

# Hot-rolled Pickled Automotive Steel Sheets

酸洗汽车板

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[www.baosteel.com](http://www.baosteel.com)



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# 1. 前言

## Preface

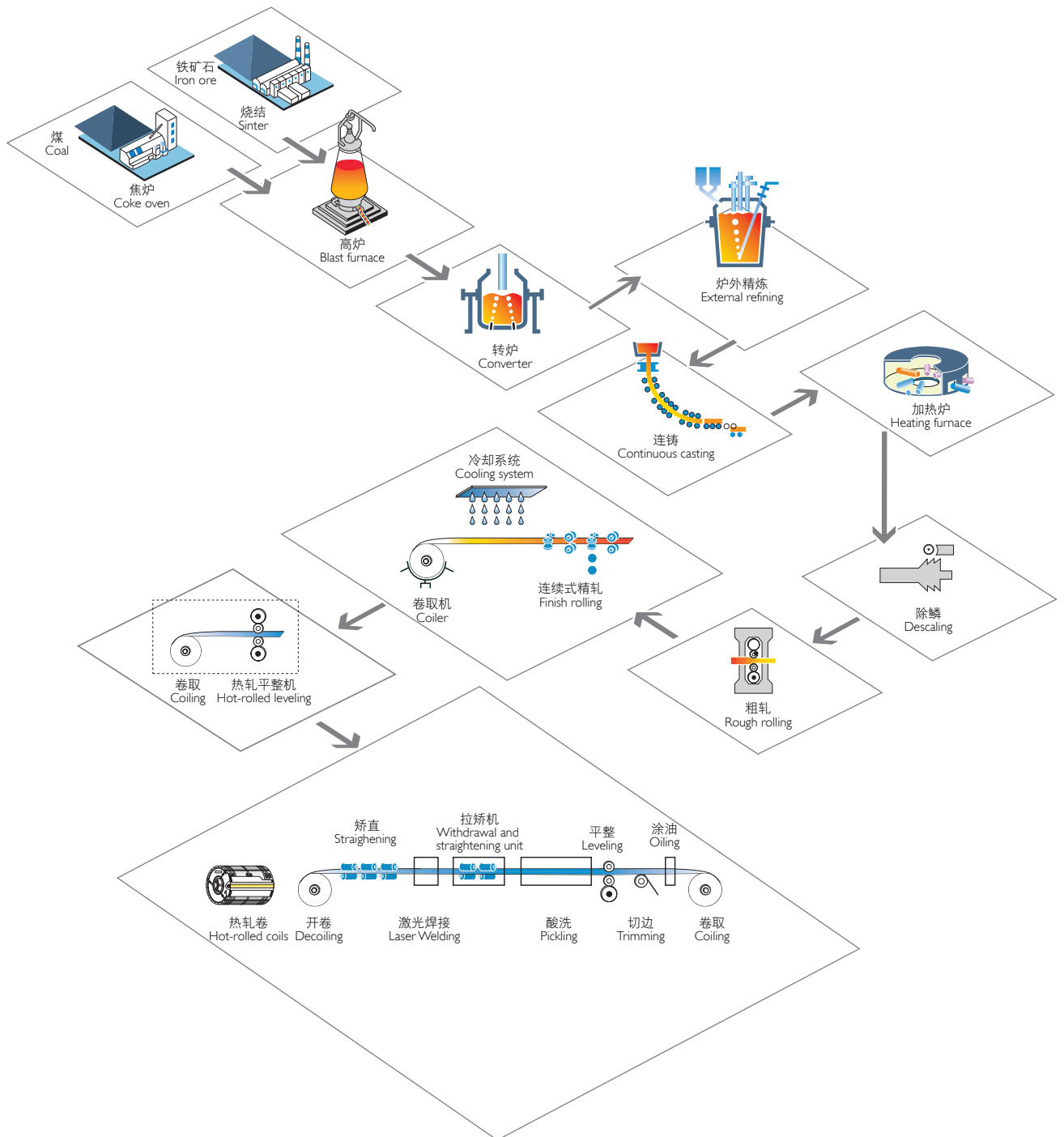
热轧酸洗产品以其表面质量、节省工序能耗等独特优势，越来越多地被应用在汽车制造行业，成为汽车底盘、车轮、座椅、安全构件等的主要材料。宝钢以满足用户需求为导向，紧密跟踪汽车行业发展动态，凭借长期积累的生产技术，进行热轧酸洗汽车板产品的探索和实践，生产出具有良好品质的系列化产品，并实现了批量稳定供货，满足汽车安全性和经济性的要求，在通用、大众、东风日产等品牌车型上批量使用，受到汽车用户的青睐。

With unique advantages in surface quality and economic producing processes, hot-rolled pickled products have been widely used in auto manufacturing as one of the main materials for chassis, wheel, seat and safety components. Baosteel has been closely following the developments in the automotive industry to meet customers' demands. With long-term accumulated technology in production, Baosteel has been exploring and practicing on the producing of hot-rolled pickled automotive sheets products and has developed a series of products with excellent quality. Baosteel has the capability for stable batch supply and meets the safety and economy requirements of automobiles. It's products have been mass used by GM, Volkswagen, Dongfeng-Nissan in their various types of vehicles and have been widely favored by users.



# 2. 酸洗产品 生产流程

## Production Flow Chat of Pickled Products



# 3.

## 热轧酸洗 机组简介

## Introduction of Hot-rolled Pickling Line

宝钢目前有2条可生产热轧酸洗板的机组，宝钢直属厂部连续酸洗机组和不锈钢事业部碳钢酸洗线。直属厂部连续酸洗机组于2001年投产，设计年产量75万吨。不锈钢事业部碳钢酸洗线于2008年初投产，设计年产量140万吨，其中酸洗商品卷63.4万吨。宝钢酸洗机组引进德国SMS-DEMAG、SIEMES、MIEBACH、DUMA等厂商的关键技术和设备。主要工序有激光焊接、拉伸矫直、紊流酸洗、在线平整、切边、涂油等。另外，为了满足汽车、家电等行业发展需要，宝钢计划在2011年投产一条酸洗机组，设计年产量100万吨。

Currently, Baosteel has two product lines of hot-rolled pickled sheets. One is the Baosteel directly owned continuous pickling line and the other is the Stainless Steel Business Unit's carbon steel pickling line. The directly owned continuous pickling line started production in year 2001 with design capacity of 750,000 tons per year. The carbon steel pickling line of Stainless Steel Business Unit started in 2008, with an annual output of 1,400,000 tons which includes 634,000 tons of commercial pickled rolls. Baosteel's pickling line has introduced key techniques and equipments from German companies such as SMS-DEMAG, SIEMES, MIEBACH, DUMA. Main processes include laser welding, stretch rolling, turbulence pickling, on-line leveling, trimming, oiling, etc. In addition, to meet the demands of automobile and household appliances industries, Baosteel has planned to start another pickling line in 2011 with an annual capacity of 1 million tons.



# 4. 产品范围 及特点

## Product Range and Features

### 4.1 产品范围 Product Range

抗拉强度	≤800 MPa
屈服强度	≤700 MPa
产品厚度	1.5-6.0mm (2011年新产线可达7.0mm)
产品宽度	800-1650mm
钢卷重量	≤38.64吨
钢卷内径	610mm, 760mm
Rm	≤800 MPa
Re	≤700 MPa
Thickness	1.5-6.0mm (We can produce 7.0mm in the new line by 2011)
Width	800-1650mm
Coil weight	≤38.64 ton
Coil inner diameter	610mm, 760mm

### 4.2 产品特点 Product Features

- (1) 用盐酸将热轧钢板上的氧化铁皮清除后得到漂亮、光滑的表面, 便于焊接、涂油和上漆, 经过平整, 使钢板表面更接近冷轧板表面
  - (2) 切除不规则的头尾、按产品宽度切除热轧带钢的边部, 以利于后序加工
  - (3) 检查并清除钢板表面不利于后道工序的缺陷
  - (4) 对带钢表面涂油, 以防钢卷在存放期间发生锈蚀
  - (5) 尺寸精度高, 经拉矫、平整后可改善带钢板形
- (1) Smooth surface is obtained by using hydrochloric acid to remove the scale on the hot-rolled strips, thus makes it easier for welding, oiling and painting. The surface is more similar to the cold-rolled steel surface after temper rolling.
  - (2) In order to facilitate the processes followed, irregular heads and tails are removed and the edges of the hot rolled strips are trimmed according to the width of the products.
  - (3) Surface defects on the sheets which are not conducive to the processes followed are examined and eliminated.
  - (4) The strip surface is oiled to prevent it from rusting during storage.
  - (5) High precision in sizes, the strip shape can be improved by straightening, leveling and temper rolling.

