TISCO

耐 热 不 锈 钢

HEAT-RESISTANT STAINLESS STEEL

地址：山西省太原市尖草坪 2 号

Add：No. 2 Jiancaoping Taiyuan,Shanxi,P.R.China.

邮编 (Post Code)：030003

电话 (Tel)：+86 (0) 351-3131541/3010673

传真 (Fax)：+86 (0) 351-3130793

网址 (http)：//www.tisco.com.cn

服务热线(Hotline)：800-806-1998

400-653-1998

Printed on recycled paper

2010年11月印刷

太原钢铁(集团)有限公司

Taiyuan Iron & Steel(Group) Co., Ltd.

HEAT-RESISTANT
STAINLESS STEEL
耐 热 不 锈 钢

目 录 Content

01 简 介 Brief introduction
02 工艺流程 Process flow
03 装备优势 Advanced equipment
07 研发能力 Research and Development
08 自主知识产权 Chemical composition/Products specification
09 体系认证 Quality assurance system
10 荣誉证书 Honors and Rewards
11 产品特点 Proprietary intellectual rights
12 产品性能 Products characteristics
14 化学成分 / 产品规格 Properties of product
15 实物质量对比 Physical quality comparison
17 产品应用 Products application/Material certificate
18 包装 / 服务承诺 Package
20 联系方式 The service promise/Contact us

战略目标

把太钢建设成为全球最具竞争力的不锈钢企业

Strategic target

To build 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 value outlook

Relying on the people, putting customer' needs first, rejuvenating enterprise through quality, opening fully to the world, making constant innovation.

经营理念

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

Managerial concept

To provide users with more completed, better as well as faster solutions and realize win-win by long-term cooperation.

太原钢铁（集团）有限公司
Taiyuan Iron and Steel（Group）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，进而建设具有国际竞争力的大企业集团。

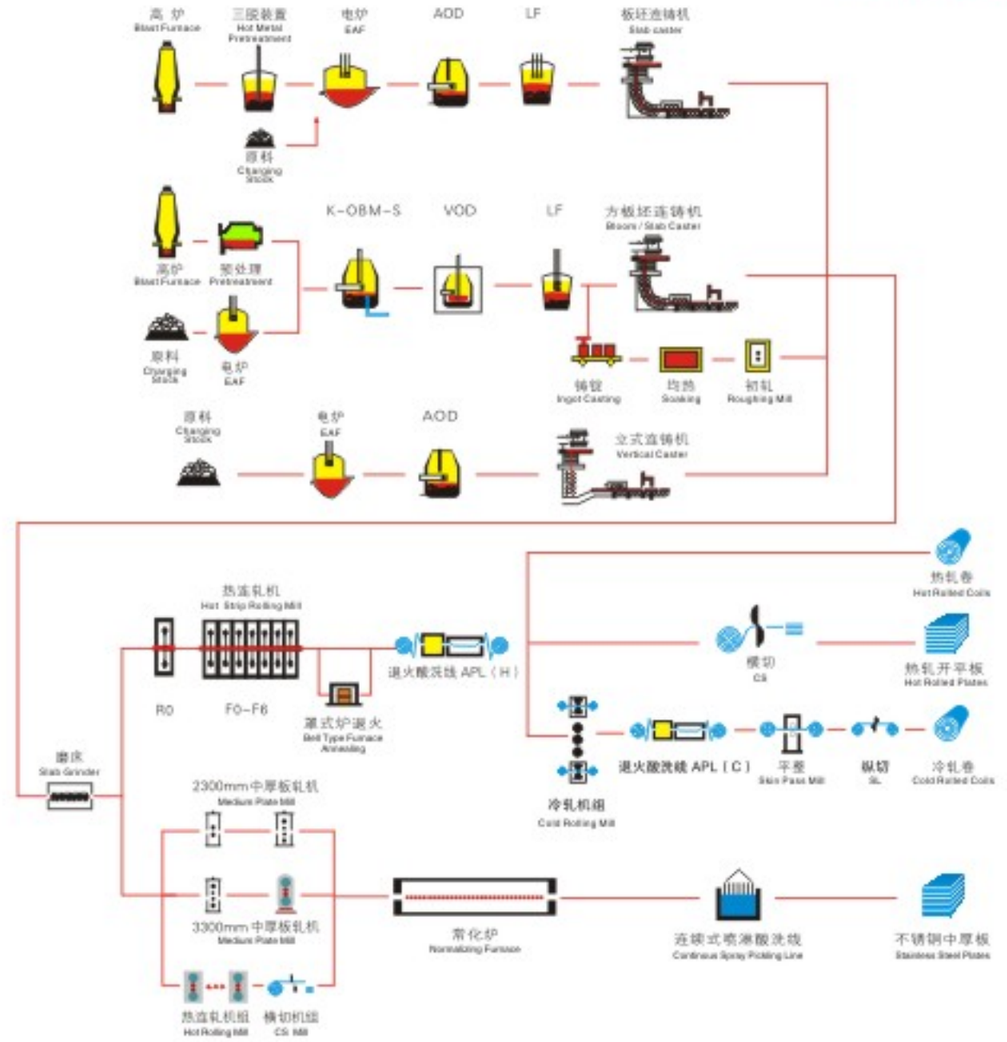
Taiyuan Iron and Steel (Group) Co. Ltd. (TISCO) is one of the steel giants in China and, the largest stainless producer in the world in term of capacity equipped with the most advanced facilities covering pretty wide product range. After over 70 years development TISCO has the capacity of 10 million 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.

