



Heavy Plate

宝钢厚板 产品手册

PRODUCT MANUAL ▶▶





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PART ONE

COMPANY PROFILE

宝山钢铁股份有限公司简介



宝山钢铁股份有限公司（简称“宝钢股份”）是全球领先的现代化钢铁联合企业，是《财富》世界500强中国宝武钢铁集团有限公司的核心企业。宝钢股份以“成为全球最具竞争力的钢铁企业和最具投资价值的上市公司”为愿景，致力于为客户提供超值的产品和服务，为股东和社会创造最大价值，实现与相关利益主体的共同发展。

2000年2月，宝钢股份由上海宝钢集团公司独家创立；同年12月，在上海证券交易所上市（证券代码：600019）。2017年2月，完成吸收合并武钢股份后，宝钢股份拥有上海宝山、武汉青山、湛江东山、南京梅山等主要制造基地，在全球上市钢铁企业中粗钢产量排名第二、汽车板产量排名第一、取向电工钢产量排名第一，是全球碳钢品种最为齐全的钢铁企业之一。

宝钢股份坚持走“创新、协调、绿色、开放、共享”的发展之路，拥有享誉全球的品牌、世界一流的制造水平和服务能力。公司注重创新能力的培育，积极开发应用先进制造和节能环保技术，建立了覆盖全国、遍及世界的营销和加工服务网络。公司自主研发的新一代汽车高强度钢、取向电工钢、高等级家电用钢、能源海工用钢、桥梁用钢等高端产品处于国际先进水平。

Baoshan Iron & Steel Co., Ltd. (hereinafter referred to as “Baosteel”), is a globally leading modernized integrated iron and steel company and the core enterprise of China Baowu Steel Group Corporation, which is listed in Fortune’s Global 500. With a strategic objective to build itself into the most globally competitive iron and steel enterprise and a listed company with the greatest investment value, Baosteel devotes to providing prominent products and services to customers, creating best value for shareholders and the society, and achieving the joint development with stakeholders.

In February 2000, Baosteel was founded by Shanghai Baosteel Group Corporation, and was listed on Shanghai Stock Exchange (stock code: 600019) in December of the same year. In February 2017, Baosteel merged Wuhan Iron & Steel by absorption, which turns Baosteel into a company that owns such main manufacturing bases as Shanghai Baoshan, Wuhan Qingshan, Nanjing Meishan and Zhanjiang Dongshan. The company ranks 2nd in the crude steel production, 1st in the automotive sheet output and 1st in the oriented electrical steel output among all the global listed steel companies. The company is also one of the global steel enterprises with the most complete carbon steel products.

Baosteel Co., Ltd. sticks to the development road of “innovation, coordination, green, openness and inclusiveness”, and possesses the world-renowned brands and the world first class manufacturing and service capability. The company attaches great emphasis to cultivating its innovation capacity, actively develops and deploys advanced technologies of manufacturing, energy-conservation and environmental protection, and has established the marketing, processing and service network with nationwide coverage and worldwide involvement. Its independently developed high-end products, such as the new generation high strength automotive steel, grain-oriented electrical steel, high grade steel for household appliances, steel for energy and marine engineering, steel for bridges, hot-rolled heavy rail and etc, all reached the world’s advanced level.

厚板事业部简介

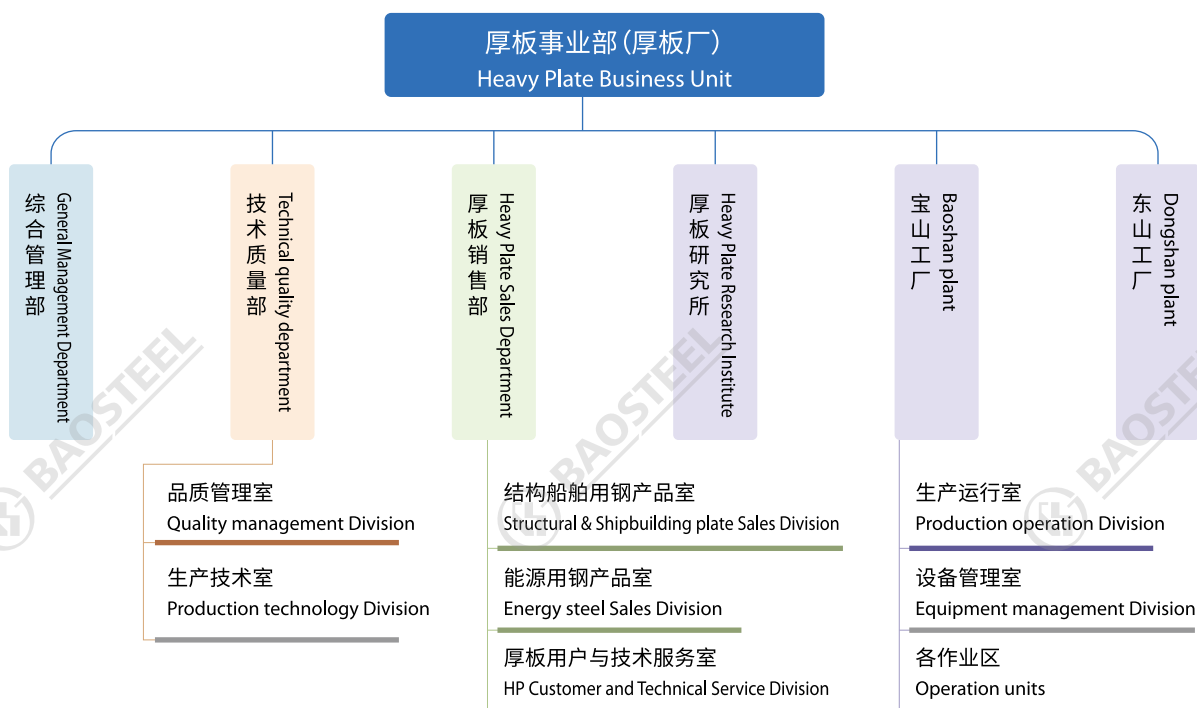
HEAVY PLATE BUSINESS UNIT PROFILE

厚板事业部是宝山钢铁股份有限公司直属二级生产经营单位，负责公司厚板产品从研发、制造到市场的一体化战略规划制定与实施，对公司厚板产品的综合竞争力负总责，同时接受公司营销、制造、研发体系的覆盖管理。厚板事业部成立以来，积极构建“着眼未来、立足现场、面向市场”的产销研一体化模式，发挥大营销平台、大研发平台的功能，专注于“大国重器，使命担当”类战略产品研发，以“品种”为核心、打造整体作战的能力和效率，敏捷应对市场的产销研一体化战略能力，做国家战略、国防安全、重大工程/装备可信赖的材料供应商。

厚板事业部下设综合管理部（党委组织部、党群工作部）、技术质量部、厚板销售部、厚板研究所、东山工厂五个机构，覆盖宝山基地和东山基地厚板产品相关管理职能。

Heavy Plate Business Unit is the production and operation unit under Baoshan Iron and Steel Co., LTD. It is responsible for the ratification and implementation of the integrated strategic plannings of Baosteel's heavy plate products, covering from R&D, manufacturing to marketing. Subject to the entire management of the company's marketing, manufacturing and R&D system, Heavy Plate Business Unit keeps on improving the comprehensive competitiveness of heavy plate products. Since its inception, streamlining the production, sales and research under the philosophy of being future-visionary, products-focusing and market-oriented, Heavy Plate Business Unit is committed to function as a pivotal platform to straddle between marketing and R&D, under which the development of strategic products is prioritized so as to relentlessly bear the brunt and blaze the trail for manufacturing the heavy plates strategically and excruciatingly needed by the country. With high-value added products being the core task, Heavy Plate Business Unit is relying on what it boasts as the capability and efficiency to swiftly respond to the market demands and strategically combine the production with the sales and research, on the basis of synergy and teamwork, enabling itself to be the reliable heavy plate supplier for mega projects and equipments both of strategic significance and national defense safety.

Heavy Plate Business Unit consists of General Management Department (Organization Department of Party Committee and Mass Working Department), Technical Quality Department, Heavy Plate Sales Department, Heavy Plate Research Institute and Dongshan Plant, bearing the administrative functions of heavy plate products both at Baoshan Plant and Dongshan Plant.





► 厚板事业部5m 产线（宝山工厂）简介

INTRODUCTION OF 5-METER HEAVY PLATE MILL

宝钢5m厚板轧机工程是宝钢股份公司“十五”规划建设的最大项目，产线位于上海宝山总部。厚板轧机产品定位是高等级船舶及海洋工程用钢、高等级管线用钢、高强韧结构钢、锅炉压力容器、核电用钢、轧制复合板及不锈钢等厚板产品。

5m厚板轧机工程分两期建设，一期建设一架精轧机，2005年3月建成，设计年生产规模为140万吨；二期增建一架粗轧机，2008年建成，设计年生产规模为180万吨。

5m厚板产线广泛采用当今厚板领域最新技术及装备：包括高精度轧制技术、DQ 技术、TMCP 技术、在线自动化探伤技术、自动化剪切技术、强力矫直自动化控制技术、无氧化热处理技术、预矫直机、综合板型测量仪、自动标记等，以满足用户对高等级厚钢板的高尺寸精度、高性能的要求。

The 5-meter heavy plate mill is the largest project in 'tenth five-year plan' of Baosteel. The mill was located in Baoshan District of Shanghai. The steel grades, which the heavy plate rolling mill can produce, aim at ship and ocean engineering steel plates, high grade pipeline steel plates, high strength and ductility structural steel plates and steel plates for boilers, pressure vessels, nuclear power plant, Clad-Rolled steels and stainless steel plate etc.

The heavy plate mill project is built in two phases. At the first phase, a set of finish rolling mill has been built with the annual capacity of 1.4 million tons. At the second phase, a set of rough rolling mill has been built and completed at the end of 2008, and the annual capacity will be expanded to 1.8 million tons.

The 5-meter heavy plate mill is extensively adopted the state-of-the-art heavy plate technologies and facilities in the world, including high precision of rolling technique, DQ technology, TMCP technology, automatic online ultrasonic detective technique, automatic cutting technique, automatic control technique for strong leveling process, non-oxidation heat treatment technique, pre-leveling straightener, comprehensive plate surface measuring apparatus and automatic marking, etc. In this way, the requirements of high dimensional accuracy and mechanical property for high grade heavy steel plates from customers can be satisfied.





► 厚板事业部4.2m 产线（东山工厂）简介

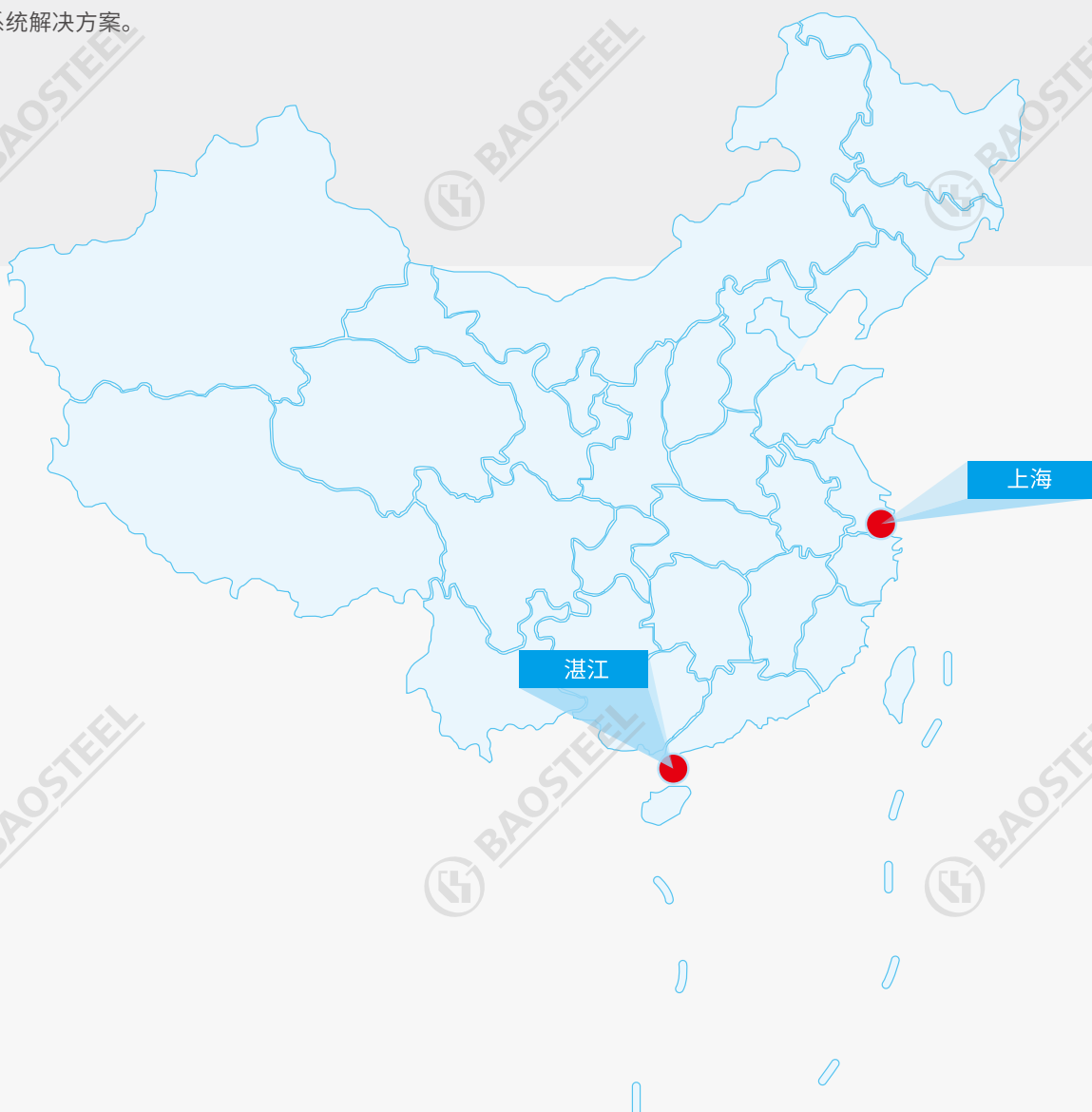
INTRODUCTION OF 4.2-METER HEAVY PLATE MILL

