat exchanger.

产品成分、性能 >>>

Composition and Property of Product

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

牌号 Grade	主要特性及特点 Main properties and features	应用领域 Applications
304	具有优良的耐腐蚀性能、较好的抗晶间腐蚀性能、冷加工成型性能、低温性能以及焊接性能。 With good corrosion resistance, inter-granular corrosion resistance, cold working formability, low temperature property and welding performance.	用途广泛, 用于制造深冲型的零件、耐酸管道、容器等。 Wide application for manufacturing deep drawing parts, acid resistant pipe and container etc.
304L	碳含量低, 比304有更好的耐蚀性能和焊接后晶间腐蚀性能。 With low carbon content, better corrosion resistance and post weld inter-granular corrosion resistance than 304 series.	用于制造化工、动力工业中焊接后不进行热处理的设备、容器、管道以及各种零部件等。 Used for manufacturing equipment, container, pipe and all kinds of parts without heat treatment after welding in chemical engineering and energy industry.
316	含有Mo, 可抵抗氯离子腐蚀。稀的还原介质如硫酸、磷酸和醋酸、甲酸以及海水中和其它介质中, 耐腐蚀性优于不含Mo的304。 Chloride ion corrosion resisting with Mo contained. Corrosion resistance is better than 304 without Mo while in dilute reduction media such as sulfuric acid, phosphoric acid, acetic acid, methane acid, seawater and other media.	制造耐稀的还原性介质和耐点蚀的结构件和零部件等。 For manufactures of structural member and parts with anti-dilution reduction media and anti-pitting corrosion.
316L	碳含量低, 比316有更好的耐酸腐蚀性能及焊接性能, 适合于多层焊接, 焊后一般不需热处理。 With low carbon content, better acid resistance and welding performance than 316, suitable for multi-layer welding and no need for post welding heat treatment.	可用于制造各种工业设备, 如塔、槽、容器、管道等。 Manufacture for all kinds of industrial equipment such as tower, tank, container and pipe.
00Cr22Ni5Mo3N	双相钢代表品种, 屈服强度为304钢的两倍, 良好的耐点蚀、氯化物腐蚀、应力腐蚀、焊接热裂纹倾向小, 导热系数大, 线膨胀系数小。 Representative grades of duplex phase steel with: yield strength doubling that of 304, good pitting corrosion resistance, anti-chloride corrosion, anti-stress corrosion, less weld cracking, big heat conductivity, small linear expansion coefficient.	石化、水利、热水槽、水加热器、热交换器管道、真空制盐、烟气脱硫等。 Petrifaction, water conservation, hot water tank, water heater, pipe of heat exchanger, vacuum salt production, flue gas desulphurization.
00Cr18Mo2444	含有Cr, Mo等耐腐蚀性强化元素, 对盐腐蚀, SCC, 点蚀, 缝隙腐蚀, 磨损及侵蚀的抵抗性非常优秀; 焊接性、加工性优良。 With strengthening element like Cr and Mo of corrosion resistant: excellent resistance for salt corrosion, SCC, pitting corrosion, crevice corrosion, abrasive and erosion; good welding performance and process capacity.	贮水槽、热交换器、食品机械、印染机械和耐应力设备。 Water storage tank, heat exchanger, food machinery, dyeing machine and proof stress equipment.
0Cr25Ni20	耐高温氧化, 适用于浓度65-85%的硝酸中耐蚀的部件。 With high temperature oxidation resistance: suitable for parts to resist nitric acid with concentration of 65-85%.	可用于炉衬材料、耐硝酸腐蚀部件。 For furnace lining and nitric acid resisting parts.
904L	高铬、镍、钼含铜且超低碳钢种, 具有良好的耐腐蚀性能, 特别在磷酸和硫酸环境下具有优良的抗全面腐蚀性能。 Ultra-low-carbon and Cu contained steel with high Cr, Ni, Mo good corrosion resistant performance, especially with good all surface corrosion resistance to phosphoric acid and sulfuric acid.	广泛应用于污水处理、化工、造纸等行业。 Widely applied in sewage treatment, chemical engineering and paper making industries.