HEAT-RESISTANT
STAINLESS STEEL
耐 热 不 锈 钢

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)

- 采用电炉熔化合金，有利于铁水和合金预熔液金属料优化配置；
- 90t和160t超高功率电炉，可适应多种原料结构，成分均匀准确，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，成分命中率高；
- 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.

90吨 VOD炉 90t VOD Converter

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

High vacuum capacity, powerful stirring performance, vacuum degree ≤0.5 Torr, stirring capacity 1200 L^3/h;
High in steel purity [C] ≤ 25ppm, [H] ≤ 2ppm; S% ≤ 0.005%; Σ (Pb+As+Sn+Sb+Bi) ≤0.01%;
It is suitable for ultra-low carbon, nitrogen stainless steel production, C+N ≤100ppm

装备优势 >>>
Advanced Equipment

45t、180tAOD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；

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.

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.

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

2250mm热连轧机组　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。

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.

宽幅中厚板轧机
Broad plate mill

- 不锈钢中厚板最大宽度3000mm、最大厚度100mm;
- 配备有先进的AGC自动控制系统，可实现控轧控冷。

Stainless steel plate with max. width of 3000mm and max. thickness of 100mm. Equiped with the advanced AGC automatic control system, controlled rolling and cooling can be

中板连续常化处理炉
Continuous normalizing line for plates

- 采用炉温控制准确（控制精度±2℃）的50米常化炉采用超高功率EBT，实现无渣出钢。

Equiped by ultra-power EBT (accuracy of ± 2℃), the precise temperature control of the 50m continuous normalizing furnace can reach non-slag tapping.

中板连续酸洗线
Continuous Pickling Line for Medium Plates

- 国内第一条不锈钢中板连续喷淋酸洗线，减少表面擦划伤源，保证表面色泽均匀。

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，可获得良好板形。

Adoption of the advanced AWC, AGC control systems secures the high accuracy of dimension control. Use of the advanced hydraulic bending and axial shifting technology can reach excellent profile.

热轧卷退火酸洗线APL(H)
Hot– rolling annealing and pickling line

- 是世界上最先进的、国内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 annealingand 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.

森吉米尔冷轧机
Sendzimir cold-rolling mill

- 是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 equiped 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 annealing and pickling line

- 具有脱脂清洗功能，可确保产品表面质量良好；炉温控制精确，产品性能稳定、均一。

It has cleaning and degreasing functions, ensuring good surface quality, temperature control accuracy as well as stable & uniform property of products.

研发能力 >>>

Research and Development

国家级实验室

National level laboratory

在2009年国家认定的575家企业技术中心中，太钢技术中心排名第2位，行业排名第一。

In 2009 Tisco technology center ranks in NO.2 position among the 575 state certified enterprise technology departments, and situates the NO.1 among the steel industry.

扫描电镜
Scanning Electron Microscope

透射电镜
Transition Electron Microscope

热模拟试验机
Thermal Simulating Tester

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

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炉用氩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.

体系认证 >>>

Honors and

荣誉证书 >>>

Honors and

产品特点 >>>

Product Characteristics

在较高工作温度下使用：
- 高的化学稳定性
- 良好的抗高温氧化性，蠕变强度和持久强度高、持久寿命长
- 良好的高温塑性

Used in higher working temperature:
- high chemical stability
- well resistance to high temperature oxidation, high creep strength and endurance strength, and long service life.
- well high temperature ductility.

牌号 Grade	特点 Characteristics	用途 Application
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 Pure austenitic structure, well oxidation resistance and high temperature operating characteristic, max. continuous operating temperature of 1150℃. The main steel grade among heat resistant steel series.	用于制造加热炉的各种构件。 For various kind of structural parts for manufacturing heating furnace.
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℃。 Better resistance to Oxidation and carburization than that of 310S and to common corrosion. Max. operating temperature of 1200℃, but weaker toughness and weldability than that of 310S, max. continuous operating temperature of 1150℃, max. intermittent operating 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。 For various of structural parts for manufacturing heating furnace such as high temperature furnace tube in ammonia synthetic unit, radiant tube, bowl in heating furnace and structures in combustion chamber.
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。 Heat resistant austenitic steel with Si content of 2%, with high oxidation resistant, tendency of σ precipitation at 600–800℃ when used for low load structural parts at high temperature(1050℃).	用于锅炉吊挂和加热炉构件等的制作。 Manufacturing of suspended parts in boiler and structural parts in heating furnace etc.
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。 Heat resistant austenitic steel, better oxidation resistant than that of 321, max. operating temperature of 1050℃, long operating time with high load at 650–700℃.	制作在 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 structural parts working at temperature of 850–1050℃ e.g. frame in furnace, belt conveyor, annealing furnace cover, heat dissociation tube 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。 Heat resistant austenitic steel, well oxidation resistant even at 1150℃, creep ductility improvement with Ce and delayed action on brittle σ precipitation with N, increasement of structural stability at high temperature.	超超临界发电锅炉循环硫化床的旋风分离器 Cyclone separator for circulating FB of ultra super critical generating boiler.
0Cr13Al(405) TD305B		

