



**BAOSTEEL**

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# Hot-rolled Automotive Steel Sheets

## 热轧汽车板

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宝山钢铁股份有限公司  
BAOSHAN IRON & STEEL CO., LTD.

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## 开发历史

# The Development of Hot-rolled Automotive Steel Sheets

随着对安全、减重节能和环保的要求，汽车对高强度汽车用钢的需求日益迫切。而热轧高强钢板广泛用于车轮、大梁、车厢、车桥、传动轴、底盘、悬挂等重要部件，具有很大的减重潜力。

宝钢于2004年开始热轧高强度汽车用钢的研制，相继开发出多种满足各种特定性能要求的高强钢种，如

- ① 屈服强度550~700MPa级的具有良好成形性能和焊接性能的低合金高强度钢，可用于汽车大梁、车厢、传动轴管和其它汽车结构件；
- ② 抗拉强度450~650MPa级车轮用钢；
- ③ 高强度桥壳用钢；
- ④ 先进高强度钢（440~780MPa级的高扩孔钢、580和780MPa级的双相钢、580和780MPa级的TRIP钢），具有良好成形性能和高的疲劳特性，可用于复杂形状零件的制造；
- ⑤ 热处理超高强度钢与耐磨钢。

宝钢汽车用高强度钢采用了先进的冶炼技术，夹杂物含量低、钢质纯净，采用精确的控制轧制和控制冷却技术获得各钢种所需的组织结构满足使用要求。

宝钢汽车用高强度钢广泛应用于轿车和卡车的整车厂、汽车零部件厂和汽车改装厂产品的制造，用高强度钢替代传统低强度钢可明显减轻汽车自重，也可在一定程度上降低成本。

With the increasing awareness for safety, energy saving and environment protection, there is an urge for high strength steel for automotive. Hot-rolled high strength steel sheets, which are widely used in wheel, beam, carriage, axle, drive shaft, chassis, suspension and other important parts, can provide great potential for weight reduction.

Baosteel began to develop hot-rolled high strength steel for automobile in 2004 and successfully developed various types of high strength steel which can satisfy different performance requirements, such as:

- ① 550~700MPa low alloy high strength steels in yield strength with good formability and weldability, which can be used in beam, carriage, drive shaft and other structural parts of automobiles.
- ② 450~650MPa wheel steels in tensile strength.
- ③ 600MPa grade steel for axle housing in tensile strength.
- ④ Advanced high strength steel (440~780MPa high hole expansion steels, 580 and 780MPa dual-phase steels, 580 and 780MPa TRIP steels) with good formability and high anti-fatigue property, which is applicable to parts with complex shapes.
- ⑤ Heat treated ultra high strength steel and wear resistant steel.

Baosteel adopts advanced smelting technology to gain pure steel with low inclusion. Precisely controlled rolling and controlled cooling technologies are used to obtain expected microstructures to meet application requirements.

Baosteel hot-rolled high strength steels for automobiles are widely used in car and truck factories, auto parts factories and car tuning shops. High strength steel sheets make it possible to reduce auto body weight, which thereby contributes to improved manufacturing cost.



# 1. 商用车大梁用钢

## Commercial Vehicles Beam Steels

大梁是商用车主要的承载部件，其对钢板的强韧性以及疲劳性能要求高。从成形方式来区分，商用车大梁主要有：冲压大梁、辊压大梁、以及焊接大梁。冲压及辊压大梁以冷变形为主，对大梁钢板的成形性要求较高；焊接大梁以焊接加工为主，对大梁钢板的焊接性要求较高。

宝钢大梁钢主要包括微合金高强大梁钢系列以及热处理型超高强大梁钢系列，最高屈服强度级别达960MPa。

Beam structure bears the main loads of the commercial vehicles. The beam steels must show good strength and toughness, and high fatigue property. From the forming methods, commercial vehicles beams can be divided into stamping beam, rolling beam, and welding beam. For stamping beam and rolling beam, the steels should have high cold forming performance. For welding beam, the steels should show good weldability.

Baosteel beam steels mainly include microalloyed high strength beam steels and ultra high strength beam steels, with a highest yield strength of 960MPa.