产品成分、性能 >>>

Composition and Property of Product

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

牌号 Grade	C	Si	Mn	P	S	Ni	Cr	Mo	Ti	N
06Cr19Ni10 (0Cr18Ni9)	0.08	0.75	2	0.045	0.03	8.0~10.5	18~20			0.1
022Cr18Ni10 (00Cr19Ni10)	0.03	0.75	2	0.045	0.03	8~12	18~20			0.1
06Cr18Ni10Ti (0Cr18Ni10Ti)	0.08	0.75	2	0.045	0.03	9~12	17~19		≥5C	0.1
06Cr17Ni12Mo2 (0Cr17Ni12Mo2)	0.08	0.75	2	0.045	0.03	10~14	16~18	2~3		0.1
022Cr17Ni12Mo2 (00Cr17Ni14Mo2)	0.03	0.75	2	0.045	0.03	10~14	16~18	2~3		0.1
022Cr22Ni5Mo3N (00Cr22Ni5Mo3N)	0.03	1	2	0.03	0.02	4.5~6.5	21~23	2.5~3.5		0.08~0.2
019Cr19Mo2NbTi (00Cr18Mo2)	0.025	1	1	0.04	0.03	1.0	17.5~19.5	1.75~2.5	8×(C+N) -0.80	0.035
06Cr25Ni20 (0Cr25Ni20)	0.08	1.5	2	0.045	0.03	19~22	24~26		Cu	
904L	0.02	0.035	2	0.045	0.035	23~28	19~23	4~5	1~2	

注(1) 化学成分数值除范围标明外, 其余均为最大值  
Note: (1) All chemical compositions are maximum values except those indicated in range.

◆ 物理性能  
Physical properties

牌号 Grade	密度 Density (g/cm <sup>3</sup> )	磁性 Magnetic	比热 Specific heat (J/g.°C)	热导率100°C Heat conductivity (W/m.°C)	热膨胀率20~100°C Heat expansion rate (10-6/°C)
0Cr18Ni9	7.93	无 (Non)	500	16.2	17.3
00Cr18Mo2		有 (Have)			
00Cr22Ni5Mo3N	7.8	有 (Have)	0.45	19.0	13.7
0Cr25Ni20	7.98	无 (Non)	0.5	14.2	15.9
904L	7.75	有 (Have)	0.46	36.9	10.6/200°C

◆ 经固溶处理的奥氏体钢的力学性能

Mechanical properties of austenitic steel after solid solution treatment

牌号 Grade	屈服强度 Yield strength R <sub>p0.2</sub> /MPa	抗拉强度 Tensile strength R <sub>m</sub> /MPa	断后伸长率 Elongation after fracture A/%	硬度值 Hardness		
				HBW	HRB	HV
				不小于 ≥		
0Cr18Ni9	205	515	40	201	92	210
00Cr19Ni10	170	485	40	201	92	210
0Cr18Ni10Ti	205	515	40	217	95	220
0Cr17Ni12Mo2	205	515	40	217	95	220
00Cr17Ni14Mo2	170	485	40	217	95	220
00Cr22Ni5Mo3N	450	620	25	293	31	(HRC)
00Cr18Mo2	275	415	20	217	96	230
0Cr25Ni20	205	515	40	217	95	220
904L	340	624	46			175



污水处理  
Sewage treatment plant



垃圾焚烧厂  
Waste calcinations plant



除尘设备  
Dust collecting facility



不锈钢防尘网  
Stainless steel dust shielding screen

产品应用 >>>

Application

我公司以上产品，广泛应用于污水处理、不锈钢水箱、不锈钢储液罐、垃圾处理-焚烧炉、不锈钢垃圾筒、烟气脱硫、除铁装置、熔盐热载体炉等设备。

The above-mentioned products of our company are widely used for equipments of sewage treatment, stainless steel water tank, stainless steel liquid storage tank, rubbish treatment- burn furnace, stainless steel dustbin, flue gas desulphurization, de-Fe devices, molten salt hot load furnace, etc.





不锈钢储液罐  
Stainless steel liquid storage tank



不锈钢烟囱  
Stainless steel chimney



不锈钢垃圾筒  
Stainless dustbin

## 用户使用指南 >>>

### User Instruction

#### 1、0Cr18Ni9和00Cr19Ni10奥氏体不锈钢

两钢种均具有良好的冷、热加工性能，可采用通用的各种热、冷加工工艺，热加工温度范围为900~1100℃。由于两种钢易于冷加工硬化，当冷变形量过大时，须进行中间固熔处理，以利于进一步加工。

焊接 0Cr18Ni9和00Cr19Ni10可采用通用的方法进行焊接。手工电焊时，含碳量0.04~0.06%的截面尺寸的0Cr18Ni9可采用奥002焊条，焊后可不产生晶间腐蚀倾向，对于厚截面尺寸欲保持焊后的耐晶间腐蚀性能，需进行焊后热处理，若不能进行热处理，应改用00Cr19Ni10或稳定化型的奥氏体不锈钢。00Cr19Ni10的焊条为奥002焊条。

#### 1. 0Cr18Ni9 and 00Cr19Ni10 austenitic stainless steel

Both of them have good cold and hot working performance, available for normal hot and cold working processes at heating process temperature of 900-1100℃ for further process when cold deformation is too much due to easy cold worked hardening of these tow grades.