# 5.

## 产品介绍

## Products Introduction

### 5.1 通用标准及牌号 General Standards and Grades

	宝钢企业标准 Baosteel Standards		相当国际标准 Equal International Standards		用途 Applications
	标准号 Standard No.	牌号 Grade	标准号 Standard No.	牌号 Grade	
冷成型用钢 Steel for Cold Forming	Q/BQB 302-2009	SPHC SPHD SPHE SPHF BRC1 BRC2 BRC3	JIS G3131	SPHC SPHD SPHE SPHF SPHF SPHF SPHF	适用于制造冷成型加工的零件 For cold forming parts
		DD11 DD12 DD13 DD14	EN 10111	DD11 DD12 DD13 DD14	
一般结构用钢 General Structural Steel	Q/BQB 303-2009	SS330 SS400 SS490 SS540	JIS G3101	SS330 SS400 SS490 SS540	用于车辆一般结构件 For general automotive structural parts
		S185 (St33) S235JR (St37-2) S235J0 (St37-3) S275JR (St44-2) E295 (St50-2) S355JR (St52-3)	EN 10025	— S235JR S235J0 S275JR E295 S355J0	
机械结构用钢 Steel for Machine Structure	Q/BQB 303-2009	C22 C35 S20C S35C S45C	DIN 17200 JIS G4501	C22 C35 S20C S35C S45C	用于经切削等加工并热处理后使用的机械结构件 For machine structural parts processed by cutting and heat treatment
钢管用钢带钢 Steel Strip for Tube	Q/BQB 303-2009	SPHT1 SPHT2 SPHT3 SPHT4	JIS G3132	SPHT1 SPHT2 SPHT3 SPHT4	用于焊接钢管 For welded tube

# 5.

## 产品介绍

## Products Introduction

	宝钢企业标准 Baosteel Standards		相当国际标准 Eqval International Standards		用途 Applications
	标准号 Standard No.	牌号 Grade	标准号 Standard No.	牌号 Grade	
汽车结构用钢 Automotive Structural Steel	Q/BQB 310-2009	SAPH310 SAPH370 SAPH400 SAPH440 SPFH540 SPFH590	JIS G3113 JIS G3134	SAPH310 SAPH370 SAPH400 SAPH440 SPFH540 SPFH590	用于要求成形性加工性能的汽车构件、车轮等汽车结构件 For automotive structural parts such as wheels which require formability and processability
		QStE340TM QStE380TM QStE420TM QStE460TM QStE500TM	SEW 092 (EN10149-2)	QStE340TM (S355MC) QStE380TM QStE420TM (S420MC) QStE460TM (S460MC) QStE500TM (S500MC)	冷变形用热轧粒钢, 用于要求良好冷成型性能并有较高或高强度要求的汽车大梁等结构件 Hot-rolled grain steel for cold forming used for automotive structural parts such as automobile frames, which requires excellent cold forming performance and high-strength
		B330CL B380CL B420CL	-	-	有良好冷成型性能, 用于汽车车轮轮辋及轮辐 Good cold forming performance, used for automotive wheel rims and discs
		B320L B420L B510L B510DL B550L	-	-	汽车大梁、横梁用 Used for automotive frame, beam
	Q/BQB311-2009	S315MC S355MC S420MC S460MC S500MC	SEW 092 (EN10149-2)	- QStE340TM (S355MC) QStE420TM (S420MC) QStE460TM (S460MC) QStE500TM (S500MC)	冷变形用热轧粒钢, 用于要求良好冷成型性能并有较高或高强度要求的汽车大梁等结构件 Hot-rolled grain steel for cold forming used for automotive structural parts such as automobile frames, which requires excellent cold forming performance and high-strength



## 5.2 冷成型用热轧酸洗钢带 Cold Forming Hot-rolled Pickled Strip

### 5.2.1 化学成分 Chemical Composition

牌号 Grade	化学成分 <sup>a</sup> (熔炼分析) (%) Chemical Composition <sup>a</sup> (Heat Analysis) (%)					
	C	Si	Mn	P	S	Al <sub>t</sub>
DD11	≤0.12	≤0.05	≤0.60	≤0.035	≤0.035	≥0.010
DD12	≤0.10	≤0.07	≤0.45	≤0.035	≤0.035	≥0.010
DD13	≤0.08	≤0.07	≤0.40	≤0.030	≤0.030	≥0.010
DD14	≤0.08	≤0.07	≤0.35	≤0.025	≤0.025	≥0.010
SPHC	≤0.15	≤0.05	≤0.60	≤0.035	≤0.035	≥0.010
SPHD	≤0.10	≤0.05	≤0.50	≤0.035	≤0.035	≥0.010
SPHE	≤0.10	≤0.05	≤0.50	≤0.030	≤0.035	≥0.010
SPHF	≤0.08	≤0.05	≤0.50	≤0.025	≤0.025	≥0.010
BRC1	≤0.08	≤0.05	≤0.40	≤0.030	≤0.025	≥0.010
BRC2	≤0.05	≤0.05	≤0.40	≤0.025	≤0.020	≥0.010
BRC3	≤0.03	≤0.05	≤0.30	≤0.025	≤0.020	≥0.010

a 由供方选择, 可添加特殊元素。

a Supply-side options, special elements can be added.

### 5.2.2 机械性能 Mechanical Properties

牌号 Grade	拉伸试验 <sup>a</sup> Tensile Test <sup>a</sup>							性能保证期 Performance Guarantee Period
	下列厚度(mm)时的下屈服强度 <sup>b</sup> ReL at the following thickness <sup>b</sup> (mm) (MPa)		抗拉强度 R <sub>m</sub> (MPa)	下列厚度(mm)时的断后伸长率 A at the following thickness (mm) (%)				
				L <sub>0</sub> =80mm, b=20mm			L <sub>0</sub> =5.65√S <sub>0</sub>	
	<2.0	2.0-11.0	<1.5	1.5-~2.0	2.0-~3.0	3.0-11.0		
DD11	170-360	170-340	≤440	≥22	≥23	≥24	≥28	3个月 3 months
DD12	170-340	170-320	≤420	≥24	≥25	≥26	≥30	6个月 6 months
DD13	170-330	170-310	≤400	≥27	≥28	≥29	≥33	6个月 6 months
DD14	170-310	170-290	≤380	≥30	≥31	≥32	≥36	6个月 6 months

注: 由于钢存在时效性, 建议用户尽早使用。

Note: Users are recommended to consider the aging of the steel.

a 表中所列拉伸试验规定值适用于横向试样。

b 屈服现象不明显时, 采用R<sub>p0.2</sub>°

a Tensile test specified values listed in the table apply to horizontal samples.

b Taking R<sub>p0.2</sub> in case of indistinct yield

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## 产品介绍

## Products Introduction

牌号 Grade	拉伸试验 <sup>a,b</sup> Tensile Test <sup>a,b</sup>							性能保证期 Performance Guarantee Period
	抗拉强度 Rm (MPa)	下列厚度(mm)时的断后伸长率 A at the following nominal thickness (mm) (%)						
		<1.6	1.6- $<$ 2.0	2.0- $<$ 2.5	2.5- $<$ 3.2	3.2- $<$ 4.0	$\geq$ 4.0	
SPHC	$\geq$ 270	$\geq$ 27	$\geq$ 29	$\geq$ 29	$\geq$ 29	$\geq$ 31	$\geq$ 31	3个月 3 months
SPHD	$\geq$ 270	$\geq$ 30	$\geq$ 32	$\geq$ 33	$\geq$ 35	$\geq$ 37	$\geq$ 39	6个月 6 months
SPHE	$\geq$ 270	$\geq$ 31	$\geq$ 33	$\geq$ 35	$\geq$ 37	$\geq$ 39	$\geq$ 41	6个月 6 months
SPHF	$\geq$ 270	$\geq$ 37	$\geq$ 38	$\geq$ 39	$\geq$ 39	$\geq$ 40	$\geq$ 42	6个月 6 months

注：由于钢存在时效性，建议用户尽早使用。

Note: Users are recommended to consider the aging of the steel.

a 表中所列拉伸试验、弯曲试验规定值适用于纵向试样。

b 拉伸试验采用 $L_0=50\text{mm}$ ,  $b=25\text{mm}$ 的试样，即为GB/T 228中P14试样。

a Tensile test specified values listed in the table apply to longitudinal samples.

b Use  $L_0=50\text{mm}$ ,  $b=25\text{mm}$  sample for tensile test, i.e. P14 sample of GB/T228.

