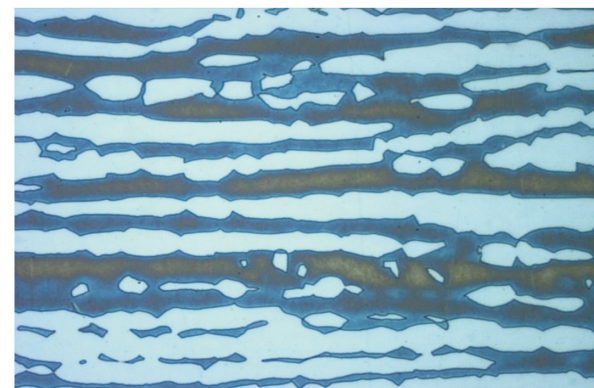




双 相 不 锈 钢

Duplex Stainless Steel

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



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企业愿景

为全球消费者提供最精美的不锈钢产品

Enterprise mission

Providing the Excellent Stainless Steel Products to Consumers

战略目标

建设全球最具竞争力的不锈钢企业

Strategic Target

Building TISCO into the Most Competitive Stainless Steel
Producer in the World

核心价值观

以人为本 用户至上 质量兴企 全面开放 不断创新

Core Values

Relying on the People, Putting Customers' Needs First, Rejuvenating
Enterprise through Quality, Fully Opening, Keeping Innovative

营销理念

为用户提供更全、更好、更快的解决方案
在长期合作中实现共赢

Marketing Principle

Providing Customer with Better and Faster Solution Package
to Realize Long-Term Win-Win Cooperation

山西太钢不锈钢股份有限公司
Shanxi TISCO Stainless Steel Co.,Ltd.



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，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.

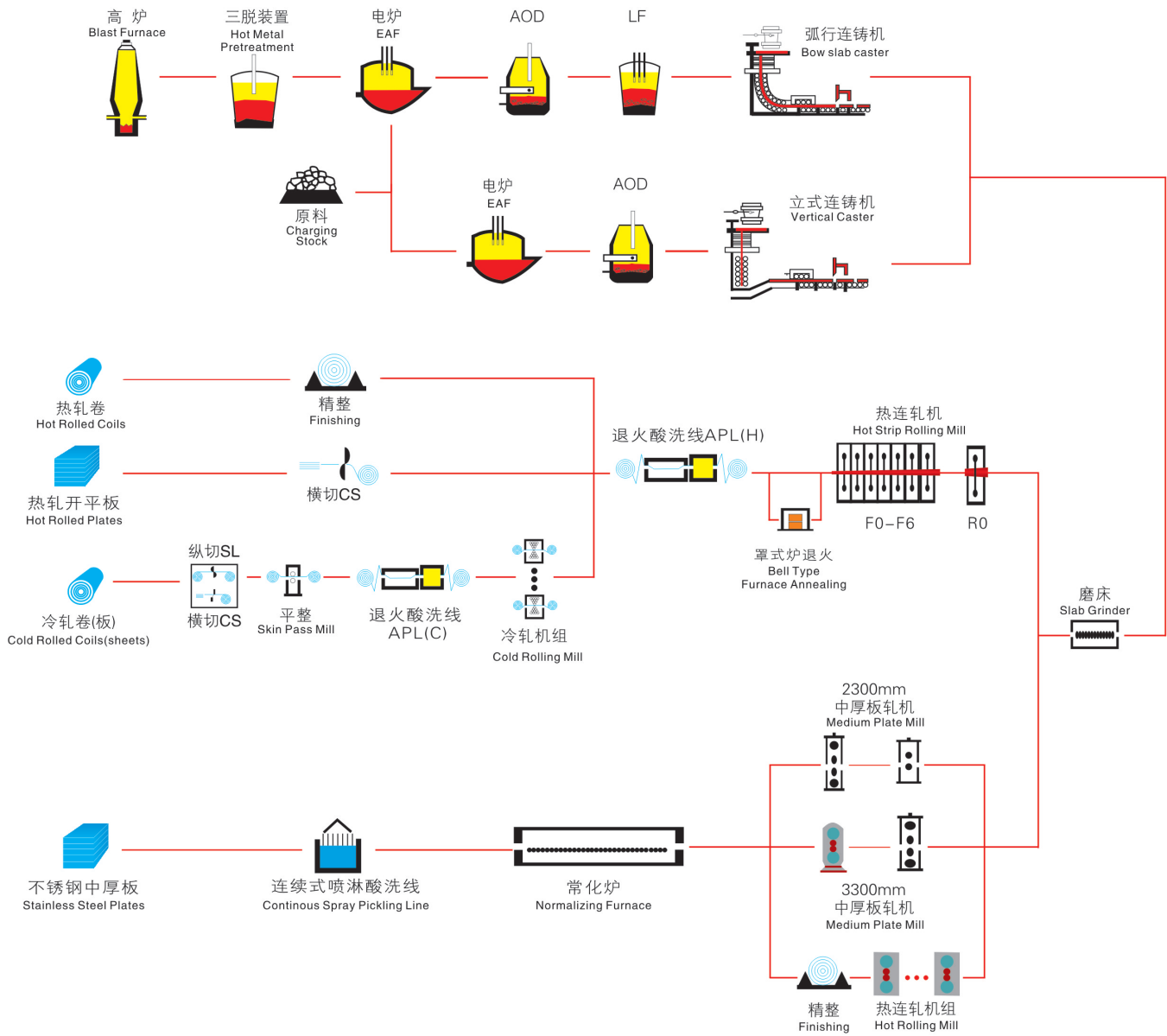
In TISCO came out the first heat of stainless steel and first heat of silicon steel as well as the first sheet of silicon in the history of China steel industry. TISCO is well equipped for mining and iron ore refining, iron and steel making, rolling and forging, metallurgical equipment and spare parts 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 2009TISCO technology centre ranked No.2 among the 575 state acknowleged 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 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.



