



北京首钢股份有限公司
BEIJING SHOUGANG CO.,LTD.

热轧 产品手册

HOT ROLLED PRODUCTS MANUAL

北京首钢股份有限公司
Beijing Shou gang Co., Ltd.



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Chapter 1 Hot rolled products

第一章 热轧产品

首钢热轧产品以迁安、京唐两个基地为依托，在首钢技术研究院及技术中心支撑下，积累了丰富的热轧生产、技术及品质管理经验，热轧产品具有稳定可靠、产品尺寸精度高、板形控制良好等诸多特点，产品质量广受用户认可，具有良好的市场美誉度。

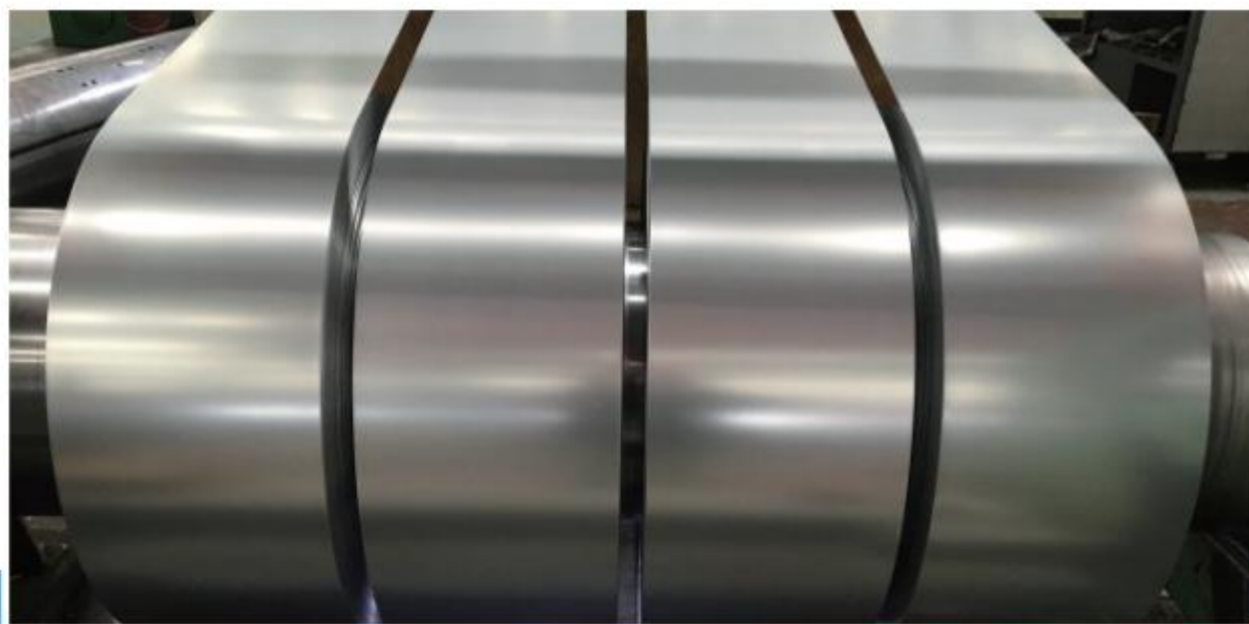
首钢股份公司有二条 2250 热连轧生产线，二条 1580 热连轧生产线以及一条 1600MCCR 产线，实现热轧板卷厚度规格 0.80-25.4mm，宽度 800-2050mm 尺寸的全覆盖。

以首钢热轧产品品种结构为拓展轴，结合两基地热连轧机组和 MCCR 产线热轧品种生产能力，热轧产品主要供应汽车结构、工程机械用钢、管线钢、耐候钢、特殊钢、冷轧基料、专用钢及普通结构钢等众多行业领域。

Shougang hot-rolled products rely on two main iron and steel bases of Qian'an company and Jingtang company. Plenty of experience in production, technology and quality management was accumulated under the support of Technology Institute of Shougang Group and Technology Center of Shougang Group. The hot-rolled products of Shougang are feathered with reliable properties and quality, high dimension accuracy, excellent flatness and therefore gained good market reputation.

Shougang mainly has two 2250 hot rolling production lines, two 1580 hot rolling production lines and one 1600MCCR production line, realizing the full coverage of hot rolling sheet coil thickness specification 0.80-25.4mm and width 800-2050mm.

Based on the hot-rolled products structure and production ability of hot-rolling mills in two bases and MCCR line, Shougang supply various hot-rolled products, such as automobile structure steel, Steel for construction machinery, pipeline steel, weathering steel, special steel, steel for cold rolling and specialized-purpose steel.



Chapter 2 Product introduction

第二章 产品介绍

2.1 汽车结构钢 (Automobile structural steel)

首钢紧抓商用车节能环保和轻量化发展趋势，开发适用于商用车全系零件的材料，依托强大的用户服务能力，为客户提供了商用车轻量化整体解决方案，实现了大梁钢、车轮钢、桥壳用钢及厢板用钢等四大系列的整车钢材供应能力，得到市场的充分认可，逐步由产品跟随发展走向市场引领位置。

汽车结构钢包括大梁钢、车轮钢、桥壳钢及汽车厢板用钢，其中汽车大梁钢共 26 个常用牌号，实现了 1000MPa 及其以下强度级别的全覆盖，主要应用于制作各类型号专用车、重卡、中卡、轻卡、SUV 等汽车的主梁、横梁、加强件等；汽车车轮钢共 36 个常用牌号，形成了普通车轮钢、轮辋专用钢、轮辐专用钢、超细晶车轮钢、双相车轮钢 5 大产品系列，实现了 800MPa 及其以下强度级别的全覆盖，主要应用于制作各类型无内胎车轮轮辐和轮辋；汽车桥壳钢共 12 个常用牌号，实现 700MPa 及其以下强度级别的全覆盖，主要应用于制作各类型号专用车、重卡、中卡、轻卡、SUV 等汽车的桥壳件。

Shougang clings to commercial vehicle energy conservation, environmental protection and the development trend of lightweight, develops materials are material is suitable for the whole series of commercial vehicle parts, achieved four series of vehicle steel supply capabilities including beam steel, wheel steel, axle housing steel, and van steel, which was fully recognized by the market, and gradually moved from the product to follow to the market leader, recognized by the market, gradually by the product to follow the development of the market leading position.

Automotive structural steel includes beam steel, wheel steel, axle housing steel and automobile car plate steel, among which there are 26 commonly used grades of automobile beam steel, realizing the full coverage of strength levels of 1000MPa and below, mainly used in the production of beams and strengthening parts for various types of special vehicles, heavy trucks, medium trucks, light trucks, SUVs and other vehicles. There are 36 commonly used grades of automobile wheel steel, forming 5 product series of ordinary wheel steel, rim special steel, spokes special steel, ultrafine grain wheel steel, dual phase wheel steel, realizing full coverage of 800MPa and below strength level, mainly used in the production of various types of tubeless wheel spokes and rims. There are 11 common grades of automobile axle housing steel, realizing the full coverage of 700MPa and the following strength levels. It is mainly used in the production of various types of special vehicles, heavy trucks, medium trucks, light trucks, SUVs and other automobile axle housing parts.

2.1.1 牌号标准 (Steel grades and standards)

类别 Type	参考标准 Standards	牌号 Steel grades	用途 Usage	
汽车结构钢	JIS G 3113 Q/SGZGS 0315	SAPH370/SAPH400/SAPH440	应用于重车 / 轻卡 / SUV 等汽车的纵梁 / 横梁 / 加强件等。 Used in the beams and strengthening parts of heavy truck/light truck / SUV etc.	
	Q/SGZGS 0315	QStE340TM/QStE380TM/QStE420TM QStE460TM/QStE500TM		
	EN 10149-2 Q/SGZGS 0315	S315MC/S355MC/S420MC/S460MC/S500MC		
	Q/SGZGS 0377	S420L/S510L/S610L/S700L/S750L/S800L		
	SJXE 221	SG610/SG700/SG750/SG700BL		
	SGXYE 0121	SH700MCD/E, SH750MCD/E, SH800MCD/E		
	汽车车轮钢 Automobile wheel steel	Q/SGZGS 0351	轮辋专用: S330LW/S380LW/S400LW/S420LW S440LW/S490LW/S540LW/S590LW S650LW/S700LW	应用于商用车和乘用车的轮辋和轮辐。 Used in spokes and rims of commercial and passenger vehicles
		Q/SGZGS 0351	轮辐专用: S330LF/S380LF/S400LF/S420LF S440LF/S490LF/S540LF/S590LF S650LF/S700LF	
		SJXE 096	普通车轮: SQ235PL	
		SGXYE 0021	超细晶车轮: SCX400/SCX450	
		SGXYJ 0031	双相车轮: DP600/DP690/SDP590/SHR590DP SHR650DP/SHR800DP/SRS590 SHR590FB/SRS650/SHR780FB/S500CLH	
	汽车桥壳钢 Automotive axle housing steel	SGXYE 0159	热成形: S500RQK/S550RQK/S600RQK S650RQK/S700RQK	应用于重车 / 轻卡 / SUV 等汽车的桥壳。 Used in the axle housing of heavy truck/light truck / SUV, etc.
		SGXYJ 0028	冷成形: S500LQK/S550LQK/S600LQK S650LQK/LYQ490MCC	
		SGXYE 0065	胀形: SQK700ZX	
	汽车厢板用钢 Steel for car compartment panels	SGXYE 0177	S650XT/S700XT/S800XT	应用于重车 / 中卡 / 轻卡等汽车的厢体。 Used in the car body of heavy truck/medium truck/light truck, etc.

2.1.2 化学成分 (Chemical component)

(一) 汽车大梁钢 Automobile beam steel

牌号 Steel grades	化学成分 (熔炼分析) (%) Chemical component									
	C ≤	Si ≤	Mn ≤	P ≤	S ≤	Ti ≤	Nb ≤	Mo ≤	V ≤	Alt
SAPH370	0.12	0.30	1.20	0.025	0.020	-	-	-	-	≥ 0.010
SAPH400	0.12	0.30	1.40	0.025	0.020	-	-	-	-	≥ 0.010
SAPH440	0.12	0.30	1.60	0.025	0.020	-	-	-	-	≥ 0.010
QStE340TM	0.12	0.50	1.30	0.025	0.020	0.22	0.09	-	-	≥ 0.015
QStE380TM	0.12	0.50	1.40	0.025	0.020	0.22	0.09	-	-	≥ 0.015
QStE420TM	0.12	0.50	1.50	0.025	0.015	0.22	0.09	-	-	≥ 0.015
QStE460TM	0.12	0.50	1.60	0.025	0.015	0.22	0.09	-	-	≥ 0.015
QStE500TM	0.12	0.50	1.70	0.025	0.015	0.22	0.09	-	-	≥ 0.015
S315MC	0.12	0.50	1.30	0.025	0.020	0.15	0.09	-	0.20	≥ 0.015
S355MC	0.12	0.50	1.50	0.025	0.020	0.15	0.09	-	0.20	≥ 0.015
S420MC	0.12	0.50	1.60	0.025	0.015	0.15	0.09	-	0.20	≥ 0.015
S460MC	0.12	0.50	1.60	0.025	0.015	0.15	0.09	-	0.20	≥ 0.015
S500MC	0.12	0.50	1.70	0.025	0.015	0.15	0.09	-	0.20	≥ 0.015
S420L	0.12	0.50	1.50	0.025	0.015	-	-	-	-	-
S510L	0.12	0.50	1.50	0.025	0.015	-	-	-	-	-
S610L	0.12	0.50	1.70	0.025	0.015	0.22	0.09	-	0.10	≥ 0.020
S700L	0.12	0.50	2.00	0.020	0.015	0.22	0.09	0.50	0.20	≥ 0.020
S750L	0.12	0.50	2.10	0.020	0.015	0.22	0.09	0.50	0.20	≥ 0.020
S800L	0.12	0.50	2.10	0.020	0.015	0.22	0.09	0.50	0.20	≥ 0.020
SG610	0.12	0.25	1.80	0.025	0.010	0.15	0.090	-	-	≤ 0.06
SG700	0.10	0.25	2.00	0.025	0.010	0.15	0.090	-	-	≤ 0.06
SG750	0.15	0.50	3.00	0.025	0.010	0.15	0.100	-	-	≤ 0.06
SG700BL	0.10	0.25	2.00	0.025	0.010	0.15	0.090	-	-	≤ 0.06
SH700MCD/E	0.10	0.20	1.90	0.025	0.010	0.15	0.090	0.20	-	≤ 0.06
SH750MCD/E	0.12	0.20	2.00	0.025	0.010	0.15	0.090	0.20	-	≤ 0.06
SH800MCD/E	0.12	0.20	2.00	0.025	0.010	0.15	0.090	0.20	-	≤ 0.06

(二) 汽车车轮钢 Automobile wheel steel

牌号 Steel grades	化学成分 (熔炼分析) (%) Chemical component						
	C	Si ≤	Mn	P ≤	S ≤	Nb ≤	Alt
S330LW	≤ 0.12	0.05	≤ 0.50	0.025	0.015	-	≥ 0.015
S380LW	≤ 0.12	0.15	≤ 1.40	0.025	0.015	-	≥ 0.015
S400LW	≤ 0.14	0.15	≤ 1.40	0.025	0.015	-	≥ 0.015
S420LW	≤ 0.14	0.30	≤ 1.40	0.025	0.015	-	≥ 0.015
S440LW	≤ 0.14	0.30	≤ 1.50	0.025	0.015	-	≥ 0.015
S490LW	≤ 0.15	0.30	≤ 1.60	0.025	0.015	-	≥ 0.015
S540LW	≤ 0.12	0.35	≤ 1.70	0.020	0.010	-	≥ 0.015
S590LW	≤ 0.12	0.50	≤ 1.80	0.020	0.010	-	≥ 0.015
S650LW	≤ 0.12	0.55	≤ 2.00	0.020	0.010	-	≥ 0.015
S700LW	≤ 0.12	0.55	≤ 2.10	0.020	0.010	-	≥ 0.015
S330LF	≤ 0.12	0.10	≤ 1.00	0.025	0.015	-	≥ 0.015
S380LF	≤ 0.14	0.15	≤ 1.40	0.025	0.015	-	≥ 0.015
S400LF	≤ 0.16	0.15	≤ 1.40	0.025	0.015	-	≥ 0.015
S420LF	≤ 0.16	0.30	≤ 1.40	0.025	0.015	-	≥ 0.015
S440LF	≤ 0.18	0.30	≤ 1.50	0.025	0.015	-	≥ 0.015
S490LF	≤ 0.18	0.30	≤ 1.70	0.025	0.015	-	≥ 0.015
S540LF	≤ 0.20	0.35	≤ 1.70	0.020	0.010	-	≥ 0.015
S590LF	≤ 0.20	0.50	≤ 1.80	0.020	0.010	-	≥ 0.015
S650LF	≤ 0.20	0.55	≤ 1.80	0.020	0.010	-	≥ 0.015
S700LF	≤ 0.20	0.55	≤ 1.90	0.020	0.010	-	≥ 0.015
330CL	≤ 0.12	0.10	≤ 1.00	0.025	0.015	-	≥ 0.020
380CL	≤ 0.14	0.15	≤ 1.40	0.025	0.015	-	≥ 0.020
SQ235PL	≤ 0.18	0.10	≤ 1.30	0.030	0.015	-	≥ 0.020
S500CLH	≤ 0.16	0.40	≤ 1.70	0.020	0.010	-	≥ 0.015
SCX400	≤ 0.21	0.30	≤ 1.30	0.020	0.015	0.03	≥ 0.015
SCX450	≤ 0.15	0.20	≤ 1.60	0.020	0.015	0.06	≥ 0.015
DP600	0.05-0.10	1.50	0.60-1.50	0.025	0.010	-	0.020-0.050
DP690	0.06-0.15	0.10	1.50-2.00	0.020	0.010	-	0.010-0.060
SDP590	≤ 0.15	0.45	≤ 1.70	0.040	0.015	-	≥ 0.015
SHR590DP	≤ 0.15	0.45	≤ 1.70	0.040	0.015	-	≥ 0.015
SHR650DP	≤ 0.15	0.45	≤ 1.80	0.040	0.015	-	≥ 0.015
SHR800DP	≤ 0.18	1.00	≤ 2.00	0.020	0.010	-	≥ 0.015
SRS590	0.04-0.10	1.00	1.00-1.80	0.020	0.010	-	0.020-0.060
SHR590FB	0.04-0.12	1.00	1.00-2.00	0.020	0.010	-	0.020-0.060
SRS650	0.04-0.10	0.50	1.00-1.80	0.020	0.010	-	0.020-0.060
SHR780FB	0.04-0.15	0.50	1.00-2.20	0.020	0.010	-	0.020-0.060