### 产品特点

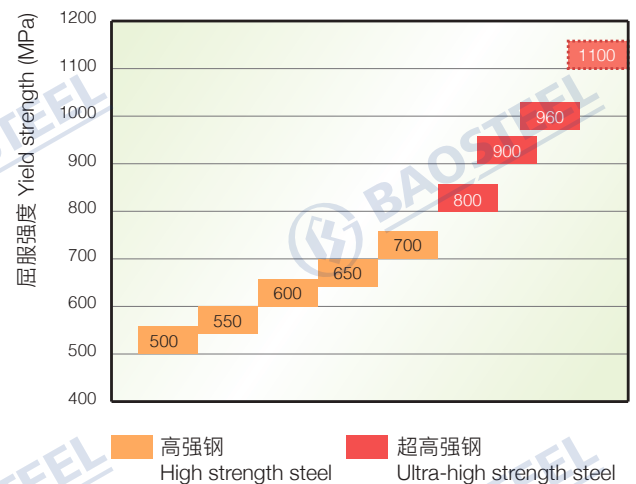
#### Steel Characteristics

高强大梁钢系列产品最高屈服强度级别达700MPa，不仅具有高的纯净度、优异的强韧性匹配、以及优异的疲劳性能，且具有优异的冷成形性能以及焊接性能，适用于冲压大梁、辊压大梁以及焊接大梁结构。

超高强大梁钢系列产品最高屈服强度达960MPa，以热处理状态交货，具有高的纯净度、良好的强韧性匹配、优异的疲劳性能以及良好的焊接性能，并具有优异的板形质量和表面质量，适用于焊接大梁结构。

High strength beam steels reach the highest yield strength level of 700MPa. The steels not only have good purity, excellent toughness, and good fatigue performance, but also have excellent performance of cold forming and welding. The steels are suitable for stamping beam, rolling beam, and welding beam.

Ultra high strength beam steels reach the highest yield strength level of 960MPa, delivered by heat treatment. The steels show high purity, excellent toughness, good fatigue performance, good weldability, excellent flatness and surface quality. The steels are suitable for welding beam.



## 产品性能

## Mechanical Properties

分类 Classification	强度级别 Level, MPa	典型牌号 Typical Grades	拉伸试验 Tensile Test			弯曲试验 Diameter for Bending Test	备注
			屈服强度 ReH MPa	抗拉强度 Rm MPa	断后伸长率 % A		
普通大梁钢 Common beam steel	355	B510L	≥355	510-630	≥24	D=0.5a, 180°	冲/辊压大梁
高强大梁钢 High strength beam steel	500	B550L QStE500TM	≥500	550-700	≥17	D=1a, 180°	冲/辊压大梁
	550	B600L QStE550TM	≥550	600-760	≥16	D=1.5a, 180°	冲/辊压大梁
	600	B650L QStE600TM	≥600	650-820	≥15	D=1.5a, 180°	冲/辊压大梁
	650	B700L QStE650TM	≥650	700-880	≥14	D=2a, 180°	冲/辊压大梁
	700	B750L QStE700TM	≥700	750-950	≥13	D=2a, 180°	冲/辊压大梁
		B750LD	≥700	750-950	≥13	D=2a, 180°	焊接大梁
超高强大梁钢 Ultra high strength beam steel	800	B850LE	≥800	≥850	≥12	D=4a, 90°	焊接大梁
	960	B980LE	≥960	≥980	≥12	D=6a, 90°	焊接大梁

## 规格范围

## Available Size

厚度 Thickness, mm	宽度 Width, mm	长度 Length, mm
1.5-12	900-1800	2000-13000



应用案例  
Application Case

栏板车焊接大梁轻量化

A lightweight design for welding beam of a flatbed truck

超高强度钢焊接大梁 额定载荷40T

Welding beam of ultra high strength steel, specified load 40 tons

材料: B980LE超高强度钢替代B750L高强度钢

Material: ultra high strength steel B980LE replace high strength steel B750L

大梁轻量化后重量由840kg降低为600kg

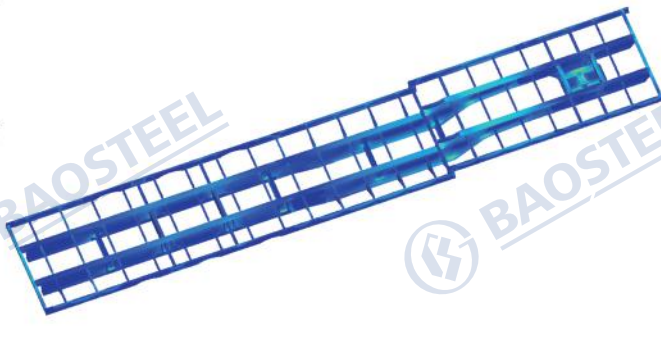
After lightweight design, weight decreases from 840kg to 600kg.