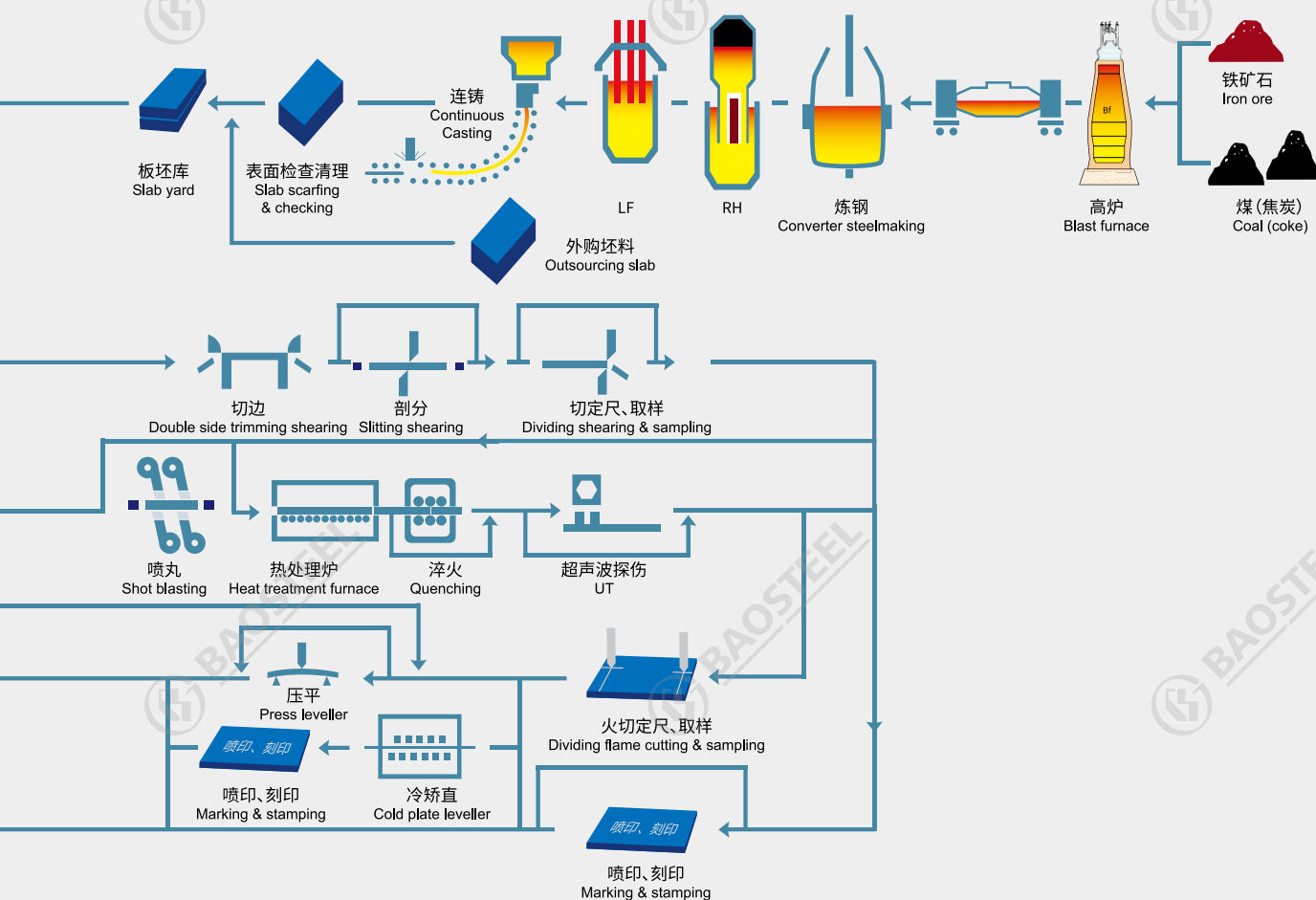
4.2m厚板产线位于宝钢湛江钢铁基地，2016年5月投产。主轧线配置了4.2m双机架轧机，主体设备从西马克引进，控制系统由西门子提供。设计年生产规模为160万吨。主要品种有造船钢板、海洋平台钢板、结构钢板、锅炉容器钢板、管线钢板、耐蚀钢板以及模具钢板等。

产线采用了包括多功能液压AGC厚度控制技术、CVC板形控制技术、MULPIC 冷却技术、全流程板形矫直技术等厚板领域多项新技术及装备。湛江4.2m厚板产线以先进的工艺装备技术为支撑，秉承“简单、高效、低成本、高质量”管理理念，致力于为用户提供敏捷、优质的产品与服务以及批量中高端产品和重大工程用钢的系统解决方案。

The 4.2-meter heavy plate rolling project is located in zhan-jiang iron and steel base of baosteel, put into operation in May, 2016. Main rolling line is equipped with two-stand mill, Max. rolling force of 9000 tons, The main equipments are imported from SMSD, and the controlling system is supplied by Siemens. Annual capacity of 1.60 million tons. Mainly produces plates are Shipbuilding steel plate, offshore platform steel plate, structural steel plate, boiler steel plate, pipeline steel plate, corrosion resistant steel plate and mould plate, etc.

The plant uses many advanced technologies and equipments: such as multi functional AGC hydraulic controlling technique for thickness CVC plate profile control technique MULPIC cooling technique whole process plate shape straightening technique, etc.





产线特色

PROCESS FEATURES

宝钢厚板产线主要生产船舶及海洋工程用钢、管线钢、桥梁建筑结构钢、锅炉压力容器及核电用钢等，具有成分均匀、性能稳定、板型良好、表面质量优良等优点。

Baosteel heavy plate mill mainly produces ship and ocean engineering steel plates, pipeline steel plates, structure steel plates, and steel plates for boilers, pressure vessels and nuclear power plant. All the products of Baosteel have the advantage of even composition, stable quality, excellent flatness and nice surface quality.



▶▶ 钢水纯净度高 High purity of liquid steel

宝钢转炉对脱磷、脱硫、脱氮等工艺进行了研究和开发，形成了转炉低磷、低硫、低氮冶炼工艺技术。并通过RH、VD、LF、CAS、KIP等精炼设备，确保钢水的化学成分控制稳定，波动小，钢中不可去除有害元素As、Sn、Te、Sb、Bi含量极低。钢水纯净度能够达到 $[S] \leq 10\text{ppm}$ 、 $[P] \leq 50\text{ppm}$ 、 $[O] \leq 20\text{ppm}$ 、 $[H] \leq 1.5\text{ppm}$ 的世界一流水平。

Baosteel takes the research and development on dephosphorization, desulfurization and denitrogenation of converter, and the relative smelting technique was made. The chemical composition of liquid steel was stable with ladle refining equipment RH, VD, LF, CAS, KIP. The harmful elements of As, Sn, Te, Sb, Bi which can not be avoid in the steel was very low in the steel. The purity of steel can reach $[S] \leq 10\text{ppm}$, $[P] \leq 50\text{ppm}$, $[O] \leq 20\text{ppm}$, $[H] \leq 1.5\text{ppm}$.

▶▶ 铸坯内质优良 Excellent metallurgical properties of the slab

宝钢厚板连铸机通过全过程密封浇注技术防止钢水在连铸过程中发生二次氧化；通过铸坯的多点矫直、多点弯曲和轻压下技术有效的防止板坯产生鼓肚变形、表面裂纹等缺陷；通过结晶器液面自动检测和控制技术有效减少钢水在结晶器内的波动；通过小辊密排/轻压下技术，改善板坯成分偏析、夹杂物、疏松和内裂；通过动态幅切的气-雾冷却技术和高频小振幅液压振动技术，改善板坯表面质量。

The secondary oxidation of liquid steel can be prevented with the hermetic casting technique. The bulging deformation and surface crack can be prevented with the multi-point leveling, multi-point bending and soft reduction technology. The fluctuation of liquid steel can be reduced with the crystallizer liquid surface automatic inspection and control technique. The segregation, inclusion, porosity and crack of the slab can be improved through the dense arrangement small roller & soft reduction technology. The surface quality of the slab can be improved by using dynamic amplitude cutting gas mist cooling technology and high-frequency small amplitude hydraulic vibration technology.

▶▶ 尺寸精度高 High dimensional accuracy

宝钢厚板精轧机采用高精度多点式设定模型，高响应液压AGC技术，具有监控AGC、绝对AGC等功能，并在水平机架出口侧近距离布置γ射线测厚仪，减小监控AGC控制盲区，实现高厚度精度控制。钢板厚度同板差 $\leq 0.5\text{mm}$ ，船舶及海工产品厚度正公差增量 $\leq 1.5\%$ 。计算机自动组板、控制切割，钢板厚度可按0.1mm进级，长度、宽度可按1mm进级，提高用户的材料利用率。

The finishing mill takes the multi point setting module with high precise, high response hydraulic AGC technique and the γ -ray thickness meter was set near the exit of horizontal stander, the monitor AGC control blind area can be reduced. The deviation of the thickness can be less than 0.5mm, the extra mass of the shipment and offshore product can be less than 1.5%. The thickness can be ordered with 0.1mm with the automatic computer design and control cutting technique, the length and width can be order with 1mm which can improve the utility of the steel.



▶▶ 平面形状控制好 Excellent control of shape

采用MAS轧制法控制钢板的平面形状。同时配置与水平机架成近距离布置的立辊机架，采用立辊机架的AWC短行程（SSC）功能，进一步改善钢板平面形状，提高宽度绝对精度。

The MAS rolling method can control the shape of the plate, and the vertical mill was set near the horizontal stander, with the AWC, SSC function, the shape of the plate and the definite accuracy of the width was further improved.

▶▶ 板型控制好 Excellent control of flatness

通过高精度设定模型，实现多点设定、道次间自适应，多功能AGC控制技术及CVCPLUS板型控制技术，获得良好平面形状。热矫直机采用预应力立柱及高刚性框架，矫直辊上辊系采用高响应伺服阀液压压下装置，具有动态控制功能。上辊系能够整体前后倾动，左右倾动，预设定正、负弯辊，以尽可能改善平直度。

With the high precise setting mold, the multifunction AGC control technique and the CVCPLUS flatness control technique, the excellent flatness was got. The hot leveling was set with stress upright post and high rigidity frame, the roller was set with high response servovalve hydraulic roll screwdown equipment which has the dynamic control function. The upper roller can tilt in all direction to improve the flatness.

▶▶ 表面质量优 Excellent surface quality

通过加热工艺优化减少板坯一次氧化铁皮的产生，轧制时通过高压水喷射除去轧制过程的二次氧化铁皮。调质钢板热处理前进行抛丸处理保证表面质量，氮气保护热处理炉中进行热处理，提供无氧化铁皮的热处理厚钢板。

The first scale sinter was removed with the optimized heating technique, and the secondary scale sinter was removed during the rolling process with the high pressure water injection. The surface was shot blasted before heat treatment to guarantee the quality, and the heat treatment heavy plate without scale sinter was processed in the nitrogen protection heat treatment furnace.

▶▶ 产品交付能力强 Strong product delivery capability

能够提供多种交货状态包括普通轧制态AR、控制轧制态CR、正火轧制态NR、热机械控轧控冷TMCP、热机械控轧控冷加回火TMCP+T、正火态N、正火加回火态N+T、调质态QT、固溶处理solid solution等；产品最大宽度达4800mm，最大厚度为400mm，最大长度为25m，最大单重26吨。

Baosteel can offer all the delivery conditions such as: as rolled, controlled rolled, normalized rolled, TMCP, normalized, normalized and tempered, quenched and tempered, solid solution; The maximum width of the product is 4800mm, the maximum thickness is 400mm, the maximum length is 25m, and the maximum unit weight is 26 tons.



检测设备

TESTING DEVICES AND EQUIPMENTS

宝钢拥有化学、力学、物理性能检测实验室，有热轧试验机、拉伸试验机、冲击试验机、光学显微镜、透射电镜、热模拟试验机等大型检测设备近百台，为宝钢厚板新产品的开发提供了有力的支持。并获得中国合格评审国家认可委员会实验室认可证书。

Baosteel possesses chemical, mechanical and physics testing laboratory which are equipped with nearly one hundred sets of large scale testing devices such as hot rolling testing machines, tensile testing machines, impact testing machines, optical microscopes, and hot stimulating testing machines, etc. They supply the strong support for the available product testing and new heavy

plate product developed by Baosteel. The laboratory certification was given by China National Accreditation Service for Conformity Assessment.