(三) 汽车桥壳钢 Automotive axle housing steel

牌号 Steel grades	化学成分 (熔炼分析) (%) Chemical component									
	C	Si	Mn	P ≤	S ≤	Ti ≤	Nb ≤	V ≤	Alt	Ceq ≤
S500RQK	≤ 0.20	≤ 0.50	≤ 1.70	0.020	0.010	0.15	0.09	0.20	≥ 0.020	0.47
S550RQK	≤ 0.20	≤ 0.50	≤ 1.70	0.020	0.010	0.15	0.09	0.20	≥ 0.020	0.47
S600RQK	≤ 0.25	≤ 0.50	≤ 1.80	0.020	0.010	0.20	0.10	0.20	≥ 0.020	0.50
S650RQK	≤ 0.25	≤ 0.50	≤ 2.00	0.020	0.010	0.20	0.12	0.25	≥ 0.020	0.51
S700RQK	≤ 0.25	≤ 0.50	≤ 2.50	0.020	0.010	0.20	0.15	0.30	≥ 0.020	0.52
S500LQK	≤ 0.18	≤ 0.40	≤ 1.70	0.020	0.010	0.10	0.09	0.20	≥ 0.020	0.45
S550LQK	≤ 0.18	≤ 0.40	≤ 1.70	0.020	0.010	0.10	0.09	0.20	≥ 0.020	0.46
S600LQK	≤ 0.18	≤ 0.40	≤ 1.80	0.020	0.010	0.10	0.10	0.20	≥ 0.020	0.47
S650LQK	≤ 0.18	≤ 0.40	≤ 2.00	0.020	0.010	0.10	0.12	0.25	≥ 0.020	0.48
S700LQK	≤ 0.20	≤ 0.40	≤ 2.00	0.020	0.010	0.10	0.12	0.25	≥ 0.020	0.49
LYQ490MCC	≤ 0.40	≤ 0.50	≤ 3.00	0.025	0.010	-	-	-	≤ 0.060	-
SQK700ZX	0.08-0.18	0.10-0.45	1.20-1.70	0.020	0.020	0.01-0.02	0.015-0.060	-	≥ 0.015	-

(四) 汽车厢板用钢 Steel for car compartment panels

牌号 Steel grades	化学成分 (熔炼分析) (%) Chemical component							
	C ≤	Si ≤	Mn ≤	P ≤	S ≤	Ti ≤	Nb ≤	Alt
S650XT	0.10	0.25	1.90	0.025	0.010	0.15	0.090	≤ 0.060
S700XT	0.15	0.50	2.50	0.025	0.010	0.20	0.090	≤ 0.060
S800XT	0.25	0.50	2.50	0.020	0.010	0.25	0.050	≤ 0.060

2.1.3 力学性能 (Mechanical property)

(一) 汽车大梁钢 Automobile beam steel

牌号 Steel grades	拉伸试验 Tensile test										弯曲试验 Bending test 180°	
	屈服强度 Yield Strength ReL/MPa			抗拉强度 Tensile Strength Rm/MPa	断后伸长率 Elongation A/% ≥							
	厚度/mm Thickness				厚度/mm Thickness						厚度/mm Thickness	
	< 6.0	6.0~ < 8.0	8.0~ < 14.0	< 2.0	2.0~ < 2.5	2.5~ < 3.15	3.15~ < 4.0	4.0~ < 6.3	≥ 6.3	< 2.0	≥ 2.0	
SAPH370	225	225	215	≥ 370	32.0	33.0	35.0	36.0	37.0	38.0	D=a	D=2a
SAPH400	255	235	235	≥ 400	31.0	32.0	34.0	35.0	36.0	37.0	D=2a	D=2a
SAPH440	305	295	275	≥ 440	29.0	30.0	32.0	33.0	34.0	35.0	D=2a	D=2a

牌号 Steel grades	拉伸试验 Tensile test					弯曲试验 Bending test 180°
	厚度 /mm Thickness	屈服强度 Yield Strength ReL/MPa	抗拉强度 Tensile Strength Rm/MPa	断后伸长率 Elongation A/% ≥		弯头直径 Bend diameter
				厚度 < 3mmA ₅₀ /%	厚度 ≥ 3mmA/%	
QStE340TM	-	≥ 340	420-540	19.0	25.0	D=0.5a
QStE380TM	-	≥ 380	450-590	18.0	23.0	D=0.5a
QStE420TM	-	≥ 420	480-620	16.0	21.0	D=0.5a
QStE460TM	-	≥ 460	520-670	14.0	19.0	D=1a
QStE500TM	-	≥ 500	550-700	12.0	17.0	D=1a
S315MC	-	≥ 315	390-510	20.0	24.0	D=0a
S355MC	-	≥ 355	430-550	19.0	23.0	D=0.5a
S420MC	-	≥ 420	480-620	16.0	19.0	D=0.5a
S460MC	-	≥ 460	520-670	14.0	17.0	D=1a
S500MC	-	≥ 500	550-700	12.0	14.0	D=1a

牌号 Steel grades	拉伸试验 Tensile test				弯曲试验 Bending test 180°
	厚度 /mm Thickness	屈服强度 Yield Strength ReL/MPa	抗拉强度 Tensile Strength Rm/MPa	断后伸长率 Elongation A/% ≥	
S420L	≤ 14.0	≥ 315	420-520	26.0	D=0.5a
S510L	≤ 14.0	≥ 355	510-630	24.0	D=a

牌号 Steel grades	拉伸试验 Tensile test				弯曲试验 Bending test 180°	冲击试验 Impulse test	
	厚度 /mm Thickness	屈服强度 Yield Strength ReL/MPa	抗拉强度 Tensile Strength Rm/MPa	断后伸长率 Elongation A/% ≥	弯头直径 Bend diameter	试验温度 test temperature°C	冲击吸收能量 Impact absorbed energy KV2/J
S610L	≤ 3.0	500	610-720	16.0	D=a	-	-
	> 3	500	610-720	18.0	D=a	-	-
S700L	≤ 10.0	620	700-850	17.0	D=2a	-	-
	> 10	600	700-850	15.0	D=2a	-	-
S750L	≤ 10.0	670	750-900	16.0	D=2a	-	-
	> 10	650	750-900	15.0	D=2a	-	-

S800L	≤ 10.0	700	800-950	15.0	D=2a	-	-
	> 10	700	800-950	14.0	D=2a	-	-
SG610	2 ~ 16	500	≥ 610	18.0	-	-	-
SG700	< 8	650	≥ 700	17.0	-	-	-
	8 ~ 14	630	≥ 700	16.0	-	-	-
SG750	< 8	700	≥ 750	16.0	-	-	-
	8 ~ 14	680	≥ 750	15.0	-	-	-
SG700BL	2 ~ 8	640	≥ 700	17.0	-	-	-

牌号 Steel grades	拉伸试验 Tensile test				弯曲试验 Bending test 180°	冲击试验 Impulse test	
	厚度 /mm Thickness	屈服强度 Yield Strength ReL/MPa	抗拉强度 Tensile Strength Rm/ MPa	断后伸长率 Elongation A/% ≥	弯头直径 Bend diameter	试验温度 test temperature°C	冲击吸收能量 Impact absorbed energy KV2/J
SH700MCD	≤ 2.0	630	730	17.0	D=2a	-20	≥ 47
	> 2.0	630	730	18.0	D=2a	-20	≥ 47
SH700MCE	≤ 2.0	630	730	17.0	D=2a	-40	≥ 47
	> 2.0	630	730	18.0	D=2a	-40	≥ 47
SH750MCD	1.5 ~ 12.0	680	750	18.0	D=2a	-20	≥ 47
SH750MCE	1.5 ~ 12.0	680	750	18.0	D=2a	-40	≥ 27
SH800MCD	1.5 ~ 12.0	720	820	18.0	D=2a	-20	≥ 47
SH800MCE	1.5 ~ 12.0	720	820	18.0	D=2a	-40	≥ 27

(二) 汽车车轮钢 Automobile wheel steel

牌号 Steel grades	拉伸试验 Tensile test				弯曲试验 Bending test 180°	冲击试验 Impulse test	
	厚度 /mm Thickness	屈服强度 Yield Strength ReL/MPa	试验温度 test temperature°C	断后伸长率 Elongation A/% ≥	弯头直径 Bend diameter	试验温度 test temperature°C	冲击吸收能量 Impact absorbed energy KV2/J
S330LW/S330LF	-	≥ 225	330-430	33.0	D=0.5a	-	-
S380LW/S380LF	-	≥ 235	380-480	28.0	D=a	-	-
S400LW/S400LF	-	≥ 235	400-520	26.0	D=a	-	-
S420LW/S420LF	-	≥ 290	420-520	26.0	D=a	-	-

S440LW/S440LF	-	≥ 295	440-550	26.0	D=a	-	-
S490LW/S490LF	-	≥ 325	490-600	24.0	D=2a	-	-
S540LW/S540LF	-	≥ 355	540-660	22.0	D=2a	-	-
S590LW/S590LF	-	≥ 420	590-710	20.0	D=2a	-	-
S650LW/S650LF	-	≥ 500	650-770	17.0	D=2a	-	-
S700LW/S700LF	-	≥ 550	700-850	15.0	D=2a	-	-
330CL	-	≥ 225	330-430	33.0	D=0.5a	-	-
380CL	-	≥ 235	380-480	28.0	D=a	-	-
SQ235PL	-	≥ 235	400-520	26.0	D=a	-	-
S500CLH	14 ~ 22	≥ 290	≥ 500	25.0	D=2a	-	-
SCX400	3 ~ < 8	≥ 400	≥ 490	23.0	D=a	-	-
SCX400	≥ 8 ~ 14	≥ 400	≥ 490	22.0	D=a	-	-
SCX450	3 ~ < 8	≥ 450	520-650	22.0	D=a	-	-
SCX450	≥ 8 ~ 16	≥ 450	520-650	21.0	D=2a	-	-
DP600	2 ~ < 5	330-470	580-680	20.0	D=0.5a	-	-
DP690	2 ~ < 7	500-600	690-760	21.0	D=2a	-	-
DP690	≥ 7 ~ 14	500-600	680-760	20.0	D=2a	-	-
SDP590	3 ~ < 8	350-490	590-690	22.0	D=2a	-	-
SDP590	≥ 8 ~ 16	350-490	575-690	24.0	D=2a	-	-
SHR590DP	3 ~ < 7	≥ 350	590-690	22.0	D=2a	-	-
SHR590DP	≥ 7 ~ 16	≥ 350	575-690	24.0	D=2a	-	-
SHR650DP	3 ~ < 7	≥ 410	650-760	20.0	D=2a	-	-
SHR650DP	≥ 7 ~ 16	≥ 410	640-760	22.0	D=2a	-	-
SHR800DP	3 ~ < 7	≥ 450	≥ 800	17.0	D=2a	-	-
SHR800DP	≥ 7 ~ 16	≥ 450	≥ 780	17.0	D=2a	-	-
SRS590	3 ~ < 7	450-600	580-700	24.0	D=a	-	-
SRS590	≥ 7 ~ 14	450-600	580-700	22.0	D=a	-	-
SRS650	3 ~ < 7	500-650	650-750	18.0	D=2a	-	-
SRS650	≥ 7 ~ 16	500-650	640-750	15.0	D=2a	-	-
SHR590FB	3 ~ < 7	450-600	590-700	24.0	D=a	-	-
SHR590FB	≥ 7 ~ 14	450-600	580-700	22.0	D=a	-	-
SHR780FB	3 ~ < 7	580-700	≥ 780	15.0	D=2a	-	-
SHR780FB	≥ 7 ~ 16	580-700	≥ 760	15.0	D=2a	-	-

(三) 汽车桥壳钢 Automotive axle housing steel

牌号 Steel grades	拉伸试验 Tensile test				弯曲试验 Bending test 180°	冲击试验 Impulse test	
	厚度 /mm Thickness	屈服强度 Yield Strength ReL/MPa	试验温度 test temperature°C	断后伸长率 Elongation A/% ≥	弯头直径 Bend diameter	试验温度 test temperature°C	冲击吸收能量 Impact absorbed energy KV2/J
S500RQK	< 16	≥ 420	500 ~ 680	17.0	D=2a	0	≥ 40
S500RQK	≥ 16	≥ 400	480 ~ 680	17.0	D=2a	0	≥ 40
S550RQK	< 16	≥ 460	550 ~ 720	16.0	D=2a	0	≥ 40
S550RQK	≥ 16	≥ 440	530 ~ 720	16.0	D=2a	0	≥ 40
S600RQK	< 16	≥ 500	600 ~ 770	14.0	D=2a	0	≥ 40
S600RQK	≥ 16	≥ 480	580 ~ 770	14.0	D=2a	0	≥ 40
S650RQK	< 16	≥ 550	650 ~ 800	13.0	D=2a	0	≥ 40
S650RQK	≥ 16	≥ 530	630 ~ 800	13.0	D=2a	0	≥ 40
S700RQK	< 16	≥ 600	700 ~ 950	11.0	D=2a	0	≥ 40
S700RQK	≥ 16	≥ 580	680 ~ 950	11.0	D=2a	0	≥ 40
S500LQK	≤ 12	≥ 420	500 ~ 680	20.0	D=a	0	≥ 40
S500LQK	> 12	≥ 400	480 ~ 680	20.0	D=a	0	≥ 40
S550LQK	≤ 12	≥ 460	550 ~ 720	19.0	D=a	0	≥ 40
S550LQK	> 12	≥ 440	530 ~ 720	19.0	D=a	0	≥ 40
S600LQK	≤ 12	≥ 500	600 ~ 770	18.0	D=a	0	≥ 40
S600LQK	> 12	≥ 480	580 ~ 770	18.0	D=a	0	≥ 40
S650LQK	≤ 10	≥ 550	650 ~ 800	17.0	D=a	0	≥ 40
S650LQK	> 10	≥ 530	630 ~ 800	17.0	D=a	0	≥ 40
S700LQK	≤ 10	≥ 600	700 ~ 850	15.0	D=2a	0	≥ 40
S700LQK	> 10	≥ 580	680 ~ 850	15.0	D=2a	0	≥ 40
LYQ490MCC	4 ~ 16	≥ 490	580 ~ 770	18.0	D=a	0	≥ 40
SQK700ZX	< 8	≥ 400	≥ 600	20.0	D=2a	0	≥ 40
SQK700ZX	≥ 8	≥ 400	≥ 580	15.0	D=2a	0	≥ 40

(四) 汽车厢板用钢 Steel for car compartment panels

牌号 Steel grades	拉伸试验 Tensile test			弯曲试验 Bending test 180°	冲击试验 Impulse test		
	厚度 /mm Thickness	屈服强度 Yield Strength ReL/MPa	抗拉强度 Tensile Strength Rm/MPa	断后伸长率 Elongation A/% ≥	弯头直径 Bend diameter	试验温度 test temperature°C	冲击吸收能量 Impact absorbed energy KV2/J
S650XT	-	600	650	16.0	D=1.5a	-20	≥ 47
S700XT	-	640	700	16.0	D=2a	-20	≥ 47
S800XT	-	700	780	14.0	D=2a	-20	≥ 47

2.1.4 可订货规格 (Orderable specification)

分类 Type	牌号 Steel grades	规格 Specification	
		厚度 /mm Thickness	宽度 /mm Breadth
汽车大梁钢 Automobile beam steel	SAPH370/SAPH400/SAPH440/420L	1.8-14.0	800-2050
	QStE340TM/QStE380TM/QStE420TM S315MC/S355MC/S420MC/S10L	2.0-20.0	800-2050
	QStE460TM/QStE500TM/S460MC S500MC/S610L/S700L S750L/SG610/SG700/SG750	2.0-16.0	800-2050
	S800L/SG750 SH700MCD/E, SH750MCD/E, SH800MCD/E	2.5-16.0	800-2050
	SG700BL	1.5-8.0	800-2050
汽车车轮钢 Automobile wheel steel	S330LW/S380LW/S400LW S330LF/S380LF/S400LF 330CL/380CL/SQ235PL	1.8-22.0	800-2050
	S420LW/S440LW/S490LW/S540LW S420LFS440LF/S490LF/S540LF SCX400/SCX450	2.0-22.0	800-2050
	S590LW/S650LW/S700LW S590LF/S650LF/S700LF	2.5-22.0	800-2050
	DP600/DP690/SDP590/SHR590DP SHR650DP/SRS590/SHR590FB/SRS650	2.5-16.0	800-1800
	SHR800DP, SHR780FB	3.0-16.0	800-1800
汽车桥壳钢 Automotive axle housing steel	S500RQK/S550RQK/S600RQK S500LQK/S550LQK/S600LQK/LYQ490MCC	3.0-22.0	800-2050
	S650RQK/S700RQK/S650LQK/SQK700ZX	3.0-20.0	800-2050
汽车厢体用钢 Steel for car compartment panels	S650XT/S700XT	1.5-14.0	800-2050
	S800XT	2.0-14.0	800-2050

2.1.5 供货业绩 (Delivery performance)

汽车大梁钢具备 1000MPa 级别及其以下全系列产品批量稳定供货能力；厢板钢具备 700MPa 级别 1.5mm 极限薄规格供货能力，累计供货超 30 万吨；车轮钢以双相高级别材料为引领，具备 800MPa 级及其以下双相钢稳定供货能力，连续多年商用车车轮行业占有率排名第一；桥壳钢具备冷压、热压、胀形全系列产品供货能力，冷压桥壳累计供货超 5 万吨，胀形桥壳 SQK700ZX 实现国内首发。

Automotive beam steel has the capacity of stable batch supply of 1000MPa grade and the whole series of products below;

Steel for car compartment panels has 700MPa level 1.5mm limit thin specification supply capacity, the cumulative supply of more than 300,000 tons; Wheel steel is led by dual-phase high-grade materials, with stable supply capacity of 800MPa grade and below dual-phase steel, ranking first in the market share of commercial vehicle wheel industry for many consecutive years; Axle housing steel has the ability to supply the whole series of cold pressing, hot pressing and bulging products. The total supply of cold pressing axle housing exceeds 50,000 tons, and the bulging axle housing SQK700ZX has realized the first launch in China.