General welding methods can be adopted for 0Cr18Ni9 and 00Cr19Ni10. Austenitic 002 welding rod is used for manual electric-welding of 0Cr18Ni9 with carbon content of 0.04-0.06% and light cross section, thus inter-granular corrosion can be avoided after welding; for heavy cross section, heat treatment after welding is needed in order to keep inter-granular corrosion resistance, otherwise 00Cr19Ni10 or stabilization type austenitic stainless steels are adopted. Austenitic 002 welding rod is used for 00Cr19Ni10.

#### 2、0Cr17Ni12Mo2和00Cr17Ni14Mo2奥氏体不锈钢

0Cr17Ni12Mo2和00Cr17Ni14Mo2钢均具有良好的冷、热加工性能，钢的热塑性良好，过热敏感性低，适宜的热加工温度为900~1200℃。由于钢中含钼量较高，其变形抗力较0Cr18Ni9和00Cr19Ni10钢明显提高。钢的冷加工性能良好，可进行冷轧、冷拔、深冲、弯曲、卷边、折叠等冷加工和冷成形。

两个钢种可采用通用的方法进行焊接，常用的方法是钨极氩弧焊、金属极氩弧焊和手工电弧焊。0Cr17Ni12Mo2钢手工焊条采用奥202、奥201或E316-15（美国牌号），为保持良好的耐晶间腐蚀性能，焊后应进行固溶处理，若不允许热处理，应选用00Cr17Ni14Mo2。其手工焊条为奥022，焊后可不进行热处理，仍具有良好的耐晶间腐蚀能力。

#### 2. 0Cr17Ni12Mo2 and 00Cr17Ni14 Mo2 austenitic stainless steel

Both 0Cr17Ni12Mo2 and 00Cr17Ni14 Mo2 possess good cold and hot working performances with good hot plasticity and lower over-heat sensitivity as well as appropriate heat working temperature of 900-1200℃. due to their good cold work performance.

General welding methods can be adopted for both steel grades. Tungsten electrode argon arc welding, metal electrode argon arc welding and manual electric arc welding are commonly used. For 0Cr17Ni12Mo2 steel grade, austenitic 202, 201 or E316-15 (American grade) are used as manual welding rods. Solid solution treatment after welding is carried out to keep good inter-granular corrosion resistance performance. In case heat treatment is not allowed, 00Cr17Ni14 Mo2 steel grade should be selected, employing austenitic 022 as manual welding rod for it without heat treatment after welding, thus good inter-granular corrosion resistance performance can still be kept.

#### 3、00Cr22Ni5Mo3N双相钢

耐蚀性能非常优秀，耐点蚀PRE值为25，与316L钢的点蚀指数相当。在300mV电位下，NaCl溶液中2205钢耐蚀性好于304L，和316L相当。耐应力腐蚀方面，体现出双相钢优异的耐应力腐蚀性，耐应力腐蚀性优于奥氏体不锈钢。耐晶间腐蚀方面，能够通过CuSO4+H2SO4铜屑法检验，体现出良好的耐晶间腐蚀性。

#### 3. 00Cr22Ni5Mo3N dual phase steel grade

It has very good corrosion resistance performance with 25 of PRE value which is similar to that of 316 steel grades. Under 300mV potential in NaCl solution, the corrosion resistance performance of 2205 steel grade is better than that of 304L, and equal to 316L. In the respect of stress corrosion resistance, it has excellent stress corrosion resistance performance as a kind of dual phases steel grades which have much better stress corrosion resistance performance than austenitic stainless steel grades. Regarding inter-granular corrosion resistance, good corrosion resistance is displayed through CuSO<sub>4</sub>+H<sub>2</sub>SO<sub>4</sub> copper fillings test.