减重量240kg, 减重率28.6%

The weight reduction is 240kg, and weight loss rate is 28.6%

结构 Structure	原方案 (材料为B750L) Original Design (B750L)	新方案(材料为B980LE) New Design (B980LE)
上翼板 Upper wing plate	8mm	4.5mm
下翼板 Lower wing plate	10mm	6.5mm
立板 Vertical plate	6mm	4.5mm

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Analysis system  
Serial Analysis  
Serial 1772402  
-3.713E+02  
-2.289E+02  
-2.769E+02  
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-1.996E+02  
-1.362E+02  
-9.202E+01  
-4.640E+01  
-3.879E+13  
Max = 4.177E+02  
Min = 9.249E-08  
Max = 3.579E+13  
Min = 300957



减重率 28.6%

### 重卡冲压大梁轻量化

A lightweight design for stamping beam of a heavy truck

高强度大梁 载重量30~55t

Stamping beam of high strength steel, specified load 30-55 tons

材料: QStE700TM替代B510L

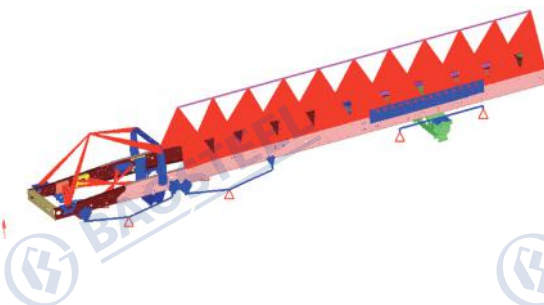
Material: high strength steel QStE700TM replace B510L

纵梁轻量化后重量由686.5kg (7+5mm, 双层梁) 降低为469.5kg (8mm, 单层梁)

After lightweight design, weight decreases from 686.5kg (7+5mm double beams) to 469.5kg (8mm single beam) .

减重量217kg, 减重率31.6%

The weight reduction is 217kg, and weight loss rate is 31.6%



减重率 **31.6%**

## 2. 车轮钢 Wheel Steels

### 产品特点

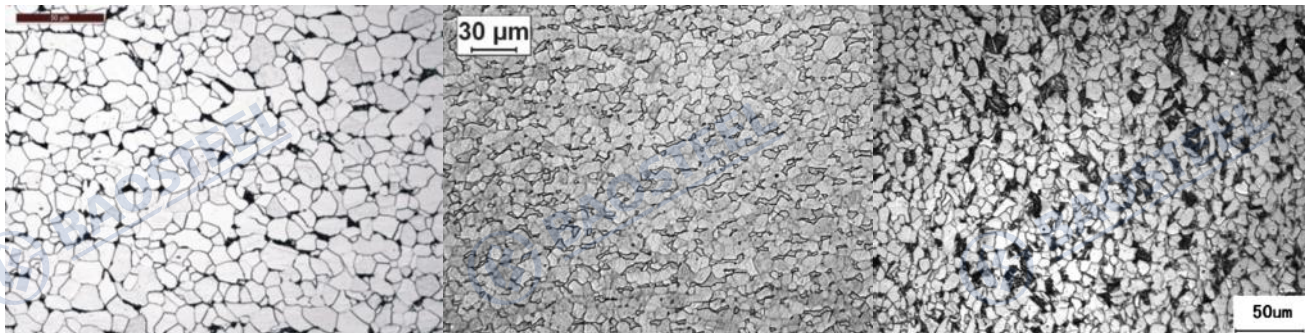
#### Product Characteristics

车轮钢可分为高强度低合金型和先进高强度型两种，高强度低合金型以Nb、Ti强化为主，具有高强度、良好的焊接性能、良好的耐疲劳性能；先进高强度型则是以相变强化为主，如具有低屈强比的铁素体+马氏体双相钢和具有高扩孔率的铁素体+贝氏体钢，具有高强度、良好的焊接性能、较低的屈强比、优异的冷成形性能、很好的耐疲劳性能。

Wheel steels consist of the high strength low alloy (HSLA) type and advanced high strength (AHS) type. HSLA steels are strengthened by Nb and Ti with high strength, good weldability, excellent cold formability. AHS steels are mainly strengthened by phase transformation such as DP steels with low yield ratio and FB steels with high hole expansion ratio with High strength, good weldability, low yield ratio, excellent cold formability, high fatigue resistance.

### 微观组织

#### Microstructures



高强度低合金车轮钢  
HSLA wheel steel

双相钢  
Dual Phase Steel

高扩孔钢  
FB steel





## 力学性能

### Mechanical Properties

产品类型 Steel Type	产品 Steel Grade	屈服强度 <sup>a</sup> Y.S. R <sub>p0.2</sub> <sup>a</sup> MPa	抗拉强度 T.S. R <sub>m</sub> <sup>a</sup> MPa	延伸率 EL %	扩孔率 λ %
高强低合金 HSLA	B500CL	380-500	500-620	≥26	
	B550CL	450-570	550-680	≥24	
	B600CL	500-620	600-750	≥22	
	B650CL	550-680	650-800	≥20	
双相钢 DP steel	BR330/580DP	330-470	≥580	≥19	
	BR450/780DP	450-610	≥780	≥14	
高扩孔钢 FB steel	BR300/450HE	300-420	≥450	≥24	≥80
	BR440/580HE	440-620	≥580	≥14	≥75
	BR600/780HE	600-800	≥780	≥12	≥55

a. 屈服现象不明显时, 采用R<sub>p0.2</sub>, 否则采用R<sub>eL</sub>

a. If the yield point is not pronounced, the values of R<sub>p0.2</sub> apply. Otherwise, the values of R<sub>eL</sub> apply.