(一) 汽车大梁钢 Automobile beam steel

首钢汽车大梁钢热轧连轧钢板和钢带表面质量优良，性能优越，适用于制作各类型号专用车、重卡、中卡、轻卡、SUV 等汽车的纵梁、横梁、加强件等。产品供货北汽福田、一汽解放、陕汽、江淮汽车、中集汽车、长城汽车等国内知名汽车主机厂。

Shougang hot rolled steel plate and strip of Automobile Beam Steel have excellent surface quality and superior performance, which are suitable for the beam and stiffener of various types of special vehicles, heavy trucks, medium trucks, light trucks, SUVs, etc. Products supply Beiqi Foton, FAW Jiefang, Shaanxi Auto, Jianghuai Automobile, CIMC Automobile, Great Wall Motor and other well-known domestic automobile OEMs.



(二) 汽车车轮钢 Automobile wheel steel

首钢汽车车轮钢热连轧钢板和钢带加工及疲劳性能优越，表面质量优良，采用个性化的成分工艺设计，适用于制作各类型无内胎车轮轮辐和轮辋。产品供货全球最大车轮制商 MAXION、国内大型车轮企业正兴、日上、兴民、贝特尔等。车轮配套一汽、福田、重汽、陕汽、江淮汽车等龙头主机厂，连续多年国内市场占有率第一。

Shougang hot rolled steel plate and strip for automobile wheel steel have excellent fatigue performance and surface quality, and are suitable for making spokes and rims of various types of tubeless wheels with personalized composition and process design. Product supplied to the world's largest wheel MAXION, domestic large enterprises ZhengXing, SunRise, XingMin, Better, etc. The wheels are equipped to FAW, Foton, China National Heavy Duty Truck, Shanqi Automobile, Jianghuai Automobile, etc., and ranking first in the domestic market for many years.



(三) 汽车桥壳钢 Automotive axle housing steel

首钢汽车桥壳钢热连轧钢板和钢带性能优越、表面质量良好，适用于制作各类型重卡、中卡、轻卡、SUV 等汽车的桥壳。产品供货一汽、中国重汽、汉德车桥等国内知名汽车桥壳制造厂及主机厂。

Shougang hot rolled steel plate and strip of Automobile Axle Housing have superior performance and good surface quality, which are suitable for the manufacture of axle housing for various types of heavy truck, medium truck, light truck, SUV and other automobile. Product supplied to FAW, China National Heavy Duty Truck, Hande Axle and other well-known domestic auto axle housing manufacturers and OEMs.



2.2 工程机械用钢 (Steel for construction machinery)

首钢工程机械用钢共 22 个牌号，实现了 800MPa 及其以下强度级别的全覆盖，主要应用于制作工程机械支腿、支架、吊臂等结构件。

There are 22 grades of steel used for construction machinery in Shougang, which has achieved full coverage of strength grade of 800MPa and below. It is mainly used in making structural parts such as construction machinery legs, supports and lifting arms.

2.2.1 牌号标准 (Steel grades and standards)

类别 Type	参考标准 standards	牌号 Steel grades	用途 Usage
工程 机械 用钢 Steel for construction machinery	GB/T 1591	Q550D/E	以TMCP状态交货，用于制作工程机械用的支架、支腿等。 Delivered in TMCP state, used for making support, leg, etc., for construction machinery.
	Q/SGZGS 0346	SQ460MCC/D/E, SQ500MCC/D/E, SQ550MCC/D/E, SQ600MCC/D/E, SQ650MCC/D/E, SQ700MCC/D/E	
	SGXYE 0157	SHG700TD/SHG785TD	以回火状态交货，用于制作工程机械用的吊臂等 Delivered in temper state, used for making construction machinery jib, etc

2.2.2 化学成分 (Chemical component)

牌号 Steel grades	化学成分 (熔炼分析) (%) Chemical component									
	C ≤	Si ≤	Mn ≤	P ≤	S ≤	Ti	Nb	Mo ≤	V	Alt
Q550D	0.18	0.60	2.00	0.030	0.030	0.006-0.05	0.01-0.11	0.30	0.01-0.12	≥ 0.015
Q550E	0.18	0.60	2.00	0.030	0.025	0.006-0.05	0.01-0.11	0.30	0.01-0.12	≥ 0.015
SQ460MCC/D/E	0.20	0.30	1.80	0.025	0.010	≤ 0.15	≤ 0.09	0.20	≤ 0.20	≥ 0.015
SQ500MCC/D/E	0.18	0.30	1.90	0.025	0.010	≤ 0.20	≤ 0.09	0.30	≤ 0.12	≥ 0.015
SQ550MCC/D/E	0.18	0.30	2.00	0.025	0.010	≤ 0.20	≤ 0.09	0.30	≤ 0.12	≥ 0.015
SQ600MCC/D/E	0.18	0.30	2.00	0.025	0.010	≤ 0.20	≤ 0.09	0.30	≤ 0.12	≥ 0.015
SQ650MCC/D/E	0.18	0.30	2.10	0.025	0.010	≤ 0.20	≤ 0.09	0.30	≤ 0.12	≥ 0.015
SQ700MCC/D/E	0.18	0.30	2.20	0.025	0.010	≤ 0.20	≤ 0.09	0.50	≤ 0.12	≥ 0.015

牌号 Steel grades	化学成分 (熔炼分析) (%) Chemical component									
	C ≤	Si ≤	Mn ≤	P ≤	S ≤	Mo ≤	Cr ≤	Ni ≤	Nb+V+Ti	CEV ≤
SHG700TD	0.10	0.40	1.80	0.020	0.010	0.60	0.60	0.60	≤ 0.22	0.50
SHG785TD	0.12	0.40	2.00	0.020	0.010	0.60	0.60	0.60	≤ 0.22	0.53
SHG880TD	0.15	0.40	2.30	0.020	0.010	0.60	0.60	0.60	≤ 0.25	0.53

2.2.3 力学性能 (Mechanical property)

牌号 Steel grades	拉伸试验 Tensile test				弯曲试验 Bending test 180°		冲击试验 Impulse test	
	厚度 mm Thickness	屈服强度 Yield Strength ReL/MPa	抗拉强度 Tensile Strength Rm/MPa	断后伸长率 Elongation A/% ≥	≤ 16	> 16	试验温度 test temperature °C	冲击吸收能量 Impact absorbed energy KV2/J
Q550D	-	≥ 500	670-830	≥ 17.0	D=2a	D=2a	-20	≥ 47
Q550E	-	≥ 500	670-830	≥ 17.0	D=2a	D=2a	-20	≥ 47
SQ460MCC	-	≥ 460	550-750	≥ 17.0	D=2a	D=3a	0°C	≥ 47
SQ460MCD	-	≥ 460	550-750	≥ 17.0	D=2a	D=3a	-20°C	≥ 47
SQ460MCE	-	≥ 460	550-750	≥ 17.0	D=2a	D=3a	-40°C	≥ 34
SQ500MCC	-	≥ 500	610-810	≥ 17.0	D=2a	D=3a	0°C	≥ 47
SQ500MCD	-	≥ 500	610-810	≥ 17.0	D=2a	D=3a	-20°C	≥ 47
SQ500MCE	-	≥ 500	610-810	≥ 17.0	D=2a	D=3a	-40°C	≥ 34
SQ550MCC	-	≥ 550	670-830	≥ 16.0	D=2a	D=3a	0°C	≥ 47
SQ550MCD	-	≥ 550	670-830	≥ 16.0	D=2a	D=3a	-20°C	≥ 47
SQ550MCE	-	≥ 550	670-830	≥ 16.0	D=2a	D=3a	-40°C	≥ 34
SQ600MCC	-	≥ 600	690-850	≥ 16.0	D=2a	D=3a	0°C	≥ 47
SQ600MCD	-	≥ 600	690-850	≥ 16.0	D=2a	D=3a	-20°C	≥ 47
SQ600MCE	-	≥ 600	690-850	≥ 16.0	D=2a	D=3a	-40°C	≥ 34
SQ650MCC	-	≥ 650	700-880	≥ 15.0	D=2a	D=3a	0°C	≥ 47
SQ650MCD	-	≥ 650	700-880	≥ 15.0	D=2a	D=3a	-20°C	≥ 47
SQ650MCE	-	≥ 650	700-880	≥ 15.0	D=2a	D=3a	-40°C	≥ 34
SQ700MCC	-	≥ 700	750-930	≥ 14.0	D=3a	D=4a	0°C	≥ 47
SQ700MCD	-	≥ 700	750-930	≥ 14.0	D=3a	D=4a	-20°C	≥ 47
SQ700MCE	-	≥ 700	750-930	≥ 14.0	D=3a	D=4a	-40°C	≥ 34

牌号 Steel grades	拉伸试验 Tensile test				弯曲试验 Bending test 180°		冲击试验 Impulse test	
	厚度 Thickness mm	屈服强度 Yield Strength ReL/MPa	抗拉强度 Tensile Strength Rm/MPa	断后伸长率 Elongation A/% ≥	≤ 6	> 6	试验温度 test temperature °C	冲击吸收能量 Impact absorbed energy KV2/J
SHG700TD	-	590	650-850	≥ 17.0	D=2a	D=2a	-20	≥ 47
SHG785TD	-	680	750-900	≥ 15.0	D=3a	D=3a	-20	≥ 47
SHG880TD	-	780	880-1000	≥ 13.0	D=3a	D=3a	-20	≥ 47

2.2.4 可订货规格 (Orderable specification)

分类 Type	牌号 Steel grades	规格 Specification	
		厚度 /mm Thickness	宽度 /mm Breadth
工程机械用钢	Q550D/E	2.0-25.4	750-2130
	SQ460MCC/D/E, SQ500MCC/D/E, SQ550MCC/D/E, SQ600MCC/D/E, SQ650MCC/D/E, SQ700MCC/D/E	2.0-22.0	800-2000
	SHG700TD/SHG785TD/SHR880TD	6.0-22.0	800-2000

2.2.5 供货业绩 (Delivery performance)

首钢高强度工程机械用钢具有良好的成形及焊接性能，表面、板形良好，产品供货徐州重工、三一重工等国内知名企业。

Shougang high strength construction machinery steel has good forming and welding properties, good surface, plate shape, the products supplied to Xuzhou heavy industry, Sany heavy industry and other well-known domestic enterprises.



2.3 管线钢 (Pipeline Steel)

首钢管线钢共涉及 3 大系列 20 个牌号，包括普通输送用管线钢、抗 HIC 管线钢和石油套管。输送用管线钢主要用于石油、天然气和水等流体的输送管道；抗 HIC 管线钢用于含腐蚀介质（硫化氢）的石油及天然气的输送管道；石油套管用于石油井钻探。

2010-2013 年首钢管线钢连续四年突破 100 万吨，市场占有率达到国内首位，先后荣获河北省科技进步奖、北京市科技进步奖、冶金科技进步奖等荣誉，并被中技开评为优秀和杰出供应商，始终保持国内一流水平。2014-2015 年，与管道局、管研院及钢研院、宝鸡钢管等各单位联合攻关，围绕合金成分与焊接工艺开展多轮试验，为《1422mm 天然气输送管道技术规范》提供重要参考。

Shougang pipeline steels involve 3 series and 20 grades, including ordinary pipeline steel for transportation, HIC-resistant pipeline steel and oil casing steel. Pipeline steel for transportation is mainly used for oil, natural gas and water pipelines. HIC-resistant pipeline steel is used for oil and gas pipelines containing corrosive medium (H₂S). Oil casing steel is used for drilling oil wells.

From 2010 to 2013, Shougang pipeline steel had exceeded 1 million tons for four consecutive years, and its market share reached the first place in China. Shougang successively won the Hebei Provincial Science and Technology Progress Award, Beijing Science and Technology Progress Award, metallurgical science and Technology Progress Award and other honors. Shougang has been rated as excellent and outstanding supplier by China Science and Technology Development Corporation, and maintained the first-class level in China. From 2014 to 2015, Shougang worked with Pipeline Bureau, Pipe Research Institute, Steel Research Institute, Baoji steel pipe and others to tackle key problems, carried out intensive research around alloy composition and welding process. Shougang provided important reference for technical specification for 1422 mm natural gas transmission pipeline.

2.3.1 牌号标准 (Grades and Standards)

类别 Category	参考标准 Standard	牌号 Grade	用途 Application
管线钢 Pipeline Steel	GB/T14164	B(L245M/BM)/X42(L290M/X42M) X46(L320M/X46M)/X52(L360M/X52M) X56(L390M/X56M)/X60(L415M/X60M) X65(L450M/X65M)/X70(L485M/X70M) X80M(L555M)	用于石油天然气输送管以及具有类似要求的其它流体输送管。 Used for transportation pipe for petroleum, natural gas or fluid with similar requirements
	QSGZGS 0357	BMS/X42MS/X46MS/X52MS X56MS/X60MS/X65MS	主要用于含有腐蚀性气体（硫化氢）原油及天然气的输送制管。 Mainly used for transportation of crude oil and natural gas containing corrosive gas (H ₂ S)
	SJXC 046	J55/J55N/J55UP/J55UPH	主要用于石油井钻探。 Mainly used for oil well drilling

2.3.2 化学成分 (Chemical Composition)

(一) 输送用管线钢 (Pipeline Steel for Transportation)

牌号 Grade	化学成分 (熔炼分析) (%) Chemical Composition (ladle analysis)					
	C ≤	Si ≤	Mn ≤	P ≤	S ≤	其他 Others
BM	0.26	0.35	1.20	0.030	0.030	a, b
X42M	0.26	0.35	1.30	0.030	0.030	a, b
X46M	0.26	0.35	1.40	0.030	0.030	a, b
X52M	0.26	0.35	1.40	0.030	0.030	a, b
X56M	0.26	0.40	1.40	0.030	0.030	a, b
X60M	0.26	0.40	1.40	0.030	0.030	a, b
X65M	0.26	0.40	1.45	0.030	0.030	a, b
X70M	0.26	0.40	1.65	0.030	0.030	a, b
X80M	0.12	0.45	1.85	0.025	0.015	a, b

a) 由生产厂选定，可在铌、钒、钛三种元素中或添加一种，或添加它们的任一组合。
b) 铌含量、钒含量和钛含量之和应不大于 0.15%。
a) Selected by the manufacturer, one or any combination of the three elements of niobium, vanadium, and titanium can be added.
b) The sum content of niobium, vanadium and titanium should not exceed 0.15%.

(二) 抗 HIC 管线钢 (HIC-resistant Pipeline steel)

牌号 Grade	化学成分 (熔炼分析) (%) Chemical Composition								碳当量 CE _{pcm}
	C ≤	Si ≤	Mn ≤	P ≤	S ≤	V ≤	Nb ≤	Ti ≤	
L245MS/BMS	0.10	0.40	1.25	0.015	0.002	0.04	0.04	0.04	0.19
L290MS/X42MS	0.10	0.40	1.25	0.015	0.002	0.04	0.04	0.04	0.19
L320MS/X46MS	0.10	0.45	1.35	0.015	0.002	0.05	0.05	0.04	0.20
L360MS/X52MS	0.10	0.45	1.45	0.015	0.002	0.05	0.06	0.04	0.20
L390MS/X56MS	0.10	0.45	1.45	0.015	0.002	0.06	0.08	0.04	0.21
L415MS/X60MS	0.10	0.45	1.45	0.015	0.002	0.08	0.08	0.06	0.21
L450MS/X65MS	0.10	0.45	1.60	0.015	0.002	0.10	0.08	0.06	0.22

(三) 石油套管 (Oil Casing Steel)

牌号 Grade	化学成分 (熔炼分析) (%) Chemical Composition								
	C	Si	Mn	P ≤	S ≤	Alt	Nb	V	Ti
J55UP	0.23-0.27	0.15-0.30	1.20-1.45	0.020	0.020	≥ 0.015	≤ 0.020	-	≤ 0.020
J55UPH	0.23-0.27	0.15-0.35	1.20-1.40	0.015	0.010	≥ 0.015	≤ 0.020	-	≤ 0.020
J55	≤ 0.20	≤ 0.45	≤ 1.4	0.020	0.020	-	-	-	-
J55N	0.20-0.26	0.10-0.30	1.10-1.30	0.020	0.003	0.02-0.06	0.02-0.06	0.02-0.06	≤ 0.025

2.3.3 力学性能 (Mechanical Properties)

(一) 输送用管线钢 (Pipeline Steel for Transportation)

牌号 Grade	拉伸试验 Tensile Test				弯曲试验 180° 180° Bending Test	冲击试验 Impact Test	
	厚度 Thickness mm	屈服强度 Yield Strength ReL/MPa	抗拉强度 Tensile Strength Rm/MPa	断后伸长率 Elongation A/% ≥		弯头直径 Bending Diameter	试验温度 Test Temperature°C
BM	-	245-455	415-755	21.0	D=2a	-10	≥ 40
X42M	-	290-495	415-755	21.0	D=2a	-10	≥ 42
X46M	-	320-525	435-755	20.0	D=2a	-10	≥ 42
X52M	-	360-530	460-755	19.0	D=2a	-10	≥ 60
X56M	-	390-545	490-755	18.0	D=2a	-10	≥ 60
X60M	-	415-565	520-755	17.0	D=2a	-10	≥ 60
X65M	-	450-600	535-755	17.0	D=2a	-10	≥ 60
X70M	-	485-620	570-755	16.0	D=2a	-10	≥ 80
X80M	-	555-690	625-755	15.0	D=2a	-10	≥ 100