工艺流程 >>>

Process Flow



装备优势 >>>

Advanced Equipment



超高功率电弧炉 Ultra-high-power Electric Arc Furnace (EAF)

- 采用电炉熔合金,有利于铁水和合金预熔液金属材料优化配置;
- 90t和160t超高功率电炉可适应多种原料结构,成份均匀准确,炉机匹配优越。

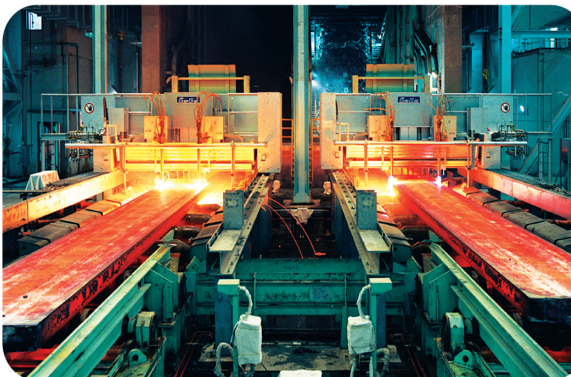
The use of EAF for melting alloys optimizes the preparation of hot metal and pre-melting alloys.
90t and 160t ultra-high-power EAF are capable of charging stock combinations, accurate in the making of homogenous composition and excellent for furnace and machines compatibility.



90吨 K-OBM-S转炉 90t K-OBM-S Converter

- K-OBM-S炉容比大、供氧强度高、冶炼周期短;
- 配备智能炼钢系统,成分命中率;
- 配备自动挡渣装置,为VOD提供高纯净度钢水。

K-OBM-S, featured for its big furnace volume, dense oxygen blowing and short smelting period, is capable of providing clean and pure melt steel to VOD with automatic slag stopping device equipped. It is designed with intelligent steel-smelting system to achieve high hitting rate.



直弧型方板坯兼容连铸机和宽幅板坯连铸机
Straight-bow Slab and Bloom Combined Caster, Broad Slab Caster

- 国内唯一的一台方、板坯兼容连铸机和国际上最宽的不锈钢板坯连铸机,采用结晶器液面自动控制技术,配备电磁搅拌装置;
- 采用二冷动态配水、气雾冷却、液压振动等技术,铸坯冷却均匀;采用轻压下技术,铸坯内部组织致密。

It is the only slab and bloom combined caster in China and the widest stainless steel slab caster in the world, using the automatic mold level control technology, equipped with electric magnetic stirrer (EMS). The bloom is cooled homogenously by the secondary dynamic cooling water, air-mist cooling, hydraulic vibrator, and is metallographically compacted by applying soften reduction technology.

装备优势 >>>

Advanced Equipment



90吨 VOD炉 90t VOD Converter

- 真空度高,搅拌能力大:真空度 ≤ 0.5 Torr,搅拌能力1200L³/h;
- 钢质纯净度高: [O] ≤ 25 ppm, [H] ≤ 2 ppm, S $\leq 0.005\%$, Σ (Pb+As+Sn+Sb+Bi) $\leq 0.01\%$;
- 适合超低碳、氮不锈钢生产: C+N ≤ 100 ppm

High vacuum capacity, powerful stirring performance, vacuum degree ≤ 0.5 Torr, stirring capacity 1200 L³/h;
High in steel purity [C] ≤ 25 ppm, [H] ≤ 2 ppm; S% $\leq 0.005\%$; Σ (Pb+As+Sn+Sb+Bi) $\leq 0.01\%$;
It is suitable for ultra-low carbon, nitrogen stainless steel production, C+N ≤ 100 ppm



45t、180t AOD炉 45t, 180t AOD Furnace

- 采用顶底复吹方式,脱碳效率高;
- 以优质废钢为原料,采用电炉+AOD工艺冶炼不锈钢,钢质纯净、残余元素低、夹杂物含量少;
- AOD采用智能炼钢,成分控制精确,波动小。

High de-carbon efficiency by top bottom blow.
Using the top grade scrap as the raw material, EAF+AOD as the smelt process, the molten steel is pure, low in residue composition, less impurities. AOD uses the intelligent smelting system achieving precise and stable composition control with minimized fluctuation.



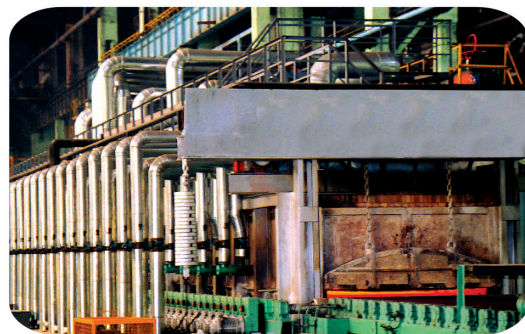
立式板坯连铸机 Vertical Slab Caster

- 采用立式板坯连铸机,可实现夹杂物充分上浮,钢质纯净;
- 铸坯不经弯曲矫直,内部缺陷少;
- 结晶器配有非正弦液压振动和电磁涡流式液面控制装置及二冷采用自动配水等技术,铸坯组织均一、致密。

Vertical slab caster makes impurities float up freely and improve purity. The slab goes without bending and stretching, and comes with less inner defects. As the mold is designed with non-sinus hydraulic vibrator, electro magnetic vortex level control system and secondary dynamic cooling water and others, the metallographic structure of slab is therefore uniform and compact.

装备优势 >>>

Advanced Equipment



中厚板连续常化处理线
Continuous Normalizing Line for Medium Plates

- 50m连续常化炉温度控制精度高，炉后无约束核沸腾淬火机可实现不锈钢快速冷却。(冷却速度 > 25℃/s)。

The temperature control of the 50m continuous normalizing furnace is precise and the unconfined-nucleus rimming quencher make the stainless steel plate fast cool down. (The cooling speed >25℃/s).



宽幅中厚板轧机
Broad Medium Plate Mill

- 不锈钢中厚板最大宽度3000mm、最大厚度100 mm;
- 配备有先进的AGC自动控制系统，产品尺寸精度高板形好。

Stainless steel medium plate with max. width of 3000mm and max. thickness of 100mm. Equiped with the advanced AGC automatic control system, its products have high accuracy dimension and good flatness.