在酸性环境中，在硝酸中有很好的耐蚀性，与304L相当，在硫酸中，与316L相当，而在有机酸中，如甲酸，甚至还优于316L。

良好的焊接性，焊前不需预热，焊后不需热处理。适宜采用SMAW, GTAW, GMAW及SAW法进行焊接。采用GTAW法焊接时，需要填丝，并要使用纯氩或Ar+2%N<sub>2</sub>的保护气体。

在热成型加工时，成型温度范围为1100~950℃，成型后淬火处理。冷成型加工时，加工初期变形困难，达到屈服极限后，变形与奥氏体相同。在深拉、冷旋压成型时要比奥氏体不锈钢困难。

主要可以用于制造氨回收设备、碳氢化合物的发酵设备，还可用于制造工业的热交换器，纸浆和造纸工业的蒸煮预热器及湿热、近海地区的金属制品等。

Under acid circumstances, good corrosion resistance is displayed in nitric acid, which is equal to that of 304L. In sulfuric acid, it is equal to 316L. In organic acid, such as methane acid, it is even better than 316L.

It has so good welding performance that no pre-heat is necessary before welding and no heat treatment after welding. SMAW, GTAW, GMAW and SAW welding methods are suitable to be used. When GTAW is employed, wire feeding and protective gas of pure argon or Ar+2%N<sub>2</sub> is to be necessary.

In case of hot forming work, the forming temperature range is between 1100-950°C deep drawing or cold flow turning.

It is mainly used for ammonia reclaiming unit, hydrocarbon fermenting equipment, heat exchanger of manufacturing industry, steaming and boiling preheat instrument for paper pulp and paper industry, metal articles in wet and hot area or offshore area.

#### 4、0Cr25Ni20耐热钢

焊接性能良好，可采用TIG、MIG和手工电弧焊等方法进行焊接，在通常情况下，不需要焊前预热，在各种焊接方法中手工电弧焊最好。焊件厚度≤3.2mm焊条。

#### 5、904L

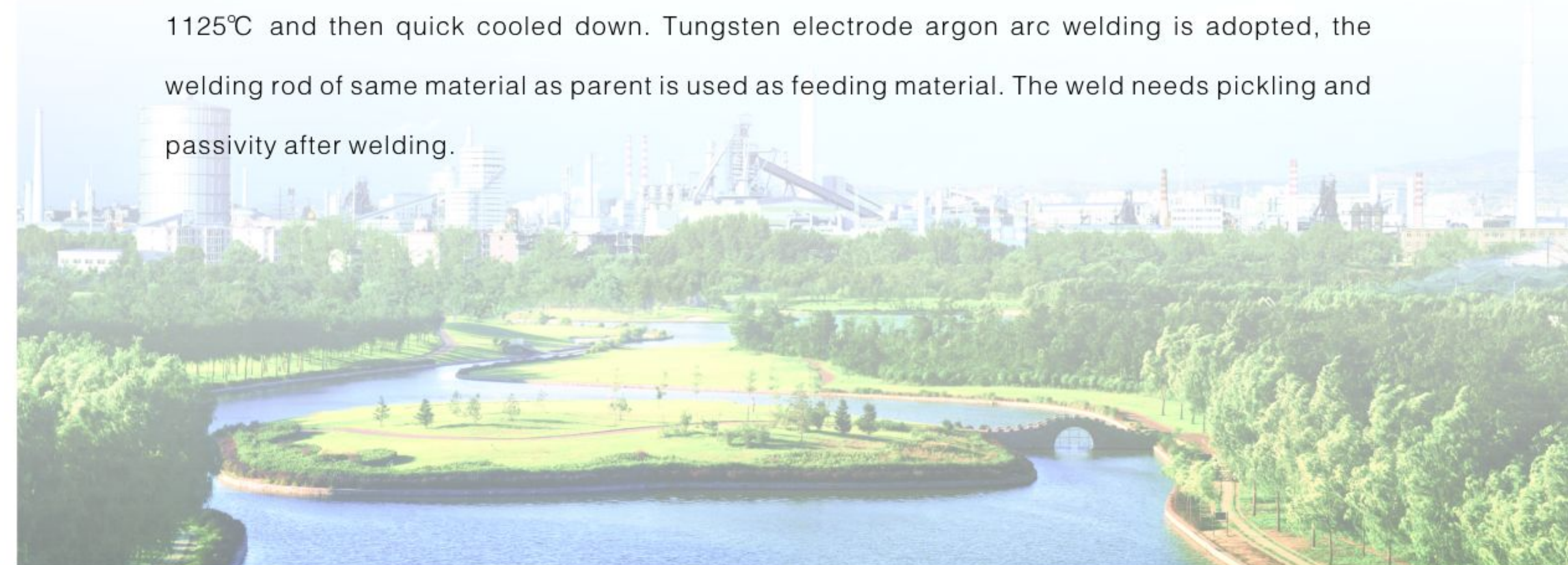
该钢种虽可采用通用的焊接工艺进行焊接，但是最恰当的焊接方法是手工电弧焊和钨极氩弧焊。当采用手工电弧焊焊接不大于6毫米板材时焊条直径不大于2.5毫米；当板厚大于6毫米时焊条直径小于3.2毫米。当焊后需热处理时，可以在1075-1125摄氏度加热后快冷进行处理。用钨极氩弧焊焊接时的填充金属可用同材焊条，焊后焊缝须经酸洗，钝化处理。