(二) 抗 HIC 管线钢 (HIC-resistant Pipeline Steel)

牌号 Grade	拉伸试验 Tensile Test				弯曲试验 180° 180° Bending Test	冲击试验 Impact Test	
	屈服强度 Yield Strength ReL/MPa	抗拉强度 Tensile Strength Rm/MPa	屈强比 ≤ Yield Ratio	断后伸长率 Elongation A50/% ≥		弯头直径 Bending Diameter	试验温度 Test Temperature °C
L245MS/BMS	245-450	415-655	0.93	21.0	D=2a	-20	≥ 100
L290MS/X42MS	290-495	415-655	0.93	21.0	D=2a	-20	≥ 100
L320MS/X46MS	320-525	435-655	0.93	20.0	D=2a	-20	≥ 110
L360MS/X52MS	360-530	460-760	0.93	19.0	D=2a	-20	≥ 110
L390MS/X56MS	390-545	490-760	0.93	18.0	D=2a	-20	≥ 140
L415MS/X60MS	415-565	520-760	0.93	17.0	D=2a	-20	≥ 140
L450MS/X65MS	450-600	535-760	0.93	17.0	D=2a	-20	≥ 140

(三) 石油套管 (Oil Casing Steel)

牌号 Grade	拉伸试验 Tensile Test				弯曲试验 180° 180° Bending Test	冲击试验 Impact Test	
	厚度 Thickness mm	屈服强度 Yield Strength ReL/MPa	抗拉强度 Tensile Strength Rm/MPa	断后伸长率 Elongation A/% ≥		弯头直径 Bending Diameter	试验温度 Test Temperature °C
J55UP	-	379-552	≥ 540	23.0	-	-	-
J55UPH	-	390-540	≥ 540	23.0	-	-	-
J55N	-	460-580	≥ 560	25.0	D=2a	-	-
J55	-	390-540	520-630	24.0	D=2a	-	-

2.3.4 订货规格 (Available Dimension)

分类 Category	牌号 Grade	规格 Dimension	
		厚度 Thickness/mm	宽度 Width/mm
输送用管线钢 Pipeline steel for transportation	B(L245M/BM)/X42(L290M/X42M) X46(L320M/X46M)/X52(L360M/X52M) X56(L390M/X56M)/X60(L415M/X60M) X65(L450M/X65M)/X70(L485M/X70M) X80M(L555M)	2.0-25.4	750-2130
抗 HIC 管线钢 HIC-resistant Pipeline steel	BMS/X42MS/X46MS/X52MS X56MS/X60MS/X65MS	2.0-18.0	800-2000
石油套管 Oil Casing Steel	J55/J55N/J55UP/J55UPH	2.0-18.0	800-2000

2.3.5 供货业绩 (Supply Performance)

首钢管线钢品牌实现了国内地方管网供货资质的全覆盖，广泛应用于中俄东线、西气东输三线、中缅线、中贵联络线、中亚 C 线等多项重大管道工程。首钢是长庆油田抗酸系列管线钢供货量最多的钢厂，首钢管线钢已成功进入韩国、伊朗、澳大利亚等国际市场。

Shougang pipeline steels have covered the grade supply of domestic local pipeline network, and are widely used in many major pipeline projects, such as The China-Russia east pipeline West-East Gas Pipeline

Third Line, China-Myanmar Line, Zhongwei-Guiyang Connecting Line, Central Asia Line C etc. Shougang is the biggest supplier of acid resistant pipeline steel in Changqing Oilfield Branch of CNPC. Shougang pipeline steels have successfully entered the international market and sold to South Korea, Iran, Australia and other countries.



2.4 耐候钢 (Weathering steel)

首钢耐候钢共涉及 7 大系列 25 个牌号，包括集装箱用钢、铁路用耐候钢、搅拌罐用钢、耐酸钢、建筑用耐候钢、塔架用耐候钢、耐火耐候钢等。

持续深化与中集、新华昌等重点用户的紧密合作，集装箱产品市场占有率为稳定在 20% 以上，保持在国内领先。完成二代高强集装箱 SQ550W 产品，国家电网项目新型耐候输电塔架用钢 SQ420NH、北京冬奥会幕墙耐候幕墙用钢 SQ355NHMQ、三沙文体馆及园林雕塑的绿色建筑用耐火耐候钢 SQ345FRW、SQ460FRW 等产品开发并实现批量供货。

Shougang weathering steels cover 7 series and 25 grades, including container steel, railway steel, mixing tank steel, tower steel, construction steel, acid-resistant steel and fire-resistant steel.

SShougang keeps deepen the close cooperation with CIMC, CXIC and other key users, and the market share of container products more than 20%, keeping the leading position in China. SQ550W steel for the second-generation high-strength container, SQ420NH steel for the new weather-resistant transmission tower of the State Grid project, SQ355NHMQ steel for the weather-resistant curtain wall of the Beijing Winter Olympic Games, SQ345FRW and SQ460FRW fire-resistant and weather-resistant steel for green building of SanSha Museum and garden sculpture. All the grades have achieved mass supply.

2.4.1 牌号标准 (Grades and Standards)

类别 Category	参考标准 Standard	牌号 Grade	用途 Application
集装箱用钢 Container steel	Q/SGZGS 0331	SPA-H/SQ450W/SQ550W SQ550J/SQ700J	用于制作集装箱 / 铁路箱 / 冷藏箱等 Used for making containers/railway boxes/ refrigerators, etc
铁路用耐候钢 Weathering steel for railway	TB/T 1979	Q345NQR2(09CuPCrNi-A) /Q350EWR1 Q450NQR1/Q450EWR1	用于火车车体结构件 Used for structural parts of train body
搅拌罐用钢 Mixing tank steel	Q/SGZGS 0340	SG520JJ/SG750JJ/SG900JJ	用于搅拌罐车罐体及叶片 Used for mixing tank body and blade
耐酸钢 Acid-resistant steel	SJXA 113 QSGZGS 0343.1	09CrCuSb/Q295NS Q315NS/Q345NS	用于酸性环境服役的结构件 Used for structural parts in acid environment
建筑用耐候钢 Weathering steel for construction	SGXYJ 0024	SQ355NH (B/C/D/E) SQ355NHMQ	用于有耐大气腐蚀要求的农房建筑用结构件 Used for structural parts of rural houses with atmospheric corrosion resistance requirement
塔架用耐候钢 Weathering steel for tower	SJXA 093	SQ350NH/SQ420NH	用于有耐大气腐蚀要求的电力塔架用结构件 Used for structural parts of power tower with atmospheric corrosion resistance requirement
耐火耐候钢 Fire-resistant weathering steel	SJXA 112	SQ345FRW/SQ460FRW	用于有耐火耐大气腐蚀要求的建筑用结构件 Used for building structural parts with fire resistance and atmospheric corrosion resistance requirements

2.4.2 化学成分 (Chemical Composition)

(一) 集装箱用钢 Container Steel

牌号 Grade	化学成分 (熔炼分析) (%) Chemical composition (ladle analysis) (%)							
	C ≤	Si	Mn ≤	P	S	Cr	Ni ≤	Cu
SPA-H	0.12	0.20-0.75	0.60	0.07-0.15	0.035	0.30-1.25	0.65	0.25-0.55
SQ550J	0.12	≤ 0.50	1.80	≤ 0.025	0.015	≤ 1.25	0.65	≤ 0.55
SQ700J	0.12	≤ 0.60	2.00	≤ 0.025	0.015	≤ 1.25	0.65	≤ 0.55
SQ450W	0.12	≤ 0.75	1.50	≤ 0.025	0.008	≤ 1.25	0.65	≤ 0.55
SQ550W	0.16	≤ 0.75	2.00	≤ 0.025	0.008	≤ 1.25	0.65	≤ 0.55

(二) 铁路耐候钢 Railway weathering steel

牌号 Grade	化学成分 (熔炼分析) (%) Chemical composition (ladle analysis) (%)							
	C ≤	Si	Mn ≤	P	S	Cr	Ni ≤	Cu
Q345NQR2	0.12	0.25-0.75	0.20-0.50	0.06-0.12	0.020	0.30-1.25	0.12-0.65	0.25-0.50
Q350EWR1	0.07	≤ 0.50	≤ 1.10	≤ 0.020	0.010	3.00-5.50	0.10-0.65	0.30-0.55
Q450NQR1	0.12	≤ 0.75	≤ 1.50	≤ 0.025	0.008	0.30-1.25	0.12-0.65	0.20-0.55
Q450EWR1	0.07	≤ 0.50	≤ 1.50	≤ 0.020	0.010	3.00-5.50	0.10-0.65	0.30-0.55

(三) 搅拌罐用钢 Mixing tank steel

牌号 Grade	化学成分 (熔炼分析) (%) Chemical composition (ladle analysis) (%)									
	C ≤	Si ≤	Mn ≤	P ≤	S ≤	Nb	V	Cu	Ti ≤	Alt
SG520JJ	0.20	0.55	1.60	0.035	0.030	-	-	0.20-0.45	0.10	-
SG750JJ	0.20	0.55	2.00	0.020	0.010	≤ 0.09	≤ 0.20	≤ 0.50	0.22	≥ 0.02
SG900JJ	0.23	1.00	2.20	0.020	0.010	≤ 0.09	≤ 0.20	≤ 0.50	0.22	≥ 0.02
SNM300TP	0.23	2.00	3.00	0.025	0.010	-	-	-	0.050	≥ 0.01

(四) 耐酸钢 Acid-resistant steel

牌号 Grade	化学成分 (熔炼分析) (%) Chemical composition (ladle analysis) (%)								
	C ≤	Si	Mn	P ≤	S ≤	Cr	Cu	Sb	
09CrCuSb	0.12	0.2-0.4	0.35-0.65	0.035	0.035	0.7-1.1	0.25-0.45	0.04-0.10	
Q295NS	0.12	≤ 0.40	≤ 0.90	0.030	0.015	0.5-1.0	0.20-0.50	0.04-0.20	
Q315NS	0.15	≤ 0.50	≤ 1.20	0.030	0.015	0.6-1.20	0.20-0.50	0.04-0.20	
Q345NS	0.15	≤ 0.50	≤ 1.50	0.030	0.015	0.6-1.20	0.20-0.50	0.04-0.20	

(五) 建筑用耐候钢 Weathering steel for construction

牌号 Grade	化学成分 (熔炼分析) (%) Chemical composition (ladle analysis) (%)									
	C ≤	Si ≤	Mn	P ≤	S ≤	Cr	Ni	Cu	Alt	
SQ355NHB/C/D/E	0.16	0.50	0.50-1.50	0.030	0.030	-	-	-	≤ 0.06	
SQ355NHMQ	0.10	0.75	≤ 1.20	0.030	0.010	≤ 1.00	≤ 0.50	≤ 0.50	≤ 0.06	

(六) 塔架耐候钢 Weathering steel for tower

牌号 Grade	化学成分 (熔炼分析) (%) Chemical composition (ladle analysis) (%)									
	C ≤	Si ≤	Mn ≤	P	S	Cr	Ni	Cu	Alt	
SQ350NH	0.19	0.30	1.30	≤ 0.025	≤ 0.010	0.40-0.80	≤ 0.65	0.25-0.55	≤ 0.06	
SQ420NH	0.15	0.50	1.60	≤ 0.025	≤ 0.010	-	-	-	≤ 0.06	

(七) 耐火耐候钢 Fire resistant weathering steel

牌号 Grade	化学成分 (熔炼分析) (%) Chemical composition (ladle analysis) (%)												
	C ≤	Si ≤	Mn ≤	P ≤	S ≤	Cr ≤	Ni ≤	Cu ≤	Sb ≤	Nb ≤	Ti ≤	V ≤	Alt
SQ345FRW	0.18	0.55	1.60	0.020	0.015	0.75	0.65	0.55	0.9	0.10	0.05	0.15	≥ 0.02
SQ460FRW	0.18	0.55	1.60	0.020	0.015	0.75	0.65	0.55	0.9	0.10	0.05	0.15	≥ 0.02

2.4.3 力学性能 (Mechanical properties)

(一) 集装箱用钢 Container steel

牌号 Grade	拉伸试验 Tensile test				弯曲试验 180° Bending test	冲击试验 Impact test	
	厚度 Thickness mm	屈服强度 Yield strength ReL/MPa ≥	抗拉强度 Tensile strength Rm/MPa	断后伸长率 Elongation A/% ≥	弯头直径 Bending diameter	试验温度 Test temperature °C	冲击吸收能量 Impact energy KV ₂ /J
SPA-H	≤ 6	355	490-630	22.0	D=0.5a	-	-
SPA-H	> 6	355	490-630	15.0	D=1.5a	20	≥ 47
SQ550J	-	550	≥ 600	15.0	D=1.5a	-40	≥ 27
SQ700J	-	700	≥ 750	12.0	D=1.2a	-40	≥ 27
SQ450W	-	450	≥ 550	18.0	D=a	-40	≥ 60
SQ550W	-	550	≥ 600	18.0	D=a	-40	≥ 60

(二) 铁路耐候钢 Railway weathering steel

牌号 Grade	拉伸试验 Tensile test					弯曲试验 180° Bending test 180°	冲击试验 Impact test	
	厚度 Thickness mm	屈服强度 Yield strength ReL/MPa ≥	抗拉强度 Tensile strength Rm/MPa ≥	屈强比 Yield ratio ≤	断后伸长率 Elongation A/% ≥	弯头直径 Bending diameter	试验温度 Test temperature °C	冲击吸收能量 Impact energy KV ₂ /J
Q345NQR2	≤ 6	345	≥ 480	0.75	24.0	D=a	-	-
Q345NQR2	> 6	345	≥ 480	0.75	24.0	D=2a	-40	≥ 27
Q350EWR1	≤ 6	350	490-690	0.80	22.0	D=2a	-	-
Q450NQR1	≤ 6	450	≥ 550	-	22.0	D=a	-	-
Q450NQR1	> 6 ~ ≤ 14	450	≥ 550	-	20.0	D=2a	-40	≥ 60
Q450NQR1	> 14 ~ ≤ 20	450	≥ 550	-	19.0	D=3a	-40	≥ 60
Q450EWR1	≤ 6	450	550-750	-	20.0	D=a	-	-
Q450EWR1	> 6 ~ ≤ 18	450	550-750	-	18.0	D=2a	-40	≥ 60

(三) 搅拌罐用钢 Stirring tank steel

牌号 Grade	拉伸试验 Tensile test				弯曲试验 180° Bending test 180°	维氏硬度 Vickers hardness HV10
	厚度 Thickness mm	屈服强度 Yield strength ReL/MPa ≥	抗拉强度 Tensile strength Rm/MPa ≥	断后伸长率 Elongation A/% ≥	弯头直径 Bending diameter	
SG520JJ	-	365	520	20.0	D=2a	-
SG750JJ	≥ 3 ~ < 6	620	750	16.0	D=3a	230-280
SG750JJ	≥ 6 ~ ≤ 12	600	725	16.0	D=3a	220-280
SG900JJ	≥ 3 ~ ≤ 12	750	900	10.0	D=6a	250-350
SNM300TP	≥ 3 ~ < 6	550-850	950	10.0	D=6a	250-350

(四) 耐酸钢 Acid-resistant steel

牌号 Grade	拉伸试验 Tensile test				弯曲试验 180° Bending test 180°	冲击试验 Impact test	
	厚度 Thickness mm	屈服强度 Yield strength ReL/MPa ≥	抗拉强度 Tensile strength Rm/MPa ≥	断后伸长率 Elongation A/% ≥		试验温度 Test temperature °C	冲击吸收能量 Impact energy KV2/J
09CrCuSb	-	245	390-550	25.0	D=2a	-	-
Q295NS	-	300	≥ 410	22.0	D=2a	-	-
Q315NS	-	315	≥ 440	22.0	D=3a	-	-
Q345NS	-	345	≥ 470	21.0	D=3a	-	-

(五) 建筑用耐候钢 Weathering steel for construction

牌号 Grade	拉伸试验 Tensile test				弯曲试验 180° Bending test 180°	冲击试验 Impact test	
	厚度 Thickness mm	屈服强度 Yield strength ReL/MPa ≥	抗拉强度 Tensile strength Rm/MPa ≥	断后伸长率 Elongation A/% ≥		试验温度 Test temperature °C	冲击吸收能量 Impact energy KV2/J
SQ355NHB	≤ 16	355	490	22.0	D=2a	20	≥ 47
SQ355NHC	≤ 16	355	490	22.0	D=2a	0	≥ 34
SQ355NHD	≤ 16	355	490	22.0	D=2a	-20	≥ 34
SQ355NHE	≤ 16	355	490	22.0	D=2a	-40	≥ 20
SQ355NHMQ	≤ 16	355	490	22.0	D=2a	-	-

(六) 塔架耐候钢 Weathering steel for tower

牌号 Grade	拉伸试验 Tensile test				弯曲试验 180° Bending test 180°	冲击试验 Impact test	
	厚度 Thickness mm	屈服强度 Yield strength ReL/MPa ≥	抗拉强度 Tensile strength Rm/MPa ≥	断后伸长率 Elongation A/% ≥		试验温度 Test temperature °C	冲击吸收能量 Impact energy KV2/J
SQ350NH	≤ 16	350	500	17.0	D=2a	20	≥ 40
SQ420NH	≤ 16	420	520	18.0	D=2a	-20	≥ 40