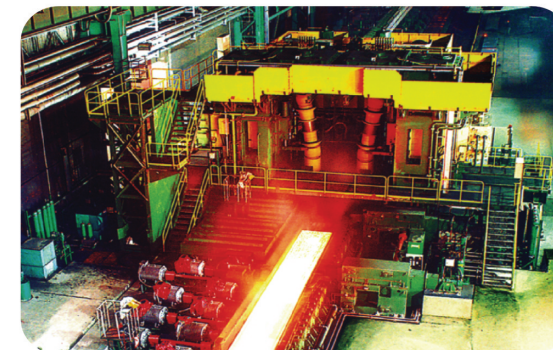
中厚板连续酸洗线
Continuous Pickling Line for Medium Plates

- 不锈钢中厚板连续酸洗线减少了中板表面擦划伤源，实现高质量快速生产。

By continuous spraying and pickling the stainless steel medium plates, scratch sources are minimized. China' s first this line secures the surface colour uniformity.

装备优势 >>>

Advanced Equipment



1549mm热连轧机机组 1549mm Hot Strip Mill

- 采用先进AWC、AGC控制系统，可获得高的尺寸精度；
- 采用先进液压弯辊、串辊技术，配备有边部加热装置，可生产的产品范围更广、质量更好。

Adoption of the advanced AWC, AGC control systems secures the high accuracy achieved of dimension control. Use of the advanced hydraulic bending and axial shifting technology in combination of the edge heater makes it possible to produce a wider range of products with better quality control.



2250mm热连轧机机组 2250mm Hot Strip Mill

- 2250mm生产线装备和控制系统水平代表了当今世界传统热连轧机组的最高水平；
- 板形控制系统采用了最新的CVC技术，压下系统采用液压AGC控制技术；
- 热卷箱和高效冷却装置，保证各种规格产品的良好板形和优良尺寸精度，可满足双相、TRIP等特殊钢种的生产和开发需要。

2250mm hot strip mill and its control system represent the currently most advanced level of traditional hot strip mill cluster in the world. The latest CVC technology is used for profile control system, hydraulic AGC control for screw down system. Hot coil box and high efficient cooling device ensure good profile and excellent dimension accuracy for various specifications of products.



热轧卷退火酸洗线APL(H)
Hot-rolling Coils Annealing and Pickling Line

- 世界上最先进的、最大的热轧卷退火酸洗线，产能110万吨/年；
- 喷丸酸洗前设有拉伸弯曲破磷装置，酸洗前预处理能力得到强化；后部增设在线平整机。

It is the most advanced & largest hot-rolling coils annealing and pickling line with 1.1 million tons of annual production capacity. Equipped with the scale breaker in front of shot blaster and pickling section, the pre-treatment capacity is strengthened before pickling, and on-line skin pass mill comes after pickling section.

装备优势 >>>

Advanced Equipment



森吉米尔冷轧机
Sendzimir cold-rolling mill

- 世界上最先进的冷轧机。具有厚度、板形自动控制装置，产品精度高、板形优良、同板差小。

The most advanced cold-rolling mill in the world equipped with AGC AFC, its products have high accuracy, excellent flatness and small thickness tolerance.



冷轧卷退火酸洗线APL(C)
Cold-rolling Coils Annealing and Pickling Line

- 具有脱脂清洗功能,可确保产品良好表面质量、性能稳定、均一。

It has cleaning and degreasing functions, ensuring good surface quality and stable & uniform property of products.

研发能力 >>>

Research and Development



扫描电镜
Scanning Electron Microscope



透射电镜
Transition Electron Microscope

国家级实验室 National level laboratory



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 place among
enterprise-based 575 technoiogy centers
accredited by the state



热模拟试验机
Thermal Simulating Tester



热分析仪
Thermal Analyser

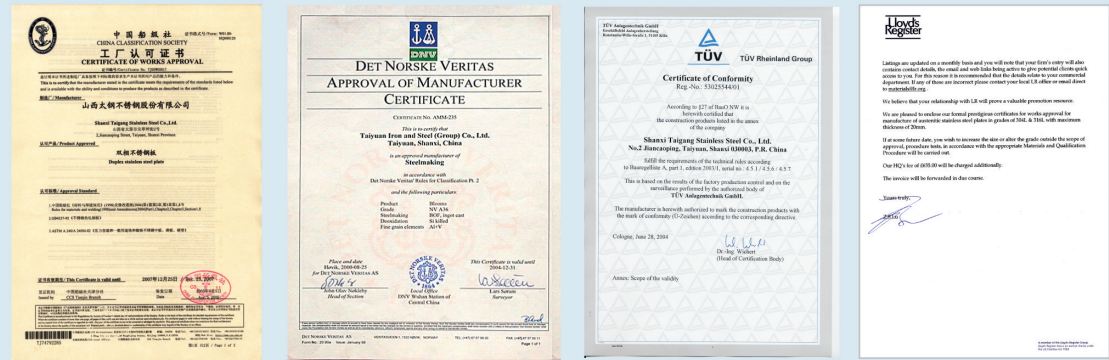
质量保证体系 >>>

Quality Assurance System



产品荣誉 >>>

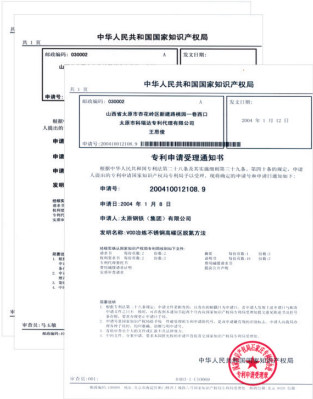
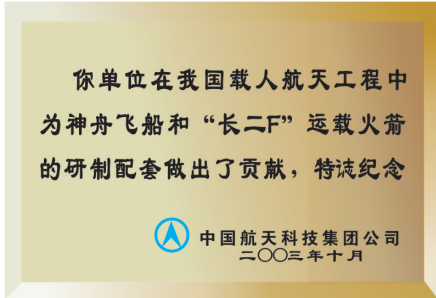
Honors and Rewards



自主知识产权 >>>

Proprietary Intellectual Rights

- 《高质量不锈钢板材技术开发》和《含氮不锈钢工艺及品种开发》两项成果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一、二、三等奖
- 《双相不锈钢复合板》等六项分别获国家重点新产品奖、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86项
- 《Technical Development on High-quality Stainless Steel Plates》and 《Nitrogen-containing Stainless Steel Technology and Products Development》are awarded the second prizes of National Science & Technology Progress Reward.
- 《AOD Campaign, Process and Technological Development》and other two are honored as the first and second prizes of Shanxi Province Science & Technology Progress Reward.
- 《Research and Development of Nitrogen –containing Stainless Steel in TISCO》and other eight are honored the first, second and third prizes respectively of Metallurgical Science & Technology Rewards.
- 《Clad Plates of Duplex Stainless Steel》and other five are honored the New Products Reward of National Key Projects and Excellent Reward of New Products of Shanxi Province respectively.
- Stainless steel 2B plates are rated by Science & Technology Ministry as the National Hi & New-tech Products.
- 《Nitrogen Alloying Process with AOD-used Nitrogen》《De-nitrogenization Process in the High Carbon Zones of VOD Smelting Stainless Steel》and so on in total of 86 items are awarded as the patents.