牌号 Grade	拉伸试验 <sup>a,b</sup> Tensile Test <sup>a,b</sup>							性能保证期 Performance Guarantee Period
	抗拉强度 Rm MPa	下列公称厚度 (mm) 时的断后伸长率 A at the following nominal thickness (mm) %						
		1.5- $<$ 1.6	1.6- $<$ 2.0	2.0- $<$ 2.5	2.5- $<$ 3.2	3.2- $<$ 4.0	4.0-6.0	
BRC1	$\geq$ 275	$\geq$ 33	$\geq$ 35	$\geq$ 37	$\geq$ 39	$\geq$ 41	$\geq$ 42	6个月 6 months
BRC2	$\geq$ 255	-	$\geq$ 37	$\geq$ 39	$\geq$ 41	$\geq$ 43	$\geq$ 44	6个月 6 months
BRC3	$\geq$ 255	-	$\geq$ 39	$\geq$ 41	$\geq$ 43	$\geq$ 45	$\geq$ 46	6个月 6 months

注：由于钢存在时效性，建议用户尽早使用。

Note: Users are recommended to consider the aging of the steel.

a 表中所列拉伸试验规定值适用于纵向试样。

b 拉伸试验采用 $L_0=50\text{mm}$ ,  $b=25\text{mm}$ 的试样，即为GB/T 228中P14试样。

a Tensile test specified values listed in the table apply to longitudinal samples.

b Use  $L_0=50\text{mm}$ ,  $b=25\text{mm}$  sample for tensile test, i.e. P14 sample of GB/T228.

## 5.3 结构用热轧酸洗钢带

### Hot-rolled Pickled Structural Strip

#### 5.3.1 化学成分

#### Chemical Composition

牌号 Grade	化学成分 <sup>a</sup> (熔炼分析) Chemical Composition <sup>a</sup> (Heat Analysis) (%)						
	C	Si	Mn	P	S	N <sup>b</sup>	Ceq <sup>c</sup>
SS330	≤0.15	≤0.30	≤0.95	≤0.035	≤0.035	-	-
SS400	≤0.21	≤0.30	≤1.40	≤0.035	≤0.035	-	-
SS490	≤0.22	≤0.25	≤1.40	≤0.035	≤0.035	-	-
SS540	≤0.30	≤0.25	≤1.60	≤0.035	≤0.035	-	-
S185 (St33)	-	-	-	≤0.040	≤0.040	-	-
S235JR (St37-2)	≤0.17	≤0.35	≤1.40	≤0.035	≤0.035	≤0.012	≤0.35
S235J0 (St37-3)	≤0.17	≤0.35	≤1.40	≤0.030	≤0.030	≤0.012	≤0.35
S275JR (St44-2)	≤0.21	≤0.35	≤1.50	≤0.035	≤0.035	≤0.012	≤0.40
E295 (St50-2)	≤0.30	≤0.35	≤1.60	≤0.035	≤0.035	≤0.012	-
S355J0 (St52-3)	≤0.20			≤0.030	≤0.030		

a 根据需要可添加其它合金元素。

b 当Alt≥0.020或Als≥0.015或加入其他足够的固氮元素时，N的最大值不适用，检验文件中应提供固氮元素的含量。

c  $C_{eq} = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15$

a Other alloying agent can be added on request.

b When Alt≥0.020 or Als≥0.015, or when other adequate nitrogen fixation elements are added, the maximum of N does not apply. Test documents should provide the contents of nitrogen fixation.

c  $C_{eq} = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15$

牌号 Grade	化学成分 (熔炼分析) Chemical Composition (Heat Analysis) (%)					
	C	Si	Mn	P	S	其他 Others
C22	0.17-0.24	≤0.40	0.40-0.70	≤0.035	≤0.035	a
C35	0.32-0.39	≤0.40	0.50-0.80	≤0.035	≤0.035	a
S20C	0.18-0.23	0.15-0.35	0.30-0.60	≤0.030	≤0.030	Cr≤0.20
S35C	0.32-0.38	0.15-0.35	0.60-0.90	≤0.030	≤0.030	Cr≤0.20
S45C	0.42-0.48	0.15-0.35	0.60-0.90	≤0.030	≤0.030	Cr≤0.20
SPHT1	≤0.10	≤0.35	≤0.50	≤0.035	≤0.035	b
SPHT2	≤0.18	≤0.35	≤0.60	≤0.035	≤0.035	b
SPHT3	≤0.25	≤0.35	0.30-0.90	≤0.035	≤0.035	b
SPHT4	≤0.30	≤0.35	0.30-1.00	≤0.035	≤0.035	b

a  $Cr \leq 0.40, Mo \leq 0.10, Ni \leq 0.40, Cr + Mo + Ni \leq 0.63$ .

b 根据需要可添加其它合金元素。

a  $Cr \leq 0.40, Mo \leq 0.10, Ni \leq 0.40, Cr + Mo + Ni \leq 0.63$ .

b Other alloying agent can be added on request.

# 5.

## 产品介绍

## Products Introduction

### 5.3.2 机械性能 Mechanical Properties

牌 号 Grade	拉伸试验 <sup>a</sup> Tensile Test <sup>a</sup>						180° 弯曲试验 <sup>b</sup> b≥35mm 弯心直径 180° Bending Test b≥35mm Diameter
	上屈服强度 ReH (MPa)		抗拉强度 Rm (MPa)	断后伸长率 A (%)			
	公称厚度 Nominal Thickness (mm)			L <sub>0</sub> =50mm b=25mm	L <sub>0</sub> =200mm b=40mm		
	≤16	>16	公称厚度 Nominal Thickness (mm)				
			≤5	>5-16	>16		
SS330	≥205	≥195	330-430	≥26	≥21	≥26	1a
SS400	≥245	≥235	400-510	≥21	≥17	≥21	3a
SS490	≥285	≥275	490-610	≥19	≥15	≥19	4a
SS540	≥400	≥390	≥540	≥16	≥13	≥17	4a

a 拉伸试验取横向试样；屈服现象不明显时，采用 $R_{p0.2}$ ；对拉伸试验取 $L_0=50\text{mm}$ ， $b=25\text{mm}$ 的试样，即为GB/T 228中P14试样。

b 弯曲试验取横向试样，仲裁试验时试样宽度为35mm。

a Horizontal samples are taken for tensile test; Take  $R_{p0.2}$  in case of indistinct yield. Use  $L_0=50\text{mm}$ ， $b=25\text{mm}$  sample for tensile test, i.e. P14 sample of GB/T228.

b Horizontal samples are taken for bending test with width 35mm sample for referee test.



牌 号 Grade	拉伸试验 <sup>a</sup> Tensile Test <sup>a</sup>								180° 弯曲试验 <sup>b</sup> 180° Bending Test <sup>b</sup> 弯心直径 Diameter										
	上屈服强度 ReH (MPa)		抗拉强度 Rm (MPa)		断后伸长率 A (%)														
					L <sub>0</sub> =80mm, b=20mm		L <sub>0</sub> =5.65√S <sub>0</sub>												
	公称厚度 Nominal Thickness (mm)		公称厚度 Nominal Thickness (mm)		公称厚度 Nominal Thickness (mm)				公称厚度 Nominal Thickness (mm)										
≤16.0		>16.0		<3.0		≥3.0		>1.5-2.0		>2.0-2.5		>2.5-3.0		≥3.0		<3.0		≥3.0	
S185 (St33)	≥185	≥175	310-540	290-510	≥10	≥11	≥12	≥16	3a	3.5a									
S235JR (St37-2)	≥235	≥225	360-510	360-510	≥17	≥18	≥19	≥24	1.5a	2a									
S235J0 (St37-3)	≥235	≥225	360-510	360-510	≥17	≥18	≥19	≥24	1.5a	2a									
S275JR (St44-2)	≥275	≥265	430-580	410-560	≥15	≥16	≥17	≥21	2.5a	3a									
E295 (St50-2)	≥295	≥285	490-660	470-610	≥12	≥13	≥14	≥18	-	-									
S355J0 (St52-3)									2.5a	3a									

a 拉伸试验取横向试样, 屈服现象不明显时, 采用R<sub>p0.2</sub>°

b 弯曲试验取横向试样, 弯曲试验取b≥20mm的试样, 仲裁试验时为20mm。

a Horizontal samples are taken for tensile test. Take R<sub>p0.2</sub> in case of indistinct yield.

b Horizontal samples are taken for bending test. Width b≥20mm samples are taken for bending test, while width of the sample for referee test is 20mm.