产品性能 >>>

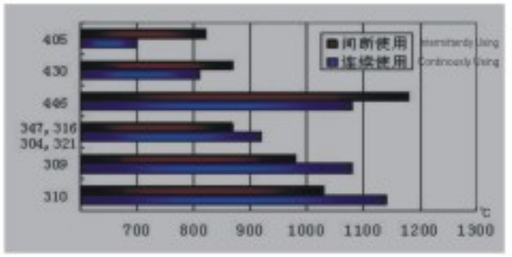
Properties of Product

耐高温数据参考

Referential Data for Heat Resisting

牌号 Grade	间歇式使用℃ Intermittently Using	连续式使用℃ Continously Using
304	870	925
302	870	925
1Cr25Ni20Si2	925	980
1Cr20Ni14Si2	980	1095
0Cr23Ni13	1035	1150
253MA（S30815）	1035	1150
0Cr13Al(405)	815	705
1Cr11MoV	870	925
00Cr13Ni5Mo3N	870	925
2308	1035	1150

牌号 Grade	间歇式使用℃ Intermittently Using	连续式使用℃ Continously Using
410	815	705
416	760	675
420	735	620
430	870	815
440	815	760
442	1035	980
446	1175	1095



高温(℃)短时拉伸性能对比
Short-time Tensile Property Comparison at High Temperturae(℃)

牌号 Grade	RM(MPa)				$R_{p0.2}$(MPa)			A(%)			
	600	700	800	850	600	700	800	600	700	800	850
304	370	260	---	---	150	140	---	43	61	77	---
309	410	240	---	170	---	---	---	42	54	---	66
310	430	310	200	190	---	---	---	40	49	63	34
316	400	300	---	---	150	150	---	45	59	---	---
321	390	340	230	---	120	120	110	38	40	61	---

HEAT-RESISTANT
STAINLESS STEEL
耐 热 不 锈 钢

化学成分 >>>

Chemical Composition

牌 号 Steel grade	执行标准 Standard To carry out	C	Si	Mn	P	S	Cr	Ni	N	Ce
0Cr25Ni20（310S）	GB EN JIS AISI	0.06	1.20	1.45	0.028	0.003	24.80	19.90	---	---
1Cr25Ni20Si2（314）		0.080	1.85	0.90	0.030	0.003	24.50	19.15	---	---
0Cr23Ni13（309S）		0.065	1.90	0.95	0.028	0.003	19.80	13.30	---	---
1Cr20Ni14Si2		0.054	0.54	1.33	0.027	0.002	22.60	13.35	---	---
253MA（S30815）		0.07	1.60	0.60	0.028	0.001	21.50	11.00	0.15	0.04
TD305B										

典型机械及物理性能

Typical Mechanical and Physical Property

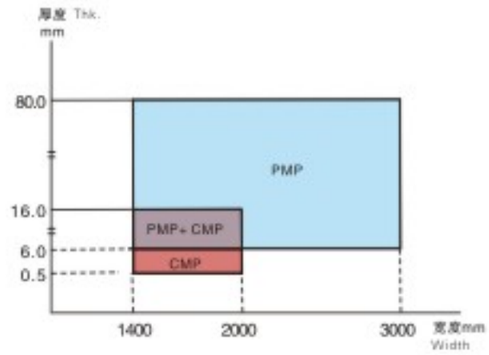
机械性能 Mechanical Property					物理性能 Physical Property			
牌 号 Grade	$R_{p0.2}$（MPa）	R_m（MPa）	A（%）	HB	比重 Specific density	比热C Specific Heat Cal/g·℃	弹性模量E Elastic Module 20℃,Kg/mm²	比电阻20℃ Specific Resistance Ω·mm²/m
0Cr25Ni20	≥205	≥520	≥40	≤187	7.93	---	16700	---
1Cr25Ni20Si2	---	≥540	≥35	---	7.93	0.12	20300	0.95
1Cr20Ni14Si2	---	≥590	≥40	---	7.90	0.12	---	---
0Cr23Ni13	≥205	≥520	≥40	≤187	7.90	0.12	21100	0.78
253MA（S30815）	≥310	≥ 600	≥40	---	7.90	---	---	---
0Cr13Al(405)	≥ 175	≥ 410	≥ 20	≤ 183				

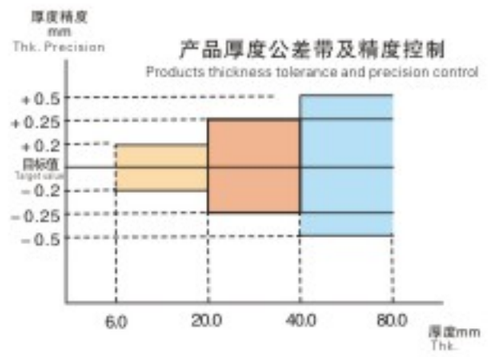
不同温度下(℃)的持久强度（ 1000h ,Mpa) Endurable Strength at Different Temperature							
牌 号 Grade	538	593	649	704	760	816	871
304	255	172	117	69	48	27	20
309	---	---	131	82	55	27	20
310	220	172	124	89	55	41	27
316	---	255	165	110	69	48	20
321	289	206	124	75	48	27	---

不同温度(℃)的蠕变强度（10000h/1%,MPa) Creep strength at Different Temperature					
牌 号 Grade	538	593	649	704	816
304	137	82	51	27	10
309	113	86	69	41	20
310	227	158	103	69	20
316	172	120	80	51	16
321	124	117	62	34	10

产品规格 >>>

Product Specification





TISCO

耐 热 不 锈 钢

HEAT-RESISTANT STAINLESS STEEL

地址：山西省太原市尖草坪 2 号

Add：No. 2 Jiancaoping Taiyuan,Shanxi,P.R.China.