产品及特性 >>>

Product & Character

■ 特性及应用 Characteristics & Applications

- 强度高，屈服强度为18-8型不锈钢的两倍；
- 良好的耐孔蚀性能及耐氯化物应力腐蚀性能；
- 焊接热裂纹倾向小；
- 导热系数大，线膨胀系数小，适合制造设备的衬里、热交换器的管芯和生产复合板；
- 加工硬化率高；
- 具有高的能量吸收，抗冲击性好。

It has high strength because yield strength of it is twice of that of 18-8 type stainless steel. Good pit corrosion resistance and stress corrosion resistance, small tendency of welding heat crack,large conductivity and small linear expansion coefficient of it are suitable to manufacture line of facilities, tube of heat exchange and produce clad plate. In addition, it has high rate of work hardening, high energy absorption and high shock resistance.

■ 化学成分 Chemical composition

钢材编号 Material Code		质量百分比 Mass percent (%)								
		C	Si	Mn	P	S	Cr	Ni	Mo	N
2101 (S32101、1.4162)	ASTM	≤0.040	≤1.00	4.00-6.00	≤0.040	≤0.030	21.0-22.0	1.35-1.70	0.1-0.8	0.20-0.25
	典型值 Typicalvalue	0.028	0.71	5.03	0.028	0.001	21.50	1.55	0.30	0.22
2304 (S32304、1.4362)	ASTM	≤0.030	≤1.00	≤2.50	≤0.040	≤0.030	21.5-24.5	3.0-5.5	0.05-0.60	0.05-0.20
	典型值 Typicalvalue	0.026	0.50	1.28	0.028	0.001	23.50	4.05	0.30	0.12
2205 (S31803、S32205、1.4462)	ASTM ^a	≤0.030	≤1.00	≤2.00	≤0.030	≤0.020	21.0-23.0	4.5-6.5	2.5-3.5	0.08-0.20
	ASTM ^b	≤0.030	≤1.00	≤2.00	≤0.030	≤0.020	22.0-23.0	4.5-6.5	3.0-3.5	0.14-0.20
2507 (S32750、1.4410)	ASTM ^a	≤0.030	≤1.00	≤2.00	≤0.030	≤0.020	22.1	5.10	3.10	0.17
	典型值 Typicalvalue	0.025	0.55	1.2	0.028	0.001	22.1	5.10	3.10	0.17
2507 (S32750、1.4410)	ASTM	≤0.030	≤1.00	≤1.20	≤0.035	≤0.020	24.0-26.0	6.0-8.0	3.0-5.0	0.24-0.32
	典型值 Typicalvalue	0.026	0.55	0.78	0.028	0.001	25.5	7.40	4.10	0.28

a为S31803标准,b为S32205标准
a:AccordingtoS31803standard,
b:AccordingtoS32205standard.

产品及特性 >>>

Product & Character

机械性能 Mechanical Properties

室温机械性能 Mechanical properties at ambient temperature

钢材编号 Material Code		Rp0.2/MPa	Rm/MPa	A/%	HB
2101 (S32101、1.4162)	ASTM	≥450	≥620	≥25	≤293
	典型值 Typicalvalue	530	720	33	240
2304 (S32304、1.4362)	ASTM	≥400	≥600	≥25	≤293
	典型值 Typicalvalue	520	710	35	245
2205 (S31803、S32205、1.4462)	ASTM ^a	≥450	≥620	≥25	≤293
	ASTM ^b	≥450	≥655	≥25	255
	典型值 Typicalvalue	550	750	33	≤293
2507(S32750、1.4410)	ASTM	≥550	≥795	≥15	260
	典型值 Typicalvalue	580	850	31	≤310

a为S31803标准，b为S32205标准

a:AccordingtoS31803standard,

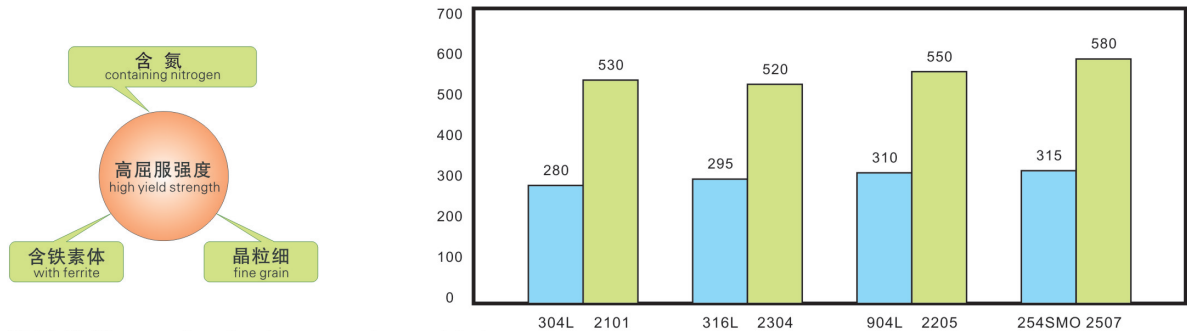
b:AccordingtoS32205standard.

典型值为12.0mm钢板所测数据

Typical value is 12mm steel plate measured data.