牌 号 Grade	拉伸试验 <sup>a</sup> Tensile Test <sup>a</sup>						180° 弯曲试验 <sup>b</sup> 180° Bending Test <sup>b</sup> 弯心直径 Diameter	
	抗拉强度 Rm (MPa)	断后伸长率 A (%)				公称厚度 Nominal Thickness (mm)		
		公称厚度 Nominal Thickness (mm)						
		<1.6	1.6-3.0	3.0-6.0	6.0-13.0			≤3.0
SPHT1	≥270	≥30	≥32	≥35	≥37	0a	1a	
SPHT2	≥340	≥25	≥27	≥30	≥32	2a	3a	
SPHT3	≥410	≥20	≥22	≥25	≥27	3a	4a	
SPHT4	≥490	≥15	≥18	≥20	≥22	3a	4a	

a 拉伸试验取纵向试样, 拉伸试验应采用L<sub>0</sub>=50mm, b=25mm的试样, 即为GB/T 228中P14试样。

b 弯曲试验取纵向试样, 弯曲试验采用b≥20mm的试样, 仲裁试验时试样宽度为20mm。

a Longitudinal samples are taken for tensile test. Tensile test should use sample of L<sub>0</sub>=50mm, b=25mm, i.e. P14 sample of GB/T 228.

b Longitudinal samples are taken for bending test. Width b≥20mm samples are taken for bending test, while width of the sample for referee test is 20mm.

# 5.

## 产品介绍

## Products Introduction

### 5.4 汽车结构用热轧酸洗钢带 Hot-rolled Pickled Strip for Automotive Structure

#### 5.4.1 化学成分 Chemical Composition

牌 号 Grade	化学成分 <sup>a</sup> Chemical Composition <sup>a</sup> (%)					
	C	Si	Mn	P	S	Alt
SAPH310	≤0.10	≤0.30	≤0.50	≤0.035	≤0.035	≥0.010
SAPH370	≤0.21	≤0.30	≤0.75	≤0.035	≤0.035	≥0.010
SAPH400	≤0.21	≤0.30	≤1.40	≤0.030	≤0.025	≥0.010
SAPH440	≤0.21	≤0.30	≤1.50	≤0.030	≤0.025	≥0.010
SPFH540	≤0.15	≤0.50	≤1.80	≤0.025	≤0.025	≥0.010
SPFH590	≤0.18	≤0.60	≤2.00	≤0.025	≤0.025	≥0.010
B330CL	≤0.10	≤0.30	≤0.50	≤0.030	≤0.025	≥0.010
B380CL	≤0.12	≤0.30	≤1.20	≤0.030	≤0.025	≥0.010
B420CL	≤0.12	≤0.30	≤1.50	≤0.030	≤0.025	≥0.010
B320L	≤0.10	≤0.30	≤0.50	≤0.030	≤0.035	≥0.010
B420L	≤0.12	≤0.50	≤1.50	≤0.030	≤0.025	≥0.010
B510L	≤0.16	≤0.50	≤1.60	≤0.030	≤0.025	≥0.010
B510DL	≤0.18	≤0.30	≤1.60	≤0.025	≤0.020	≥0.010
B550L	≤0.16	≤0.50	≤1.60	≤0.030	≤0.025	≥0.010

a 为改善钢的性能, 根据需要可添加其他合金元素, 此时Alt的下限不要求。

a To improve properties, other alloying agent can be added on request. Here no minimum limit for Alt.

牌 号 Grade	化学成分 <sup>a</sup> Chemical Composition <sup>a</sup> (%)						
	C	Si	Mn	P	S	Alt	其它 Others
QStE340TM	≤0.12	≤0.50	≤1.30	≤0.030	≤0.025	≥0.015	
QStE380TM	≤0.12	≤0.50	≤1.40	≤0.030	≤0.025	≥0.015	Nb≤0.09
QStE420TM	≤0.12	≤0.50	≤1.50	≤0.030	≤0.025	≥0.015	V≤0.20
QStE460TM	≤0.12	≤0.50	≤1.60	≤0.030	≤0.025	≥0.015	Ti≤0.15
QStE500TM	≤0.12	≤0.50	≤1.70	≤0.030	≤0.025	≥0.015	

a 为改善钢的性能, 根据需要可添加Nb、V、Ti中一种或几种合金元素, 但Nb+V+Ti≤0.22%。

a One or several alloying elements of Nb, V, Ti can be added to improve properties, while Nb+V+Ti≤0.22%.

牌号 Grade	化学成分(熔炼分析) Chemical Composition (Heat Analysis) (%)						
	C	Si	Mn	P	S	Al <sub>t</sub>	其它 <sup>a</sup> Other <sup>a</sup>
TL1106	≤0.10	≤0.10	0.20-0.45	≤0.030	≤0.030	0.020-0.070	-
TL1110	≤0.10	≤0.10	≤0.35	≤0.030	≤0.030	≥0.020	-
TL1111	≤0.12	≤0.10	0.20-0.45	≤0.030	≤0.030	≥0.020	-
TL1402	≤0.10	≤0.50	≤1.20	≤0.030	≤0.030	0.020-0.060	Nb≤0.09
TL1406	≤0.12	≤0.50	≤0.90	≤0.030	≤0.030	0.020-0.070	Nb≤0.09
410XLF	≤0.12	≤0.50	≤1.00	≤0.025	≤0.025	≥0.020	Nb≤0.08

a 由供方选择, 可添加特殊元素。

a Supply-side options, special elements can be added.

## 5.4.2 机械性能 Mechanical Properties

牌号 Grade	抗拉强度 R <sub>m</sub> (MPa)	拉伸试验 <sup>a</sup> Tensile Test <sup>a</sup>									180° 弯曲试验 <sup>b</sup> 弯心直径 180° Bending Test <sup>b</sup> Diameter	
		上屈服强度 <sup>c</sup> ReH <sup>c</sup> (MPa)			断后伸长率 A L <sub>0</sub> =50mm, b=25mm (%)							
		公称厚度 Nominal Thickness (mm)										
		<6.0	6.0- $<$ 8.0	≥8.0	1.6- $<$ 2.0	2.0- $<$ 2.5	2.5- $<$ 3.15	3.15- $<$ 4.0	4.0- $<$ 6.3	≥6.3	<2.0	≥2.0
SAPH310 <sup>d</sup>	≥310	≥185	≥185	≥175	≥33	≥34	≥36	≥38	≥40	≥41	0a	2a
SAPH370	≥370	≥225	≥225	≥215	≥32	≥33	≥35	≥36	≥37	≥38	1a	2a
SAPH400	≥400	≥255	≥235	≥235	≥31	≥32	≥34	≥35	≥36	≥37	2a	2a
SAPH440	≥440	≥305	≥295	≥275	≥29	≥30	≥32	≥33	≥34	≥35	2a	3a

a 拉伸试验规定值适用于纵向试样: 拉伸试验取L<sub>0</sub>=50mm, b=25mm的试样, 即为GB/T 228中P14试样。

b 弯曲试验规定值适用于横向试样, 弯曲试样宽度b≥20mm, 仲裁试验时试样宽度为20mm。

c 屈服现象不明显时, 采用R<sub>p0.2</sub>。

d 牌号SAPH310的上屈服强度为参考值, 不作为保证条件。

a Tensile test specified values apply to longitudinal samples. Tensile test should use sample of L<sub>0</sub>=50mm, b=25mm, i.e. P14 sample of GB/T 228.

b Horizontal samples are taken for bending test. Width b≥20mm samples are taken for bending test, while width of the sample for referee test is 20mm.

c Taking R<sub>p0.2</sub> in case of indistinct yield.

d Grade SAPH310's ReH is for reference only, not as a guarantee condition.