邮编 (Post Code)：030003

电话 (Tel)：+86 (0) 351-3131541/3010673

传真 (Fax)：+86 (0) 351-3130793

网址 (http)：//www.tisco.com.cn

服务热线(Hotline)：800-806-1998

400-653-1998

Printed on recycled paper

2010年11月印刷

太原钢铁(集团)有限公司

Taiyuan Iron & Steel(Group) Co., Ltd.

HEAT-RESISTANT
STAINLESS STEEL
耐 热 不 锈 钢

目 录 Content

01 简 介 Brief introduction
02 工艺流程 Process flow
03 装备优势 Advanced equipment
07 研发能力 Research and Development
08 自主知识产权 Chemical composition/Products specification
09 体系认证 Quality assurance system
10 荣誉证书 Honors and Rewards
11 产品特点 Proprietary intellectual rights
12 产品性能 Products characteristics
14 化学成分 / 产品规格 Properties of product
15 实物质量对比 Physical quality comparison
17 产品应用 Products application/Material certificate
18 包装 / 服务承诺 Package
20 联系方式 The service promise/Contact us

战略目标

把太钢建设成为全球最具竞争力的不锈钢企业

Strategic target

To build 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 value outlook

Relying on the people, putting customer' needs first, rejuvenating enterprise through quality, opening fully to the world, making constant innovation.

经营理念

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

Managerial concept

To provide users with more completed, better as well as faster solutions and realize win-win by long-term cooperation.

太原钢铁（集团）有限公司
Taiyuan Iron and Steel（Group）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，进而建设具有国际竞争力的大企业集团。

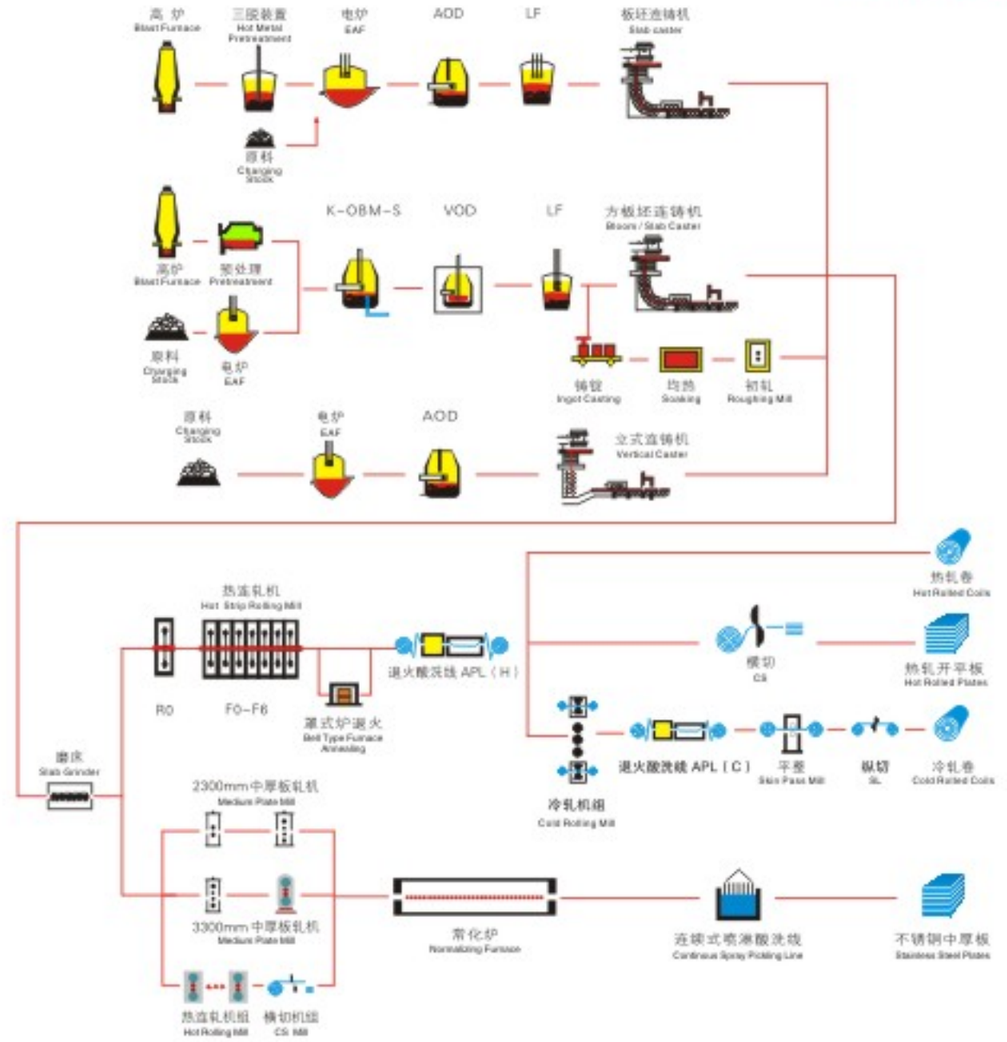
Taiyuan Iron and Steel (Group) Co. Ltd. (TISCO) is one of the steel giants in China and, the largest stainless producer in the world in term of capacity equipped with the most advanced facilities covering pretty wide product range. After over 70 years development TISCO has the capacity of 10 million 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.