## 可供规格

### Available Specification

产品类型 Steel Type	产品 Steel Grade	厚度 Thickness mm	宽度 Width mm
高强低合金 HSLA	B500CL	1.6-14.0	800-1400
	B550CL	1.6-14.0	800-1400
	B600CL	1.6-14.0	800-1400
	B650CL	1.6-14.0	800-1400
双相钢 DP steel	BR330/580DP	1.6-6.0	800-1400
	BR450/780DP	1.6-6.0	800-1400
高扩孔钢 FB steel	BR300/450HE	1.6-6.0	800-1400
	BR440/580HE	1.6-6.0	800-1400
	BR600/780HE	1.6-6.0	800-1400

### 3. 汽车厢体用钢 Steel for Truck Body

改装车车厢、罐体在服役过程中将承受严苛的装载冲击、卸车磨损、满载应变等工况，随着超限超载管控加严，公路货车车辆将面临着越来越迫切的轻量化的需求，宝钢开发了一系列汽车厢体、罐体用高强热轧钢板和耐磨钢板，以满足用户对轻量化设计、易加工、长寿耐用、低成本等需求。

自卸车箱体采用耐磨钢代替普通结构钢，可实现厢体减重30-50%，采用耐磨钢制造的车厢厢体强度高刚性好、抗撞击不凹陷、韧性好不破裂、耐磨损寿命长，宝钢可为用户提供选材、加工、焊接、轻量化设计的一揽子技术支持。

Truck body or mixer tank body in service will withstand wear, severe loading impact, strain load condition, with overload control more and more strict, highway vehicles will face more and more urgent demand for lightweight, Baosteel has developed a series of truck body, high strength hot rolled steel plate and wear-resistant steel plate to meet the user's requirement of lightweight design, easy processing, longevity and durability, low cost and so on.

The dump truck body adopts wear-resistant steel instead of ordinary steel structure, can reduce the body weight 30-50%. Truck body made by wear-resistant steel, perform high strength and high rigidity, anti impact dent with good toughness, abrasion resistance and long service life. Baosteel can provide package of technical support, such as material recommending, processing, welding, and the lightweight design as well.

#### 厢体用钢典型产品

#### Truck Body Steels and Typical Application

类别 Type	牌号 Grade	产品特点 Product Features
BW耐磨钢 Wear resistant steel	BW300	低牌号耐磨钢，适用于公路自卸车车厢等 Low grade, apply to road dump truck body, etc.
	BW450 BW500	高牌号耐磨钢，适用于矿用自卸车车厢等 High grade, apply to mining dump truck body, etc.
	BW300TP	易成形耐磨钢，适用于混凝土搅拌机筒体、旋叶等 Easy forming wear resistant steel, apply to concrete mixer tank body, etc.
XT高强度钢 High strength steel	B650XT B700XT B800XT	经济型高强度钢，塑性好易加工、易焊接、高强耐用，适用于改装车箱体冷弯矩管、侧面板、框架结构、防护件等。 High strength steel plate, with good plasticity, easy processing, easy welding, high strength and durable, suitable for the modification of the truck body cold formed tube, side panels, frame structure, crashproof beam and so on.

## XT高强度力学性能 Mechanical Properties

牌号 Grade	屈服强度 Re, MPa	抗拉强度 Rm, MPa	延伸率 A.%	180°冷弯 弯心直径
B650XT	≥600	≥650	≥11	d=2a
B700XT	≥620	≥700	≥11	d=2a
B800XT	≥700	≥800	≥11	d=2a

## 应用案例Application Case



1	
2	
3	4

1. 采用B700XT制造的轻量化半挂车上装  
Lightweight semi trailer manufactured with B700XT

2. 意大利某用户采用BW450耐磨钢制造的矿车车厢  
Italy a user using BW450 wear resistant steel manufacturing mining dump truck body.

3. 采用BW300耐磨钢制造的公路自卸车车厢  
Road dump truck body manufactured by BW300 wear resistant steel.

4. 采用BW300TP制造的混凝土搅拌车筒体, 累计用量约4000吨, 远销东南亚市场  
Concrete mixer drum using BW300TP, exported to Southeast Asia market.



## 4. 汽车传动轴管及车桥用高强钢 High Strength Steel for Shaft Tube and Axle

### 产品用途

### Applications

宝钢开发了一系列高强度传动轴管, 冷冲压及热冲压用桥壳钢, 为车桥的轻量化提供了多种解决方案。

冷冲压桥壳钢具有高强度、易冲压、易焊接等特点, 生产效率高, 适用于薄规格轻卡桥壳的生产。

热冲压桥壳钢适用于热冲压成型工艺, 其特殊设计的组织能够保证热冲压以后的高强度及良好的疲劳性能, 该产品主要用于厚规格重卡热冲压桥壳的高强减重, 目前已通过德国某著名商用车企业认证。

Baosteel has developed a series of high strength cold forming and hot stamping hot-rolled steel for Shaft Tube and Axle, which provides a variety of solutions for the lightweight of axle housing.