# 5.

## 产品介绍

## Products Introduction

牌号 Grade	拉伸试验 <sup>a</sup> Tensile Test <sup>a</sup>						180° 弯曲试验 <sup>b</sup> 弯心直径 180° Bending Test <sup>b</sup> Diameter	
	上屈服强度 <sup>c</sup> ReH <sup>c</sup> (MPa)	抗拉强度 Rm (MPa)	断后伸长率 A L <sub>0</sub> =50mm, b=25mm (%)				公称厚度 Nominal Thickness (mm)	
			公称厚度 Nominal Thickness (mm)					
			1.6- $<$ 2.0	2.0- $<$ 2.5	2.5- $<$ 3.25	3.25-6.0	$<$ 3.25	$\geq$ 3.25
SPFH540	$\geq$ 355	$\geq$ 540	$\geq$ 21	$\geq$ 22	$\geq$ 23	$\geq$ 24	2a	3a
SPFH590	$\geq$ 420	$\geq$ 590	$\geq$ 19	$\geq$ 20	$\geq$ 21	$\geq$ 22	3a	3a

a 拉伸试验规定值适用于纵向试样; 拉伸试验取L<sub>0</sub>=50mm, b=25mm的试样, 即为GB/T 228中P14试样。

b 弯曲试验规定值适用于横向试样, 弯曲试样宽度b $\geq$ 20mm, 仲裁试验时试样宽度为20mm。

c 屈服现象不明显时, 采用R<sub>p0.2</sub><sup>o</sup>。

a Tensile test specified values apply to horizontal samples. Tensile test should use sample of L<sub>0</sub>=50mm, b=25mm, i.e. P14 sample of GB/T 228.

b Horizontal samples are taken for bending test. Width b $\geq$ 20mm samples are taken for bending test, while width of the sample for referee test is 20mm.

c Taking R<sub>p0.2</sub> in case of indistinct yield.

牌号 Grade	拉伸试验 <sup>a</sup> Tensile Test <sup>a</sup>				180° 弯曲试验 <sup>a, b</sup> 弯心直径 180° Bending Test <sup>a, b</sup> Diameter	
	上屈服强度 <sup>c</sup> ReH <sup>c</sup> (MPa)	抗拉强度 Rm (MPa)	断后伸长率 A (%)			
			L <sub>0</sub> =80mm, b=20mm	L <sub>0</sub> =5.65 $\sqrt{S_0}$		
			公称厚度 Nominal Thickness (mm)			
		$<$ 3.0	$\geq$ 3.0			
QStE340TM	$\geq$ 340	420-540	$\geq$ 19	$\geq$ 25	0.5a	
QStE380TM	$\geq$ 380	450-590	$\geq$ 18	$\geq$ 23	0.5a	
QStE420TM	$\geq$ 420	480-620	$\geq$ 16	$\geq$ 21	0.5a	
QStE460TM	$\geq$ 460	520-670	$\geq$ 14	$\geq$ 19	1a	
QStE500TM <sup>d</sup>	$\geq$ 500	550-700	$\geq$ 12	$\geq$ 17	1a	

a 表中所列拉伸试验规定值适用于纵向试样, 弯曲试验规定值适用于横向试样。

b 弯曲试样宽度b $\geq$ 20mm, 仲裁试验时为20mm。

c 屈服现象不明显时, 采用R<sub>p0.2</sub><sup>o</sup>。

d 牌号QStE500TM厚度大于8.0mm的钢板及钢带, 其屈服强度下限允许降低20MPa。

a Tensile test specified values listed in the table apply to longitudinal samples. Bending test specified values apply to horizontal samples.

b Width b $\geq$ 20mm samples are taken for bending test, while width of the sample for referee test is 20mm.

c Taking R<sub>p0.2</sub> in case of indistinct yield.

d Allowable reduction of min. yield strength is by 20MPa for Grade QStE500TM, thickness  $>$ 8.0mm plates and strip.



牌 号 Grade	拉伸试验 <sup>a</sup> Tensile Test <sup>a</sup>				180° 弯曲试验 <sup>b</sup> 弯心直径 180° Bending Test <sup>b</sup> Diameter
	下屈服强度 <sup>c</sup> ReL <sup>c</sup> (MPa)	抗拉强度 Rm (MPa)	屈强比 Yield Ratio	断后伸长率 A $L_0=5.65\sqrt{S_0}$ (%)	
B330CL	≥225	330-430	—	≥33	0a
B380CL <sup>d</sup>	厚度≤5.5mm, ≥260	380-480	—	≥32	0.5a
	厚度>5.5-10.0mm, ≥235			≥28	
	厚度>10.0-14.0mm, ≥220			≥25	
B420CL	≥290	420-520	—	≥28	0.5a
B320L	≥215	320-420	—	≥27	0a
B420L	≥305	420-520	—	≥25	0.5a
B510L	≥355	510-630	—	≥24	0.5a
B510DL	≥355	510-630	≤0.80	≥24	1a
B550L	≥400	550-670	—	≥23	1a

a 拉伸试验规定值适用于横向试样。

b 弯曲试验规定值适用于横向试样。牌号B440QZR、B480QZR的弯曲试样宽度 $b \geq 20$ mm, 仲裁试验时弯曲试样宽度为20mm; 其它牌号的弯曲试样宽度 $b \geq 35$ mm, 仲裁试验时试样宽度为35mm。

c 屈服现象不明显时, 采用 $R_{p0.2}$ 。

d 牌号B380CL, 厚度 $\geq 10.0$ mm的钢板及钢带, 其抗拉强度下限允许降低10MPa。

a Tensile test specified values apply to horizontal samples.

b Bending test specified values apply to horizontal samples. For grade B440QZR, B480QZR, width  $b \geq 20$ mm samples are taken for bending test, while width of the sample for referee test is 20mm. For other grades, width  $b \geq 35$ mm samples are taken for bending test, while width of the sample for referee test is 35mm.

c Taking  $R_{p0.2}$  in case of indistinct yield.

d Allowable reduction of min. tensile strength is by 10MPa for Grade B380CL, thickness  $\geq 10.0$ mm plates and strip.

牌 号 Grade	拉伸试验 <sup>a</sup> Tensile Test <sup>a</sup> ( $L_0=80$ mm, $b=20$ mm)			180° 弯曲试验 <sup>c</sup> 弯心直径 180° Bending Test <sup>c</sup> Diameter
	下屈服强度 <sup>b</sup> ReL <sup>b</sup> (MPa)	抗拉强度 Rm (MPa)	断后伸长率 A (%)	
TL1106	215-285	320-390	≥32	—
TL1110	245-300	370-430	≥28	1a
TL1111	215-305	320-410	≥25	—
TL1402	390-490	≥450	≥18	0.5a
TL1406	350-450	≥420	≥24	0a
410XLF	≥410	≥480	≥18	0.5a

a 拉伸试验规定值适用于横向试样。

b 屈服现象不明显时屈服强度用 $R_{p0.2}$ 。

c 弯曲试验规定值适用于横向试样。弯曲试样宽度 $b \geq 20$ mm, 仲裁试验时试样宽度为20mm。

a Tensile test specified values apply to horizontal samples.

b Taking  $R_{p0.2}$  in case of indistinct yield.

c Bending test specified values apply to horizontal samples. Width  $b \geq 20$ mm samples are taken for bending test, while width of the sample for referee test is 20mm.

## 6

新品种  
汽车用热轧  
酸洗钢带New Products of  
Hot-rolled Pickled Strip for Automobiles6.1 冷成形用低合金高强度钢带  
High Strength Low-alloy Steel for Cold Forming6.1.1 产品特点  
Product Features

宝钢冷成形用低合金高强度酸洗钢带是采用先进的冶炼技术和控轧控冷工艺生产的，低碳、低硫和低磷含量，具有优良冷成形性能和焊接性能的低碳微合金化钢。

Baosteel uses the world's leading technology in smelting and TMCP to produce cold forming high strength low-alloy pickled strips. Besides the advantages of low contents of carbon, sulfur and phosphorus, the low carbon microalloy steel also has outstanding properties in cold forming and welding.