双相不锈钢与奥氏体不锈钢室温屈服强度对比

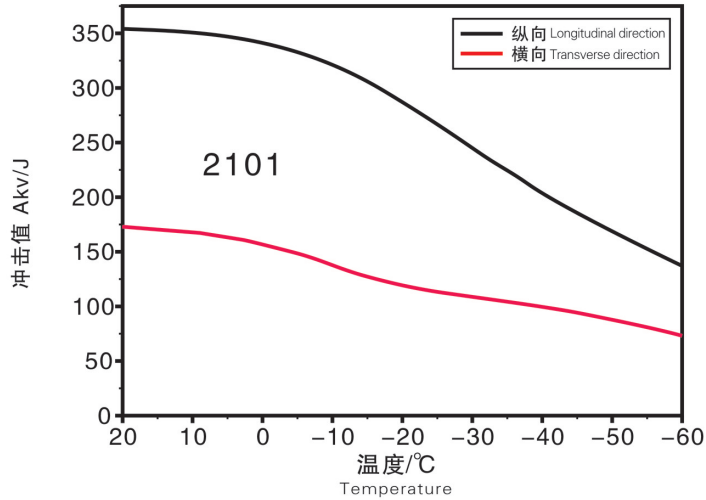
Comparing with the yield strengths in room temperature of duplex stainless and austenitic stainless steel



高温机械性能 Mechanical properties at high temperature

钢材编号 Material Code	温度/℃ Temperature	典型值 Typical value		
		Rp0.2/MPa	Rm/MPa	A/%
2304 (S32304、1.4362)	100	330	570	31
	200	290	530	29
2205 (S31803、S32205、1.4462)	100	470	710	37
	200	393	680	32
2507(S32750、1.4410)	100	525	720	30
	200	470	700	30

冲击性能 Impact performance



腐蚀性能 Corrosion resistance

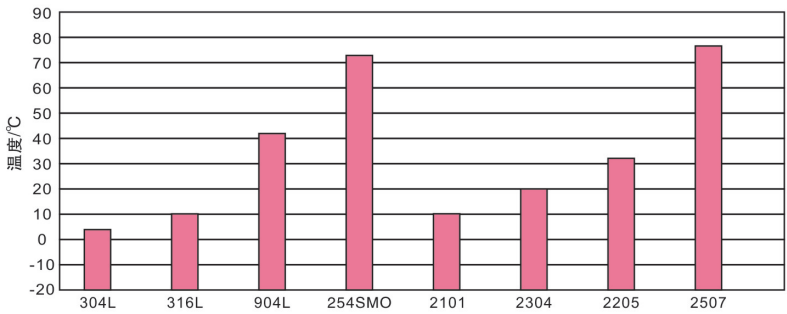
抗点蚀强弱通常用抗耐点蚀指数PREN的大小作为评价参考，因为除与成分有关，还与热处理工艺有关。

The pitting corrosion resistances usually take PREN as an assessment standard for reference.

种类 Materials grade	钢材编号 Material Code	Cr	Mo	N	PREN
奥氏体不锈钢 Austenitic stainless steel	304L	18.50	–	0.03	18.98
	316L	17.10	2.5	0.03	25.83
	904L	20.0	4.3	0.03	34.67
	254SMO	19.7	6.05	0.20	42.87
双相不锈钢 Duplex stainless steel	2101	21.50	0.30	0.22	26.01
	2304	23.50	0.30	0.12	26.41
	2205	22.10	3.10	0.17	35.05
	2507	25.50	4.10	0.28	43.51
PREN = %Cr+3.3%Mo+16%N					

临界点蚀温度（CPT）℃，实验标准为ASTM G150（CPT因产品形态和表面抛光不同而有所不同）

Critical pitting corrosion temperature（CPT）℃.Testing standard ASTM G150（CPT varies according to the differences in the shape of product and the condition of surface polishing）



产品及特性 >>>

Product & Character

■ 焊接Weldability

双相不锈钢焊接最重要的是维持热影响区内的相平衡，避免析出相的产生。
双相不锈钢可使用奥氏体不锈钢所使用的大部分焊接方法进行焊接：手工电弧焊（SMAW）、惰性气体保护钨级电弧焊TIG（GTAW）、惰性气体保护金属级电弧焊MIG（GMAW）、药芯焊丝电弧焊（FCAW）、埋弧焊（SAW）等。

- 焊接基本规则：
 - 焊前不需要热处理；
 - 焊接层间温度≤150℃，对于2507而言温度≤100℃；
 - 需要使用双相不锈钢专用焊材；
 - 热输入应考虑双相不锈钢成分和厚度。

Keeping phases balance in heat affected zone(HAZ) is the most important for duplex stainless steel. It can successfully avoid the precipitated phases.
The most of welding methods for austenitic stainless steels are suitable to the duplex stainless steels. Such as SMAW, TIG（GTAW）, MIG（GMAW）,（FCAW）and（SAW）.
General rules for welding

No pre-heating of welding.

Weld interpass temperature≤150℃， Temperature for 2507 ≤100℃.
Special welding material for duplex stainless steel are needed.
Heat input varies with the composition and thickness of duplex stainless steels.

■ 物理性能 Physical properties

- 导热率（W/（m·℃））thermal conductivity

钢材编号 Material code	温度/℃ temperature				
	20	100	200	300	400
2101	15	16	18	19	20
2304	16	17	18	19	20
2205	19	19	21	23	24
2507	16	17	19	20	22

- 线膨胀系数（X10⁻⁶/℃）coefficient of linear expansion

钢材编号 Material code	温度/℃ temperature			
	20-100	20-200	20-300	20-400
2101	13.2	14.1	14.7	14.9
2304	13	14.3	14.4	14.6
2205	13.7	14.2	14.7	14.9
2507	12.5	14.1	14.3	14.7

- 比热（J/Kg·℃）specific heat

钢材编号 Material code	温度/℃ temperature				
	20	100	200	300	400
2101	490	530	550	575	605
2304	500	540	565	590	620
2205	470	500	530	560	585
2507	450	475	500	530	550

- 弹性模量(GPa) elastic modulus

钢材编号 Material code	温度/℃ temperature				
	20	100	200	300	400
2101	200	191	182	175	170
2304	200	192	183	176	172
2205	200	190	180	170	160
2507	200	189	179	168	159