HEAT-RESISTANT
STAINLESS STEEL
耐 热 不 锈 钢

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)

- 采用电炉熔化合金，有利于铁水和合金预熔液金属料优化配置；
- 90t和160t超高功率电炉，可适应多种原料结构，成分均匀准确，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，成分命中率高；
- 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.

90吨 VOD炉 90t VOD Converter

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

High vacuum capacity, powerful stirring performance, vacuum degree ≤0.5 Torr, stirring capacity 1200 L^3/h;
High in steel purity [C] ≤ 25ppm, [H] ≤ 2ppm; S% ≤ 0.005%; Σ (Pb+As+Sn+Sb+Bi) ≤0.01%;
It is suitable for ultra-low carbon, nitrogen stainless steel production, C+N ≤100ppm

装备优势 >>>
Advanced Equipment

45t、180tAOD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；

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.

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.

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

2250mm热连轧机组　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。

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.

宽幅中厚板轧机
Broad plate mill

- 不锈钢中厚板最大宽度3000mm、最大厚度100mm;
- 配备有先进的AGC自动控制系统，可实现控轧控冷。

Stainless steel plate with max. width of 3000mm and max. thickness of 100mm. Equiped with the advanced AGC automatic control system, controlled rolling and cooling can be

中板连续常化处理炉
Continuous normalizing line for plates

- 采用炉温控制准确（控制精度±2℃）的50米常化炉采用超高功率EBT，实现无渣出钢。

Equiped by ultra-power EBT (accuracy of ± 2℃), the precise temperature control of the 50m continuous normalizing furnace can reach non-slag tapping.

中板连续酸洗线
Continuous Pickling Line for Medium Plates

- 国内第一条不锈钢中板连续喷淋酸洗线，减少表面擦划伤源，保证表面色泽均匀。

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，可获得良好板形。

Adoption of the advanced AWC, AGC control systems secures the high accuracy of dimension control. Use of the advanced hydraulic bending and axial shifting technology can reach excellent profile.

热轧卷退火酸洗线APL(H)
Hot– rolling annealing and pickling line

- 是世界上最先进的、国内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 annealingand 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.

森吉米尔冷轧机
Sendzimir cold-rolling mill

- 是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 equiped 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 annealing and pickling line

- 具有脱脂清洗功能，可确保产品表面质量良好；炉温控制精确，产品性能稳定、均一。

It has cleaning and degreasing functions, ensuring good surface quality, temperature control accuracy as well as stable & uniform property of products.

HEAT-RESISTANT
STAINLESS STEEL
耐 热 不 锈 钢

研发能力 >>>

Research and Development

国家级实验室

National level laboratory

在2009年国家认定的575家企业技术中心中，太钢技术中心排名第2位，行业排名第一。

In 2009 Tisco technology center ranks in NO.2 position among the 575 state certified enterprise technology departments, and situates the NO.1 among the steel industry.

扫描电镜
Scanning Electron Microscope

透射电镜
Transition Electron Microscope

热模拟试验机
Thermal Simulating Tester

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

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炉用氩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.

体系认证 >>>

Honors and

荣誉证书 >>>

Honors and

产品特点 >>>

Product Characteristics

在较高工作温度下使用：
- 高的化学稳定性
- 良好的抗高温氧化性，蠕变强度和持久强度高、持久寿命长
- 良好的高温塑性

Used in higher working temperature:
- high chemical stability
- well resistance to high temperature oxidation, high creep strength and endurance strength, and long service life.
- well high temperature ductility.

牌号 Grade	特点 Characteristics	用途 Application
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 Pure austenitic structure, well oxidation resistance and high temperature operating characteristic, max. continuous operating temperature of 1150℃. The main steel grade among heat resistant steel series.	用于制造加热炉的各种构件。 For various kind of structural parts for manufacturing heating furnace.
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℃。 Better resistance to Oxidation and carburization than that of 310S and to common corrosion. Max. operating temperature of 1200℃, but weaker toughness and weldability than that of 310S, max. continuous operating temperature of 1150℃, max. intermittent operating 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。 For various of structural parts for manufacturing heating furnace such as high temperature furnace tube in ammonia synthetic unit, radiant tube, bowl in heating furnace and structures in combustion chamber.
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。 Heat resistant austenitic steel with Si content of 2%, with high oxidation resistant, tendency of σ precipitation at 600–800℃ when used for low load structural parts at high temperature(1050℃).	用于锅炉吊挂和加热炉构件等的制作。 Manufacturing of suspended parts in boiler and structural parts in heating furnace etc.
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。 Heat resistant austenitic steel, better oxidation resistant than that of 321, max. operating temperature of 1050℃, long operating time with high load at 650–700℃.	制作在 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 structural parts working at temperature of 850–1050℃ e.g. frame in furnace, belt conveyor, annealing furnace cover, heat dissociation tube 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。 Heat resistant austenitic steel, well oxidation resistant even at 1150℃, creep ductility improvement with Ce and delayed action on brittle σ precipitation with N, increasement of structural stability at high temperature.	超超临界发电锅炉循环硫化床的旋风分离器 Cyclone separator for circulating FB of ultra super critical generating boiler.
0Cr13Al(405) TD305B		