▶▶ 全自动拉伸试验机 Automatically Tensile Testing Machine



▶▶ 冲击试样加工中心 Processing Center for Impact Test Specimen



▶▶ 多通道恒电位仪 Multichannel potentiostat



▶▶ 晶间腐蚀装置 Inter-crystalline corrosion test



主要产品和可供范围

AVAILABLE PRODUCTS

产品规格：Available Dimensions

产品 Product	厚度(mm) Thickness	宽度(mm) Width	长度(mm) Length	单重(t) Unit weight
普通轧制产品 As rolled product	5~400			
TMCP产品 TMCP product	8~130			
碳钢 Carbon Steel	热处理产品（包括正火、调质及回火等热处理工艺生产的产品） Heat treatment product (including products treated by Normalizing, quenching and tempering process)	900~4,800	MAX.25,000	MAX.26
	5~200			
涂漆产品 Painting product	6~100			
奥氏体不锈钢 Austenitic stainless steel				
铁素体不锈钢 Ferritic stainless steel				
马氏体不锈钢 Martensitic stainless steel				
双相不锈钢 Duplex stainless steel				
厚板 Heavy plate	5~400	900~4,800	MAX.25,000	MAX.40
轧制复合板 Clad-rolled Steel	热轧卷 Hot rolled coil	1.5~25.4	600~1600	-
				MAX.18
	冷轧卷 Cold rolled coil	0.17~4.5	700~1500	-
				MAX.12

注：产品既可以切边和定尺状态交货，也可根据用户要求，以毛边状态交货。

Remarks: The delivery condition of the products can either be edge-cutting and cut-to-length, or raw edge required by the customer.





碳钢产品 Carbon Steel Products

▶ 船舶海工用钢 Steel plate for shipbuilding and offshore engineering

可供产品牌号、规格范围及交货状态 Available product grade, specification and delivery condition

船级社 classification society	品种 Steel Type	牌号 Steel Grade	厚度 (mm) Thickness	交货状态 Delivery Condition	备注 Remarks
LR	普通船板 Ordinary-strength Hull Structural Steel	A/B/D/E	≤100	TM	RS≤80; RINA *
BV			≤50	AR	
ABS		A/B			
CCS			≤130	N	
DNV					
KR			≤35	AR	
NK		D			
RINA			≤130	N	
RS					
		E	≤130	N	
LR	高强船板 Higher-strength Hull Structural Steel		≤20	AR	
BV		AH32/DH32			
ABS		AH36/DH36	≤40	CR(NR)	
CCS			≤100	N	RS≤80
DNV					
KR		EH32/EH36	≤100	N	RS≤80
NK					
RINA		AH/DH/EH32/36	≤100	TM	LR/NK/KR/ RINA≤80; BV≤88
RS					
		AH40/DH40/EH40	≤100	TM	LR/NK/KR/ RINA≤68; BV≤88
LR	超高强船板 Extra High Strength Steel	AH420~FH690	≤160/90	QT	RINA≤50; NK/KR/BV not include
ABS		AQ43~FQ70			
CCS		AO420~FO690			
DNV					
RINA		AH420~EH500	≤80	TM	LR/KR/RINA not include
		AQ43~EQ51			
RS		AO420~EO500			
LR	高韧性船板 High-Toughness Hull Structural Steel				
NK					
RINA		FH32/FH36/FH40	≤68	TM	
RS					



LR		EH36/EH40/EH47-BCA1 COD	≤100	TM	超大型集装箱船用钢
ABS					
DNV	止裂钢				Ultra Large Container Carrier
CCS	Brittle Crack Arrest Steel	EH40/EH47-BCA2 COD	≤100	TM	
RS					
		LTAH27S~LTEH36	≤80	TM	
LR		LTAH27S~LTEH36	≤80	N	
BV					用于液化石油气、液氨船储罐
CCS	低温碳锰钢	LTFH27/32/36 LTAH40~FH40	≤68	TM	Liquefied petroleum gas and liquid ammonia storage tanks
ABS	Carbon-manganese steel for low temperature service				
DNV		410/460/510/550LE/LF CL-I-2~CL-III-4			
NK		V/VH32/VH36-OXX	≤40	TM	
KR		NV 2-2/3/4/4L,NV4-2/3/4/4L KL24A/B,KL27/33/37 RL235A/B,RL325A/B,RL360			
LR			≤50	QT	
BV					
ABS	低温镍合金钢	9Ni/X8Ni9/			用于液化天然气运输船储罐及燃料罐
CCS	Nickel alloy steel for low temperature service	X7Ni9/9N490	≤30	NNT	LNG carrier storage tank and fuel tank
DNV					
KR		5Ni/X12Ni5/5N390	≤50	QT	
RS					
CCS		基材: AH32/36,DH32/36	≤30		
		覆材: S22053,S22253 S32205,S31803	≤4		用于化学品运输船核动力破冰船
	船用复合板			TM	Chemical Carrier nuclear powered icebreaker
	Clad steel plate				
BV		基材: AH/DH/FH32/36/40	≤49		
		覆材: S32205,S31803 304L/316L/317L	≤5		
EN 10225-1		S355MLO(S355G7/G9+M) S420MLO(S420G1+M) S460MLO(S460G1+M)	≤80	TM	
API	海工用钢	API 2W-50/60			海洋平台
	Offshore engineering plate				Offshore platform
ASTM		A514/514M Gr.Q(MODIFIED) A517/517M Gr.Q(MODIFIED)	≤178	QT	

注: 1、A/B/D/E普通船板TM交货状态不包含RINA船级社证书。

2、API标志认证钢种及规格需与产品销售部确认, 以当期证书为准。

Remarks: 1. A/B/D/E products in TM delivery condition do not include RINA.

2. The grade and specification of API mark certification shall be confirmed with the heavy plate sales department, and the current certificate shall prevail.



船舶及海工行业供货业绩 Shipbuilding and offshore engineering industry

行业 Industry	重点用途 Application	牌号 Grade	厚度范围 Thickness(mm)	供货业绩 Weight(t)
船舶行业 Shipbuilding industry	86K LPG船液货舱 86K LPG Ship Cargo Tank			
	93K LPG船液货舱 93K LPG Ship Cargo Tank	LT-FH32		
		VL 4-4		
	40K液氨/LPG船液货舱及甲板罐 40K NH ₃ /LPG Ship Cargo & Deck Tank	VL 4-4L	8-50	130,000
		AB/VH32-OXX		
		AB/VH36-OXX		
	9500M ³ LNG船液货舱及甲板罐 9500m ³ Ship Cargo & Deck Tank	X7Ni9		
		SA553 Type I		
	船用LNG燃料罐 LNG Fuel Tank			
	24100TEU集装箱船上甲板及舱口围板 Deck and Hatch Coaming for 24100TEU Con- tainer Ship	E40/47		
海工行业 Offshore engineering industry		E40BCA1	50-95	18,000
	23000TEU集装箱船上甲板及舱口围板 Deck and Hatch Coaming for 23000TEU Con- tainer Ship	E47BCA1/BCA2		
	自升式钻井平台 Jack-up Drilling Platform	EQ43		
		EQ47		
		EQ51		
		EQ56	≤178mm	
		EQ63		
		EQ70		
		A514Q		
		A517Q		50,000
海工行业 Offshore engineering industry	浮箱和基座 Buoy and Foundation	API 2H-50		
		API 2W-50	8-50mm	
	导管架 Jacket	API 2W-60		
	液化天然气项目 LNG Project	S355M		
		S355ML		
		S355G10+M	≤80mm	200,000
		S420M		
		S420ML		
		S420G2+M		

重点工程及典型项目应用 Application Achievement

项目名称: 东方红3号海洋科考船 **project:** Dongfanghong III marine research ship

牌号: B/AH32/DH36

Steel grade: B/AH32/DH36

用途: 船体

application: Hull

产品特点: 高厚度精度

Product features: High thickness accuracy

供货量: 2200吨

Quantity: 2200t

供货时间: 2016年

Delivery time: 2016



项目名称: 雪龙2号极地科考船 **project:** XUELONG 2 polar research vessel



牌号: A/AH36/DH36/EH36

Steel grade: A/AH36/DH36/EH36

用途: 船体

application: Hull

产品特点: 耐低温磨蚀

Product features: Low temperature abrasion resistance

供货量: 670吨

Quantity: 670t

供货时间: 2017年

Delivery time: 2017

项目名称: 超大型液化气船 **project:** VLGC



牌号: NV 4-4, NV 4-4L, AB/VH32-OXX, AB/VH36-OXX

Steel grade: NV 4-4, NV 4-4L, AB/VH32-OXX, AB/VH36-OXX

用途: 液货舱及甲板罐

application: Cargo tanks and deck tanks

产品特点: 低温韧性好、低屈强比

Product features: Good low temperature toughness and low YS/TS

供货量: 150000吨

Quantity: 150000t

供货时间: 2018-2022年

Delivery time: 2018-2022





项目名称: 蓝鲸一号半潜式钻井平台

project: Lanjing 1 semi submersible drilling platform



牌号: A36/D36/E36/F36/E460/E550

Steel grade: A36/D36/E36/F36/E460/E550

用途: 平台主船体

application: Main hull of platform

项目特点: 我国自主制造世界最大、钻井深度最深的双井架半潜式钻井平台

Project features: The world's largest and deepest double well frame semi submersible drilling platform manufactured independently by China.

供货量: 12600吨

Quantity: 12600t

供货时间: 2013-2014年

Delivery time: 2013-2014

项目名称: 24100TEU集装箱船

project: 24100TEU container ship



牌号: E40/E40BCA1/E47/E47BCA1/E47BCA2

Steel grade: E40/E40BCA1/E47/E47BCA1/E47BCA2

用途: 上甲板及舱口围板

application: Upper deck and hatch coaming

产品特点: 高强度、高韧性、高止裂、易焊接。世界最大集装箱船止裂及特厚非止裂钢整船供货

Product features: High strength, high toughness, high crack arrest, easy to weld. The world's largest container ship supplied with crack arrest and extra thick non crack arrest steel.

供货量: 18000吨

Quantity: 18000t

供货时间: 2020-2021年

Delivery time: 2020-2021



▶▶ 管线钢 Steel plate for pipeline

可供产品标准、牌号、规格范围及交货状态 Available product standard, grade, specification and delivery condition

产品标准 Product Specification	牌号 Grade	厚度范围 Thickness(mm)	交货状态 Delivery Condition
API Spec5L/ISO3183	L245 or Gr.B	≤40	CR
	L290 or X42	≤40	CR
	L320 or X46	≤40	CR
	L360 or X52	≤40	CR/TM
	L390 or X56	≤40	CR/TM
	L415 or X60	≤40	CR/TM
	L450 or X65	≤40	TM
	L485 or X70	≤40	TM
	L555 or X80	≤35	TM
	L625 or X90	≤30	TM
	L690 or X100	≤30	TM
	L830 or X120	≤25	TM
	L360M or X52MS	≤30	TM
	L390M or X56MS	≤30	TM
	L415M or X60MS	≤30	TM
	L450M or X65MS	≤30	TM
	L485M or X70M	≤30	TM
	L555M or X80M	≤30	TM
	L245	≤40	CR
	L290	≤40	CR
GB/T 9711	L360	≤40	CR/TM
	L415	≤40	CR/TM
	L450	≤40	TM
	L485	≤40	TM
	L555	≤35	TM
	245	≤40	CR
DNV-OS-F101	290	≤40	CR
	360	≤40	CR/TM
	415	≤40	CR/TM
	450	≤40	TM
	485	≤40	TM
	555	≤35	TM



管线供货业绩 Pipeline steel

业主单位 Customer	重点工程名称 Project	代表牌号 Grade	厚度范围 Thickness(mm)	供货业绩 Weight(t)
中国石油 CNPC	中俄管线 China-Russia Pipeline Project			
	西气东输二线 West East Gas Pipeline Project, phase II			
	中卫-贵阳一、二、三期 Pipeline from Zhongwei-Guiyang, Phase I to III	K60		
		X70		
	西气东输三线 West East Gas Pipeline Project, phase III	X70-W	14-33	
中国石化 SINOPEC		X80		
		X80-W		
	川气出川管线 Pipeline of Transmitting Sichuan Natural Gas			
中海油 CNOOC	广东管网 Guangdong Pipeline net			
印度石油 India Oil	印度海底管线 Submarine Pipeline, India	X52	20-24	1210000
中国石油技术与 开发公司 CPTDC	中俄管线 China-Russia Pipeline Project	K60-2/K70		
			17.5-24	
	中亚管线 Central Asia Pipeline Project	X70		
壳牌石油公司 SHELL	WESTWARD HO项目 Westward Ho Project	X70	11.9	
沙特阿美石油公司 ARAMCO	MASTER GAS一期 Master Gas, Phase I	X70	25.7	
墨西哥石油公司 PEMEX	LOS RAMONES管线 Los Ramones Pipeline	X70	14.2/16.9	
秘鲁石油公司 PETROPERU	秘鲁管线 Peru's Pipeline Project	X70	15.3/17.64	