产品及特性 >>>

Product & Character

■ 加工与成型 Processing and molding

■ 热加工温度和热处理温度 (°C) hot working and heat treatment temperature

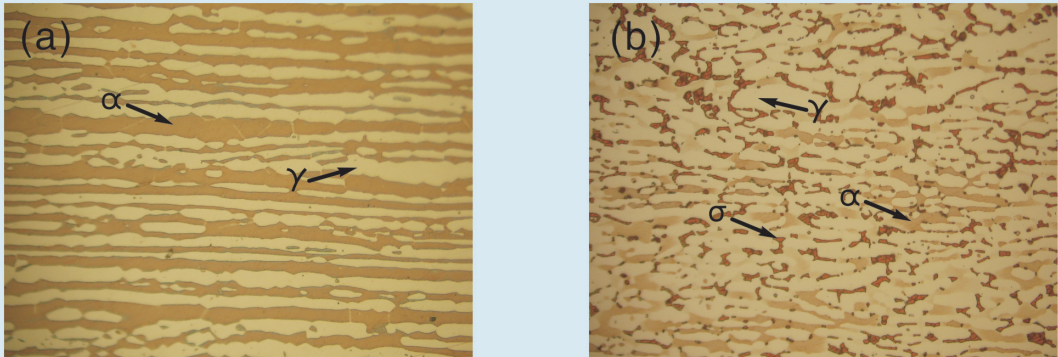
	2101	2304	2205	2507
热加工温度 hot working temperature	900~1100	900~1100	950~1150	1020~1200
热处理温度 heat treatment temperature	1020~1080	1020~1080	1020~1100	1050~1120

由于双相不锈钢容易产生析出相导致钢材脆化，从而影响其使用性能。 σ 相等金属间相的形成温度范围为600~950℃，而铁素体的转变发生范围为350~525℃（475℃脆性）。因此，双相不锈钢应避免在这些温度下使用，一般的使用温度不要超过250℃。

对于2101双相不锈钢而言，由于其不含钼，其对 σ 相等金属间相析出并不敏感，

The precipitated phase in duplex stainless steel may result in the embrittlement, therefore, the application performances would be affected.
The formation temperature range of σ intermetallic phases is about 600~950℃. For ferritic stainless steel, the transformation temperature is between 350~525℃（475℃ brittleness）. For this reason, the application temperature for duplex stainless steel should be below 250℃.
Differing from 2507 and 2205, 2101 duplex stainless steel is not sensitive to intermetallic phases precipitation and easily be controlled in heat treating and welding.

■ 普通金相与析出相金相对比图
metallographic microscopes for duplex stainless steel(a: no σ phase, b: with σ phase)



■ 冷成型性cold forming ability

与奥氏体不锈钢相比，双相不锈钢强度更高，成型时所需力度比奥氏体不锈钢要大。不过由于降低了材料厚度，影响比预期的要小。由于强度高，在弯曲时，其回弹会比较大。

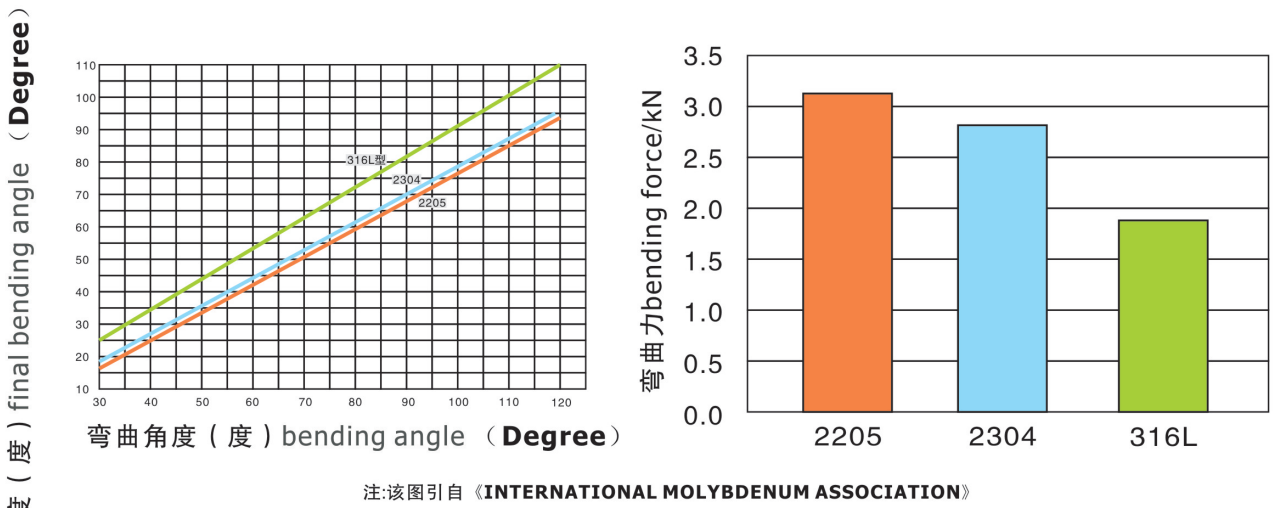
Compared with the austenitic stainless steel, duplex stainless steel has higher strength and need large force for molding. Because of material thickness reducing, the influence of this strength is much smaller expection. The rebound effects will be obvious during bending.

2mm的双相不锈钢与316L回弹性比较

Comparing results of rebound resiliometers for 2mm thick duplex stainless steel and 316L steel

双相不锈钢与316L弯曲开始变形的最小外力
(厚度2mm，宽度50mm)

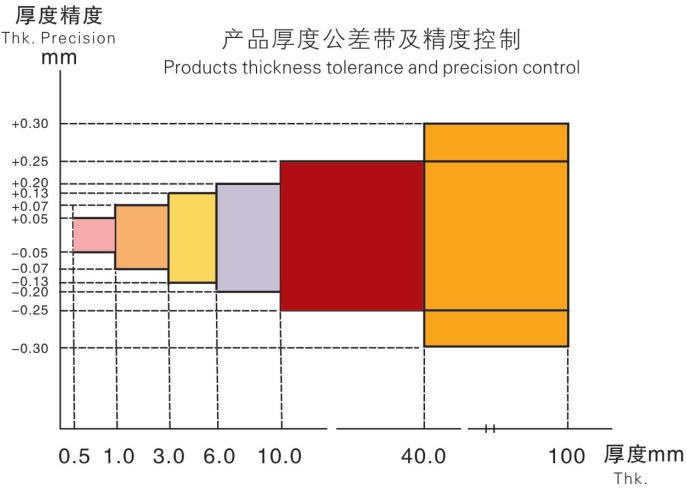
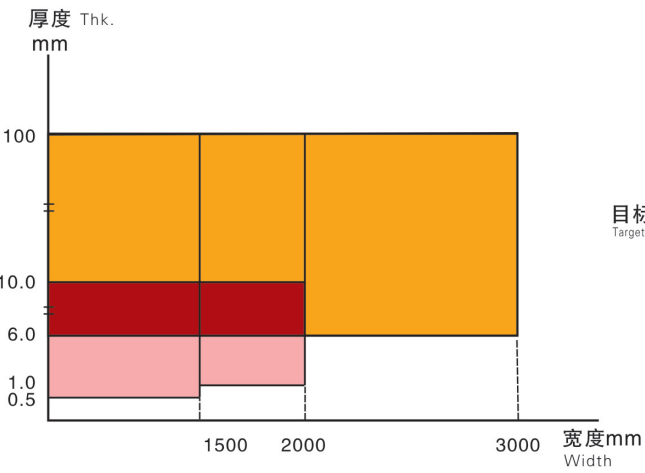
The minimize external forces during the initial stage of the bending for duplex stainless steel and 316L steel (thickness2mm, width50mm)