(七) 耐火耐候钢 Fire resistant weathering steel

牌号 Grade	拉伸试验 Tensile test				弯曲试验 180° Bending test 180°	冲击试验 Impact test	
	厚度 Thickness mm	屈服强度 Yield strength ReL/MPa ≥	抗拉强度 Tensile strength Rm/MPa ≥	断后伸长率 Elongation A/% ≥		试验温度 Test temperature °C	冲击吸收能量 Impact energy KV2/J
SQ345FRW	≤ 16	345	490	22.0	D=2a	-40	≥ 34
SQ460FRW	≤ 16	460	550	17.0	D=2a	-40	≥ 34

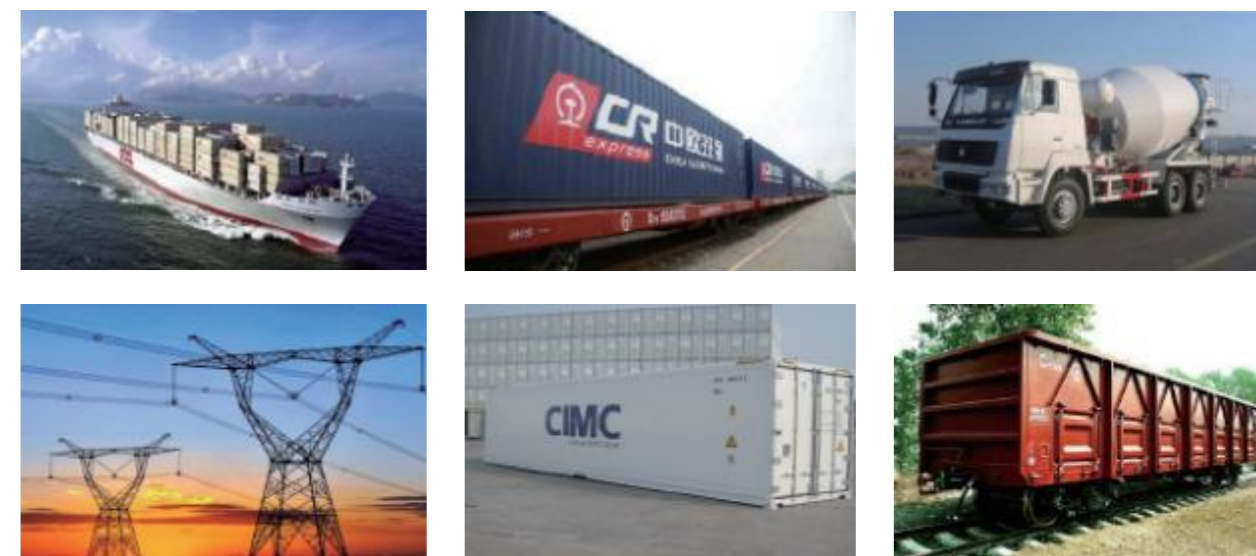
2.4.4 订货规格 (Available Dimension)

分类 Category	牌号 Grade	规格 Dimension	
		厚度 Thickness /mm	宽度 Width /mm
耐候钢 Weathering steel	SPA-H	1.4-16.0	800-2050
	SQ550J/SQ700J	1.5-19.0	800-2050
	SQ450W/SQ550W	1.4-22.0	800-2050
	Q345NQR2/Q350EWR1	3.0-22.0	800-2050
	Q450NQR1/Q450EWR1	3.0-22.0	800-2050
	SG520JJ/SG750JJ/SG900JJ/SNM300TP	2.5-22.0	800-2050
	09CrCuSb	2.0-22.0	800-2050
	Q295NS/Q315NS/Q345NS	2.0-22.0	800-2050
	SQ355NHB/C/D/E, SQ355NHMQ	2.0-25.4	800-2050
	SQ345FRW/SQ460FRW	2.0-25.4	800-2050

2.4.5 供货业绩 (Supply performance)

首钢耐候钢覆盖集装箱、铁路车辆、电力塔架、桥梁、环境保护、结构工程等诸多领域，首钢已成为国内最大的集装箱钢板生产企业，是中集、中国远洋海运、胜狮、新华昌、富华等集装箱制造企业的核心供应商。

Shougang weathering steel covers container, railway wagon, power tower, bridge, environmental protection, structural engineering and many other fields. Shougang has become the largest container steel production enterprise in China, and is the core supplier of container manufacturers such as CIMC, COSCO, SINGAMAS, CXIC, Fuwa etc.



2.5 特殊钢 (Special steel)

特殊钢是指具有特殊的化学成分、采用特殊的生产工艺、具备特殊的组织和性能的产品。首钢特殊钢包括碳素结构钢、碳素工具钢、合金结构钢、合金工具钢以及锯片钢等，主要应用于汽车、摩托车、纺织机械、农用机械、仪器仪表和量刀具等领域。

Special steel is the kind of steel with special chemical composition, produced by special process, having special structure and properties. Shougang Special Steel includes carbon structural steel, carbon tool steel, alloy structural steel, alloy tool steel and saw blade steel, which are mainly used in the fields of automobile, motorcycle, textile machinery, agricultural machinery, instruments and tools.

2.5.1 牌号标准 (grades and standards)

类别 category	参考标准 standad	牌号 grade	用途 application
特殊钢 Special steel	碳素结构钢 carbon structural steel	Q/SGZGS 0356 SAE1020/SAE1021/SAE1022/SAE1025 SAE1030/SAE1035/SAE1040/SAE1045 SAE1050/20/25/30/35/40/45/50 22Mn/25Mn/30Mn/35Mn/40Mn/45Mn 50Mn/C22E/C25/C25E/C30/C30E C35/C35E/C40/C40E/C45/C45E/C50/C50E S25C/S30C/S35C/S40C/S45C/S50C	各种机械结构件 (如链条、链轮)、五金件 (如卷尺) 等 mechanical structural parts (such as chains, sprockets), hardware parts (such as tape measures), etc.
	碳素工具钢 carbon tool steel	Q/SGZGS 0356 SAE1055/SAE1060/SAE1065/SAE1070 SAE1074/SAE1075/SAE1080/SAE1085 SAE1095/55/60/65/70/75/80/85 60Mn/65Mn/70Mn C55/C55E/C60/C60E/S55C	弹簧、高耐磨性零件、发条、刀具、锯片等 Springs, high wear resistance parts, clockwork, knives, saw blades, etc.
	合金结构钢 alloy structural steel	Q/SGJS 0010 12Cr1MoV/15CrMo/15Cr3/16MnCr5 20Cr/40Cr/20CrMo/30CrMo 35CrMo/SCM435/42CrMo4	汽车零部件、机械零部件、冲压件 Automobile parts, mechanical parts, stamping parts
	合金工具钢 alloy tool steel	Q/SGJS 0010 50CrV4/51CrV4/58CrV4 55MnB/55CrMn/60Si2Mn/62Si2Mn 65MnB/75Cr1/8CrV	工具、刀具和锯片 Tools, cutters and saw blades



2.5.2 化学成分 (chemical composition)

(一) 碳素结构钢 carbon structural steel

牌号 grade	化学成分 (熔炼分析) (%) Chemical composition (ladle analysis)				
	C	Si	Mn	P ≤	S ≤
20	0.18-0.23	0.17-0.35	0.35-0.60	0.030	0.030
25	0.22-0.28	0.17-0.35	0.50-0.70	0.030	0.030
30	0.28-0.33	0.17-0.35	0.60-0.80	0.030	0.030
35	0.32-0.38	0.17-0.35	0.60-0.80	0.030	0.030
40	0.37-0.43	0.17-0.35	0.60-0.80	0.030	0.030
45	0.43-0.48	0.17-0.35	0.60-0.80	0.030	0.030
50	0.48-0.53	0.17-0.35	0.60-0.80	0.030	0.030
SAE1020	0.18-0.23	≤ 0.03	0.35-0.60	0.030	0.030
SAE1021	0.18-0.23	≤ 0.03	0.60-0.90	0.030	0.030
SAE1022	0.18-0.23	≤ 0.03	0.70-1.00	0.030	0.030
SAE1025	0.22-0.28	≤ 0.37	0.30-0.60	0.030	0.030
SAE1030	0.28-0.34	≤ 0.37	0.60-0.80	0.030	0.030
SAE1035	0.32-0.38	≤ 0.37	0.60-0.80	0.030	0.030
SAE1040	0.37-0.44	≤ 0.37	0.60-0.80	0.030	0.030
SAE1045	0.43-0.50	≤ 0.37	0.60-0.80	0.030	0.030
SAE1050	0.48-0.55	≤ 0.37	0.60-0.80	0.030	0.030
20Mn	0.17-0.23	0.17-0.37	0.70-1.00	0.030	0.030
25Mn	0.22-0.29	0.17-0.37	0.70-1.00	0.030	0.030
30Mn	0.27-0.34	0.17-0.37	0.70-1.00	0.030	0.030
35Mn	0.32-0.39	0.17-0.37	0.70-1.00	0.030	0.030
40Mn	0.37-0.44	0.17-0.37	0.70-1.00	0.030	0.030
45Mn	0.42-0.50	0.17-0.37	0.70-1.00	0.030	0.030
50Mn	0.48-0.56	0.17-0.37	0.70-1.00	0.030	0.030
C22E	0.18-0.23	0.17-0.35	0.35-0.60	0.030	0.030
C25/C25E	0.22-0.28	0.17-0.35	0.50-0.70	0.030	0.030
C30/C30E	0.28-0.33	0.17-0.35	0.60-0.80	0.030	0.030
C35/C35E	0.32-0.38	0.17-0.35	0.60-0.80	0.030	0.030
C40/C40E	0.37-0.43	0.17-0.35	0.60-0.80	0.030	0.030
C45/C45E	0.43-0.48	0.17-0.35	0.60-0.80	0.030	0.030
C50/C50E	0.48-0.53	0.17-0.35	0.60-0.80	0.030	0.030
S20C	0.18-0.23	0.17-0.35	0.35-0.60	0.030	0.030
S25C	0.22-0.28	0.17-0.35	0.30-0.60	0.030	0.030
S30C	0.28-0.33	0.17-0.35	0.60-0.80	0.030	0.030
S35C	0.32-0.38	0.17-0.35	0.60-0.80	0.030	0.030
S40C	0.37-0.43	0.17-0.35	0.60-0.80	0.030	0.030
S45C	0.43-0.48	0.17-0.35	0.60-0.80	0.030	0.030
S50C	0.48-0.53	0.17-0.35	0.60-0.80	0.030	0.030
C55/C55E	0.52-0.60	0.17-0.35	0.60-0.80	0.030	0.030
C60/C60E	0.57-0.65	0.17-0.37	0.60-0.80	0.030	0.030
S55C	0.52-0.58	0.17-0.35	0.60-0.80	0.030	0.030

(二) 碳素工具钢 carbon tool steel

牌号 grade	化学成分 (熔炼分析) (%) Chemical composition (ladle analysis)				
	C	Si	Mn	P ≤	S ≤
55	0.52-0.60	0.17-0.35	0.60-0.80	0.030	0.030
60	0.57-0.65	0.17-0.37	0.60-0.80	0.030	0.030
65	0.62-0.70	0.17-0.37	0.60-0.80	0.030	0.030
70	0.67-0.75	0.17-0.37	0.60-0.80	0.030	0.030
75	0.72-0.80	0.17-0.37	0.60-0.80	0.030	0.030
80	0.77-0.85	0.17-0.37	0.60-0.80	0.030	0.030
85	0.82-0.90	0.17-0.37	0.50-0.70	0.030	0.030
SAE1055	0.50-0.60	≤ 0.37	0.60-0.80	0.030	0.030
SAE1060	0.55-0.65	≤ 0.37	0.60-0.80	0.030	0.030
SAE1065	0.62-0.70	≤ 0.37	0.60-0.80	0.030	0.030
SAE1070	0.67-0.75	≤ 0.37	0.60-0.80	0.030	0.030
SAE1074	0.72-0.80	≤ 0.37	0.50-0.80	0.030	0.030
SAE1075	0.70-0.80	≤ 0.37	0.40-0.70	0.030	0.030
SAE1080	0.77-0.85	≤ 0.37	0.60-0.80	0.030	0.030
SAE1085	0.82-0.90	≤ 0.37	0.70-1.00	0.030	0.030
SAE1095	0.90-1.03	≤ 0.37	0.30-0.50	0.030	0.030
60Mn	0.57-0.65	0.17-0.37	0.70-1.00	0.030	0.030
65Mn	0.62-0.70	0.17-0.37	0.90-1.20	0.030	0.030
70Mn	0.67-0.75	0.17-0.37	0.90-1.20	0.030	0.030

(三) 合金结构钢 alloy structural steel

牌号 grade	化学成分 (熔炼分析) (%) Chemical composition (ladle analysis)							
	C	Si ≤	Mn	P ≤	S ≤	Cr	Mo	V
12Cr1MoV	0.08-0.15	0.17-0.35	0.40-0.70	0.025	0.015	0.90-1.20	0.15-0.30	0.15-0.30
15CrMo	0.12-0.18	0.17-0.35	0.40-0.70	0.025	0.015	0.80-1.10	0.4-0.55	-
15Cr3	0.12-0.18	0.17-0.35	0.40-0.60	0.025	0.015	0.40-0.70	-	-
16MnCr5	0.14-0.19	≤ 0.35	1.00-1.30	0.025	0.015	0.80-1.00	-	-
20Cr	0.18-0.24	0.17-0.35	0.50-0.80	0.025	0.015	0.70-1.00	-	-
40Cr	0.37-0.44	0.17-0.35	0.50-0.80	0.025	0.015	0.80-1.10	-	-
20CrMo	0.17-0.24	0.17-0.35	0.40-0.70	0.025	0.015	0.80-1.10	0.15-0.25	-
30CrMo	0.26-0.33	0.17-0.35	0.40-0.70	0.025	0.015	0.80-1.10	0.15-0.25	-
35CrMo	0.32-0.40	0.17-0.35	0.40-0.70	0.025	0.015	0.80-1.10	0.15-0.25	-
SCM435	0.33-0.38	0.17-0.35	0.60-0.85	0.025	0.015	0.90-1.20	0.15-0.30	-
42CrMo4	0.38-0.45	0.17-0.35	0.60-0.90	0.025	0.015	0.90-1.20	0.15-0.25	-

(四) 合金工具钢 alloy tool steel

牌号 grade	化学成分 (熔炼分析) (%) Chemical composition (ladle analysis)							
	C	Si	Mn	P ≤	S ≤	Cr	V	B
50CrV4	0.48-0.55	0.17-0.35	0.80-1.10	0.025	0.015	0.90-1.10	0.10-0.20	-
51CrV4	0.47-0.55	≤ 0.40	0.70-1.10	0.025	0.015	0.90-1.20	0.10-0.25	-
58CrV4	0.55-0.62	0.17-0.35	0.70-1.10	0.025	0.015	1.05-1.20	0.10-0.20	-
55MnB	0.52-0.58	0.17-0.35	0.60-1.00	0.025	0.015	-	-	0.0012-0.003
55CrMn	0.52-0.60	0.17-0.37	0.65-0.95	0.025	0.015	0.65-0.95	-	-
60Si2Mn	0.56-0.64	1.50-2.00	0.70-1.00	0.025	0.015	≤ 0.35	-	-
62Si2Mn	0.58-0.66	1.50-2.00	0.70-1.00	0.025	0.015	≤ 0.35	-	-
65MnB	0.62-0.70	0.17-0.37	0.90-1.20	0.025	0.015	-	-	0.0005-0.0035
75Cr1	0.72-0.80	0.20-0.45	0.60-0.90	0.025	0.015	0.30-0.60	-	-
8CrV	0.75-0.85	0.20-0.40	0.30-0.60	0.025	0.015	0.40-0.70	0.15-0.25	-

2.5.3 力学性能 (mechanical property)

一般情况下, 特殊钢将成分、力学性能等检测结果填入质量证明书, 供用户参考。

Generally, the mechanical properties of special steel are chemical composition and the test results are filled in the quality certificate for reference.

2.5.4 订货规格 (Available Dimension)

分类 category	牌号 grade	规格 Dimension	
		厚度 /mm thickness	宽度 /mm width
碳钢结构 carbon structural steel	SAE1020/SAE1021/SAE1022/SAE1025 SAE1030/SAE1035/SAE1040/SAE1045 SAE1050/20/25/30/35/40/45/50 22Mn/25Mn/30Mn/35Mn/40Mn/45Mn 50Mn/C22E/C25/C25E/C30/C30E C35/C35E/C40/C40E/C45/C45E/C50/C50E S25C/S30C/S35C/S40C/S45C/S50C	2.3-20.0	900-2000
碳钢工具 carbon tool steel	SAE1055/SAE1060/SAE1065/SAE1070 SAE1074/SAE1075/SAE1080/SAE1085 SAE1095/55/60/65/70/75/80/85 60Mn/65Mn/70Mn C55/C55E/C60/C60E/S55C	2.3-20.0	900-2000
合金结构 alloy structural steel	12Cr1MoV/15CrMo/15Cr3/16MnCr5 20Cr/40Cr/20CrMo/30CrMo 35CrMo/SCM435/42CrMo4	2.3-20.0	900-2000
合金工具 Alloy tool steel	50CrV4/51CrV4/58CrV4 55MnB/55CrMn/60Si2Mn/62Si2Mn 65MnB/75Cr1/8CrV	2.3-20.0	900-2000

2.5.5 供货业绩 (Supply performance)

首钢特殊钢主要供应唐山锯业、日照海恩、天津远洋等锯片企业，以及太仓威尔斯、山东冠洲等冷轧用途企业。

Shougang special steels are mainly supplied to saw blade companies such as TANGSAW, Hein Saw and Tianjin Yuanyang, and cold rolling companies such as C..D..Waelzholz and Shandong Guanzhou.