业主单位 Customer	重点工程名称 Project	代表牌号 Grade	厚度范围 Thickness(mm)	供货业绩 Weight(t)
国家管网 PipeChina	中俄东线 China-Russia East Natural Gas Pipeline Project	X70M X80M L555M	18.4-33.8	653000
	陕京四线 Pipeline from Shaanxi-Beijing, Phase IV	L485M X80M	22-33	66000
	西气东输一线 West East Gas Pipeline Project, phase I	X70M L485M	21	20000
新天绿色能源股份有限公司 China Suntien Green Energy Co., Ltd	唐山LNG输气管线 Tangshan LNG Transmission Pipeline	X80M	21.4-25.7	58000
广东省天然气管网有限公司 Guangdong Natural Gas Pipeline Network Co., Ltd	粤北广州-韶关干线 Guangzhou to Shaoguan Line in Northern Guangdong	X70M	14.6-25	41000
	粤东海丰-惠来 Haifeng to Huilai Line in East Guangdong	X70M	14.6-17.5	17000
	粤西茂名-阳江 Maoming to Yangjiang Line in West Guangdong	X70M	15.9	16000
	华丰华瀛外输管线 Huafeng to Huaying Pipeline	X70M	17.5-22.2	11000
河北省天然气 Hebei Natural Gas Co., Ltd	涿州永清天然气管线 Zhuozhou to Yongqing Natural Gas Pipeline	X80M	18.4-27.5	45000
国家管网 PipeChina	江苏滨海LNG配套输气管线 Gas Transmission Pipeline for Jiangsu Binhai LNG Project	X70M L555M	19.1-28	80000
江苏省沿海输气管道有限公司 Jiangsu coastal Gas Transmission Pipeline Co., Ltd	江苏沿海管线项目一、三 Jiangsu Coastal Pipeline Project, Phase I & III	X70M	21-26.2	25000
国家管网 PipeChina	广东揭阳炼化 Jieyang Refining and Chemical Integration Project, Guangdong	L485M	14.3-21	24000
国家管网 PipeChina	深圳LNG项目 Shenzhen LNG Project	L485M	26.2-30.2	42000

重点工程及典型项目应用 Application Achievement

项目名称：西气东输二线管道工程 **project:** West East Gas Pipeline Project, phase II

牌号：X80M
Steel grade: X80M

用途：高压天然气输送管道
application: High pressure natural gas transmission pipeline

项目特点：国内首条距离最长、工程量最大的里程碑式X80管道工程

Project features: The first milestone X80 pipeline project with the longest distance and the largest quantities in China

供货量：473100吨
Quantity: 473100t

供货时间：2007-2010年
Delivery time: 2007-2010



项目名称：中俄东线天然气管道工程 **project:** China-Russia east natural gas pipeline project

牌号：X80M
Steel grade: X80M

用途：高压天然气输送管道
application: High pressure natural gas transmission pipeline

项目特点：全球钢级最高、口径最大、输量最大的天然气管道工程

Project features: Natural gas pipeline project with the highest steel grade, the largest diameter and the largest transmission capacity in the world

供货量：500000吨
Quantity: 500000t

供货时间：2017-2022年
Delivery time: 2017-2022



项目名称：超高强管线钢开发 **project:** Development of ultra-high strength pipeline steel

牌号：X90/X100/X120
Steel grade: X90/X100/X120

用途：高压天然气输送管道
application: High pressure natural gas transmission pipeline

产品特色：国内首家实现X100管线钢商业供货
Product features: The first commercial supply of X100 Pipeline Steel in China

供货量：170吨
Quantity: 170t

供货时间：2013年
Delivery time: 2013



►► 能源工程用钢板 Steel plate for energy engineering

可供产品标准、牌号、规格范围及交货状态 Available product standard, grade, specification and delivery condition

产品标准 Product Specification	牌号 Grade	厚度范围 Thickness(mm)	交货状态 Delivery Condition
GB713	Q245R(20g、20R)	6-150	AR/CR/N
	Q345R(16Mng、19Mng、16MnR)		AR/CR/N/N+SR
	Q370R(15MnNbR)		N/N+SR
	18MnMoNbR		N+T/N+T+SR
	13MnNiMoR(13MnNiMoNbR)		N+T/N+T+SR
	15CrMoR(15CrMog)、15CrMoR(H)		N+T/N+T+SR/N+ACC+T+SR
	12Cr1MoVR(12Cr1MoVg)		N+T/N+T+SR
	14Cr1MoR、14Cr1MoR(H)		N+T/N+T+SR/N+ACC+T+SR
GB3531	12Cr2Mo1R、12Cr2Mo1R(H)	6-120	N+T/N+T+SR/N+ACC+T+SR
	16MnDR		N/N+SR
	15MnNiDR		
	09MnNiDR		N/N+T
	08Ni3DR		
GB24510	06Ni9DR	5-40	QT
	5Ni	5-50	QT
	9Ni	5-40	
GB19189	07MnMoVR	10-60	QT/QT+SR
	07MnNiVDR		
	07MnNiMoDR		
	12MnNiVR		
ASME SA387/SA387M ASTM A387/A387M	SA387 Gr.12/A387 Gr.12	6-150	N+T/N+T+SR/N+ACC+T+SR
	SA387 Gr.12(H)/A387 Gr.12(H)		
	SA387 Gr.11/A387 Gr.11		
	SA387 Gr.11(H)/A387 Gr.11(H)		
	SA387 Gr.22/A387 Gr.22		
ASME SA204/ SA204M ASTM A204/A204M	SA387 Gr.22(H)/A387 Gr.22(H)	6-100	N/N+SR
	SA204Gr.B		
	SA204Gr.C		
ASME SA203/SA203M ASTM A203/A203M	SA203 Gr.D	6-80	N+T
	SA203 Gr.E		
ASME SA285/SA285M ASTM A285/A285M	SA285 Gr.A/A285 Gr.A	6-50	AR/CR/N/N+SR
	SA285 Gr.B/A285 Gr.B		
	SA285 Gr.C/A285 Gr.C		





产品标准 Product Specification	牌号 Grade	厚度范围 Thickness(mm)	交货状态 Delivery Condition
ASME SA299/SA299M ASTM A299/A299M	SA299/A299	8-130	N/N+SR
ASME SA516/SA516M ASTM A516/A516M	SA516Gr.55/A516Gr.55 SA516Gr.60/A516Gr.60 SA516Gr.65/A516Gr.65 SA516Gr.70/A516Gr.70	6-130	AR/CR/N/N+T /N+SR/N+T+SR
ASME SA533/SA533M ASTM A533/A533M	SA533 Type A/A533 Type A SA533 Type B/A533 Type B SA533 Type C/A533 Type C SA533 Type D/A533 Type D	10-130	QT/QT+SR
ASME SA553/SA553M ASTM A553/A553M	SA553 Type I/A553 Type I	5-40	QT
ASME SA737/SA737M ASTM A737/SA737M	SA737 Gr.B/A737 Gr.B SA737 Gr.C/A737 Gr.C	8-50	N/N+SR/N+ACC+T
ASME SA738/SA738M ASTM A738/SA738M	SA738 Gr.A/A738 Gr.A SA738 Gr.B/A738 Gr.B SA738 Gr.C/A738 Gr.C	8-150 10-130 10-150	N/N+SR/QT/QT+SR QT/QT+SR QT/QT+SR
ASME SA612/SA612M ASTM A612/A612M	SA612/A612	6-25	AR/CR/N/N+SR
ASME SA662/ SA662M ASTM A662/A662M	SA662 Gr.A/A662 Gr.A SA662 Gr.B/A662 Gr.B SA662 Gr.C/A662 Gr.C	6-50	CR/N/N+SR
ASME SA455/SA455M ASTM A455/A455M	SA455/A455	8-130	AR/CR/N/N+SR
ASME SA841/SA841M ASTM A841/A841M	SA841 Gr.A/A841 Gr.A SA841 Gr.B/A841 Gr.B SA841 Gr.C/A841 Gr.C	8-65	TM/TM+T
EN10028-2	P235GH P265GH P295GH P355GH (19Mn6) 16Mo3 20MnMoNi4-5	6-130 6-130 6-130 6-130 6-130 10-130	AR/CR/NR/N/N+SR



产品标准 Product Specification	牌号 Grade	厚度范围 Thickness(mm)	交货状态 Delivery Condition
EN10028-3	P275NH/NL1/NL2	6-130	N/NR
	P355N/NH/NL1/NL2	6-130	N/NR
	P460NH/NL1/NL2	8-130	N/N+T
EN10028-4	12Ni14	5-80	N/N+T
	X12Ni5	5-50	QT
	X7Ni9	5-40	QT
	X8Ni9	5-50	QT/ N+N+T
EN10028-5	P355M/ML1/ML2	8-80	TM/TM+T
	P420M/ML1/ML2	8-60	TM/TM+T
	P460M/ML1/ML2	8-60	TM/TM+T
EN10028-6	P355Q/QH/QL1/QL2	10-130	QT/QT+SR
	P460Q/QH/QL1/QL2		
	P500Q/QH/QL1/QL2		
	P690Q/QH/QL1/QL2		
Q/BQB 620-2018	B610CFHQL2、 B780CFHQL2	10-150	QT
	B610CFHML2、 B780CFHML2	10-60	TM/TM+T
	B610CFHQL4、 B780CFHQL4	10-150	QT
	B610CFHML4、 B780CFHML4	10-60	TM/TM+T
	B780CFHQL5	10-150	QT
	B780CFHML5	10-60	TM/TM+T
Q/BQB660-2018	B610E(08MnNiVR)	10-45	QT/QT+SR/DQ+T+SR/ TMCP+T+SR
	B610E(12MnNiVR)		
	B610CF(07MnMoVR)		
	B610CF-L1(07MnNiVDR)	10-75	
	B610CF-L2 (07MnNiMoDR)		

注：A—退火 AR—普通轧制 ACC—加速冷却 CR—控轧 N—正火 NR—正火轧制 QT—调质
SR—消除应力退火 T—回火 TM(TMCP)—热机械轧制

Remarks: A-annealing, AR-as rolled, ACC-accelerated cooling, CR-controlled rolling, N-normalizing, NR-normalizing rolling,
QT-quenching and tempering, SR- Stress Relieving, T-tempering, TM-thermo-mechanical controlled process



能源行业供货业绩 Energy industry

■ 原油储罐 Crude oil storage tank

业主单位 Customer	工程名称 Project	代表牌号 Grade	厚度范围 Thickness(mm)	罐型(万立方) Tank Type (x10 ⁴ m ³)	供货业绩 Weight(t)
中石化 Sinopec	镇海国家石油储备基地 Zhenhai National Crude Oil Reserve Base	B610E 08MnNiVR 12MnNiVR	12-42	10	450000t 562台/set
	黄岛国家石油储备基地 Huangdao National Crude Oil Reserve Base			10	
	白沙湾岚山基地 Baishawan Lanshan Crude Oil Reserve Base			10	
	白沙湾项目 Baishawan Project			15	
	茂名储罐项目 Maoming Storage Tank Project			12.5	
	惠州储罐项目 Huizhou Storage Tank Project			10	
	册子岛储罐项目 Shendao Storage Tank Project			10	
	仪征日照储罐项目 Yizheng Rizhao Storage Tank Project			10	
	北海储罐项目 Beihai Storage Tank Project			10	
	天津大港商储项目 Tianjin Dagang Commercial Reserve Project			10	
	海南洋浦商储项目 Hainan Yangpu Commercial Reserve Project			10	
	天津实华项目 Tianjin Shihua Project			10	
	白沙湾商储二期项目 Baisha Bay Commercial Reserve Project, Phase II			10	
	仪征商储项目 Yizheng Commercial Storage Project			12.5	
	镇海炼化项目 Zhenhai Refining and Chemical Project			10	
	齐鲁石化项目 Qilu Petrochemical Project			10	
	湛江储罐项目 Zhanjiang Storage Tank Project			10	
	镇海炼化算山码头储罐项目 Zhenhai Refining and Chemical Suanshan Wharf Storage Tank Project			10	
	天津项目 Tianjin Project			10	
	库车项目 Kuche Project			10	



业主单位 Customer	工程名称 Project	代表牌号 Grade	厚度范围 Thickness(mm)	罐型(万立方) Tank Type (x10 ⁴ m ³)	供货业绩 Weight(t)
中石化 Sinopec	茂名项目 Maoming Project			10	
	泉州项目 Quanzhou Project			10	
	湛江项目 Zhanjiang Project			12.5	
	国储项目 National Reserve Project			10	
	钦州基地 Qinzhou Base			10	
	兰州储备基地 Lanzhou Reserve Base			10	
	大港石化储罐项目 Dagang Petrochemical Storage Tank Project			10	
	原油商储鄯善储罐项目 Shanshan Storage Tank Project of Crude Oil Commercial Storage			10	
	大连石化储罐项目 Dalian Petrochemical Storage Tank Project			10	
	钦州国储一期储罐项目 Qinzhou National Reserve Storage Tank Project, Phase I	B610E			450000t
中石油 CNPC		08MnNiVR	12-42	10	562台/set
	大连国储EPC项目储罐项目 Dalian National Reserve Storage Tank EPC Project	12MnNiVR		10	
	大庆油田储罐项目 Daqing Oilfield Storage Tank Project			10	
	独山子储罐项目 Dushanzi Storage Tank Project			10	
	云南炼化项目 Yunnan Refining and Chemical Project			10	
	中油汇鑫项目 CNPC Huixin Project			10	
	国储新建项目 National Reserve New Project			15	
	惠州储罐项目 Huizhou Storage Tank Project			10	
	国储项目 National Reserve Project			10	
	商储东营项目 Commercial Reserve Dongying Project			10	
其它 Others	营口储罐一、二期项目 Yingkou Storage Tank Project, Phase I & II			10	