Cold forming axle housing steel with high strength, easy forming, good welding performance and high production efficiency, suitable for the production of light truck axle housing.

Hot stamping steel axle housing is suitable for hot stamping forming process, its special designed microstructure ensured the high strength and good fatigue performance after hot stamping. The steel is mainly used in thick axle housing of heavy truck for the purpose of reducing weight, and has been certified by a famous German commercial vehicle enterprise.

## 产品介绍

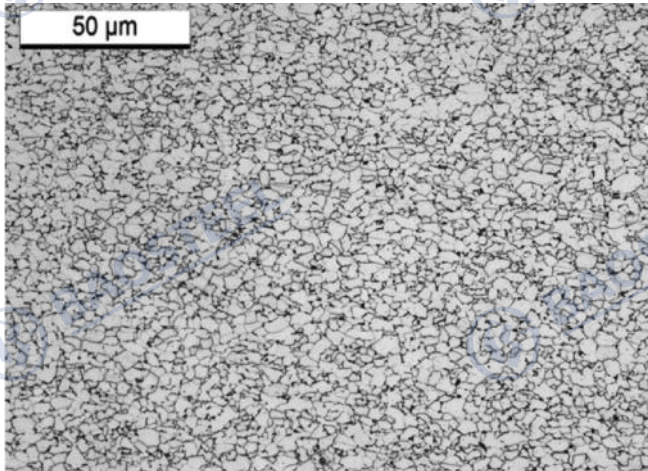
## Products Introduction

### 产品及性能

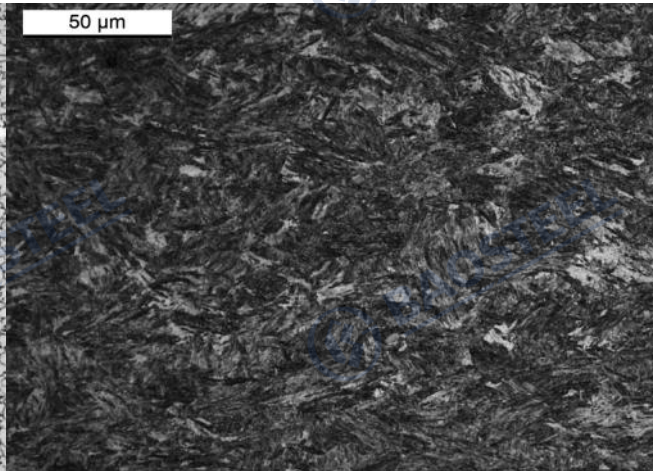
### Products and Mechanical Properties

牌号 Steel Grade	屈服强度 Re, MPa	抗拉强度 Rm, MPa	延伸率 A, %	180°冷弯, 弯心直径 Bending test, Diameter	用途 Field of Application
B600QZR	≥550	600-760	≥14	1.5a	传送轴管用 Steel for Shaft Tube
B700QZR	≥600	700-850	≥13	1.5a	
B750QZR	≥700	750-900	≥13	1.5a	
B440QK	≥295	≥440	≥34	1a	冷冲压桥壳用 Cold Forming for Axle
B500QK	≥460	≥500	≥19	1a	
B600QK	≥550	≥600	≥15	1.5a	
B700QK	≥600	≥700	≥14	2a	
BQT800 (热轧基板) (Hot-rolled Plate)	≥600	≥750	≥12	-	热冲压桥壳用 Hot Stamping for Axle
BQT800 (热冲压桥壳) (Hot-stamping housing)	≥460	≥550	≥21	-	

显微组织  
Microstructure



冷冲压桥壳钢: 铁素体组织  
Cold forming axle housing steel: Ferrite



热冲压桥壳钢: 下贝氏体和马氏体组织。  
Hot stamping axle housing steel: Lower bainite and martensite

规格范围  
Product Range of Dimensions

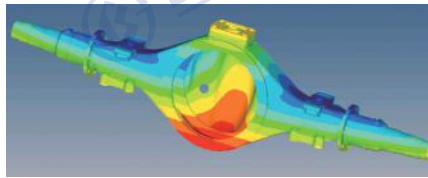
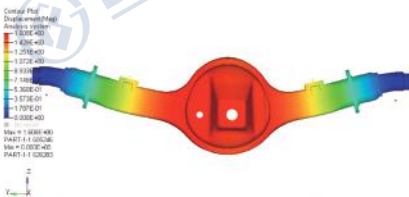
应用范围 Application	厚度 Thickness, mm	宽度 Width, mm	长度 Length, mm
传送轴管用钢 Steel for Shaft Tube	2-8	900-1800	2000-12000
冷成型桥壳 Cold forming axle housing	2-8	900-1800	2000-12000
热成型桥壳 Hot stamping axle housing	8-14	900-1800	2000-12000