Figures quote from 《INTERNATIONAL MOLYBDENUM ASSOCIATION》

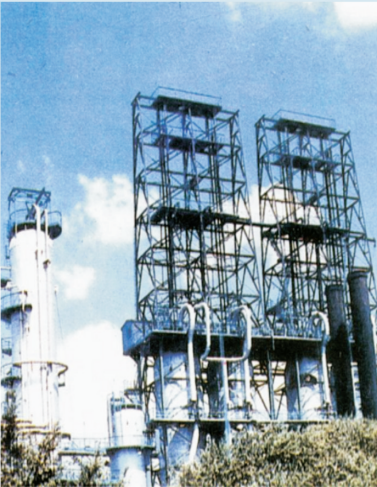
产品规格 >>>

Product Specification



产品应用 >>>

Products Application



客户评价 >>>

Consumer Evaluation

太钢双相不锈钢成分稳定、性能优异，耐蚀性优良、交货快速并能及时提供技术服务，完全满足设计及使用要求。

TISCO duplex stainless steel has stable composition, excellent performance, excellent corrosion resistance, fast delivery and the timely provision of technical services, which fully meet the design and use requirements.



材质证明书 >>>

Material Certificate



山西太钢不锈钢科技有限公司
SHANXI TAIGANG STAINLESS STEEL TECHNOLOGY CO., LTD.

产品质量证明书
INSPECTION CERTIFICATE

山西省太原市尖草坪区2号 邮编 030003
NO. 2 Jiaocaiwang, Taiyuan, Shanxi, P.R. China
030003 TAIYUAN, CHINA
TEL: (0351) 3015328
FAX: (0351) 3017916

客户名称 CUSTOMER 订购单位 PURCHASER	产品名称 PRODUCT 规格 CUSTOMER'S NO.	证书号 CERTIFICATE NO.																																																																																																																																			
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备注 REMARKS 1. 本证书由本厂出具。 2. 本厂一律为法定计量单位。 3. 质量证明书执行GB4334.1。 4. 用户提出质量异议时，须写明合同号、证书号、批号、炉号、钢号、规格、重量等。																																																																																																																																					
附注 NOTES 本产品已按上述要求逐行制造和检验，其结果符合要求，特此证明。 WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HEREIN HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION.																																																																																																																																					
检验者 SURVEYOR TO										王志军 检验人 LESTER																																																																																																																											

- 采用防水、防潮材料
- 采用护板、垫片，防止磕碰
- 横、纵打捆，防止钢卷松卷及层间擦伤

Employment of waterproof and damp-proof materials.
Damage avoided with protecting plank and shim.
Coil loosening and scratching prevented as a result of vertical and horizontal tying up between coil layers.

包 装 >>>

Package



- 中板包装采用防水材料，
加装支架防止钢板变形。

Medium plate package with water-proof material,
strengthened frame to prevent plate from deformation.

服务承诺 >>>

The Service Promise

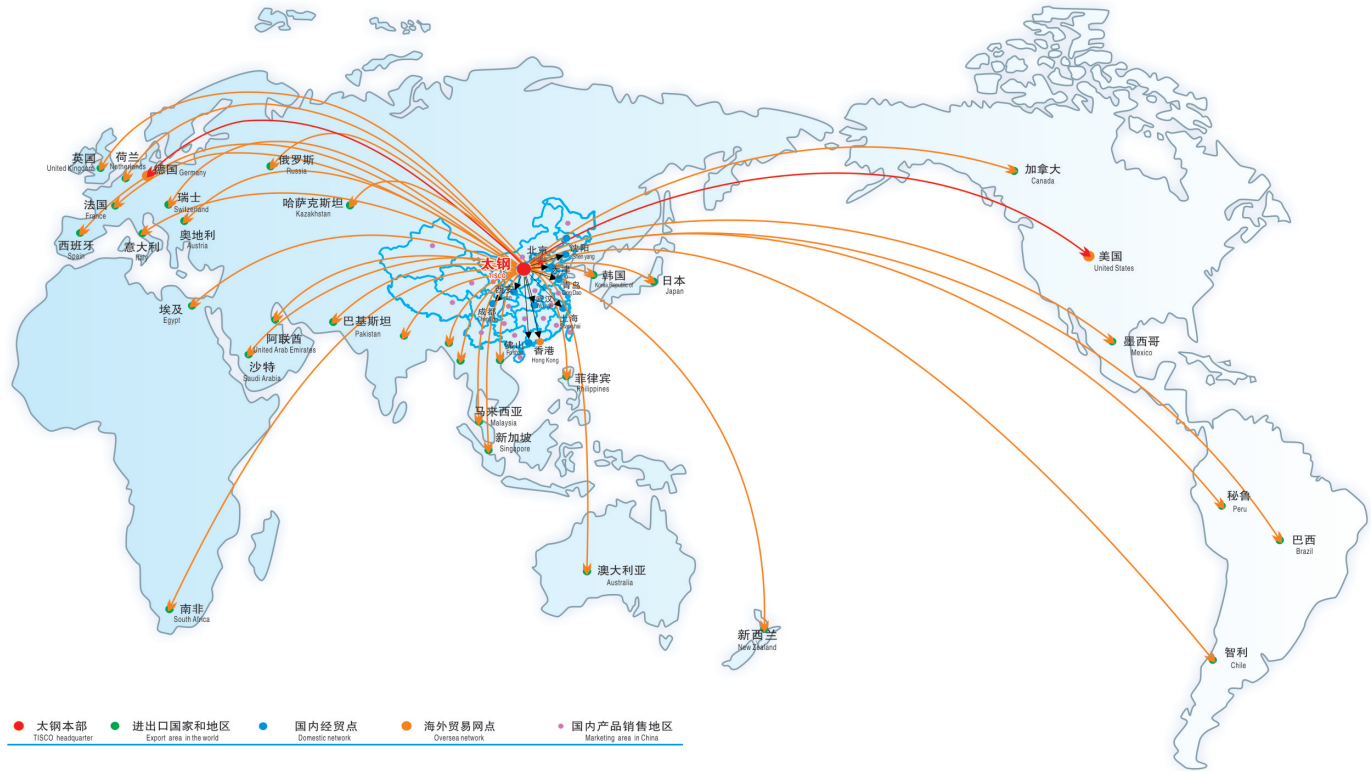
- 为客户提供个性化成份、性能、包装、卷重、质保书的设计。
- 交货准确及时：交货期不超过30天。
- 为用户在不锈钢合理选材及其加工、焊接工艺和使用环境等个性化需求方面提供技术支持。
- 对客户投诉，在24小时内答复，一周内结案。