业主单位 Customer	工程名称 Project	代表牌号 Grade	厚度范围 Thickness(mm)	罐型(万立方) Tank Type (x10 ⁴ m ³)	供货业绩 Weight(t)
其它 Others	大连港南海基地 Dalian Port Nanhai Base	B610E 08MnNiVR 12MnNiVR	12-42	10	450000t 562台/set
	冀东南堡油田1号终端项目 Jidong Nanpu Oilfield Terminal 1 Project			10	
	大连港沙陀子一、二、三期项目 Dalian Port Shatuozi Project, Phase I, II & III			10	
	林源站增设原油油库工程 Crude Oil Storage Tank of Linyuan Project			10	
	辽宁盘锦储罐工程 Liaoning Panjin Storage Tank Project			10	
	钦州二期项目 Qinzhou Project, Phase II			15	
	大连新港项目 Dalian Xingang Project			15	
	抚顺石化项目 Fushun Petrochemical Project			10	
	兰州生产运行原料储备库项目 Lanzhou Production and Operation Raw Material Storage Project			10	
	大连长兴岛储罐一期项目 Dalian Changxing Island Storage Tank Project, Phase I			10	
	大连港8号罐区 No. 8 Tank Block of Dalian Port			10	
	宁波大榭岛小田湾储罐项目 Ningbo Daxie Island Xiaotianwan Storage Tank Project			10	
	锦州港一、二期项目 Jinzhou Port Project, Phase I & II			10	
	国投孚宝海南洋浦港储罐项目 SDIC Fubao Hainan Yangpu Port Storage Tank Project			10	
	浙江广厦黄泽山项目 Zhejiang Guangxia Huangzeshan Project			10	
	惠州华瀛原油储罐项目 Huizhou Huaying Crude Oil Storage Tank Project			10	
	东营齐润化工原油储罐项目 Dongying QiRun Chemical Crude Oil Storage Tank Project			10	
	浙石化炼化储罐项目 Zhejiang Petrochemical Refining and Chemical Storage Tank Project			10	
	大连恒力原油储罐项目 Dalian Hengli Crude Oil Storage Tank Project			15	

■ LNG储罐 LNG storage tank

业主单位 Customer	工程名称 Project	牌号 Grade	厚度范围 Thickness (mm)	罐形 Tank Type ($\times 10^4 \text{m}^3$)	储罐数量 Number of tanks (sets)	供货业绩 Weight(t)
广汇能源 Guanghui energy	南通吕四港LNG工程 Nantong Lvsi Port LNG Project	06Ni9DR		5	2	1,086
上海燃气 Shanghai gas	五号沟LNG二期 No.5 Ditch LNG, Phase II	06Ni9(9%Ni)		10	2	2,615
上海液化天然 气公司 Shanghai LNG Company	洋山港二期 Yangshan Port, Phase II	X7Ni9		20	2	4,643
中海油 CNOOC	唐山LNG项目 Tangshan LNG Project	X7Ni9	5~50	20	4	9,600
中石化 Sinopec	天津LNG项目二期 Tianjin LNG Project, Phase II	06Ni9DR		22	1	2,600
中海油南山 CNOOC Nanshan	龙口LNG项目 Longkou LNG Project	X7Ni9		22	2	5,600





■ 低温球罐 Low temperature spherical tank

工程名称 Project	代表牌号 Grade	厚度范围 Thickness(mm)	供货业绩 Weight(t)
天津项目 Tianjin Project			
镇海项目 Zhenhai Project			
北海项目 Beihai Project			
神华宁煤项目 Shenhua Ningxia Coal Chemical Project			
武汉乙烯项目 Wuhan Ethylene Project			
山东兖矿项目 Shandong Energy Group Project			
泰州滨江项目 Taizhou Binjiang Project			
中化弘润项目 Sinochem Hongrun Project			
宁波中金项目 Ningbo CICC Project			
云南项目 Yunnan Project	B610CF-L1/L2		138000t
宝钢湛江项目 Baosteel Zhanjiang Project	07MnNiVDR	10-50	352台/set
神华榆林项目 Shenhua Yulin Project	07MnNiMoDR		
福建中景项目 Fujian Zhongjing Project			
宁波新兴项目 Ningbo Xinxing Project			
福建天汇项目 Fujian Tianhui Project			
湖北荆门石化项目 Hubei Jingmen Petrochemical Project			
江苏斯尔邦石化项目 Jiangsu Silbang Petrochemical Project			
大榭岛项目 Daxie Island Project			
南京金陵亨斯迈项目 Nanjing Jinling Huntsman Project			
山东贝特项目 Shandong Beiter Project			
惠州一、二期项目 Huizhou Projects, Phase I and II			



工程名称 Project	代表牌号 Grade	厚度范围 Thickness(mm)	供货业绩 Weight(t)
烟台万华一、二期项目 Yantai Wanhua Project, Phase I and II			
天津奥佳永利项目 Tianjin Aojia Yongli Project			
云南云天石化项目 Yunnan Yuntianhua Petrochemical Project			
吉林康乃尔项目 Jilin Cornell Project			
大连恒力石化项目 Dalian Hengli Petrochemical Project			
吉神化学项目 Jishen Chemical Project			
浙江石化一、二期项目 Zhejiang Petrochemical Projects, Phase I and II			
南京中安项目 Nanjing Zhong'an Project			
中科炼化项目 Zhongke Refining and Chemical Project			
宁波民营项目 Ningbo Private Project	B610CF-L1/L2		138000t
福建泉州石化项目 Fujian Quanzhou Petrochemical Project	07MnNiVDR	10-50	352台/set
古雷石化项目 Gulei Petrochemical Project	07MnNiMoDR		
大庆石化项目 Daqing Petrochemical Project			
山东鲁清石化项目 Shandong Luqing Petrochemical Project			
连云港石化项目 Lianyungang Petrochemical Project			
山东万华项目 Shandong Wanhua Project			
长庆项目 Changqing Project			
山东劲海项目 Shandong Jinhai Project			
广东石化项目 Guangdong Petrochemical Project			
南京扬子石化项目 Nanjing Yangzi Petrochemical Project			
齐鲁石化项目 Qilu Petrochemical Project			

■ Cr-Mo钢、汽包钢、核电钢 Cr-Mo steel,boil barrel steel,nuclear engineering steel

行业 Industry	重点用途 Application	代表牌号 Grade	厚度范围 Thickness(mm)	供货业绩 Weight(t)
CR-MO钢 Cr-Mo steel	煤化工、炼化设备、电站耐热结构件 Coal chemical industry, refinery equipment, components for resisting heat in power station	12Cr1MoVR 12Cr2Mo1R 14Cr1MoR 15CrMoR	6-150	60000
		SA387系列 SA387 series		
汽包钢 Boil barrel steel	汽包锅炉 Boiler	13MnNiMoR/ 13MnNiMo5-4		
核电 Nuclear engineeringsteel	AP-1000安全壳、CAP-1400安全壳 AP-1000 containment vessel CAP-1400 containment vessel	SA738B		

■ 水电用钢 Steel for hydropower station

工程名称 Project	代表牌号 Grade	厚度范围 Thickness(mm)	供货业绩 Weight(t)
三峡向家坝水电站 Xiangjiaba Hydropower Station of Three Gorges Corporation			
三峡水电站 Three Gorges Corporation Hydropower Station			
三峡溪洛渡水电站 Xiluodu Hydropower Station of Three Gorges Corporation			
雅砻江锦屏水电站 Jinping Hydropower Station on Yalong River			
雅砻江两河口水电站 Lianghekou Hydropower Station on Yalong River			
南方电网清远抽水蓄能电站 Qingyuan Pumped Storage Power Station of China Southern Power Grid			
南方电网深圳抽水蓄能电站 Shenzhen Pumped Storage Power Station of China Southern Power Grid	B610CF系列 B610CF series	12-120	185600
国信溧阳抽水蓄能电站 Guoxin Liyang Pumped Storage Power Station			
越南SONLA水电站 Sonla Hydropower Station in Vietnam			
越南LAICHOU水电站 Laichou Hydropower Station in Vietnam			
厄瓜多尔德尔西电站 Ecuador Delsi Hydropower Station			
伊朗伊朗鲁德巴水电站 Rudba Hydropower Station in Iran			
以色列KOKHAV HAYARDEN抽水蓄能电站 Kokhav Hayarden Pumped Storage Power Station in Israel			





工程名称 Project	代表牌号 Grade	厚度范围 Thickness(mm)	供货业绩 Weight(t)
三峡白鹤滩水电站 Baihetan Hydropower Station of Three Gorges Corporation	B780CF系列 B780CF series	20-150	60000
三峡乌东德水电站 Wudongde Hydropower Station of Three Gorges Corporation			
三峡呼和浩特抽水蓄能电站 Hohhot Pumped Storage Power Station of Three Gorges Corporation			
三峡长龙山抽水蓄能电站 Changlongshan Pumped Storage Power Station of Three Gorges Corporation			
国家电网丰宁抽水蓄能电站 Fengning Pumped Storage Power Station of State Grid			
国家电网洪屏抽水蓄能电站 Hongping Pumped Storage Power Station of State Grid			
国家电网仙居抽水蓄能电站 Xianju Pumped Storage Power Station of State Grid			
国家电网文登抽水蓄能电站 Wendeng Pumped Storage Power Station of State Grid			
国家电网天池抽水蓄能电站 Tianchi Pumped Storage Power Station of State Grid			
国家电网金寨抽水蓄能电站 Jinzhai Pumped Storage Power Station of State Grid			
国家电网蟠龙抽水蓄能电站 Panlong Pumped Storage Power Station of State Grid			
国家电网敦化抽水蓄能电站 Dunhua Pumped Storage Power Station of State Grid			
国家电网荒沟抽水蓄能电站 Huanggou Pumped Storage Power Station of State Grid			
南方电网清远抽水蓄能电站 Qingyuan Pumped Storage Power Station of China Southern Power Grid			
南方电网深圳抽水蓄能电站 Shenzhen Pumped Storage Power Station of China Southern Power Grid			
华电周宁抽水蓄能电站项目 Huadian Zhouning Pumped Storage Power Station project			
福建永泰抽水蓄能电站项目 Fujian Yongtai Pumped Storage Power Station project			
公格尔水电站 Gongger Hydropower Station			
精河水电站 Jinghe Hydropower Station			
以色列KOKHAV HAYARDEN抽水蓄能电站 Kokhav hayarden Pumped Storage Power Station in Israel			

重点工程及典型项目应用 Application Achievement

项目名称: 上海白沙湾原油储罐工程 **project:** Shanghai Baisha Bay crude oil storage tank project

牌号: 12MnNiVR/B610E/08MnNiVR
Steel grade: 12MnNiVR/B610E/08MnNiVR

用途: 15万立方原油储罐
application: 150000m³ crude oil storage tank

产品特点: 实现15万立方储罐用高强度钢板国内首次开发和工程应用
The first domestic development and engineering application of high-strength steel plate for 150000 m³ storage tank

供货量: 4800吨
Quantity: 4800t

供货时间: 2007年
Delivery time: 2007



项目名称: 中海油南山LNG项目 **project:** CNOOC Nanshan LNG project



牌号: X7Ni9
Steel grade: X7Ni9

用途: 22万立方液化天然气储罐
application: 220000 m³ LNG storage tank

产品特点: 保证-196℃超低温冲击韧性, 应用于22万立方国内最大容积LNG储罐
Product features: -196℃ ultra-low temperature impact toughness, applied to 220000 m³ LNG storage tank with the largest volume in China.

供货量: 5568吨
Quantity: 5568t

供货时间: 2020年
Delivery time: 2020

项目名称: 中海油惠州千万吨炼化工程 **project:** CNOOC Huizhou ten million ton refining and chemical project

牌号: B610CF-L2
Steel grade: B610CF-L2

用途: 2000立方丙烯球罐
application: 2000m³ Propylene Spherical Tank

产品特点: 首次实现-50℃低焊接裂纹敏感性610MPa级高强度钢板工程应用
Product features: The engineering application of 610 MPa high strength & -50℃ low temperature toughness steel plate with crack free for the first time

供货量: 679吨
Quantity: 679t

供货时间: 2007年
Delivery time: 2007



项目名称：中海油大榭岛炼化工程 **project:** CNOOC Daxie Island refining and chemical project



牌号：07MnNiMoDR
Steel grade: 07MnNiMoDR

用途：3000立方丙烯、丙烷球罐
application: 3000m³ propylene and propane spherical tanks

产品特点：3000立方球罐高强钢板国产化替代
Product features: First localization of high strength steel plate for 3000m³ spherical tank

供货量：5493吨
Quantity: 5493t

供货时间：2014年
Delivery time: 2014year

项目名称：三门核电站1#2#机组、海阳核电站1#2#机组
project: Sanmen Nuclear Power Station 1# & 2# unit, Haiyang Nuclear Power Station 1# & 2# unit

牌号：SA738Gr.B
Steel grade: SA738Gr.B

用途：安全壳、设备闸门
application: Containment and equipment gates

产品特点：宝钢首次批量生产高性能合金钢板
Product features: The first batch production of high performance alloy steel plate for Baosteel.

供货量：16000吨
Quantity: 16000t

供货时间：2007-2012年
Delivery time: 2007-2012



项目名称：国家科技重大专项压水堆示范工程石岛湾CAP1400核电站1#2#机组
project: Shidaowan CAP1400 nuclear power plant 1# & 2# unit of national science and technology major special PWR demonstration project



牌号：SA738Gr.B
Steel grade: SA738Gr.B

用途：安全壳、设备闸门
application: Containment and equipment gates

产品特点：首次完成国家科技重大专项压水堆安全壳用55mm和设备闸门用130mm开发和评价
The development and evaluation of 55mm for pressurized water reactor containment and 130mm for equipment gate were completed for the first time.

供货量：6000吨
Quantity: 6000t

供货时间：2012-2014年
Delivery time: 2012-2014



项目名称：国家科技重大专项压水堆示范工程高温气冷堆

project: High temperature gas cooled reactor, a demonstration project of pressurized water reactor for major national science and technology projects

牌号：12Cr2Mo1R

Steel grade: 12Cr2Mo1R

用途：堆内构件

application: Reactor internal

项目特点：全球首次建设第四代核电站高温气冷堆示范工程

Project features: The first demonstration project of high temperature gas cooled reactor for the fourth generation nuclear power plant of the world.