6.1.2 化学成分  
Chemical Composition

牌 号 Grade	C	Si	Mn	P	S	Al	Nb	V	Ti	Mo
B600L, QSTE550TM, S550MC	≤0.10	≤0.15	≤1.70	≤0.025	≤0.010	≥0.015	≤0.09	≤0.20	≤0.15	
B650L, QSTE600TM, S600MC	≤0.10	≤0.15	≤1.80	≤0.025	≤0.010	≥0.015	≤0.09	≤0.20	≤0.15	
B700L, QSTE650TM, S650MC	≤0.10	≤0.15	≤2.00	≤0.025	≤0.010	≥0.015	≤0.09	≤0.20	≤0.15	
B750L, QSTE700TM, S700MC	≤0.10	≤0.15	≤2.10	≤0.025	≤0.010	≥0.015	≤0.09	≤0.20	≤0.15	≤0.5

注： Nb+V+Ti≤0.22%

Note: Nb+V+Ti≤0.22%

6.1.3 机械性能  
Mechanical Properties

牌 号 Grade	上屈服强度 ReH (MPa)	抗拉强度 Rm (MPa)	断后伸长率 A (%)		180度冷弯 弯心直径 180° Bending Test Diameter
			a<3mm, L <sub>0</sub> =80mm	a≥3mm, L <sub>0</sub> =5.65√S <sub>0</sub> mm	
B600L, QSTE550TM, S550MC	≥550	600-760	≥12	≥14	1.5a
B650L, QSTE600TM, S600MC	≥600	650-820	≥11	≥13	1.5a
B700L, QSTE650TM, S650MC	≥650	700-880	≥10	≥12	2.0a
B750L, QSTE700TM, S700MC	≥700	750-950	≥10	≥12	2.0a

注： 拉伸为纵向试样、冷弯为横向试样

Note: Longitudinal samples are taken for tensile test, while horizontal samples are taken for cold bending test.

#### 6.1.4 供货规格 Available Specifications and Sizes

牌 号 Grade	厚度 Thickness (mm)	宽度 Width (mm)
B600L, QSTE550TM, S550MC	2.0-5.0	900-1250
B650L, QSTE600TM, S600MC	2.5-4.5	900-1250
B700L, QSTE650TM, S650MC	2.5-4.0	900-1250
B750L, QSTE700TM, S700MC	3.0-4.0	900-1200

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.

#### 6.1.5 典型用途 Typical Applications

广泛用于汽车零部件的制造, 如门铰链、座椅滑道、调角器、安全气囊、安全带锁扣等。

Widely used in manufacturing of automobile's components, such as door hinges, seat slide, adjuster, airbags, seat belt lock, etc.



# 6

## 新品种 汽车用热轧 酸洗钢带

## New Products of Hot-rolled Pickled Strip for Automobiles

### 6.2 车轮用热轧酸洗钢带 Hot-rolled Pickled Strip for Auto Wheel

#### 6.2.1 产品特点 Product Features

宝钢车轮用热轧酸洗钢带是采用控轧控冷工艺生产的具有优良冷成形性能和焊接性能的低碳微合金化钢。

Hot-rolled pickled steel for automotive wheel is low carbon micro-alloyed steel with excellent properties of cold forming and welding produced by using advanced TMCP technology.

#### 6.2.2 化学成分 Chemical Composition

牌 号 Grade	C	Si	Mn	Nb+Ti
B450CL	≤0.10	≤0.50	≤1.5	≤0.10
B500CL	≤0.10	≤0.50	≤1.5	≤0.10
B550CL	≤0.10	≤0.50	≤1.5	≤0.10
B600CL	≤0.10	≤0.50	≤2.5	≤0.20
B650CL	≤0.10	≤0.50	≤2.5	≤0.20

#### 6.2.3 机械性能 Mechanical Properties

牌 号 Grade	屈服强度 Re (MPa)	抗拉强度 Rm (MPa)	延伸率A50 A50 (%)
B450CL	≥320	450-550	≥28
B500CL	≥400	500-600	≥26
B550CL	≥450	550-650	≥24
B600CL	≥500	600-700	≥22
B650CL	≥550	650-750	≥20

注： 拉伸试验为横向试样

Note: Horizontal samples are taken for tensile test

## 6.2.4 供货规格 Available Specifications and Sizes

牌 号 Grade	厚度 Thickness (mm)	宽度 Width (mm)
B450CL	2.0-6.0	900-1600
B500CL	2.0-6.0	900-1600
B550CL	2.0-6.0	900-1600
B600CL	2.5-5.0	900-1400
B650CL	2.5-4.5	900-1300

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.

## 6.2.5 典型用途 Typical Applications

广泛用于汽车车轮的轮辋和轮辐。

Widely used in automotive wheel rims and discs.



## 6

新品种  
汽车用热轧  
酸洗钢带New Products of  
Hot-rolled Pickled Strip for Automobiles6.3 高扩孔用热轧酸洗钢带  
Hot-rolled Pickled Strip for High Hole Expansion6.3.1 产品特点  
Product Features

宝钢高扩孔用热轧酸洗钢带是采用先进的控轧控冷技术生产的具有高的扩孔率、优良的成形性能和焊接性能。

Using advanced TMCP technology, Baosteel's hot-rolled pickled strip for high hole expansion has high expansion rate and excellent forming and welding properties.

6.3.2 化学成分  
Chemical Composition

牌号 Grade	C	Si	Mn	Nb+Ti
BR290/440HE	≤0.10	≤1.50	0.5-2.0	0-0.10
BR340/490HE	≤0.10	≤1.50	0.5-2.0	0-0.10
BR390/540HE	≤0.10	≤1.50	0.5-2.0	0-0.10
BR440/590HE	≤0.10	≤1.50	1.0-2.5	0.02-0.20
BR540/690HE	≤0.10	≤1.50	1.0-2.5	0.02-0.20
BR600/780HE	≤0.10	≤1.50	1.0-2.5	0.02-0.20

6.3.3 机械性能  
Mechanical Properties

牌号 Grade	抗拉强度 Rm (MPa)	屈服强度 Re (MPa)	延伸率A50 A50 (%)	扩孔率 λ (%)
BR290/440HE	≥440	≥290	≥28	≥100
BR340/490HE	≥490	≥340	≥24	≥80
BR390/540HE	≥540	≥390	≥20	≥80
BR440/590HE	≥590	≥440	≥18	≥75
BR540/690HE	≥690	≥500	≥14	≥70
BR600/780HE	≥780	≥580	≥10	≥60

### 6.3.4 供货规格 Available Specifications and Sizes

牌号 Grade	厚度 Thickness (mm)	宽度 Width (mm)
BR290/440HE	2.0-6.0	800-1600
BR340/490HE	2.0-6.0	800-1600
BR390/540HE	2.0-6.0	800-1500
BR440/590HE	2.0-5.0	800-1500
BR540/690HE	2.5-4.5	800-1400
BR640/780HE	2.5-4.5	800-1400

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.

### 6.3.5 典型用途 Typical Applications

广泛用于要求翻边变形的汽车零部件，如摆臂、车轮等。

Widely used in automotive components which require flanging deformation, such as swing arm, wheels, etc.



# 6

## 新品种 汽车用热轧 酸洗钢带

## New Products of Hot-rolled Pickled Strip for Automobiles

### 6.4 热轧酸洗双相钢带 Hot-rolled Pickled Dual Phase Strip

#### 6.4.1 产品特点 Product Features

宝钢热轧双相酸洗钢带是采用先进的控轧控冷技术生产的，显微组织主要为铁素体和马氏体，具有低屈服比、高的加工硬化率、高的疲劳性能和优良冷成形性能。

Hot-rolled pickled dual phase strip is produced by using advanced TMCP techniques. Microstructure contains mainly ferrite and martensite. It has excellent properties such as low yield ratio, high work hardening rate, high fatigue property and good cold forming performance.

#### 6.4.2 化学成分 Chemical Composition

牌 号 Grade	C	Si	Mn	P	S	Al
BR330/580DP	≤0.10	≤1.5	≤1.5	≤0.025	≤0.010	≥0.015
BR450/780DP	≤0.10	≤1.5	≤1.5	≤0.025	≤0.010	≥0.015

#### 6.4.3 机械性能 Mechanical Properties

牌 号 Grade	$R_{p0.2}$ (MPa)	抗拉强度 Rm (MPa)	延伸率 A $L_0=80\text{mm}$ (%)
BR330/580DP	330-470	≥580	≥19
BR450/780DP	450-610	≥780	≥14

注： 拉伸试验为纵向试样

Note: Longitudinal samples are taken for tensile test



#### 6.4.4 供货规格 Available Specifications and Sizes

牌号 Grade	厚度 Thickness (mm)	宽度 Width (mm)
BR330/580DP	2.0-5.0	800-1500
BR450/780DP	2.5-4.5	800-1400

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.