2.6 冷轧基料 (Base Material for Cold Rolling)

冷轧基料经冷轧、退火、涂镀等工序加工后，广泛应用于汽车、家电、建材、化工等行业。

Base materials are for cold rolling, annealing, coating and other processes, and are widely used in automobiles, home appliances, building materials, chemical industries and other industries.

2.6.1 牌号标准 (Grades and Standards)

类别 Category	参考标准 standard	牌号 Grade	用途 Application
冷轧基料 base material for cold rolling	冷成型用钢 Cold forming steel	Q/SGZGS 0314 Q/SGJS 0009	SPHC/SPHD/SPHE/SPHF DD11/DD12/DD13/DD14 SDC01/SDC03/HM290TD 用于轧制冷成型用热连轧钢板及钢带。 Used for rolling the hot-rolled plate and strip in cold forming application
	超低碳 IF 钢 Interstitial free steel(IF steel)	Q/SGJS 0009	SDC04/SDC05/SDC06 主要用于制造汽车零部件，可制作汽车前灯、油箱、门、窗、车底板、侧围外板、门内外板、后备箱的内外板等变形很复杂的零部件。 Mainly used for complex automobile parts, such as headlights, fuel tanks, windows, chassis, side plate, door inner and outer panels and trunk inner and outer panels.
	优质碳素钢 Quality carbon steel	Q/SGZGS 0356	SAE1005/SAE1006/SAE1008 SAE1010/SAE1012/SAE1013 SAE1015/SAE1016/SAE1017 SAE1018/SAE1019 适用于工业与民用建筑和一般深冲用。 Used for industrial and civil buildings and general deep drawing.
	马口铁 Tinplate	Q/SGZGS 0345 Q/SGJS 0009	MR-T1/MR-T2/MR-T25/MR-T3 MR-T35/MR-T4/MR-T5/MR-T2L MR-T25L/MR-T3L/MR-T2H MR-T25H/MR-T3H/GL55/GL57 适用于食品及饮料的包装材料以及油脂罐、化学品罐以及其它的杂罐。 Used for food and beverage packaging materials, oil cans, chemical cans and other miscellaneous cans.

2.6.2 化学成分 (Chemical Composition)

(一) 冷成型用钢 (Cold Forming Steel)

牌号 Grade	化学成分 (熔炼分析) (%) Chemical Composition (Ladle Analysis) (%)					
	C ≤	Si ≤	Mn ≤	P ≤	S ≤	Alt
SPHC/DD11	0.120	0.05	0.60	0.035	0.030	≥ 0.010
SPHD/DD12	0.080	0.05	0.45	0.030	0.025	≥ 0.010
SPHE/DD13	0.060	0.05	0.40	0.025	0.020	≥ 0.010
SPHF/DD14	0.060	0.05	0.35	0.020	0.020	≥ 0.010
HM290TD	0.040	0.03	0.20	0.020	0.020	≥ 0.010
SDC01	0.120	0.05	0.50	0.035	0.025	≥ 0.015
SDC03	0.050	0.05	0.45	0.035	0.025	≥ 0.015

(二) 超低碳 IF 钢 (IF Steel)

牌号 Grade	化学成分 (熔炼分析) (%) Chemical Composition (Ladle Analysis) (%)						
	C ≤	Si ≤	Mn ≤	P ≤	S ≤	Alt ≥	Ti ≤
SDC04	0.010	0.05	0.40	0.025	0.020	0.010	0.20
SDC05	0.004	0.05	0.30	0.020	0.020	0.015	0.20
SDC06	0.003	0.05	0.30	0.015	0.015	0.015	0.20

(三) 优质碳素钢 (Quality Carbon Steel)

牌号 Grade	化学成分 (熔炼分析) (%) Chemical Composition (Ladle Analysis) (%)					
	C	Si ≤	Mn	P ≤	S ≤	Alt
SAE1005	≤ 0.06	0.03	≤ 0.35	0.025	0.020	0.020-0.060
SAE1006	≤ 0.08	0.03	0.25-0.40	0.025	0.020	0.020-0.060
SAE1008	≤ 0.10	0.03	0.30-0.50	0.025	0.020	0.020-0.060
SAE1010	0.08-0.13	0.03	0.30-0.60	0.025	0.020	0.020-0.060
SAE1012	0.10-0.15	0.03	0.30-0.60	0.025	0.020	0.020-0.060
SAE1013	0.11-0.16	0.03	0.30-0.60	0.025	0.020	0.020-0.060
SAE1015	0.13-0.18	0.03	0.30-0.60	0.025	0.020	0.020-0.060
SAE1016	0.13-0.18	0.03	0.60-0.90	0.025	0.020	0.020-0.060
SAE1017	0.15-0.20	0.03	0.30-0.60	0.025	0.020	0.020-0.060
SAE1018	0.15-0.20	0.03	0.60-0.90	0.025	0.020	0.020-0.060
SAE1019	0.15-0.20	0.03	0.70-1.00	0.025	0.020	0.020-0.060

(四) 马口铁 (Tinplate)

牌号 Grade	化学成分 (熔炼分析) (%) Chemical Composition (Ladle Analysis) (%)						
	C ≤	Si ≤	Mn ≤	P ≤	S ≤	Alt	N ≤
MR-T1	0.040	0.03	0.25	0.020	0.020	≤ 0.060	0.0040
MR-T2	0.050	0.03	0.30	0.020	0.020	≤ 0.060	0.0040
MR-T25	0.070	0.03	0.30	0.020	0.020	≤ 0.060	0.0040
MR-T3	0.090	0.03	0.40	0.020	0.020	≤ 0.060	0.0040
MR-T35	0.110	0.03	0.50	0.020	0.020	≤ 0.060	0.0040
MR-T4	0.120	0.03	0.55	0.020	0.020	≤ 0.060	0.0040
MR-T5	0.140	0.05	0.65	0.020	0.020	≤ 0.065	0.0045
GL55	0.070	0.03	0.30	0.020	0.020	0.035-0.065	0.0040
GL57	0.090	0.03	0.50	0.020	0.020	0.035-0.065	0.0040

2.6.3 力学性能 (Mechanical Properties)

冷轧基料的化学成分、力学性能等检测结果填入质量证明书, 供用户参考。

The test results of chemical composition and mechanical properties of cold rolled base material shall be filled into the quality certificate for reference.

2.6.4 订货规格 (Available Dimension)

分类 Category	牌号 Grade	规格 Dimension	
		厚度 /mm Thickness/mm	宽度 /mm Width/mm
冷成型用钢 Cold forming steel	SPHC/SPHD/SPHE/SPHF DD11/DD12/DD13/DD14 SDC01/SDC03/HM290TD	1.50-22.0	750-2000
超低碳 IF 钢 Interstitial free steel(IF steel)	SDC04/SDC05/SDC06 IF220/IF30	2.50-22.0	750-2000
优质碳素钢 Quality carbon steel	SAE1005/SAE1006/SAE1008 SAE1010/SAE1012/SAE1013 SAE1015/SAE1016/SAE1017 SAE1018/SAE1019	1.70-22.0	750-2000
马口铁 Tinplate	MR-T1/MR-T2/MR-T25/MR-T3 MR-T35/MR-T4/MR-T5/MR-T2L MR-T25L/MR-T3L/MR-T2H MR-T25H/MR-T3H/GL55/GL57	1.70-22.0	750-2000

2.7 专用钢 (Exclusive steel)

首钢专用钢包括船板、锅炉容器及焊瓶钢、桥梁钢、防爆钢、军工用钢、涂镀用钢等 10 个系列 50 多个牌号。

Shougang special steel includes more than 50 grades in 10 series, including ship plate, boiler vessel and welded bottle steel, bridge steel, explosion-proof steel, military steel, and coating steel.

船板于 2007 年完成了 8 国 (美国 ABS, 法国 BV、中国 CCS、挪威德国 DNV-GL、韩国 KR、英国 LR、日本 NK) 船级社认证, 欧标产品于 2007 年获得英国劳氏船级社资质认证。船板用于制造远洋、沿海和内河航区船舶, 锅炉容器用于锅炉及其附件和中常温压力容器的受压元件, 焊瓶钢主要用于制作液化石油气瓶、乙炔气瓶、氮气瓶、液态氨瓶等的压力容器, 桥梁钢主要用于各种桥梁工程。

In 2007, the ship plates were certified by 8 classification societies (ABS, BV, CCS, DNV-GL, KR, LR, NK). The European standard products were certified by Lloyd's Register of Shipping in 2007. The ship plate is used for the manufacture of ships in the ocean, the severe sea and the inland waterway navigation area, the boiler vessel is used for the boiler and its accessories and the pressure element of the medium normal temperature pressure vessel, the welding bottle steel is mainly used for the manufacture of liquefied petroleum gas cylinder, acetylene gas cylinder, nitrogen gas cylinder, liquid ammonia cylinder and other pressure vessels, the bridge steel is mainly used for various bridge engineering.

2.7.1 牌号标准 (Steel grades and standards)

类别 Type	参考标准 standards	牌号 Steel grades	用途 Usage	
专用钢 Exclusive steel	船板 Ship plate steel	GB/T 712	A/B/D/A32/D32 A36/D36 用于制造船舶船体结构板。 Used for the manufacture of ship hull structural plates.	
	桥梁钢 Bridge steel	GB/T 714	Q345qC/D/E Q370qD/E Q420qD/E Q460qD/E Q500qD/E 主要用于各类桥梁的制造。 Mainly used for the manufacture of all kinds of Bridges.	
	容器钢 Container steel	GB/T 713 Q/SGZGS 0355.1	Q245R/Q345R	主要用于中常温压力容器的受压元件的钢板。 Mainly used for pressure components of medium temperature pressure vessels
		Q/SGZGS 0335.4 Q/SGZGS 0355.1	A516 Gr.55 A516 Gr.60 A516 Gr.65 A516 Gr.70	用于高缺口韧性的焊接压力容器。 Used for welded pressure vessels with high notch toughness.
	焊瓶钢 Welding bottle steel	Q/SGZGS 0332 GB/T 6653	HP235/HP265/HP295 HP325/HP345/SG365 SG255/SG295/SG325 主要用于制造液化石油天然气气瓶。 Mainly used in the manufacture of liquefied petroleum and natural gas cylinders.	
	防爆钢 Explosion-proof steel	SJXE 035	SFB700/SL600MC SL700MC 用于制造保险柜等防爆结构件。 Used for making safes and other explosion-proof structural parts.	
	塔架用钢 Tower steel	SJXE 135	Gr50/Gr65 用于制造塔架用途的结构件 Used for Structural parts for tower purposes.	
	涂镀用钢 Coated steel	SJXA 103	SQ320TD/SQ350TD SQ380TD/SQ400TD SQ420TD 用于制造涂镀用途的结构件 Used for manufacturing structural parts for coating purposes	
	军工钢 Military steel	SJXA 110	SPR500 用于制造军警用盾牌、头盔等防弹件 Used for making bulletproof parts such as shield and helmet for military and police	
	搪瓷钢 Enamelled pressed steel	SGXYE 0032	SRT390/SRT480 SRT550 用于制造需要搪瓷的污水罐等 Used in the manufacture of enameled sewage tanks, etc	
风机用钢 Fan steel	SJXA 104	F400/F500 F600/F700 用于制造风机结构件 Used for manufacturing fan structure parts.		

2.7.2 化学成分 (Chemical component)

(一) 船板 Ship plate steel

牌号 Steel grades	化学成分 (熔炼分析) (%) Chemical component									
	C ≤	Si	Mn	P ≤	S ≤	Nb	Ni ≤	Cu	Ti	Alt
A	0.21	≤ 0.35	0.80-1.20	0.035	0.035	-	0.30	0.30	-	≥ 0.020
B	0.21	≤ 0.35	0.80-1.20	0.035	0.035	-	0.30	0.30	-	≥ 0.020
D	0.21	0.10-0.50	0.60-1.20	0.030	0.030	-	0.30	0.30	-	≥ 0.020
A32	0.18	0.10-0.50	0.90-1.60	0.030	0.030	-	0.30	0.30	-	0.020-0.085
D32	0.18	0.10-0.50	0.90-1.60	0.025	0.025	-	0.30	0.30	-	0.020-0.085
A36	0.18	0.10-0.50	0.90-1.60	0.030	0.030	0.02-0.05	0.30	0.30	0.007-0.020	0.020-0.085
D36	0.18	0.10-0.50	0.90-1.60	0.025	0.025	0.02-0.05	0.30	0.30	0.007-0.020	0.020-0.085

(二) 桥梁钢 Bridge steel

牌号 Steel grades	化学成分 (熔炼分析) (%) Chemical component								
	C ≤	Si ≤	Mn	P ≤	S ≤	Nb	V	Ti ≤	Alt
Q345qC	0.14	0.55	0.90-1.60	0.030	0.025	0.010-0.090	0.010-0.080	0.006-0.030	0.015-0.050
Q345qD	0.14	0.55	0.90-1.60	0.025	0.020	0.010-0.090	0.010-0.080	0.006-0.030	0.015-0.050
Q345qE	0.14	0.55	0.90-1.60	0.020	0.010	0.010-0.090	0.010-0.080	0.006-0.030	0.015-0.050
Q370qD	0.14	0.55	1.00-1.60	0.025	0.020	0.010-0.090	0.010-0.080	0.006-0.030	0.015-0.050
Q370qE	0.14	0.55	1.00-1.60	0.020	0.010	0.010-0.090	0.010-0.080	0.006-0.030	0.015-0.050
Q420qD	0.11	0.55	1.00-1.70	0.025	0.020	0.010-0.090	0.010-0.080	0.006-0.030	0.015-0.050
Q420qE	0.11	0.55	1.00-1.70	0.020	0.010	0.010-0.090	0.010-0.080	0.006-0.030	0.015-0.050
Q460qD	0.11	0.55	1.00-1.70	0.025	0.020	0.010-0.090	0.010-0.080	0.006-0.030	0.015-0.050
Q460qE	0.11	0.55	1.00-1.70	0.020	0.010	0.010-0.090	0.010-0.080	0.006-0.030	0.015-0.050
Q500qD	0.11	0.55	1.00-1.70	0.025	0.020	0.010-0.090	0.010-0.080	0.006-0.030	0.015-0.050
Q500qE	0.11	0.55	1.00-1.70	0.020	0.010	0.010-0.090	0.010-0.080	0.006-0.030	0.015-0.050



(三) 容器板 Container steel

牌号 Steel grades	厚度	化学成分 (熔炼分析) (%) Chemical component								
		C ≤	Si	Mn	P ≤	S ≤	Nb ≤	V ≤	Ti ≤	Alt
Q245R	-	0.20	≤ 0.35	0.50-1.10	0.025	0.010	0.050	0.05	0.03	≥ 0.020
Q345R	-	0.20	≤ 0.55	1.20-1.70	0.025	0.010	0.050	0.05	0.03	≥ 0.020
A516 Gr.55	≤ 12.5	0.18	0.15-0.40	0.60-0.90	0.025	0.025	0.020	0.03	0.03	≥ 0.020
A516 Gr.55	> 12.5	0.20	0.15-0.40	0.60-1.20	0.025	0.025	0.020	0.03	0.03	≥ 0.020
A516 Gr.60	≤ 12.5	0.21	0.15-0.40	0.60-0.90	0.025	0.025	0.020	0.03	0.03	≥ 0.020
A516 Gr.60	> 12.5	0.23	0.15-0.40	0.85-1.20	0.025	0.025	0.020	0.03	0.03	≥ 0.020
A516 Gr.65	≤ 12.5	0.24	0.15-0.40	0.85-1.20	0.025	0.025	0.020	0.03	0.03	≥ 0.020
A516 Gr.65	> 12.5	0.26	0.15-0.40	0.85-1.20	0.025	0.025	0.020	0.03	0.03	≥ 0.020
A516 Gr.70	≤ 12.5	0.27	0.15-0.40	0.85-1.20	0.025	0.025	0.020	0.03	0.03	≥ 0.020
A516 Gr.70	> 12.5	0.28	0.15-0.40	0.85-1.20	0.025	0.025	0.020	0.03	0.03	≥ 0.020

(四) 焊瓶钢 Welding bottle steel

牌号 Steel grades	化学成分 (熔炼分析) (%) Chemical component									
	C	Si ≤	Mn	P ≤	S ≤	Nb ≤	V ≤	Ti ≤	Cu	Alt
HP235	0.08-0.15	0.10	0.10-0.80	0.018	0.010	0.050	0.10	0.06	-	≥ 0.020
HP265/SG255	0.08-0.18	0.10	0.30-0.80	0.018	0.010	0.050	0.10	0.06	-	≥ 0.020
HP295/SG295	0.08-0.18	0.10	0.50-1.00	0.018	0.010	0.050	0.10	0.06	-	≥ 0.020
HP325/SG325	0.08-0.18	0.30	0.70-1.45	0.018	0.010	0.050	0.10	0.06	-	≥ 0.020
HP345/SG365	0.08-0.18	0.30	0.70-1.45	0.018	0.010	0.050	0.10	0.06	-	≥ 0.020