供货量：780吨

Quantity: 780t

供货时间：2008-2009年

Delivery time: 2008-2009



项目名称：华龙一号核电站工程

project: Hualong 1# nuclear power plant project



牌号：18MND5

Steel grade: 18MND5

用途：安注箱

application: Safety injection tank

产品特色：华龙一号安注箱用钢板的国产化替代

Product features: First localization of steel plate for Hualong 1# safety injection tank.

供货量：1500吨

Quantity: 1500t

供货时间：2018-2023年

Delivery time: 2018-2023

项目名称：三峡电站

project: Three Gorges Corporation Power Station

牌号：B610CF

Steel grade: B610CF

用途：引水压力钢管、蜗壳

application: Diversion penstock and volute

项目特点：全球规模最大的水电站

Project features: The world's largest hydropower station

供货量：8500吨

Quantity: 8500t

供货时间：2006-2008年

Delivery time: 2006-2008



项目名称：白鹤滩水电站
project: Baihetan Hydropower Station



牌号：800MPa级高强调质钢
Steel grade: 800MPa high strength steel

用途：蜗壳
application: volute

项目特点：全球单机功率最大机组
Project features: World's largest single unit power unit

供货量：12000吨
Quantity: 12000t

供货时间：2017-2018年
Delivery time: 2017-2018

项目名称：锦屏二级水电站
project: Jinping Hydropower Station, level II

牌号：B610CF
Steel grade: B610CF

用途：引水压力钢管、蜗壳
application: Diversion penstock and volute

项目特点：世界最高拱坝、世界最大规模水工隧洞群
Project features: The world's highest arch dam and largest hydraulic tunnel group

供货量：7800吨
Quantity: 7800t

供货时间：2010-2011年
Delivery time: 2010-2011



项目名称：汕尾甲子海上风电场
project: Shanwei Jiazi offshore wind farm



牌号：DH36
Steel grade: DH36

用途：单桩
application: Single pile

项目特点：全国平价海上风电示范项目
Project features: National affordable offshore wind power demonstration project.

供货量：50000吨
Quantity: 50000t

供货时间：2020年
Delivery time: 2020





► 结构用钢板 Structural steel plate

可供产品标准、牌号、规格范围及交货状态 Available product standard, grade, specification and delivery condition

产品标准 Product Specification	牌号 Grade	厚度范围 Thickness(mm)	交货状态 Delivery Condition
JIS G3101	SS400 /SS490	6-130	AR
	SM400A/SM490A	6-130	AR
	SM400B /SM400C	6-130	AR/CR/N/TM
	SM490B/SM490C		
JIS G3106	SM490YA	6-100	AR/CR/N/TM
	SM490YB		
	SM520B/SM520C	6-100	CR/N/TM
	SM570	10-100	TM/QT
JIS G3136	SN400B/C	6-100	AR/CR/N
	SN490B/C		
EN10025-2	S235JR /S275JR/S355JR	6-150	AR/N
	S235J0/S275J0/S355J0		
	S235J2/S275J2/S355J2/S355K2		
EN10025-3	S275N/S275NL	6-150	N
	S355N/S355NL		
EN10025-4	S275M/S275ML	10-127	TM
	S355M/S355ML		
	S420M/S420ML		
	S460M/S460ML		
	S500M/S500ML		
EN10025-6	S460Q/S460QL/S460QL1	10-130	QT
	S500Q/S500QL/S500QL1		
	S550Q/S550QL/S550QL1		
	S620Q/S620QL/S620QL1		
	S690Q/S690QL/S690QL1		
GB/T 700	Q235A	6-150	AR
	Q235B/Q235C/Q235D	6-150	AR/CR/N
GB/T 1591	Q355B/Q355C/Q355D/Q355E/Q355F	6-130	AR/N/TM/TM+T
	Q390B/Q390C/Q390D/Q390E		
	Q420B/Q420C/Q420D/Q420E		
	Q460C/Q460D/Q460E		
	Q500C/Q500D/Q500E		TM/TM+T
	Q550C/Q550D/Q550E		
	Q620C/Q620D/Q620E		
	Q690C/Q690D/Q690E		
	Q345/370qC/D/E		AR/CR/N/TM TM/TM+T TM/TM+T
	Q420/460/500/550/620/690qD/E/F		
	Q345/370/420/460/500/550qNHD/E/F		
GB/T 714	Q345/370/420qC/D/E	6-120	AR/CR/N/TM TM/TM+T TM/TM+T
	Q460/500qD/E		
	Q345/370/420/460/500qNHD/E		
TB/T 3556	Q460/500qD/E	6-120	TM/TM+T TM/TM+T
	Q345/370/420/460/500qNHD/E		



GB/T 19879	Q345GJB/Q345GJC/Q345GJD	8-150	AR/CR/N/TM
	Q390GJC/Q390GJD/Q390GJE		
	Q420GJC/Q420GJD/Q420GJEW		
ASTM A36	A36	6-150	AR/CR/N
ASTM A283	A283 Gr.C	6-150	AR
ASTM A572/709	A572Gr.50/A709Gr.50	6-150	CR/N
	A572Gr.60/A709Gr.60		
ASTM A514	A514Gr.F	10-150	QT
ASTM A633	A633Gr.D/A633Gr.E	20-155	CR/N
ASTM A588	A588 Gr.A/GR.B	8-90	N+T
		90.1-150	N
YB/T 4137	Q460CFC/D/E	12-80	TM
	Q500CFC/D/E		
	Q550CFC/D/E		
	Q620CFC/D/E	12-50	TM
	Q690CFC/D/E		
Q/BQB 616-2018	Q890CFC/D/E	8-100	QT
	BWELDY700QL2		
	BWELDY700QL4		
	BWELDY900QL2	10-60	
	BWELDY900QL4		
	BWELDY960QL2		
	BWELDY960QL4		
BWELDY1100QL2	6-100	QT	
BWELDY1100QL4			
Q/BQB 613-2018	BHARDY360	6-100	QT
	BHARDY400		
	BHARDY450		
	BHARDY500		

注: 1、Q420GJC/D/EW 为具有耐候性能的高强建筑用钢;

Remarks: Q420GJC/D/EW is high strength construction structural steels with weathering properties.

2、可以按照产品标准或产品标准+用户附加的技术协议供货;

Delivery comply with production standards or plus additional requirements by technical agreement.

3、增加Z向性能时, 按照GB/T5313 或按照用户技术协议执行;

The requirements of through thickness characteristics comply with GB/T 5315 or technical agreement.

4、Q890CFD 按宝钢企业标准, 未包含在YB/T 4137 中;

Q890CFD according to Baosteel enterprise standards, not included in the YB/T 4137.

5、JIS标志认证钢种及规格需与产品销售部确认, 以当期证书为准。

The grade and specification of JIS mark certification shall be confirmed with the heavy plate sales department, and the current certificate shall prevail.



结构钢行业供货业绩 Structural steel industry

■ 结构高强 High strength structural steel

行业 Industry	重点用途 Application	代表牌号 Grade	厚度范围 Thickness(mm)	供货业绩 Weight(t)
工程机械 Engineering machinery	混凝土泵车、起重机、挖掘机 Concerte mixer, crane, excavator	BWELDY700/900/960/1100系列 BWELDY700/900/960/1100series	8-100	100000
煤矿机械 Coal mine machinery	矿用电动轮自卸车、挖掘机、 煤矿刮板运输机 Mine used electric wheel dump truck, excavator, scraper conveyor	B-HARD360/400/450/500系列 B-HARD360/400/450/500series	8-80	70000
煤矿机械 Coal mine machinery	煤矿液压支架 Coal mine hydraulic support	Q500/550/690/890CF系列 Q500/550/690/890CFseries	15-80	240000
海工机械 Ocean engineering machinery	集装箱正面吊、船舶起重机 Container front carrier, shipment crane	S690系列 S690 series	10-150	5000





■ 建筑桥梁 Building and bridge steel plate

行业 Industry	工程名称 Project	牌号 Grade	厚度范围 Thickness(mm)	供货业绩 Weight(t)
桥梁工程 Bridge Project	上海崇明越江通道长江大桥工程 Yangtze River Crossing Bridge Project, Chongming, Shanghai			
	上海闵浦大桥 Shanghai Minpu Bridge			
	西堠门大桥 Xihoumen Bridge			
	金塘大桥 Jintang Bridge	Q345B/C/D		
	舟山小干二桥 Zhoushan Xiaogan Second Bridge	Q345qD		
		Q370qE		
		Q420qE	8~135	1,000,000
	港珠澳大桥 Hong Kong-Zhuhai-Macao Bridge	Q500qE		
		Q690qENH		
	深中跨海通道工程 Shenzhen Zhongshan Sea Crossing Project			
	武汉汉江湾桥 Wuhan Hanjiang Bay Bridge			
	沪苏通长江公铁大桥 Shanghai-Suzhou-Nantong Yangtze River Bridge			
	常泰长江大桥 Changtai Yangtze River Bridge	316L+Q500qE 316L+Q420qE 316L+Q370qE	3+16 3+20	3,500
	马鞍山公铁长江大桥（巢马城际铁路） Ma'anshan Highway Railway Yangtze River Bridge	S31603+Q500qE S31603+Q420qE S31603+Q370qE	3+36	
建筑 Architecture	上海环球金融中心 Shanghai World Financial Center	A572GR50		
	中央电视台新址 New Site of CCTV	SN490B/C		
		Q345GJ	6~110	150,000
	国家体育馆 National Stadium	Q390GJ Q420D Q460E		
	世博场馆 EXPO Site			

重点工程及典型项目应用 Application Achievement

项目名称: 汽车起重机 project: Truck crane

牌号: BWELDY1100QL4
Steel grade: BWELDY1100QL4

用途: 臂架
application: Boom

产品特点: 超高强、高板形、易焊接
Product features: Ultra high strength, high shape accuracy and easy welding.

供货量: 200吨
Quantity: 200t

供货时间: 2012-2022年
Delivery time: 2012-2022



项目名称: 煤矿机械 project: Coal mining machinery



牌号: Q500/550/690/890CF系列
Steel grade: Q500/550/690/890CF series

用途: 液压支架
application: hydraulic support

产品特点: 超高强、易加工、易焊接
Product features: Super high strength, easy processing and welding

供货量: 40000吨/年
Quantity: 40000t/year

供货时间: 2008-2022年
Delivery time: 2008-2022

项目名称: 港珠澳大桥 project: Hong Kong-Zhuhai-Macao Bridge

牌号: Q345qD/Q370qD
Steel grade: Q345qD/Q370qD

用途: 主桥钢结构
application: Main bridge steel structure

项目特点: 世界最长跨海大桥
Project features: The world's longest sea crossing bridge

供货量: 342500吨
Quantity: 342500t

供货时间: 2012-2014年
Delivery time: 2012-2014



项目名称: 沪苏通长江公铁大桥 **project:** Shanghai-Suzhou-Nantong Yangtze River Bridge



牌号: Q370qE/Q500qE

用途: 主桥钢结构

项目特点: 世界首座跨度超千米的公铁两用斜拉桥

供货量: 65000吨

供货时间: 2015-2017年

Steel grade: Q370qE/Q500qE

application: Main bridge steel structure

Project features: The world's first dual-purpose cable-stayed bridge with a span of more than kilometers

Quantity: 65000t

Delivery time: 2015-2017

项目名称: 汉江湾桥 **project:** Hanjiang Bay Bridge



牌号: Q345qD/Q500qE/Q690qE

用途: 主桥钢结构

产品特色: Q690qE全球首发

供货量: 18900吨

供货时间: 2019年

Steel grade: Q345qD/Q500qE/Q690qE

application: Main bridge steel structure

Product features: world premiere for Q690qE

Quantity: 18900t

Delivery time: 2019





项目名称: 深中跨海通道工程 **project:** Shenzhen Zhongshan Sea crossing Project



牌号: Q345qD/Q420qD/Q390C/Q420C/
Q345B/Q345C/Q355D

用途: 主桥钢结构/人工岛钢护筒/隧道钢壳

产品特点: 高板形要求、大线能量焊接

供货量: 190000吨

供货时间: 2017-2022年

Steel grade: Q345qD/Q420qD/ Q390C/Q420C/Q345B/Q345C/Q355D

application: Main bridge steel structure, Artificial island steel casing, Tunnel steel shell

Product features: High shape requirements and large welding energy

Quantity: 190000t

Delivery time: 2017-2022

项目名称: 南京大胜关长江大桥 **project:** Nanjing Dashengguan Yangtze River Bridge



牌号: Q420qE/Q370qE

用途: 主桥钢结构

项目特点: 首次采用TMCP型Q420qE级高强度、高韧性与良好焊接性能的新型钢材

供货量: 79000吨

供货时间: 2010年

Steel grade: Q420qE/Q370qE

application: Main bridge steel structure

Project features: Q420qE with high strength, high toughness and good welding performance delivered as TMCP is adopted for the first time.

Quantity: 79000t

Delivery time: 2010

项目名称：舟山市大陆连岛工程 **project:** Zhoushan mainland Island connection project



牌号：Q235B、Q345D

用途：主桥钢结构

项目特点：跨度居国内第一、世界第二的分体式钢箱梁悬索桥

供货量：144200吨

供货时间：2007-2008年

Steel grade: Q235B、Q345D

application: Main bridge steel structure

Project features: Split type steel box girder suspension bridge with the largest span in China and the second largest in the world.