## 应用案例

### Application Case

针对某国外用户13吨卡车，国内某车桥厂采用BQT800替代Q420，热冲压重卡桥壳钢板厚度由14mm减薄至11mm，减重20% (21KG)。宝钢从仿真设计、热成形工艺、焊接、疲劳试验提供全方位服务。

Baosteel recommended axle housing user to use BQT800 instead of Q420 to produce 13tons heavy truck axle housing, and the hot stamping steel plate thickness decreased from 14mm to 11mm, the whole axle housing weight loss by 20% (21KG). Baosteel provides full-service including the simulation design, hot forming process, welding and fatigue test.



仿真计算  
Simulation design



制造加工  
Process



疲劳试验  
Fatigue test

减重率 20%

## 5. 汽车用特殊钢 Special Steel for Automobile

### 产品概况

#### Products Overview

宝钢热轧特殊钢包括碳素结构钢、合金结构钢、碳素工具钢、弹簧钢等系列产品，广泛应用于锯片基体制造、汽车零部件、工程机械、锅炉、化工能源等领域。目前，宝钢已经形成了品种丰富，种类齐全的热轧特殊钢，极大满足了用户的需求。

Hot rolled special steel in Baosteel includes carbon structural steel, alloy structural steel, carbon tool steel, spring steel etc.. Hot-rolled special steel have a wide range of applications, they are used in saw blades, automobile parts, engineering machinery, oilers, chemical energy and other fields. At presently, Baosteel has formed a full range of hot-rolled special steel, and greatly meet the needs of our customers.

### 产品特点

#### Product Characteristics

**高纯净度:** 采用严格控制的炉外精炼和连铸工艺，去除多余的杂质和夹杂物，使钢水更纯净，组织更均匀，产品的使用寿命大幅提升。

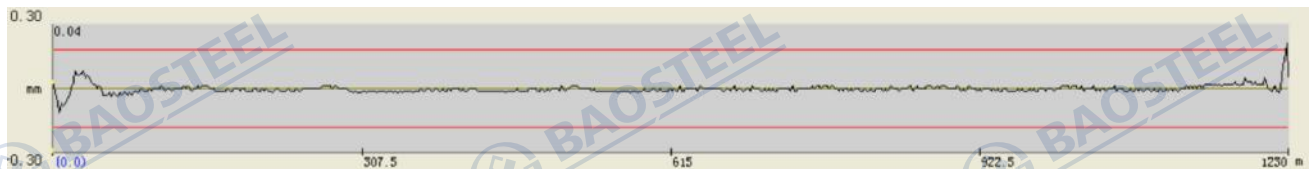
**高精度:** 世界级热轧工厂的精确控制，使产品的组织和尺寸公差满足用户的严苛要求。

**多种供货状态:** 包括控轧、退火、淬火+回火等交货态，极大满足用户的多样化需求。

**High purity:** the strictly controlled refining and continuous casting process makes steel more pure and more uniform, and greatly improved the service life of the product.

**High precision:** the precisely controlled by the world class hot mill plant, the microstructure and the tolerance of the products satisfy even the most stringent requirements.

**Multiple delivery conditions:** including hot-rolled, annealing, quenching and tempering conditions, greatly satisfy the needs of users.