(五) 防爆钢 Explosion-proof steel

牌号 Steel grades	化学成分 (熔炼分析) (%) Chemical component					
	C ≤	Si ≤	Mn ≤	P ≤	S ≤	Alt ≤
SFB700	0.20	0.50	2.10	0.025	0.010	0.060
SL600MC	0.19	0.50	2.00	0.025	0.010	0.060
SL700MC	0.20	0.50	2.10	0.025	0.010	0.060

(六) 塔架用钢 Tower steel

牌号 Steel grades	化学成分 (熔炼分析) (%) Chemical component							
	C	Si	Mn	P ≤	S ≤	Alt	Nb+V+Ti ≤	Ceq ≤
Gr50	0.12	0.05	1.30	0.020	0.020	0.020	0.22	0.45
Gr65	0.12	0.05	1.50	0.020	0.020	0.020	0.22	0.45

(七) 涂镀用钢 Coated steel

牌号 Steel grades	化学成分 (熔炼分析) (%) Chemical component					
	C ≤	Si ≤	Mn ≤	P ≤	S ≤	Alt ≤
SQ320TD	0.18	0.30	1.20	0.025	0.010	0.060
SQ350TD	0.19	0.30	1.30	0.025	0.010	0.060
SQ380TD	0.19	0.30	1.40	0.025	0.010	0.060
SQ400TD	0.21	0.30	1.50	0.025	0.010	0.060
SQ420TD	0.21	0.30	1.70	0.025	0.010	0.060

(八) 军工钢 Military steel

牌号 Steel grades	化学成分 (熔炼分析) (%) Chemical component										
	C ≤	Si ≤	Mn ≤	P ≤	S ≤	Cr ≤	Ni ≤	Mo ≤	Ti ≤	B	Alt ≥
SPRO500	0.45	1.20	2.30	0.020	0.010	1.50	1.50	0.90	0.25	0.0005-0.0060	0.010

(九) 搪瓷钢 Enamelled pressed steel

牌号 Steel grades	化学成分 (熔炼分析) (%) Chemical component					
	C ≤	Si ≤	Mn ≤	P ≤	S ≤	Alt ≤
SRT390	0.20	0.55	2.50	0.030	0.030	0.060
SRT480	0.20	0.55	2.50	0.030	0.030	0.060
SRT550	0.20	0.55	2.50	0.030	0.030	0.060

(十) 风机用钢 Fan steel

牌号 Steel grades	化学成分 (熔炼分析) (%) Chemical component					
	C ≤	Si ≤	Mn ≤	P ≤	S ≤	Alt ≤
F400	0.12	0.50	1.70	0.025	0.010	0.060
F500	0.12	0.50	1.80	0.025	0.010	0.060
F600	0.12	0.50	2.00	0.025	0.010	0.060
F700	0.12	0.50	2.10	0.025	0.010	0.060

2.7.3 力学性能 (Mechanical property)

(一) 船板 Ship plate steel

牌号 Steel grades	拉伸试验 Tensile test				冲击试验 Impulse test		
	厚度 mm Thickness	屈服强度 Yield Strength ReL/MPa	抗拉强度 Tensile Strength Rm/MPa		断后伸长率 Elongation A/% ≥	试验温度°C test temperature	冲击吸收能量 KV ₂ /J Impact absorbed energy
			CCS、DNV-GL、BV	ABS、LR KR、NK			
A	-	235	400-520	400-520	22.0	-	-
B	-	235	400-520	400-520	22.0	0	27
D	-	235	400-520	400-520	22.0	-20	27
A32	-	315	440-570	440-590	22.0	0	31
D32	-	315	440-570	440-590	22.0	-20	31
A36	-	355	490-630	490-620	21.0	0	34
D36	-	355	490-630	490-620	21.0	-20	34

(二) 桥梁钢 Bridge steel

牌号 Steel grades	拉伸试验 Tensile test				弯曲试验 180° Bending test		冲击试验 Impulse test	
	厚度 mm Thickness	屈服强度 Yield Strength ReL/MPa	抗拉强度 Tensile Strength Rm/MPa	断后伸长率 Elongation A/% ≥	厚度 Thickness ≤ 16	厚度 Thickness > 16	试验温度°C test temperature	冲击吸收能量 KV ₂ /J Impact absorbed energy
Q345qC	-	345	490	20.0	D=2a	D=3a	0	≥ 120
Q345qD	-	345	490	20.0	D=2a	D=3a	-20	≥ 120
Q345qE	-	345	490	20.0	D=2a	D=3a	-40	≥ 120
Q370qD	-	370	510	20.0	D=2a	D=3a	-20	≥ 120
Q370qE	-	370	510	20.0	D=2a	D=3a	-40	≥ 120
Q420qD	-	420	540	19.0	D=2a	D=3a	-20	≥ 120
Q420qE	-	420	540	19.0	D=2a	D=3a	-40	≥ 120
Q460qD	-	460	570	18.0	D=2a	D=3a	-20	≥ 120
Q460qE	-	460	570	18.0	D=2a	D=3a	-40	≥ 120
Q500qD	-	500	630	18.0	D=2a	D=3a	-20	≥ 120
Q500qE	-	500	630	18.0	D=2a	D=3a	-40	≥ 120



(三) 容器板 Container steel

牌号 Steel grades	拉伸试验 Tensile test				弯曲试验 180° Bending test	冲击试验 Impulse test	
	厚度 mm Thickness	屈服强度 Yield Strength ReL/MPa	抗拉强度 Tensile Strength Rm/MPa	断后伸长率 Elongation A/% ≥	弯头直径 Bend diameter	试验温度°C test temperature	冲击吸收能量 KV ₂ /J Impact absorbed energy
Q245R	3 ~ 16	245	400-520	25.0	D=1.5a	0	≥ 31
Q245R	> 16 ~ 19	235	400-520	25.0	D=1.5a	0	≥ 31
Q345R	3 ~ 16	345	510-640	21.0	D=2a	0	≥ 34
Q345R	> 16 ~ 19	325	500-630	21.0	D=3a	0	≥ 34

牌号 Steel grades	拉伸试验 Tensile test				弯曲试验 180° Bending test
	厚度 mm Thickness	屈服强度 Yield Strength ReL/MPa	抗拉强度 Tensile Strength Rm/MPa	断后伸长率 Elongation A/% ≥	弯头直径
A516 Gr.55	-	205	380-515	23.0	-
A516 Gr.60	-	220	415-550	21.0	-
A516 Gr.65	-	240	450-585	19.0	-
A516 Gr.70	-	260	485-620	17.0	-

(四) 焊瓶钢 Welding bottle steel

牌号 Steel grades	拉伸试验 Tensile test					弯曲试验 180° Bending test	晶粒度
	屈服强度 Yield Strength ReL/MPa	抗拉强度 Tensile Strength Rm/MPa	屈强比 Rel/Rm ≤	断后伸长率 Elongation A/% ≥		弯头直径 Bend diameter	
				厚度 Thickness < 3mm, A ₃₀	厚度 Thickness ≥ 3mm, A		
HP235	≥ 235	380-500	0.80	23.0	30.0	D=a	≥ 6 级
HP265	≥ 265	410-520	0.80	21.0	28.0	D=a	
HP295	≥ 295	440-560	0.80	20.0	27.0	D=1.5a	
HP325	≥ 325	490-600	0.80	18.0	23.0	D=1.5a	
HP345	≥ 345	510-620	0.80	17.0	22.0	D=1.5a	

牌号 Steel grades	拉伸试验 Tensile test					弯曲试验 180° Bending test
	厚度 mm Thickness	屈服强度 Yield Strength ReL/MPa	抗拉强度 Tensile Strength Rm/MPa	屈强比 Rel/Rm ≤	断后伸长率 Elongation A/% ≥	弯头直径 Bend diameter
SG255	1.6-6.0	265	410-520	0.80	28.0	D=a
SG295	1.6-6.0	295	440-560	0.80	26.0	D=1.5a
SG325	1.6-6.0	325	490-600	0.80	22.0	D=1.5a
SG365	1.6-6.0	365	540-650	0.80	20.0	D=1.5a

(五) 防爆钢 Explosion-proof steel

牌号 Steel grades	拉伸试验 Tensile test				冲击试验 Impulse test	
	厚度 mm Thickness	屈服强度 Yield Strength ReL/MPa	抗拉强度 Tensile Strength Rm/MPa	断后伸长率 Elongation A/% ≥	试验温度°C test temperature	冲击吸收能量 KV ₂ /J Impact absorbed energy
SFB700	-	≥ 460	≥ 700	12.0	-	-
SL600MC	-	-	600-800	12.0	-	-
SL700MC	-	-	680-800	12.0	-	-

(六) 塔架用钢 Tower steel

牌号 Steel grades	拉伸试验 Tensile test				冲击试验 Impulse test	
	厚度 mm Thickness	屈服强度 Yield Strength ReL/MPa	抗拉强度 Tensile Strength Rm/MPa	断后伸长率 Elongation A/% ≥	试验温度°C test temperature	冲击吸收能量 KV ₂ /J Impact absorbed energy
Gr50	-	345-450	≥ 450	19.0	-20	≥ 34
Gr65	-	≥ 460	≥ 550	17.0	-20	≥ 34

(七) 涂镀用钢 Coated steel

牌号 Steel grades	拉伸试验 Tensile test				弯曲试验 180° Bending test		冲击试验 Impulse test	
	厚度 mm Thickness	屈服强度 Yield Strength ReL/MPa	抗拉强度 Tensile Strength Rm/MPa	断后伸长率 Elongation A/% ≥	厚度 Thickness ≤ 16	厚度 Thickness > 16	试验温度°C Test temperature	冲击吸收能量 KV ₂ /J Impact absorbed energy
SQ320TD	-	320	470	18.0	D=2a	D=3a	-20	≥ 40
SQ350TD	-	350	500	17.0	D=2a	D=3a	-20	≥ 40
SQ380TD	-	380	510	17.0	D=2a	D=3a	-20	≥ 40
SQ400TD	-	400	520	17.0	D=2a	D=3a	-20	≥ 40
SQ420TD	-	420	540	17.0	D=2a	D=3a	-20	≥ 40

(八) 军工钢 Military steel

牌号 Steel grades	拉伸试验 Tensile test				冲击试验 Impulse test	
	厚度 mm Thickness	屈服强度 Yield Strength ReL/MPa	抗拉强度 Tensile Strength Rm/MPa	断后伸长率 Elongation A/% ≥	试验温度°C test temperature	冲击吸收能量 KV ₂ /J Impact absorbed energy
SPRO500	-	≥ 400	≥ 500	10.0	-	-

(九) 搪瓷钢 Enamelled pressed steel

牌号 Steel grades	拉伸试验 Tensile test				弯曲试验 180° Bending test		冲击试验 Impulse test	
	厚度 mm Thickness	屈服强度 Yield Strength ReL/MPa	抗拉强度 Tensile Strength Rm/MPa	断后伸长率 Elongation A/% ≥	厚度 Thickness ≤ 16	厚度 Thickness > 16	试验温度°C Test temperature	冲击吸收能量 KV ₂ /J Impact absorbed energy
SRT390	2.5 ~ 5	390-540	450	15.0	D=1.5a	D=1.5a	-20	≥ 40
SRT480	5 ~ 12	≥ 480	560	15.0	D=1.5a	D=2a	-20	≥ 40
SRT550	11 ~ 20	≥ 550	620	14.0	D=2a	D=3a	-20	≥ 40

(十) 风机用钢 Fan steel

牌号 Steel grades	拉伸试验 Tensile test				弯曲试验 180° Bending test		冲击试验 Impulse test	
	厚度 mm Thickness	屈服强度 Yield Strength ReL/MPa	抗拉强度 Tensile Strength Rm/MPa	断后伸长率 Elongation A/% ≥	厚度 Thickness ≤ 16	厚度 Thickness > 16	试验温度°C Test temperature	冲击吸收能量 KV ₂ /J Impact absorbed energy
F400	-	400	480	20.0	D=2a	D=3a	-20	≥ 40
F500	-	500	580	18.0	D=2a	D=3a	-20	≥ 40
F600	-	600	680	16.0	D=2a	D=3a	-20	≥ 40
F700	-	700	780	14.0	D=2a	D=3a	-20	≥ 40

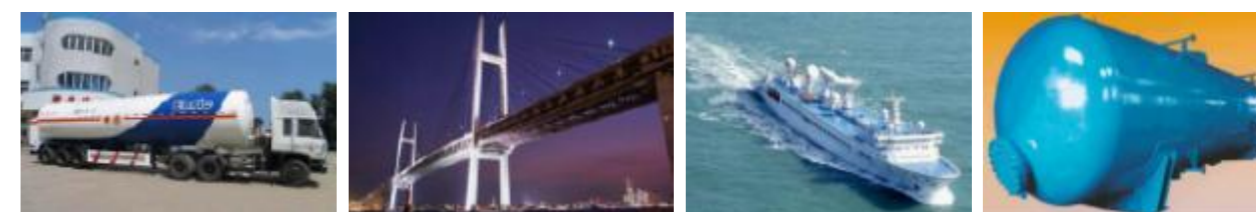
2.7.4 可订货规格 (Orderable specification)

分类 Type	牌号 Steel grades	规格 Specification	
		厚度 /mm Thickness	宽度 /mm Breadth
船板 Ship plate steel	A/B/D/A32/D32/A36/D36	3.0-18.0	900-2000
桥梁钢 Bridge steel	Q345qC/D/E, Q370qD/E Q420qD/E, Q460qD/E, Q500qD/E	3.0-22.0	900-2050
容器钢 Container steel	Q245R/Q345R/A516Gr55/A516Gr60 A516Gr65/A516Gr70	3.0-18.0	900-2000
焊瓶钢 Welding bottle steel	HP235/HP265/HP295/HP325/HP345 SG255/SG295/SG325/SG365	2.1-18.0	900-1800
防爆钢 Explosion-proof steel	SFB700/SL600MC/SL700MC	2.5-22.0	800-2130
塔架用钢 Tower steel	Gr50/Gr60/Gr65	2.0-22.0	800-2130
涂镀用钢 Coated steel	SQ320TD/SQ350TD/SQ380TD SQ400TD/SQ420TD	2.0-22.0	800-2130
军工钢 Military steel	SPR500	3.0-18.0	800-2130
搪瓷钢 Enamelled pressed steel	SRT390/SRT480/SRT550	2.5-20.0	800-2130
风机用钢 Fan steel	F400/F500/F600/F700	2.0-22.0	800-2130

2.7.5 供货业绩 (Delivery performance)

容器板稳定供货中集集团、嘉兴锅炉；焊瓶钢稳定供货河北百工、佛山良琦、天津仁和鼎盛等钢瓶厂；桥梁钢稳定供货中铁山桥；船板供货给上海外高桥船舶、大连船舶重工等。防爆钢稳定供货给上海堡垒等；军工钢稳定供货给沈阳金华等。可提供板卷及开平板交货，也可根据规格进行分卷和平整交货。

Container plate stably supplied to CIMC, Jiaying boiler. Welding bottle steel stably supplied to of welding bottle steel hebei Baigong, Foshan Liangqi, Tianjin Renhe Dingsheng and other steel bottle factory; Bridge steel stably supplied to of China Railway Mountain Bridge; The ship plates are stably supplied to CSSC, DSIC, etc. Explosion-proof steel stably supplied to Shanghai Fortress; Military steel stably supplied to Shenyang Jinhua, etc. We can supply coil and open plate delivery, also can roll and flat delivery according to specifications.



2.8 普通结构钢 (Ordinary structural steel)

用于建筑、桥梁、车辆等结构件。本系列产品具有较好的塑性、韧性和焊接性能等，产品尺寸精度高，可满足用户的不同需求。

Ordinary structural steels are widely used for building, bridge, vehicle and other structural parts. This series of products have good plasticity, toughness, welding performance and high dimensional accuracy, which can meet various demands of different customers.