Quantity: 144200t

Delivery time: 2007-2008



项目名称：武汉杨泗港长江大桥 **project:** Wuhan yangsigang Yangtze River Bridge



牌号：Q345qD

用途：主桥钢结构

项目特点：世界工程规模最大的双层悬索桥

供货量：39000吨

供货时间：2015-2017年

Steel grade: Q345qD

application: Main bridge steel structure

Project features: Double deck suspension bridge with the largest engineering scale in the world

Quantity: 39000t

Delivery time: 2015-2017



不锈钢厚板产品 Stainless Steel Products

可供产品标准、牌号、规格范围 Available product standard, grade, specification

品种 Steel Type	常用牌号 Usual Steel Grade	厚度 (mm) Thickness	其它标准牌号对照表 Other standards reference Steel Grade				
			GB4237	GB24511	JIS	ASTM/ASME	EN
奥氏体不锈钢 Austenitic stainless steel	201	8~130	/	/	SUS201	201	1.4372
	301		12Cr17Ni7	/	SUS301	301	1.4319
	304		06Cr19Ni10	S30408	SUS304	304	1.4301
	304L		022Cr19Ni10	S30403	SUS304L	304L	1.4306
	304H		07Cr19Ni10	S30409	SUS304HFB	304H	1.4948
	304N		06Cr19Ni10N	S30458	SUS304N1	304N	1.4315
	309S		06Cr23Ni13	S30908	SUS309S	309S	1.4833
	310S		06Cr25Ni20	S31008	SUS310S	310S	1.4845
	316		06Cr17Ni12Mo2	S31608	SUS316	316	1.4401
	316L		022Cr17Ni12Mo2	S31603	SUS316L	316L	1.4404
	316H		07Cr17Ni12Mo2	S31609	SUS316H	316H	1.4918
	321		06Cr18Ni11Ti	S32168	SUS321	321	1.4541
	347		06Cr18Ni11Nb	S34778	SUS347	347	1.4550
双相不锈钢 Duplex stainless steel	2205	8~130	022Cr22Ni5Mo3N	S22253/S22053	/	S31803/S32205	1.4462
	2304		022Cr23Ni4MoCuN	S23043	/	S32304	1.4362
	2101		03Cr22Mn5Ni2MoCuN	S22294	/	S32101	1.4162
铁素体 马氏体不锈钢 Ferritic Martensitic stainless steel	405	8~130	06Cr13Al	0Cr13Al	SUS405	405	1.4002
	410S		06Cr13	0Cr13	SUS410S	410S	1.4000
	430		10Cr17	1Cr17	SUS430	430	1.4016
	S41500		04Cr13Ni5Mo	/	SUSF6NM	S41500	1.4314

备注：其它牌号及规格可协商订货。

Remarks: Besides steel grades and dimensions above can be ordered negotiation



不锈钢供货业绩 Stainless steel

项目 Project	钢种 S32101	厚度范围 Thickness(mm)	供货业绩 Weight (t)	备注 Note
国核示范CAP1400项目 National Demonstration Cap1400 Nuclear Power project	S32101	14~25	323	最宽3570mm max width 3570mm
海阳、陆丰、三门项目 Haiyang, Lufeng and Sanmen Projects	S32101	12.7~15.88	62	
机械设备部件 Mechanical Equipment Components	06Cr19Ni10	120	8	
连云港盛虹炼化储罐项目 Lianyungang Shenghong Refining and Chemical Storage Tank Project	S30408	12~40	2034	
浙江石化炼化一体化项目 Zhejiang Petrochemical Refining and Chemical Integration Project	S30408 321	10~36	3035	
唐山LNG项目 Tangshan LNG Project	304/304L	12.7	1668	最宽3790mm max width 3790mm

重点工程及典型项目应用 Application Achievement

项目名称: 唐山LNG项目 project: Tangshan LNG project



牌号: 304/304L
Steel grade: 304/304L

用途: LNG输送管道
application: LNG transmission pipeline

产品特点: 超宽不锈钢板
Product features: Ultra wide stainless steel plate

供货量: 1668吨
Quantity: 1668t

供货时间: 2022年
Delivery time: 2022

供货规格: 12.7*3790*L(mm)
Dimension: 12.7*3790*L(mm)



项目名称: 国家科技重大专项压水堆示范工程石岛湾CAP1400核电站
project: Shidaowan CAP1400 nuclear power plant of national science and technology major special PWR demonstration project



牌号: S32101

Steel grade: S32101

用途: 结构安全模块

application: Structural safety module

产品特点: 成品最大宽度3570mm

Product features: The maximum width of the finished product is 3570mm

供货量: 323吨

Quantity: 323t

供货时间: 2016年

Delivery time: 2016

供货规格: 14~25*3570*L mm

Dimension: 14~25*3570*L mm



项目名称: 浙江石化炼化一体化项目 project: Zhejiang Petrochemical refining and chemical integration project



乙二醇储罐/Ethylene glycol storage tank

牌号: S30408、321

用途: 储罐、脱水反应器

供货量: 3035吨

供货时间: 2020-2021年

供货规格: 10~36mm



脱水反应器/Dehydration reactor

Steel grade: S30408、321

application: Storage tank and dehydration reactor

Quantity: 3035t

Delivery time: 2020-2021

Dimension: 10~36mm

项目名称: 盛虹炼化连云港项目 project: Shenghong refining and chemical Lianyungang project



储罐/storage tank



甲苯塔/methylbenzene tower

牌号: S30408、S30409

用途: 储罐、甲苯塔

供货量: 2034吨

供货时间: 2021年

供货规格: 12~40mm

Steel grade: S30408、S30409

application: Storage tank and methylbenzene tower

Quantity: 2034t

Delivery time: 2021

Dimension: 12~40mm



轧制复合板产品 Clad-rolled Steel Products

可供产品标准、牌号、规格范围及主要用途 Available product standard, grade, specification and applications

基层材料 / Base Material		覆层材料 / Cladding Material			
常用牌号 Steel Grade	特性与主要用途 Characteristics and Main Purposes	类别 Classification	GB牌号 GB Steel Grade	AISI牌号 AISI Steel Grade	特性与主要用途 Characteristics and Main Purposes
Q235A Q235B Q235C Q345A Q345B Q345C SS400 Q245R Q345R	一般强度级别结构用钢以及压力容器用钢，具有较好的综合力学性能。 General strength structural and pressure vessel steel, has good mechanical properties.	奥氏体不锈钢 Austenitic stainless steel	12Cr17Ni7	301	应用最广泛的不锈钢品种，在强氧化性、中性和弱还原性介质中均具有良好的耐蚀性，塑性和韧性优良，焊接性良好，用于石油、化工、核能、纺织印染设备、医疗器械、食品加工、建筑装饰等行业。 Most widely used stainless steel, has good corrosion resistance plasticity, toughness, weldability property in strong oxidizing, neutral and weak reducing medium. Used in petroleum, chemical industry, nuclear power, medical equipment, and other industries.
			12Cr18Ni9	302	
			06Cr19Ni10	304	
			022Cr19Ni10	304L	
			10Cr18Ni12	305	
			06Cr20Ni11	308	
			06Cr23Ni13	309S	
			06Cr25Ni20	310S	

■ 典型产品性能 Typical product property

核电安注箱复合板 Clad-rolled steel plate for safety injection tank of nuclear plants

牌 号 Steel grade	厚度 Thickness (mm)	拉伸试验 (横向) Tensile test (transverse)			冲击试验 (纵向) Impact test (longitudinal)		剪切强度 Shear strength /MPa	弯曲试验(横向) Bending test (transverse)	
		下屈服强度 ReL, MPa	抗拉强度 Rm, MPa	伸长率 A, %,	温度 Tem-perature °C	冲击值 Impact value J	标准要求 Required strength≥210	弯曲角度 Bending angle	弯曲直径 Bending diameter
304L +SA533B	7+62	555	661	25	10	230	393	180°	3.5a

镍基合金复合板 Nickel Based Alloy Clad Steel

牌 号 Steel grade	厚度 Thickness (mm)	拉伸试验 (横向) Tensile test (transverse)			冲击试验 (纵向) Impact test (longitudinal)		剪切强度 Shear strength /MPa	DWTT	
		下屈服强度 ReL, MPa	抗拉强度 Rm, MPa	伸长率 A, %	温度 Temperature °C	冲击值 Impact value J	标准要求 Required strength≥210	Temp., °C	剪切面积 分数/SA%
825+X65	3+22	500	594	46	-20	339	397	-10	100%

热轧单面不锈钢复合卷 Hot rolled Clad Sheet

牌 号 Steel grade	厚度 Thickness (mm)	主要化学成分 chemical compositions, (wt%)						典型值 mechanical properties			弯曲180° (d=2a)	
		C	N	Si	Mn	Cr	Ni	Rp0.2, MPa	Rm, MPa	A50, %	正弯	反弯
304	304	1	0.05	0.04	1.25	18.1	8.05					
304+Q235B								320	490	40	OK	OK
	Q235B	5	0.15	-	0.84	-	-					

热轧双面不锈钢花纹卷/板 (单面花纹) Hot rolled Clad Sheet(Checkered Plate)

牌号 Steel grade	类别 category	屈服强度 Yield Strength, MPa	抗拉强度 Tensile Strength, MPa	延伸率 Elongation, %	冷弯 Cold bend
BHW01	技术条件 Requirement	≥350	≥500	≥10	D=2a
	典型性能 Typical properties	484	627	37.3	0.7a
BHW02	技术条件 Requirement	≥350	≥500	≥10	D=2a
	典型性能 Typical properties	487	597	22.4	1a

冷轧双面不锈钢复合卷 Cold-Rolled Clad Sheet

钢种牌号 Steel grade	厚度 Thickness (mm)	屈服强度 Yield Strength Rp0.2, MPa	抗拉强度 Tensile Strength Rm, MPa	延伸率 Elongation A50, %	基层硬度 Hardness of Base metal Hv	杯突值 Erichsen value IE, mm	深拉延 Deep draw- ing Value LDR	冷弯 Cold bend 180°(4d)
304L +BDT01 +304L	1.2	395	540	32	158	11.5	2.2	合格 good





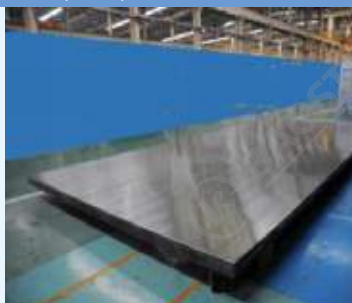
轧制复合板供货业绩 Clad-rolled Steel

行业 Industry	重点用途 Application	牌号 Grade	厚度范围 Thickness(mm)	供货业绩 Weight(t)	备注 Note
电力设备 Electrical Equipment	国家示范CAP1400核电项目安注箱 Safety Injection Tank of CAP1400 Nuclear Power Plant	304L+SA533B	7+62	150	国产化 Localization
电力设备 Electrical Equipment	凝汽器 Condenser	304L+Q235B	3.5+35	350	大宽幅, B > 4米 Large Width (Width > 4 Metre)
电力设备 Electrical Equipment	水电工程与石油化工 Hydropower & Petrochemical Project	S32205+SA516 Gr.65	4+20	260	
电力设备 Electrical Equipment	高酸性环境烟气管道 Flue Gas Pipeline under Severe Acidic Environment	S31254+SA516 Gr.65	3+10	300	
电力设备 Electrical Equipment	高酸性环境烟气管道 Flue Gas Pipeline under Severe Acidic Environment	TA2+Q235B	1.2+14	700	
炼化设备 Petroleum Refinery Equipment	化工容器 (出口KNM) Chemical Pressure Vessel (Adopt- ed by KNM, Italy)	410S+SA516 Gr65	3+68/3+104 /4+36	300	首单出口 First Export Order
炼化设备 Petroleum Refinery Equipment	高耐蚀油气管线 Corrosion Resistant Oil and Gas Pipeline	UNS N08825+X65	3+22	100	国产化 Localization
造船 Shipbuilding	化学品船 Chemical Tanker	S32205+AH36	3+8	700	国产化 Localization
环保设备 Environment-Friendly Equipement	食品处理设备 Food Processing Machine	304L+Q345R	3+25	200	
环保设备 Environment-Friendly Equipement	纯水处理中间耐蚀水箱 Intermediatecorrosion-resistant Tank for Water Purification	316L+SA516Gr.65	3+6	200	
建筑机械 Construction Equi- pement	建筑模台 Working Table for Construction	443+Q345B	1+9/2+8	3500	大宽幅, B > 4米 Large Width (Width > 4 Metre)
建筑机械 Construction Equi- pement	建筑模架 Shelf Mold for Construction	304+Q235B	1+5	8000	
市政建设 Municipal Construc- tion	引水水管 Diversion Waterpipe	304+Q235B	1+5/0.6+3.4	2000	
冶金机械 Metallurgical Equip- ment	冶金轧机耐磨板 Wearing-resistant Plates of Rollers	30Cr13+SA516 Gr50	8+32/8+42	300	产品替代 Product Substitution
建筑五金 Construction Material	容器面板、电梯面板 Decoration Plates for Containers, Elevator and Doors	304L+BDT01+304L	0.12+0.96+0.12	1600	

重点工程及典型项目应用 Application Achievement

项目名称: 国家科技重大专项压水堆示范工程石岛湾CAP1400核电站2#机组

project: Shidaowan CAP1400 nuclear power plant 2# unit of national science and technology major special PWR demonstration project



牌号: 304L+SA533B轧制复合板

用途: 安注箱

产品特点: “国和一号”(CAP1400) 安注箱用轧制复合板开发和批量化生产

供货量: 150吨

供货时间: 2014-2015年

供货规格: 304L(7mm)+SA533B(62mm)

Steel grade: 304L+SA533B Clad-rolled Steel

application: Safety injection tank

Product features: The development and production of rolled clad plate for "Guohe No. 1" (cap1400) safety injection tank.