产品性能 >>>

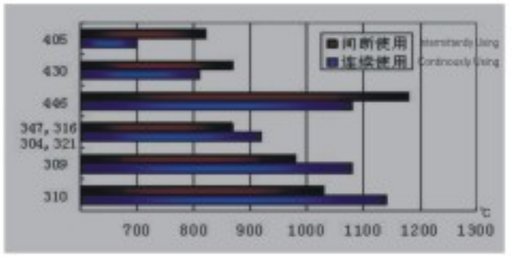
Properties of Product

耐高温数据参考

Referential Data for Heat Resisting

牌号 Grade	间歇式使用℃ Intermittently Using	连续式使用℃ Continously Using
304	870	925
302	870	925
1Cr25Ni20Si2	925	980
1Cr20Ni14Si2	980	1095
0Cr23Ni13	1035	1150
253MA（S30815）	1035	1150
0Cr13Al(405)	815	705
1Cr11MoV	870	925
00Cr13Ni5Mo3N	870	925
2308	1035	1150

牌号 Grade	间歇式使用℃ Intermittently Using	连续式使用℃ Continously Using
410	815	705
416	760	675
420	735	620
430	870	815
440	815	760
442	1035	980
446	1175	1095



高温(℃)短时拉伸性能对比
Short-time Tensile Property Comparison at High Temperturae(℃)

牌号 Grade	RM(MPa)				$R_{p0.2}$(MPa)			A(%)			
	600	700	800	850	600	700	800	600	700	800	850
304	370	260	---	---	150	140	---	43	61	77	---
309	410	240	---	170	---	---	---	42	54	---	66
310	430	310	200	190	---	---	---	40	49	63	34
316	400	300	---	---	150	150	---	45	59	---	---
321	390	340	230	---	120	120	110	38	40	61	---

HEAT-RESISTANT
STAINLESS STEEL
耐 热 不 锈 钢

化学成分 >>>

Chemical Composition

牌 号 Steel grade	执行标准 Standard To carry out	C	Si	Mn	P	S	Cr	Ni	N	Ce
0Cr25Ni20（310S）	GB EN JIS AISI	0.06	1.20	1.45	0.028	0.003	24.80	19.90	---	---
1Cr25Ni20Si2（314）		0.080	1.85	0.90	0.030	0.003	24.50	19.15	---	---
0Cr23Ni13（309S）		0.065	1.90	0.95	0.028	0.003	19.80	13.30	---	---
1Cr20Ni14Si2		0.054	0.54	1.33	0.027	0.002	22.60	13.35	---	---
253MA（S30815）		0.07	1.60	0.60	0.028	0.001	21.50	11.00	0.15	0.04
TD305B										

典型机械及物理性能

Typical Mechanical and Physical Property

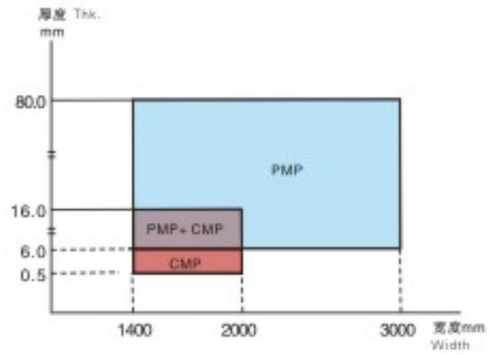
机械性能 Mechanical Property					物理性能 Physical Property			
牌 号 Grade	$R_{p0.2}$（MPa）	R_m（MPa）	A（%）	HB	比重 Specific density	比热C Specific Heat Cal/g·℃	弹性模量E Elastic Module 20℃,Kg/mm²	比电阻20℃ Specific Resistance Ω·mm²/m
0Cr25Ni20	≥205	≥520	≥40	≤187	7.93	---	16700	---
1Cr25Ni20Si2	---	≥540	≥35	---	7.93	0.12	20300	0.95
1Cr20Ni14Si2	---	≥590	≥40	---	7.90	0.12	---	---
0Cr23Ni13	≥205	≥520	≥40	≤187	7.90	0.12	21100	0.78
253MA（S30815）	≥310	≥ 600	≥40	---	7.90	---	---	---
0Cr13Al(405)	≥ 175	≥ 410	≥ 20	≤ 183				

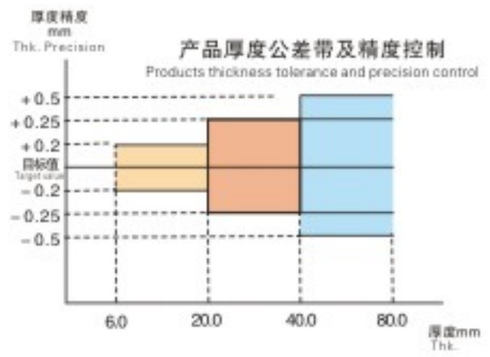
不同温度下(℃)的持久强度（ 1000h ,Mpa) Endurable Strength at Different Temperature							
牌 号 Grade	538	593	649	704	760	816	871
304	255	172	117	69	48	27	20
309	---	---	131	82	55	27	20
310	220	172	124	89	55	41	27
316	---	255	165	110	69	48	20
321	289	206	124	75	48	27	---