#### 4. 310S heat resistance steel grade

It has good welding performance. TIG, MIG or manually electric arc welding methods can be adopted. Normally, preheat is not needed before welding. Manually electric arc welding method is the best among others. ≤3.2mm welding rod is used.

#### 5. 904L

Common used welding process can be adopted for this steel grade with the most suitable welding processes of manual electric arc welding and Tungsten electrode argon arc welding. When manual electric arc welding is used, the welding rod diameter is not to be more than 2.5mm for plates with not more than 6mm thickness and less than 3.2mm for plates with more than 6mm thickness. When heat treatment after welding is done, it is to be heated at 1075-1125°C and then quick cooled down. Tungsten electrode argon arc welding is adopted, the welding rod of same material as parent is used as feeding material. The weld needs pickling and passivity after welding.



## 研发目标 >>>

### Research and Development Target

环保行业属朝阳产业，未来发展前景十分广阔。为适应市场发展，一是要加快和完善销售网络中心建设，在各大城市和经济发达区逐步建设公司产品加工配送中心，以满足不同客户的个性化需求。二是开发节镍型不锈钢，替代300系不锈钢产品。如2304、UNS 31803 等产品，2304合金是由23%铬、4%镍构成的双相不锈钢，它所具有的抗腐蚀特性与316L相似。另外，它的机械性能如耐压强度是304 / 316奥氏体等级的两倍，这项性能是设计者可以在设计时减轻产品的重量，尤其是在设计压力容器方面。与304和316奥氏体相比，由于2304合金本身的双相微观结构，较低的镍含量和较高的铬含量，使得它的抗应力腐蚀能力较强，在一定范围可以替代316L。在钻孔方面，2304的双相结构的机械加工性更强，它的性能与316L相当，局部抗腐蚀能力也更强，具有更好的机械加工性。三是开发超级不锈钢，完全替代进口，如超级双相不锈钢2507、超级奥氏体不锈钢904L、317LM、654SMo、254SMo等。

Environmental protection is a kind of sun-rising industry with wide developing prospect. In order to adapt to market developing, our company firstly speeds up and improves sale net center construction by gradually forming process and distribute center in various large cities and economic developed regions in order to meet individual requirements of different customers, and secondly develops nickel saving type stainless steel, such as 2304 which is a kind of duplex stainless steel grade consisting of 23% chromium and 4% nickel with similar corrosion resistance performance as that 316L as well as UNS31803 products, to replace 300 series stainless steel products. Besides, its mechanical property of compressive strength is double that of 304/316 austenitic steel grades, which results in product weight reduction when designing especially pressure vessel design. Compared with 304 and 316 austenite, 2304 alloy has strong stress corrosion capacity with its dual type microstructure, lower nickel content and higher chromium content, and is able to replace 316L in some extent. In respect of hole drilling mechanical working performance, 2304 dual type structure has better mechanical working performance which is equal to 316L. Additionally, 2304 is better in corrosion resistance and purity without S element used. It has better local corrosion resistance capacity and mechanical working performance. Thirdly, ultra stainless steels are developed to replace imported products completely. Such as dual phrase stainless steel 2507, ultra austenitic stainless steel 904L, 317M, 654SMo, 254SMo etc.

## 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 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.



太钢加工配送营销网络布局图  
Marketing network of TISCO service centers



## 主要业务部门联系方式 >>>

### Contacting Manners of the Main Business Sections

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