厚度公差  
Tolerance on thickness



横向截面差 (凸度)  
Crown



## 主要品种及牌号

### Main Varieties and Grades

产品系列 Product Categories	主要标准 Main Standards	牌号 Steel Grade	应用领域 Applications
碳素结构钢 Carbon steel for machine structure	JIS标准 JIS standard	S15C-S55C等	各类机械零部件, 包括汽车零部件、链条、摩擦片及供冷轧使用的各类钢卷。 Various type of mechanical parts, including automobile parts, chain, friction plate and used for cold-rolled.
	SAE标准 SAE standard	SAE1010-SAE1070等	
	EN标准 European standard	C10-C75等	
碳素工具钢 Carbon tool steel	JIS标准 JIS standard	SK5, SK4	锯片、刀具、农业机械零部件及供冷轧使用的钢卷。 Saw, blade, knife, agricultural machine parts and for cold-rolled use.
	SAE标准 SAE standard	SAE1074, SAE1078等	
	EN标准 European standard	C80等	
合金结构钢 Alloy steel for structural use	JIS标准 JIS standard	SCM系列, SNCM系列等	各类汽车零部件, 链条、座椅调节机构等, 以及供冷轧使用的钢卷。 Various type of automobile parts, chain, seat adjustment systems, clutch plates and used for cold-rolled.
	ASTM标准 ASTM standard	SAE4130, SAE4140等	
	EN标准	16MnCr5, 34CrMo4, 42CrMo4等	
合金工具钢 Alloy tool steel	JIS标准 JIS standard	SKS51等	刀具、锯片, 以及供冷轧使用的钢卷。 Cutlery, saw, circular saws and for cold-rolled steel strip.
	EN标准 European standard	75Cr1, 80CrV2/8CrV, 75Ni8等	
弹簧钢 Spring steel	JIS标准 JIS standard	SUP6, SUP9等	各类收卷装置中的弹性元件, 如离合器弹簧膜片, 卷簧等。 Various elastic parts in winding apparatus, etc.
	EN标准 European standard	50CrV4/51CrV4, 58CrV4; GB:	
	国标 GB	27SiMn, 65Mn, 60Si2MnA, 62Si2MnA等	
其他特殊用途	GB	15CrMo, 12Cr1MoV	锅炉压力容器用钢、轴承钢、渗氮钢等。
	ASME	SA387系列等	

## 应用案例 Application Case

### 汽车动力系统用特殊钢板材

#### Special steel plate for automobile power system

动力系统用钢对材料对可靠性要求极高, 以发动机摇臂用钢16MnCr5以及发动机飞轮盘SAE1050为例, 其零件的制造工艺复杂, 涉及到复杂成型, 对材料对纯净度、性能稳定性提出了很高要求。

The power system parts needs high reliability of material, for example engine rocker steel 16MnCr5 and engine flywheel steel SAE1050. The manufacturing process of complex parts involves complex forming, so high demands on high purity and stability properties are required.

### 汽车传动系统用特殊钢板材

#### Special steel plate for automobile transmission system

离合器是传动系统的核心, 而膜片弹簧是离合器中的重要零部件, 宝钢开发的膜片弹簧用钢50CrV4、58CrV4已广泛应用于各类汽车离合器, 包括传统AT以及大众DSG双离合变速箱, 产品疲劳寿命达到国际先进水平。

The clutch is the core of the transmission system and diaphragm spring is the important component of clutch. Spring steel provided by Baosteel, for example 50CrV4 and 58CrV4, has been widely used in various types of clutch, including traditional AT and Volkswagen DSG dual clutch gearbox, the fatigue life of the products reach the international advanced level.

### 汽车用精密冲压用钢

#### Fine-blanking steel for automobile

据统计, 一辆车约有70-100多种精冲零件遍布于汽车传动系统、制动系统、座椅调节机构、空调系统、排放系统及安全气囊等关键部件。宝钢在国内率先独家开发了精冲系列用钢, 极大促进了国内精冲行业的技术提升。

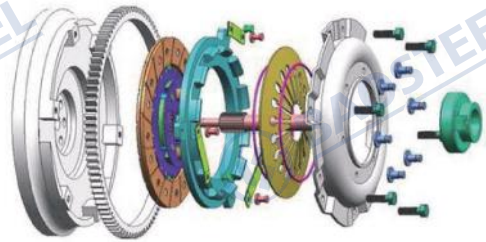
According to statistics, a car contains about 70-100 kinds of fine-blanking parts. They are existed in the transmission system, braking system, seat system, air conditioning systems, exhaust systems, airbags and other key components. Baosteel as a pioneer in China firstly developed a series of fine-blanking steel, which greatly promoted the upgrading of domestic fine blanking industry technology.



发动机摇臂  
Engine rocker arm



飞轮盘  
Flywheel disk



离合器  
Clutch



汽车空调阀板  
Valve plate for  
air-conditioning compressor



汽车门锁零件  
Door lock components



车窗玻璃升降器  
Window lifter



变速箱同步器齿环  
Synchronizing rings for  
gearbox



手动变速箱零件  
Parts for manual gearbox



汽车中的精冲零部件  
Fine-blanking parts in automobile



安全带张紧部件  
Seatbelt tensioner



自动变速箱传动部件  
Drive and transmission components  
for automatic gearboxes



ABS脉冲环  
ABS rings



制动刹车零件  
Brake components



座椅调节机构零件  
Seat adjuster  
components



安全带零件  
Seatbelt components



冷却系统法兰环  
Flange for cooling system

## 6. 热成形汽车钢 Hot forming Steel for Automobile

### 产品特点

#### Product Features

热成形汽车钢是利用金属在高温（奥氏体区）状态下延展性会迅速增加，用模具进行热冲压，同时在冲模内对冲压件快速冷却（淬火），可使冲压件的强度达到1200MPa以上。

Hot forming Steel for Automobile can reach the strength above 1200MPa by utilizing metal elongation property under high temperature (Austenite) and rapid cooling (quenching) in die.