不同温度(℃)的蠕变强度（10000h/1%,MPa) Creep strength at Different Temperature					
牌 号 Grade	538	593	649	704	816
304	137	82	51	27	10
309	113	86	69	41	20
310	227	158	103	69	20
316	172	120	80	51	16
321	124	117	62	34	10

产品规格 >>>

Product Specification



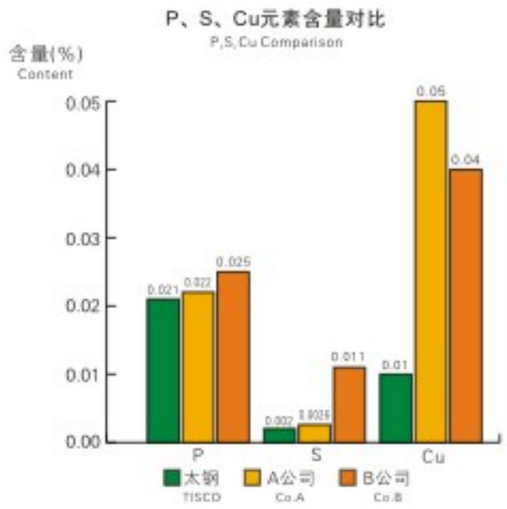


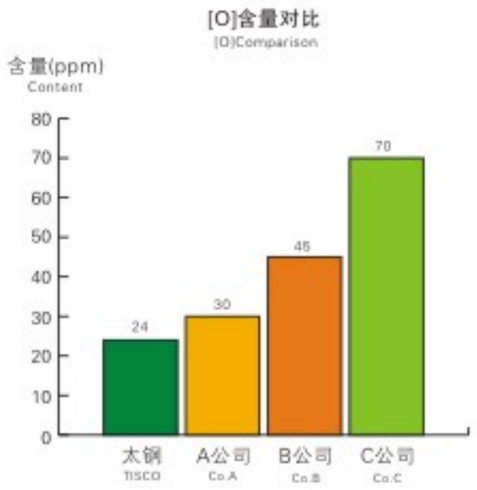
HEAT-RESISTANT
STAINLESS STEEL
耐 热 不 锈 钢