- Providing consumers with the customized design in composition, properties, package, coil weight and quality certificate.
- Delivery in time : lead time is within 30 days.
- Providing technical support to customers in selecting materials, processing, welding technology and applicability etc.
- Consumer's complains will be answered within 24 hours and settled within a week.



太钢产品及贸易全球分布图

TISCO products distribution and marking network in the world



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

股份公司主要业务部门 Main business department of Co.,Ltd	业务功能 Functions	联系电话 Telephone	E-mail
营 销 部 Marketing Department	合同管理、订货、异议、 投诉受理及出口贸易 Contract and order management Complaint and claim handing Exports business	0351-3014868 800-806-1998 +86 (0)351-3017169 +86 (0)351-3017525	Hangcg@tisco.com.cn Tgyhfwk@tisco.com.cn Tggm@tisco.com.cn
技 术 中 心 Technoigy center	技术咨询服务 Technical consultation service	0351-3012213	Tgjszxbxg@tisco.com.cn

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太钢欧洲有限公司 Taigang Europe Co., Ltd.	德国 Germany	电话（Tel）+49(0)2154-81690	传真（Fax）+049-2154-816911

国内分公司联系方式 Contacting manners of deomestic trading Co.,Ltd

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太钢华北区销售公司 TISCO sales company in North China	天津太钢销售有限公司 Tianjin TISCO Sales Co. Ltd. 北京太钢销售有限公司 Beijing TISCO Sales Co. Ltd. 太钢现货销售有限公司 Spot Sales company Ltd. of TISCO 郑州太钢销售有限公司 Zhengzhou TISCO Sales Co. Ltd.	天津 Tianjin 北京 Beijing 太原 Taiyuan 郑州 Zhengzhou 电话（Tel）022-24308105 电话（Tel）010-64441368 电话（Tel）0351-3096390 电话（Tel）0371-60805079 传真（Fax）022-24308103 传真（Fax）010-64441369 传真（Fax）0351-3090556 传真（Fax）0371-60805085
太钢东北区销售公司 TISCO sales company in Northeast of China	辽宁太钢销售有限公司 Liaoning TISCO Sales Co. Ltd. 哈尔滨太钢销售有限公司 Haerbin TISCO Sales Co. Ltd. 沈阳沈水太钢不锈钢销售有限公司 Haerbin TISCO Sales Co. Ltd.	沈阳 Shenyang 哈尔滨 Haerbin 沈阳 Shenyang 电话（Tel）024-24232050 电话（Tel）0451-87905777 电话（Tel）024-24232051 传真（Fax）024-24231216 传真（Fax）0451-55185321 传真（Fax）024-24231216
太钢华东区销售公司 TISCO sales company in East China	无锡太钢销售有限公司 Wuxi TISCO Sales Co. Ltd. 上海太钢销售有限公司 Shanghai TISCO Sales Co. Ltd. 杭州太钢销售有限公司 Hangzhou TISCO Sales Co. Ltd.	无锡 Wuxi 上海 Shanghai 杭州 Hangzhou 电话（Tel）0510-82407713 电话（Tel）021-61808397 电话（Tel）0571-85067265 传真（Fax）0510-82441187 传真（Fax）021-61808397 传真（Fax）0571-85061958
太钢山东区销售公司 TISCO sales company in Shandong	青岛太钢销售有限公司 Qingdao TISCO Sales Co. Ltd. 济南太钢销售有限公司 Jinan TISCO Sales Co. Ltd.	青岛 Qingdao 济南 Jinan 电话（Tel）0532-81101847 电话（Tel）0531-82638400 传真（Fax）0532-87734798 传真（Fax）0531-82638411
太钢华中区销售公司 TISCO sales company in Central China	武汉太钢销售有限公司 Wuhan TISCO Sales Co. Ltd. 长沙太钢销售有限公司 Changsha TISCO Sales Co. Ltd.	武汉 Wuhan 长沙 Changsha 电话（Tel）027-85615300 电话（Tel）027-85615300 传真（Fax）027-85615311 传真（Fax）0731-85598305
太钢华南区销售公司 TISCO sales company in South China	佛山市太钢不锈钢销售有限公司 Foshan TISCO Stainless Steel Sales Co. Ltd. 揭阳太钢销售有限公司 Jieyang TISCO Sales Co. Ltd.	佛山 Foshan 揭阳 Jieyang 电话（Tel）0757-83315711 电话（Tel）0663-8766018 传真（Fax）0757-83315718 传真（Fax）0663-8766048
太钢西南区销售公司 TISCO sales company in Southwest of China	成都太钢销售有限公司 Chengdu TISCO Sales Co. Ltd. 重庆太钢销售有限公司 Chongqing TISCO Sales Co. Ltd.	成都 Chengdu 重庆 Chongqing 电话（Tel）028-87604342 电话（Tel）023-68154181 传真（Fax）028-87612940 传真（Fax）023-68400789
太钢西北区销售公司 TISCO sales company in Northwest of China	西安太钢销售有限公司 Xi'an TISCO Sales Co. Ltd.	西安 Xi'an 电话（Tel）029-86231507 传真（Fax）029-86231506