Quantity: 150t

Delivery time: 2014-2015

Dimension: 304L(7mm)+SA533B(62mm)



项目名称: 化学品船

project: Chemical ship



牌号: 2205+AH36轧制复合板

用途: 8500/13000DWT化学品船液货舱

产品特点: 兼具双相不锈钢的高耐腐蚀性和碳钢的强韧性, 可有效降低材料用量和成本

供货量: 700吨

供货时间: 2017年

供货规格: S32205(3mm)+AH36(8mm)

Steel grade: 2205+AH36 Clad-rolled Steel

application: 8500/13000DWT chemical tanker cargo tank

Product features: Both of the high corrosion resistance of duplex stainless steel and the strength & toughness of carbon steel can effectively reduce the material consumption and cost.

Quantity: 700t

Delivery time: 2017

Dimension: S32205(3mm)+AH36(8mm)



项目名称：高炉喷煤制粉平台**project:** Blast furnace coal injection pulverizing platform**牌号：**304L+Q235B+304L不锈钢花纹卷（单面花纹）**用途：**走道、楼梯、作业平台**产品特点：**具有与耐蚀不锈钢纯材同等耐蚀性，无需防腐处理**供货量：**1000吨**供货时间：**2016年**Steel grade:** 304L+Q235B+304L stainless steel checkered coil (Single sided pattern)**application:** Walkway**Product features:** It has the same corrosion resistance as the pure corrosion-resistant stainless steel without anti-corrosion treatment.**Quantity:** 1000t**Delivery time:** 2016

复合花纹板

碳钢花纹板

上线五年
20211104**项目名称：**建筑模架用单面不锈钢复合卷板**project:** Single sided stainless steel composite coiled plate for building formwork**牌号：**304+Q235B不锈钢**用途：**建筑模架、水网管道、存储罐箱、环卫车辆**产品特点：**良好力学及耐腐蚀性**供货量：**20000吨/年**Steel grade:** 304+Q235B stainless steel**application:** Building formwork, water network pipeline, storage tank, sanitation vehicle**Product features:** Excellent mechanical and corrosion resistance performance**Quantity:** 20000t/year

产品开发首席工程师名册

CHIEF ENGINEER & EXPERT



高珊 Gao Shan

研究方向 / Research field:

船舶及海洋工程用钢
Steel plate for shipbuilding and offshore engineering

联系方式 / Tel

021-26641015



宋红梅 Song Hongmei

研究方向 / Research field:

不锈钢工业板
Industrial stainless steel plate

联系方式 / Tel

021-26641059



姚连登 Yao Liandeng

研究方向 / Research field:

工程机械及防护用钢
Steel for construction machinery and protection

联系方式 / Tel

021-26647182



刘自成 Liu Zicheng

研究方向 / Research field:

风电、水电、桥梁及建筑结构钢
Steel for wind power, hydropower, bridge and building structural

联系方式 / Tel

021-26641868



张汉谦 Zhang Hanqian

研究方向 / Research field:

核电、水电、储罐用钢
Steel for nuclear power, hydropower and storage tank

联系方式 / Tel

021-26643665



陈超 Chen Chao

研究方向 / Research field:

核电、容器、储罐用钢
Steel for nuclear power, vessel and storage tank

联系方式 / Tel

021-26641579



焦四海 Jiao Sihai

研究方向 / Research field:

轧制复合板
Rolled clad plate

联系方式 / Tel

021-26647273



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产品标识

PRODUCT MARKING



● 产品标识

钢板表面可以根据用户和标准要求进行喷印、刻印，钢板侧面可以进行侧喷，以便于用户识别。

● 喷印

可选择喷印宝钢标记、公司名称、第三方检验机关标记、协会机关标记、牌号、炉号、板号、制造年月、UT标准、用户管理号、钢板尺寸、重量、产品认证号、最终用户代码、交货期等。

● 刻印

可选择刻印宝钢标记、第三方检验机关标记、协会机关标记、牌号、炉号、板号、UT标准、用户管理号、钢板尺寸等。

● 侧标

可喷印牌号、钢板号、合同号、用户管理号、一贯管理番号、尺寸等。

● Product marking

Paint marking and punch marking can be done on the surface of steel plate according to the requirements of customers and standards. Edge marking can also be offered for customers' convenience.

● Paint marking

Available paint marking: Baosteel logo, company name, label of third-party inspectors, logo of associations, grade, heat number, plate number, date of production, UT standard, management number for customers, size, weight, certificate number of products, code of final users and delivery terms, etc.

● Hard punch marking

Available punch marking: Baosteel logo, label of third-party inspectors, logo of associations, grade, heat number, plate number, UT standard, management number for customers, size, etc.

● Edge marking

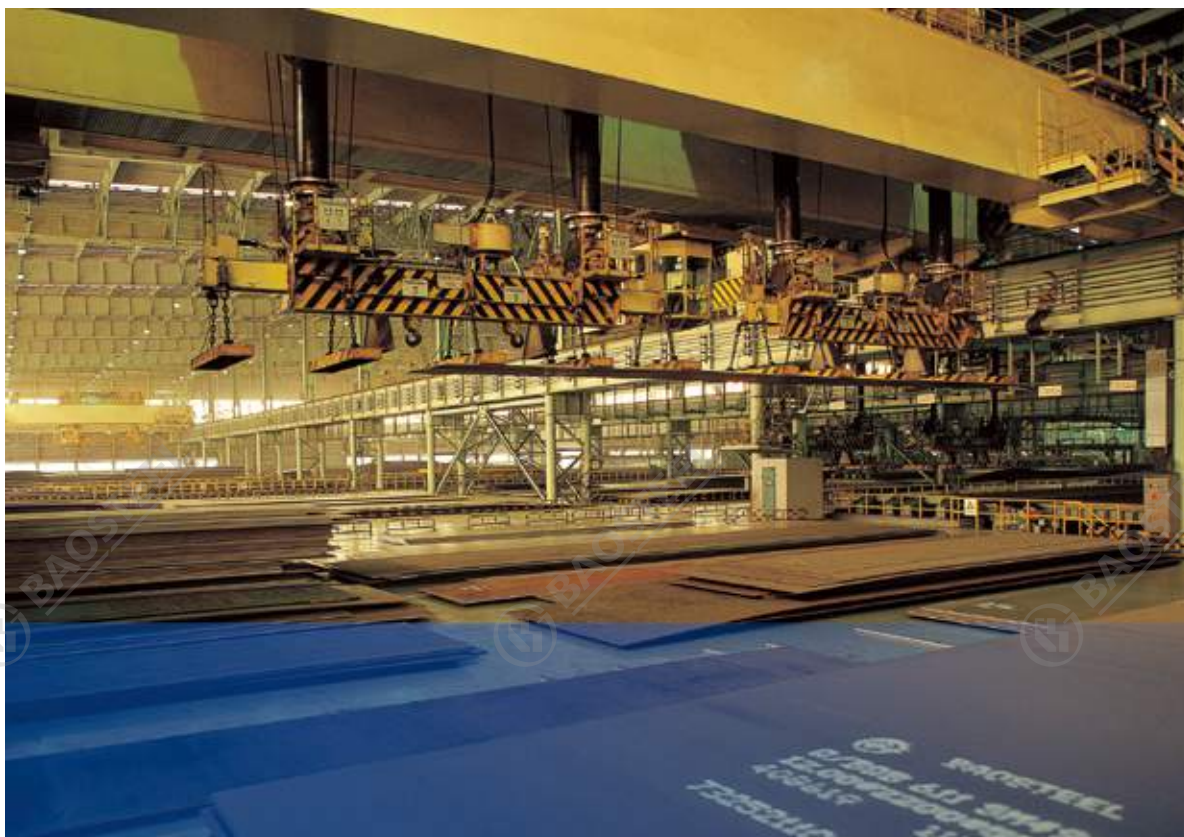
Available edge marking: grade, plate number, contract number, management number for customers, management number of going through and size, etc.

产品注册商标

REGISTERED TRADEMARK PRODUCTS

▶ 宝钢厚板产品注册商标 Registered trademark of Baosteel Heavy Plate Products

- **优质焊接结构钢:** 注册商标为“BWELDY”和“宝威迪”。
如: BWELDY®700QL2
- **装甲用钢:** 注册商标为“BARMOY”和“宝甲迪”。
如: BARMOY®300
- **工具钢:** 注册商标为“BTOOLY”和“宝拓迪”。
如: BTOOLY®33
- **耐磨钢:** 注册商标为“BHARDY”和“宝赫迪”。
如: BHARDY®450
- **High quality steels for welded structure:** its registered trademark is “BWELDY” and “宝威迪”.
Example: BWELDY®700QL2
- **Steels for armored vehicle:** its registered trademark is “BARMOY” and “宝甲迪”.
Example: BARMOY®300
- **Tool steels:** its registered trademark is “BTOOLY” and “宝拓迪”.
Example: BTOOLY®33
- **Wear resistant steels:** its registered trademark is “BHARDY” and “宝赫迪”.
Example: BHARDY®450





高性能桥梁钢和桥梁焊接应用技术 High performance bridge steel and bridge welding application technology

品类 Category	细分产品 Subdivision	命名方案 Naming Scheme	宝钢品牌 Baosteel Brand	对应牌号 Corresponding Steel Grade
结构钢 Structural Steel	桥梁高强钢 High Strength Steel for Bridge	HiBri®	HiBri®345	Q345q
			HiBri®370	Q370q
			HiBri®420	Q420q
			HiBri®500	Q500q
			HiBri®550	Q550q
			HiBri®620	Q620q
			HiBri®690	Q690q
耐候钢 Weathering Steel	城乡与工业大气腐蚀系列 Urban, Rural and Industrial Atmospheric Corrosion Resistance Series	RlcorBri®	RlcorBri®345	Q345qNH
			RlcorBri®370	Q370qNH
			RlcorBri®420	Q420qNH
			RlcorBri®500	Q500qNH
			RlcorBri®690	Q690qNH
	海洋大气腐蚀系列 Ocean Atmospheric Corrosion Resistance Series	OcorBri®	OcorBri®345-I	Q345qDNHY-I
			OcorBri®345-II	Q345qDNHY-II
			OcorBri®370-I	Q370qENHY-I
			OcorBri®370-II	Q370qENHY-II
			OcorBri®420-I	Q420qENHY-I
			OcorBri®420-II	Q420qENHY-II
			OcorBri®500-I	Q500qFNHY-I
			OcorBri®500-II	Q500qFNHY-II
	真空轧制不锈钢复合板系列 Clad-rolled Stainless Steel Plate Series	CladBri®	CladBri®345q+316L	Q345q+316L
			CladBri®370q+316L	Q370q+316L
			CladBri®420q+316L	Q420q+316L
			CladBri®500q+316L	Q500q+316L
	纳米涂层金属覆膜材料系列 Nano Coated Metal Covering Material Series	IMECBri®	IMECBri®345	Q345qIMEC
			IMECBri®370	Q370qIMEC
			IMECBri®420	Q420qIMEC
			IMECBri®500	Q500qIMEC
应用技术 Applied Technology	桥梁焊接技术 Bridge Welding Technology	BriWeld®		

订货注意事项

INFORMATION REQUIRED FOR ORDERS

1、产品名称或牌号

2、标准

3、尺寸

4、单件重量、订货总重量

5、交货状态

6、产品特性

化学成分、力学性能、超声波探伤、热处理、标记方法等

7、用途及加工方法

冷加工、热加工、热处理、焊接方法

8、钢板的检验方法

工厂证明、第三方检验机关的证明、有无会同验收及其内容

9、其它有关制造方面需要特别关注的事项

特别是对订货产品的要求和注意事项



1. Grade designations and other symbols

2. Standard specification

3. Size

4. Unit weight and total weight

5. Delivery conditions

6. Properties of products

Chemical composition, mechanical properties, ultrasonic inspection, heat treatment, marking.

7. Intended application and fabrication method

Cold forming, hot forming, heat treatment, welding methods

8. Testing method

Certification of factory, certification of the third inspection agency, inspection content

9. Other special concerned contents about the fabrication

Especially the requirement and attention for the ordered products



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国内贸易公司 Domestic Sales Channels

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STEEL PRODUCTS TRADING CO., LTD.
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广州宝钢南方贸易有限公司
GUANGZHOU BAOSTEEL
SOUTHERN TRADING CO., LTD.
TEL: 020-32219999

北京宝钢北方贸易有限公司
BEIJING BAOSTEEL
NORTHERN TRADING CO., LTD.
TEL: 010-56512000

成都宝钢西部贸易有限公司
CHENGDU BAOSTEEL
WESTERN TRADING CO., LTD.
TEL: 028-85335388

武汉宝钢华中贸易有限公司
WUHAN BAOSTEEL
CENTRAL CHINA TRADING CO., LTD.
TEL: 027-84298800

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FAX: 0082-2-5080891

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BGM CO., LTD
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FAX: 0082-31-3514558

高雄事务所
KAOSHIUNG OFFICE
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THAILAND OFFICE
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FAX: 0066-2-2348989

宝新河内代表处
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FAX: 0084-24-62691392

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(INDONESIA OFFICE)
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FAX: 0062-21-3040 8583

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TURKEY OFFICE
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FAX: 0090-212-3440068

宝欧俄罗斯代表处
RUSSIA OFFICE
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