### 化学成分（熔炼分析）（%）

#### Chemical Composition (Heat Analysis) (%)

牌 号 Grade	C	Si	Mn	Nb+Ti
BR1200HS	≤0.3	≤1.2	≤2.0	≤0.10
BR1500HS	≤0.3	≤1.2	≤2.0	≤0.10

### 机械性能

#### Mechanical Properties

牌 号 Grade	状态 Status	Rpl (MPa)	抗拉强度 Rm (MPa)	延伸率 A L0=80mm (%)
BR1200HS	热轧 Hot-rolled	≥280	≤700	≥18
	热处理后 After heat treatment	900-1200	≥1200	≥8
BR1500HS	热轧 Hot-rolled	320-630	420-800	≥15
	热处理后 After heat treatment	950-1250	1300-1800	≥6

## 供货规格

### Available Specifications and Sizes

牌 号 Grade	厚度 Thickness (mm)	宽度 Width (mm)
BR1200HS	1.8-6.0	800-1850
BR1500HS	1.8-6.0	800-1850

超出上述规格范围可以协商试制。

To those requirements out of the spec range, trial production can be arranged based on further discussion and agreement.

## 典型用途

### Typical Applications

广泛用于B柱、车门防撞杠和保险杠等。

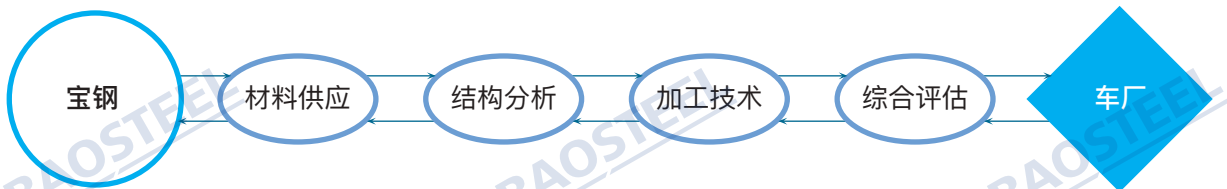
Widely used in B pillar, side intrusion beam and bumper, etc.



# 7. 技术解决方案 Technical Solutions

从材料供应到结构分析优化、加工技术应用和综合评估技术，

宝钢具备的服务能力逐步提升，从材料供应商转变为一揽子技术方案的提供者。



材料设计与选择方案

- (超) 高强钢
- 耐磨钢
- 耐腐蚀钢
- 防弹钢
- 双相钢、高扩孔钢
- .....



结构分析优化方案

- 静力分析
- 结构优化
- 动载分析
- 模具设计
- .....



加工技术应用方案

- 焊接
- 折弯
- 剪切
- 冲压
- 辊压
- .....

综合评估技术方案

- 疲劳分析
- 寿命预测
- 耐磨性
- 耐腐蚀性
- .....

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EVI技术服务

高强钢：BS/BW/BP/BT/BC...

## 8. 订货指南

### Order Guide

订货时用户需提供下列信息

Please Provide the Following Information While Placing Order

- |            |                                    |
|------------|------------------------------------|
| 1. 标准号     | 1. Product standard                |
| 2. 牌号      | 2. Steel grade                     |
| 3. 产品类别    | 3. Product category                |
| 4. 规格及尺寸精度 | 4. Specification and size accuracy |
| 5. 边缘状态    | 5. Edge status                     |
| 6. 重量      | 6. Weight                          |
| 7. 包装方式    | 7. Packaging                       |



宝山钢铁股份有限公司  
http://www.baosteel.com

BAOSHAN IRON & STEEL CO., LTD.  
http://www.baosteel.com

热板与工程材料销售部  
Hot Plate & Engineering Materials Sales Department

地址: 上海宝山漠河路151号  
邮编: 201999  
电话: 021-26641191  
传真: 021-26645077

客户与产品服务部  
Customer and Product Service Department

地址: 上海宝山同济路1800号  
邮编: 201900  
电话: 021-26648888  
传真: 021-26645295

宝钢服务热线  
Baosteel Service Hot-line

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### 国内贸易公司 Domestic Sales Channels

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传真: 021-26640700

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传真: 010-56512199

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传真: 020-32219555

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传真: 028-85335680

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传真: 027-84298224

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FAX: 0081-3-32379123

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FAX: 0082-2-5080891

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FAX: 0061-03-96636835

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FAX: 0065-63336819

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FAX: 0084-8-9100124

宝新泰国代表处  
THAILAND OFFICE  
TEL: 0066-2-6368485  
FAX: 0066-2-2348989

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FAX: 0062-21-57901599

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FAX: 0039-010-5308874

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FAX: 0048-32-7315011

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FAX: 001-949-7521234

加拿大代表处  
CANADA OFFICE  
TEL: 001-905-7315885

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FAX: 0052-55-91711787

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0055-11-26678879

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