#### 6.4.5 典型用途 Typical Applications

广泛用于制造形状复杂汽车构件和加强件, 如轿车车轮轮辐、纵梁、B柱等。

Widely used in manufacturing automotive components and reinforcement with complex shape, such as car wheel discs, longitudinal beam, B pillar, etc.



# 6

## 新品种 汽车用热轧 酸洗钢带

## New Products of Hot-rolled Pickled Strip for Automobiles

### 6.5 应变诱导塑性热轧酸洗汽车钢带 Strain Induced Plasticity Hot-rolled Pickled Auto Strip

#### 6.5.1 产品特点 Product Features

宝钢应变诱导塑性酸洗钢带是采用先进的控轧控冷技术生产的具有高强度和高塑性、优良冷成形性能和高碰撞吸收能的特点。

Strain induced plasticity hot-rolled pickled strip is produced by using advanced TMCP techniques. It has outstanding properties in high strength, high plasticity and excellent cold forming and high collision absorption features.

#### 6.5.2 化学成分 Chemical Composition

牌 号 Grade	C	Si	Mn	Nb+Ti
BR400/590TR	≤0.3	≤2.2	≤2.5	≤0.10
BR450/780TR	≤0.3	≤2.2	≤2.5	≤0.10

#### 6.5.3 机械性能 Mechanical Properties

牌 号 Grade	$R_{p0.2}$ (MPa)	抗拉强度 $R_m$ (MPa)	延伸率 A $L_0=80\text{mm}$ (%)
BR400/590TR	≥450	≥590	≥24
BR450/780TR	≥580	≥780	≥20

注： 拉伸试验为纵向试样

Note: Longitudinal samples are taken for tensile test

## 6.5.4 供货规格 Available Specifications and Sizes

牌 号 Grade	厚度 Thickness (mm)	宽度 Width (mm)
BR400/590TR	2.0-5.0	800-1500
BR450/780TR	2.5-4.0	800-1400

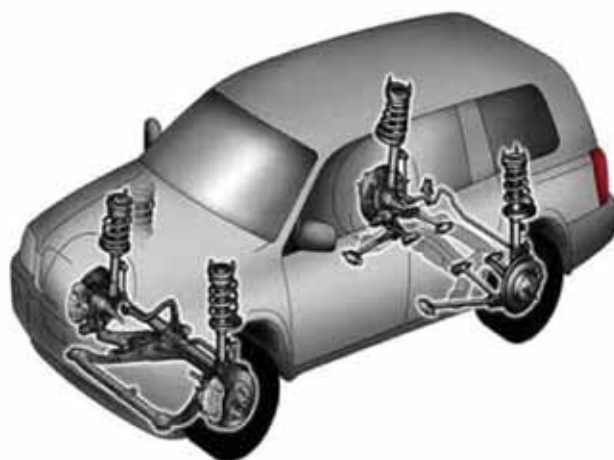
超出上述规格范围可以协商试制。

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

## 6.5.5 典型用途 Typical Applications

广泛用于制造形状复杂汽车构件、安全构件等, 如悬架、防撞梁、保险杆等。

Widely used in manufacturing complex shaped automotive components, security components such as suspension, side intrusion beam, bumper, etc.



# 6

## 新品种 汽车用热轧 酸洗钢带

## New Products of Hot-rolled Pickled Strip for Automobiles

### 6.6 复相热轧酸洗汽车钢带 Multiphase Hot-rolled Pickled Strip for Automobiles

#### 6.6.1 产品特点 Product Features

复相酸洗钢带是采用先进的冶炼技术和轧制技术生产的，组织由铁素体、贝氏体、马氏体和沉淀析出相等组成，具有晶粒细小、强度高和良好成形性能。

Multiphase hot-rolled pickled strip is produced by using advanced smelting and rolling technology. Composed of ferrite, bainite, martensite and precipitation, it has fine grain size, high strength and good forming property.

#### 6.6.2 化学成分 Chemical Composition

牌 号 Grade	C	Si	Mn	P	S	Al	Cr+Mo	Nb+Ti	V
CP800	≤0.18	≤0.8	≤2.2	≤0.08	≤0.015	≤2.0	≤1.0	≤0.15	≤0.20

#### 6.6.3 机械性能 Mechanical Properties

牌 号 Grade	$R_{p0.2}$ (MPa)	抗拉强度 $R_m$ (MPa)	延伸率 A $L_0=80\text{mm}$ (%)
CP800	680-830	≥780	≥10

#### 6.6.4 供货规格 Available Specifications and Sizes

牌 号 Grade	厚度 Thickness (mm)	宽度 Width (mm)
CP800	2.0-4.0	900-1400

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.

#### 6.6.5 典型用途 Typical Applications

广泛用于车门加强件、纵梁和抗冲击安全件。

Widely used for door reinforcement, longitudinal and impact safety items



## 6

新品种  
汽车用热轧  
酸洗钢带New Products of  
Hot-rolled Pickled Strip for Automobiles6.7 热成形热轧酸洗汽车钢带  
Hot-formed Hot-rolled Pickled Strip for Automobiles6.7.1 产品特点  
Product Features

宝钢热冲压用酸洗钢带是利用金属在高温（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。

The stamping parts made by Baosteel's hot stamping pickled strip can reach the strength above 1200MPa by utilizing metal elongation property under high temperature (Austenite) and rapid cooling (quenching) in die.

6.7.2 化学成分  
Chemical Composition

牌 号 Grade	C	Si	Mn	Nb+Ti
BR1200HS	≤0.3	≤2.2	≤2.5	≤0.10
BR1500HS	≤0.3	≤2.2	≤2.5	≤0.10

6.7.3 机械性能  
Mechanical Properties

牌 号 Grade	状 态 Status	R <sub>p1</sub> (MPa)	抗拉强度 R <sub>m</sub> (MPa)	延伸率 A L <sub>0</sub> =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	≤800	≥18
	热处理后 After heat treatment	950-1250	1300-1800	≥6

## 6.7.4 供货规格 Available Specifications and Sizes

牌号 Grade	厚度 Thickness (mm)	宽度 Width (mm)
BR1200HS	2.0-4.0	900-1400
BR1500HS	2.0-4.0	900-1400

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.

## 6.7.5 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.

## 包装及标签

## Packaging and Labeling

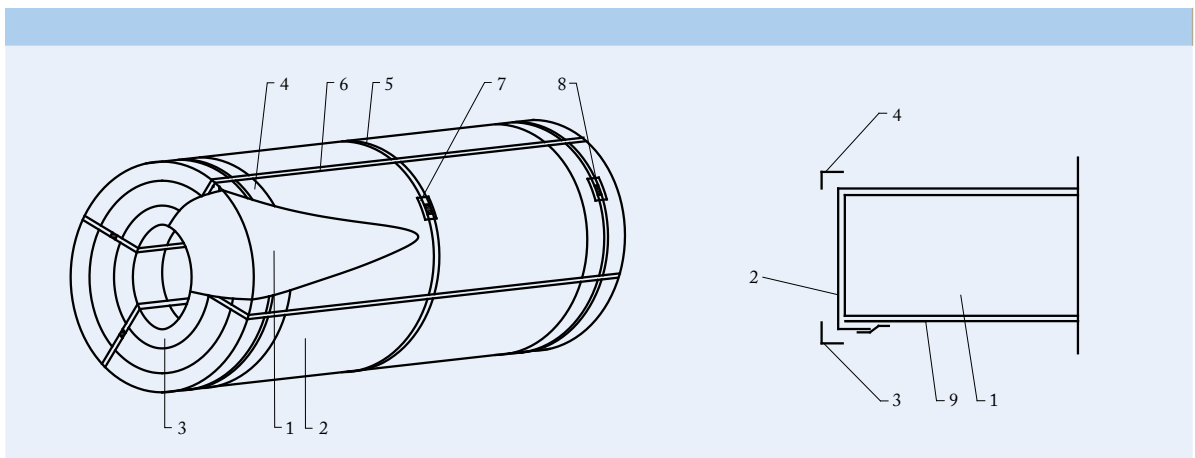
### 7.1 包装代码及适用范围

### Packaging Code and Application Scope

江浙及上海周边用户 Jiangsu, Zhejiang and around Shanghai	国内 Domestic		出口 Export
	北方市场 North market	南方市场 South market	
m0, m8, n0	m8, n0	n0	n1

m0: 钢卷简易包装代码, 适用于制造厂附近直接用户

m0: Simple coil packing code, applicable to direct users around factory



1. 钢卷;
2. 外周防锈纸;
3. 铁内护角;
4. 纸外护角;
5. 周向捆带;