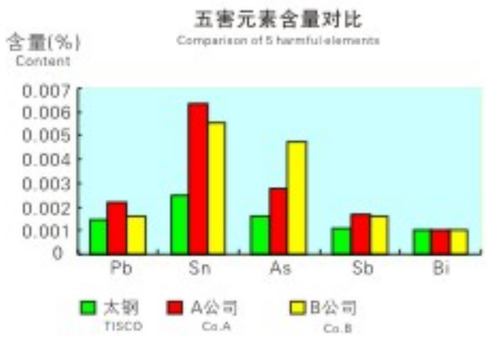
实物质量对比 >>>

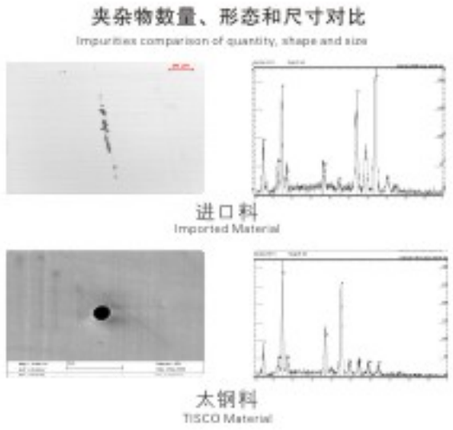
Physical Quality Comparison

纯净度对比 Purity Comparison

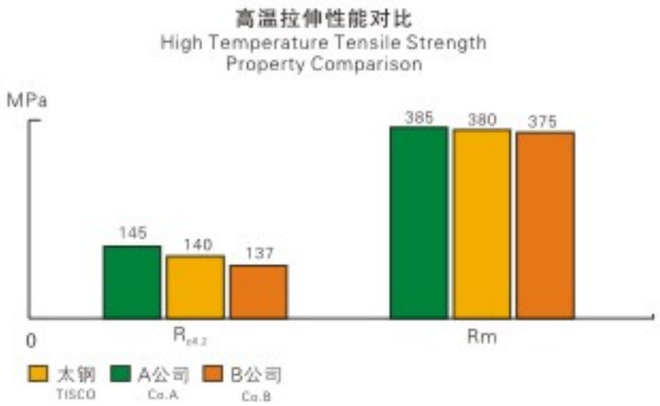






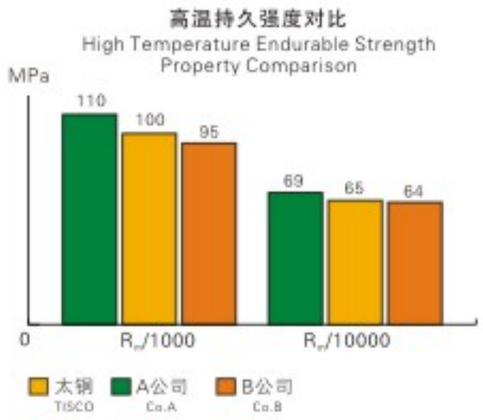


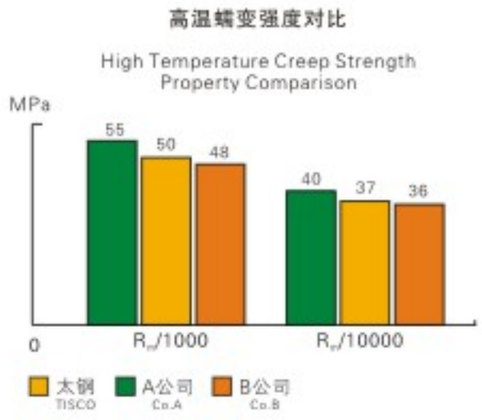
高温性能对比 High Temperature Comparison



0Cr25Ni20中板性能对比

0Cr25Ni20 Medium Plate Property Comparison





产品应用 >>>

Products Application

■ 电站锅炉
Power Station Boiler

■ 无烟煤锅炉
Snthracite Boiler

■ 流化床锅炉
Fluid Bed Boiler

■ 环形加热炉
Circular Heating Furnace

包 装 >>>

Package

- 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 loosing and scratching prevented as a result of vertical and horizontal tying up between coil layers.

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。
- 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.

太钢产品及贸易全球分布图

TISCO products distribution and marketing network in the world

太钢加工配送营销网络布局图

Marketing network of TISCO service centers

- 太钢本部加工配送中心 TISCO home-based service center
- 已建成的加工配送中心 Service center in operation
- 在建中的加工配送中心 Service center under construction
- 规划建立的加工配送中心 Service center under planning

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	电话 TEL +86 (0)351-3011431 3017478 3017378	quzy@tisco.com.cn
精密带钢公司 Precision Stainless Steel Strip plant	用户服务 Customer Services	电话 TEL +86 (0)351-7998113 +86 (0)351-7998039 +86 (0)351-7998061	wuxb@tisco.com.cn zhangyjz@tisco.com.cn

国际分公司联系方式 Contacting manners of international trading Co.,Ltd.

太钢国贸（美国）有限公司 Taigang International Trading (USA) Co., Ltd.	美国 USA	电话（Tel）001-4124340607	传真（Fax）001-4124340608
太钢国贸（香港）有限公司 Taigang International Trading (Hongkong) Co., Ltd.	香港 Hongkong	电话（Tel）+0852-28271686	传真（Fax）+0852-28271300
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

	公司名称 Branch Name	地址 Address	通讯方式 Telephone & Fax	
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.	天津 Tianjin	电话（Tel）022-24309105	传真（Fax）022-24309103
	北京太钢销售有限公司 Beijing TISCO Sales Co. Ltd.	北京 Beijing	电话（Tel）010-64441368	传真（Fax）010-64441369
	太钢现货销售有限公司 Spot Sales company Ltd. of TISCO	太原 Taiyuan	电话（Tel）0351-3096390	传真（Fax）0351-3096556
	郑州太钢销售有限公司 Zhengzhou TISCO Sales Co. Ltd.	郑州 Zhengzhou	电话（Tel）0371-60805079	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.	沈阳 Shenyang	电话（Tel）024-24232050	传真（Fax）024-24231216
	哈尔滨太钢销售有限公司 Haerbin TISCO Sales Co. Ltd.	哈尔滨 Haerbin	电话（Tel）0451-87905777	传真（Fax）0451-55165321
	沈阳沈水太钢不锈钢销售有限公司 Haerbin TISCO Sales Co. Ltd.	沈阳 Shenyang	电话（Tel）024-24232051	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.	无锡 Wuxi	电话（Tel）0510-82407713	传真（Fax）0510-82441197
	上海太钢销售有限公司 Shanghai TISCO Sales Co. Ltd.	上海 Shanghai	电话（Tel）021-61808397	传真（Fax）021-61808397
	杭州太钢销售有限公司 Hangzhou TISCO Sales Co. Ltd.	杭州 Hangzhou	电话（Tel）0571-85067265	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.	青岛 Qingdao	电话（Tel）0532-81101947	传真（Fax）0532-87736798
	济南太钢销售有限公司 Jinan TISCO Sales Co. Ltd.	济南 Jinan	电话（Tel）0531-82638400	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.	武汉 Wuhan	电话（Tel）027-85615300	传真（Fax）027-85615311
	长沙太钢销售有限公司 Changsha TISCO Sales Co. Ltd.	长沙 Changsha	电话（Tel）027-85615300	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.	佛山 Foshan	电话（Tel）0757-83315711	传真（Fax）0757-83315719
	揭阳太钢销售有限公司 Jieyang TISCO Sales Co. Ltd.	揭阳 Jieyang	电话（Tel）0663-8766049	传真（Fax）0663-8766049
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.	成都 Chengdu	电话（Tel）028-87604342	传真（Fax）028-87612940
	重庆太钢销售有限公司 Chongqing TISCO Sales Co. Ltd.	重庆 Chongqing	电话（Tel）023-68154191	传真（Fax）023-68400769
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