6. 径向捆带;
7. 锁扣垫片;
8. 锁扣;
9. 内芯防锈纸

1. Steel coil;
2. Peripheral rust-proof paper;
3. Iron corner guard (Inner);
4. Paper corner guard (Outer);
5. Circumferential binding strip;

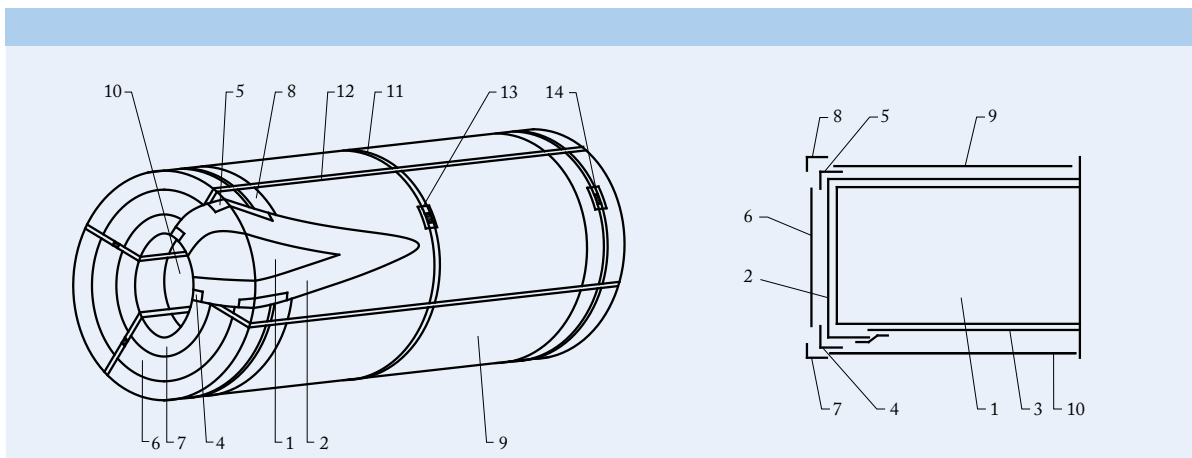
6. Radial binding strip;
7. Shim for lock;
8. Lock
9. Rust-proof paper(Innter);

m1: 钢卷简易包装代码, m0+外周包板, 适用于制造厂附近直接用户

m1: Simple packaging code for steel coil, m0+ external peripheral wrapping plate available for direct users around factory



n0:



1. 钢卷;
2. 外周防锈纸;
3. 内芯防锈纸;
4. 纸内护角;
5. 纸外护角;
6. 铁圆护板;
7. 铁内护角;

8. 铁外护角;
9. 外周包板;
10. 内周护板;
11. 周向捆带;
12. 径向捆带;
13. 锁扣垫片;
14. 锁扣

1. Steel coil;
2. Peripheral rust-proof paper;
3. Rust-proof paper (Inner);
4. Paper corner guard (Inner);
5. Paper corner guard (Outer);
6. Iron round cover;
7. Iron corner guard (Inner);

8. Iron corner guard (Outer);
9. External peripheral wrapping plate;
10. Inner peripheral guard plate;
11. Circumferential binding strip;
12. Radial binding strip;
13. Shim for lock;
14. Lock

n1: 在n0基础上加塑料套

n1: Plastic cover added on n0



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





宝山钢铁股份有限公司  
http://www.baosteel.com

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

**薄板销售部**  
**Steel Sheet Sales Department**  
地址: 上海宝山同济路1800号  
邮编: 201900  
电话: 021-26648154  
传真: 021-26645181

**产品发展部**  
**Product Development Department**  
地址: 上海宝山同济路1800号  
邮编: 201900  
电话: 021-26645947  
传真: 021-26645299

**宝钢服务热线**  
**Baosteel Service Hot-line**  
800-820-8590  
021-26648888

**宝钢在线**  
http://www.baosteel.net.cn

#### 国内贸易公司

上海宝钢钢材贸易有限公司 电话: 021-50509696 传真: 021-68404618	广州宝钢南方贸易有限公司 电话: 020-32219999 传真: 020-32219555	天津宝钢北方贸易有限公司 电话: 022-84905800 传真: 022-84905806	成都宝钢西部贸易有限公司 电话: 028-85335388 传真: 028-85335680
武汉宝钢华中贸易有限公司 电话: 027-84298800 传真: 027-84298224	上海宝钢商贸有限公司 电话: 021-56121212 传真: 021-56126584	上海宝钢浦东国际贸易有限公司 电话: 021-36014655 传真: 021-51266522 51266533	上海宝钢宝山钢材贸易有限公司 电话: 021-36014688 传真: 021-51266500
长春宝钢钢材贸易有限公司 电话: 0431-85889320 传真: 0431-85889317	沈阳宝钢钢材配送有限公司 电话: 024-62220699 传真: 024-88210198		

#### 亚澳地区 Asia and Australia

宝和通商株式会社 <b>HOWA TRADING CO., LTD.</b> TEL: 0081-3-3237-9121 FAX: 0081-3-3237-9123	宝和通商首尔事务所 <b>HOWA TRADING CO., LTD., SEOUL OFFICE</b> TEL: 0082-2-5080893 FAX: 0082-2-5080891	宝钢澳大利亚贸易有限公司 <b>BAO AUSTRALIA PTY LTD.</b> TEL: 0061-8-94810535 FAX: 0061-8-94810536
宝钢新加坡贸易有限公司 <b>BAOSTEEL SINGAPORE PTE LTD.</b> TEL: 0065-63336818 FAX: 0065-63336819	越南代表处 <b>VIETNAM REPRESENTATIVE OFFICE</b> TEL: 0084-8-39100126 FAX: 0084-8-39100124	泰国代表处 <b>THAILAND REPRESENTATIVE OFFICE</b> TEL: 0066-2-6543008 FAX: 0066-2-6543010

#### 欧非地区 Europe and Africa

宝钢欧洲有限公司 <b>BAOSTEEL EUROPE GMBH</b> TEL: 0049-40-4199410 FAX: 0049-40-41994120	宝钢西班牙有限公司 <b>BAOSTEEL ESPAÑA, S.L.</b> TEL: 0034-93-4119325 FAX: 0034-93-4119330	宝钢中东公司 <b>BAOSTEEL MIDDLE EAST FZE</b> TEL: 00971-4-8810788 FAX: 00971-4-8810789
宝钢意大利钢材集散中心有限公司 <b>BAOSTEEL ITALIA DISTRIBUTION CENTER SPA</b> TEL: 0039-010-530881 FAX: 0039-010-5308895	宝钢东欧代表处 <b>BAOSTEEL CENTRAL AND EASTERN EUROPE OFFICE</b> TEL: 0048-32-7315012 FAX: 0048-32-7315011	

#### 美洲地区 America

宝钢美洲贸易有限公司 <b>BAOSTEEL AMERICA INC.</b> TEL: 001-201-3073355 FAX: 001-201-3073358	底特律代表处 <b>DETROIT REPRESENTATIVE OFFICE</b> TEL: 001-248-2089918 FAX: 001-248-2080999	休斯顿代表处 <b>HOUSTON REPRESENTATIVE OFFICE</b> TEL: 001-281-4847333 FAX: 001-281-4842655
洛杉矶代表处 <b>LOS ANGELES REPRESENTATIVE OFFICE</b> TEL: 001-949-7526789 FAX: 001-949-7521234	里约代表处 <b>BAOSTEEL DO BRAZIL LTDA.</b> TEL: 0055-21-25311363 FAX: 0055-21-25310298	