2.8.1 牌号标准 (Grades and Standards)

类别 Category	参考标准 standard	牌号 grade	用途 application
结构钢 Ordinary structural steel	GB/T 700	Q235B/Q235C/Q235D	用于建筑、桥梁、车辆等结构件 structural parts such as buildings, bridges, vehicles, etc.
		Q/SGZGS 0316	
	GB/T 33974	Q235B	
	GB/T 1591	Q345B/Q345C/Q345D Q355B/Q355C/Q355D	
	Q/SGZGS 0321	S235JR/S235J0/S235J2 S275JR/S275J0/S275J2 S355JR/S355J0/S355J2/S355K2	
	Q/SGZGS 0335.1	A36 Gr.36/A283 Gr.C A283 Gr.D/A572 Gr.42 A572 Gr.50/A572 Gr.55 A572 Gr.60/A572 Gr.65	

2.8.2 化学成分 (chemical composition)

(一) 普碳钢 Ordinary carbon steel

牌号 grade	化学成分 (熔炼分析) (%) chemical composition (ladle analysis)				
	C ≤	Si ≤	Mn	P ≤	S ≤
Q235B	0.20	0.35	≤ 1.40	0.045	0.045
Q235C	0.17	0.35	≤ 1.40	0.040	0.040
Q235D	0.17	0.35	≤ 1.40	0.035	0.035
SS400	0.20	0.35	≤ 1.40	0.035	0.035
St37-2	0.17	0.35	≤ 1.40	0.035	0.035
St52-3	0.20	0.55	≤ 1.60	0.030	0.030
SPHT1	0.10	0.35	≤ 0.50	0.030	0.030
SPHT2	0.18	0.35	≤ 0.60	0.030	0.030
SPHT3	0.25	0.35	0.30-0.90	0.030	0.030
SPHT4	0.30	0.35	0.30-1.00	0.030	0.030

(二) 花纹板 Checkered plate

牌号 grade	化学成分 (熔炼分析) (%) chemical composition (ladle analysis)				
	C ≤	Si ≤	Mn ≤	P ≤	S ≤
Q235B	0.20	0.35	1.40	0.045	0.045

(三) 低合金 Low alloy

牌号 grade	化学成分 (熔炼分析) (%) chemical composition (ladle analysis)						
	C ≤	Si ≤	Mn ≤	P ≤	S ≤	Alt ≥	Ceq ≤
Q345B	0.20	0.50	1.70	0.035	0.035	-	0.45
Q345C	0.20	0.50	1.70	0.030	0.030	0.015	0.45
Q345D	0.18	0.50	1.70	0.030	0.025	0.015	0.45
Q355B	0.24	0.55	1.60	0.035	0.035	0.020	0.45
Q355C	0.20	0.55	1.60	0.030	0.030	0.020	0.45
Q355D	0.20	0.55	1.60	0.025	0.025	0.020	0.45

(四) 欧标 European standard

牌号 grade	化学成分 (熔炼分析) (%) chemical composition (ladle analysis)							
	C ≤	Si ≤	Mn ≤	P ≤	S ≤	N ≤	Cu ≤	Ceq ≤
S235JR	0.17	-	≤ 1.40	0.035	0.035	0.012	0.55	0.35
S235J0	0.17	-	≤ 1.40	0.030	0.030	0.012	0.55	0.35
S235J2	0.17	-	≤ 1.40	0.025	0.025	0.012	0.55	0.35
S275JR	0.21	-	≤ 1.50	0.035	0.035	0.012	0.55	0.40
S275J0	0.18	-	≤ 1.50	0.030	0.030	0.012	0.55	0.40
S275J2	0.18	-	≤ 1.50	0.025	0.025	0.012	0.55	0.40
S355JR	0.24	0.55	≤ 1.60	0.035	0.035	0.012	0.55	0.45
S355J0	0.20	0.55	≤ 1.60	0.025	0.025	0.012	0.55	0.45
S355J2	0.20	0.55	≤ 1.60	0.025	0.025	0.012	0.55	0.45
S355K2	0.20	0.55	≤ 1.60	0.025	0.025	0.012	0.55	0.45



(五) 美标 American Standard

牌号 grade	化学成分 (熔炼分析) (%) chemical composition (ladle analysis)				
	C ≤	Si ≤	Mn	P ≤	S ≤
A36 Gr.36	0.25	0.40	-	0.030	0.030
A283 Gr.C	0.24	0.40	≤ 0.90	0.030	0.030
A283 Gr.D	0.27	0.40	≤ 0.90	0.030	0.030
A572 Gr.42	0.21	0.40	0.80-1.35	0.030	0.030
A572 Gr.50	0.23	0.40	0.80-1.35	0.030	0.030
A572 Gr.55	0.25	0.40	0.80-1.35	0.030	0.030
A572 Gr.60	0.26	0.40	0.80-1.35	0.030	0.030
A572 Gr.65	0.16	0.40	0.80-1.35	0.030	0.030

2.8.3 力学性能 (Mechanical properties)

(一) 普碳钢 Ordinary carbon steel

牌号 Steel grades	拉伸试验 Tensile test				弯曲试验 180° Bending test 弯头直径 bending diameter	冲击试验 Impulse test	
	厚度 thickness mm	屈服强度 ReL/MPa yield strength	抗拉强度 Rm/MPa tensile strength	断后伸长率 A/% ≥ Elongation		试验温度°C Test temperature	冲击吸收能量 KV2/J Impact energy
Q235B	≤ 16	235	370-500	26.0	D=1.5a	20	≥ 27
Q235B	> 16	225	370-500	26.0	D=1.5a	20	≥ 27
Q235C	≤ 16	235	370-500	26.0	D=1.5a	0	≥ 27
Q235C	> 16	225	370-500	26.0	D=1.5a	0	≥ 27
Q235D	≤ 16	235	370-500	26.0	D=1.5a	-20	≥ 27
Q235D	> 16	225	370-500	26.0	D=1.5a	-20	≥ 27

牌号 Grade	拉伸试验 tensile test						弯曲试验 180° 180° Bending test	冲击试验 impact test	
	抗拉强度 Rm/MPa tensile strength	屈服强度 ReH/MPa yield strength		断后伸长率 /% ≥ Elongation					
		公称厚度 (mm) Nominal thickness			弯头直径 bending diameter		试验温度°C Test temperature	冲击吸收能量 KV ₂ /J Impact energy	
SS400	400-510	245	235	21.0	17.0	21.0	D=1.5a	-	-

牌号 Grade	拉伸试验 tensile test					弯曲试验 180° 180° Bending test	冲击试验 impact test	
	抗拉强度 Rm/MPa tensile strength	屈服强度 ReH/MPa yield strength		断后伸长率 /% ≥ Elongation				
		公称厚度 (mm) Nominal thickness				弯头直径 bending diameter	试验温度°C Test temperature	冲击吸收能量 KV ₂ /J Impact energy
St37-2	360-510	235	225	19.0	24.0	D=2a	20	≥ 27
St52-3	470-630	355	345	16.0	20.0	D=3a	0	≥ 27

牌号 Grade	拉伸试验 tensile test					弯曲试验 180° 180° Bending test	
	屈服强度 ReH/MPa yield strength	抗拉强度 Rm/MPa tensile strength	断后伸长率 /% ≥ Elongation			弯头直径 bending diameter	
			A ₅₀				
			2.5 ≤ h < 3.0	3.0 ≤ h < 6.0	6.0 ≤ h < 13.0	2.5 ≤ h < 3.0	3.0 ≤ h < 13.0
SPHT1	-	≥ 270	32.0	35.0	37.0	D=0a	D=a
SPHT2	-	≥ 340	27.0	30.0	32.0	D=2a	D=3a
SPHT3	-	≥ 410	22.0	25.0	27.0	D=3a	D=4a
SPHT4	-	≥ 490	18.0	20.0	22.0	D=3a	D=4a

(二) 低合金 Low alloy

牌号 Steel grades	拉伸试验 Tensile test				弯曲试验 180° Bending test 弯头直径 bending diameter	冲击试验 Impulse test	
	厚度 Mm thickness	屈服强度 ReL/MPa yield strength	抗拉强度 Rm/MPa tensile strength	断后伸长率 A/% ≥ Elongation		试验温度°C Test temperature	冲击吸收能量 KV ₂ /J Impact energy
Q345B	≤ 16	345	470-630	20.0	D=2a	20	≥ 27
Q345B	> 16	335	470-630	20.0	D=2a	20	≥ 27
Q345C	≤ 16	345	470-630	21.0	D=2a	0	≥ 27
Q345C	> 16	335	470-630	21.0	D=2a	0	≥ 27
Q345D	≤ 16	345	470-630	21.0	D=2a	-20	≥ 27
Q345D	> 16	335	470-630	21.0	D=2a	-20	≥ 27
Q355B	≤ 16	355	470-630	20.0	D=2a	20	≥ 27
Q355B	> 16	345	470-630	20.0	D=2a	20	≥ 27
Q355C	≤ 16	355	470-630	20.0	D=2a	0	≥ 27
Q355C	> 16	345	470-630	20.0	D=2a	0	≥ 27
Q355D	≤ 16	355	470-630	20.0	D=2a	-20	≥ 27
Q355D	> 16	345	470-630	20.0	D=2a	-20	≥ 27

(三) 欧标 (European standard)

牌号 grade	拉伸试验 tensile test							
	屈服强度 ReL/MPa yield strength		抗拉强度 Rm/MPa tensile strength		断后伸长率 /% ≥ Elongation			
	t ≤ 16	16 < t	t < 3	t ≥ 3	A ₈₀			A
					1.5 ≤ t ≤ 2	2 < t ≤ 2.5	2.5 < t < 3	t ≥ 3
S235JR	235	225	360-510		17.0	18.0	19.0	24.0
S235J0	235	225	360-510		17.0	18.0	19.0	24.0
S235J2	235	225	360-510		17.0	18.0	19.0	24.0
S275JR	275	265	430-580	410-560	15.0	16.0	17.0	21.0
S275J0	275	265	430-580	410-560	15.0	16.0	17.0	21.0
S275J2	275	265	430-580	410-560	15.0	16.0	17.0	21.0
S355JR	355	345	510-680	470-630	14.0	15.0	16.0	20.0
S355J0	355	345	510-680	470-630	14.0	15.0	16.0	20.0
S355J2	355	345	510-680	470-630	14.0	15.0	16.0	20.0
S335K2	355	345	510-680	470-630	14.0	15.0	16.0	20.0

(四) 美标 American Standard

牌号 grade	拉伸试验 tensile test			冲击试验 impact test	
	屈服强度 ReL/MPa yield strength	抗拉强度 Rm/MPa tensile strength	断后伸长率 A/% ≥ Elongation	试验 温度°C Test temperature	冲击吸收能量 KV ₂ /J Impact energy
A36 Gr.36	250	400-550	21.0	-	-
A283 Gr.C	205	380-515	23.0	-	-
A283 Gr.D	230	415-550	21.0	-	-
A572 Gr.42	290	≥ 415	22.0	20	≥ 34
A572 Gr.50	345	≥ 450	19.0	20	≥ 34
A572 Gr.55	380	≥ 485	18.0	20	≥ 34
A572 Gr.60	415	≥ 520	15.0	20	≥ 34
A572 Gr.65	450	≥ 550	14.0	20	≥ 34

2.8.4 订货规格 Available Dimension

分类 category	牌号 grade	规格 dimension	
		厚度 /mm thickness	宽度 /mm width
普碳钢 Ordinary carbon steel	Q235B/Q235C/Q235D SS400/St37-2/St52-3 SPHT1/SPHT2/SPHT3/SPHT4	2.0-25.4	800-2050
花纹板 Checkered plate	Q235B	2.3-16.0	900-1800
低合金 Low alloy	Q345B/Q345C/Q345D Q355B/Q355C/Q355D	2.0-25.4	800-2050
欧标 European standard	S235JR/S235J0/S235J2 S275JR/S275J0/S275J2 S355JR/S355J0/S355J2/S355K2	2.0-25.4	800-2050
美标 American Standard	A36 Gr.36/A283 Gr.C A283 Gr.D/A572 Gr.42 A572 Gr.50/A572 Gr.55 A572 Gr.60/A572 Gr.65	2.0-25.4	800-2050



2.9 MCCR 产品 (MCCR Products)

MCCR 是一条多功能连铸连轧带钢生产线，产线定位于“超薄”+“高强”+“优质”。产品大纲涵盖：碳素和低合金结构钢、汽车结构及高强度钢、耐候钢、相变强化钢、冷轧基料、各类用途的热轧专用钢等产品。

MCCR is a multifunctional continuous casting and rolling strip steel production line, the production line is positioned at "ultra-thin" + "high strength" + "high quality". The product outline covers carbon and low alloy structural steels, automotive structural and high strength steels, weathering steels, phase change strengthened steels, cold rolled base materials, and special hot rolled steels for various purposes.

2.9.1 产线特点 (Characteristics of production line)

与传统产线相比，产品具备以下优势：

- 具备超薄规格 (0.8-1.0mm)、高强度 (抗拉 1000MPa) 宽带钢批量供货能力；
- 三点除鳞设计，表面质量更好；
- 全无头模式生产，尺寸控制精度高；
- 张力恒定，轧制条件稳定，板形控制好；
- 恒速轧制，全长温度控制稳定，组织更均匀、性能更稳定；
- 生产效率高，交付周期短；
- 可按需求实现卷重自由控制，不受传统产线加热炉尺寸限制；
- 薄规格高强度为产品轻量化升级提供更大空间；
- 产品附加值高，可实现以热代冷。

Compared with the traditional production line, the product has the following advantages:

- With ultra-thin specifications (0.8-1.0mm), high strength (tensile 1000MPa) wide strip steel batch supply capacity;
- Three-points descaling design, better surface quality;
- Endless mode production, high precision of size control;
- Constant tension, rolling conditions, good shape control;
- Constant speed rolling, the temperature control of the whole length is stable, the structure is more uniform, the performance is more stable;
- High production efficiency, short delivery cycle;
- The coil weight can be freely controlled according to the requirements, which is not limited by the size of the heating furnace in the traditional production line;
- Thin specifications and high strength provide more space for lightweight upgrade of products;
- Products with high added value can be replaced by cold with heat;

2.9.2 产品特点 (Product Features)

MCCR 产线设计的产品厚度 0.8-12.7mm，主打 2.0mm 以下薄规格，宽度 900-1600mm，最高设计强度 1500MPa。可订货规格为：

The product thickness designed by MCCR production line is 0.8-12.7mm, the main product is the thin specification below 2.0mm, the width is 900-1600mm, and the highest design strength is 1500MPa. Orderable specifications are as follows:

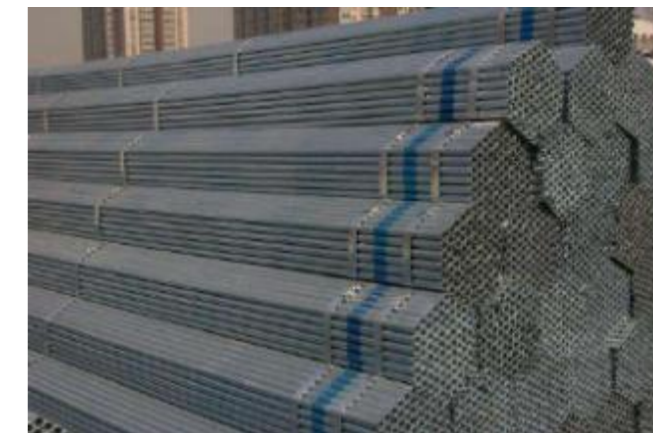
钢种 / steel grade	牌号 /brand	规格 / specifications	
		厚度 /mm thickness	宽度 /mm width
碳素结构钢 / carbon structural steel	Q195、Q215-275、SS400	1.0-12.7	900-1600
低合金结构钢 / low alloy structural steel	Q355-550A/B/C/D	1.2-12.7	900-1600
冷成型低碳钢 / Cold formed mild steel	SPHC、SPHD、SPHE、SPHF	0.8-12.7	900-1600
	DD11、DD12、DD13、DD14	0.8-12.7	900-1600
	08、08Al	0.8-12.7	900-1600
集装箱用钢 / container steel	SPA-H	1.2-12.7	900-1600
汽车结构钢 / automobile structural steel	SG700BL、S700XT	1.5-12.7	900-1600

2.9.3 供货业绩 (Delivery performance)

(一) 碳素和低合金结构钢 Carbon and low alloy structural steels

首钢 MCCR 碳素和低合金结构钢热轧带钢具有优良的延展性，性能均匀，广泛应用于制管、建筑等用户。

Shougang MCCR carbon and low alloy structural steel hot rolled strip has excellent ductility and uniform properties, and is widely used in pipe making, construction and other users.



(二) 集装箱用钢 Container steel

首钢 MCCR 集装箱用钢热轧钢带具有优异的耐腐蚀性能及成形性能，产品供货于中集、中海（东方国际）、新华昌、胜狮（太平货柜）等国内各大箱厂。

Shougang MCCR hot rolled steel strip for container has excellent corrosion resistance and formability, the products are supplied to CIMC, China Shipping (Orient International), Xinhuchang, Shengshi (Taiping Container) and other large container factories in China.



(三) 汽车结构钢 Automobile structural steel

首钢 MCCR 汽车结构钢热轧钢带具有良好的韧性及成形性能，产品供货于辽宁金天马、锣响挂车、梁山地区改装车等用户。

Shougang MCCR hot rolling steel strip for automobile structural steel has good toughness and formability, the products are supplied to Liaoning Jintianma, Luoxiang trailer, Liangshan modified car and other users.



Chapter 3 Tolerances for products

第三章 产品公差

钢板和钢带的尺寸允许偏差应符合企标 Q/SGZGS 0297 的规定。

The allowable size deviation of steel strip shall conform to the provisions of enterprise standard Q/SGZGS 0297.

■ 钢带及钢板厚度允许偏差 Allowable deviation of thickness of steel strip and steel plate

公称厚度 (mm) Nominal thickness	厚度允许偏差 (mm) / Allowable deviation of thickness							
	普通精度 Ordinary precision PT.A				较高精度 high precision PT.B			
	公称宽度 (mm) Nominal width				公称宽度 (mm) Nominal width			
	600-1200	> 1200-1500	> 1500-1800	> 1800	600-1200	> 1200-1500	> 1500-1800	> 1800
0.8-1.5	±0.15	±0.17	-	-	±0.10	±0.12	-	-
> 1.5-2.0	±0.17	±0.19	±0.21	±0.21	±0.13	±0.14	±0.14	-
> 2.0-2.5	±0.18	±0.20	±0.21	±0.25	±0.14	±0.15	±0.17	±0.20
> 2.5-3.0	±0.19	±0.21	±0.22	±0.25	±0.15	±0.17	±0.19	±0.21
> 3.0-4.0	±0.21	±0.23	±0.26	±0.27	±0.17	±0.18	±0.21	±0.22
> 4.0-5.0	±0.24	±0.26	±0.28	±0.29	±0.19	±0.21	±0.22	±0.23
> 5.0-6.0	±0.26	±0.28	±0.29	±0.31	±0.21	±0.22	±0.23	±0.25
> 6.0-8.0	±0.29	±0.30	±0.31	±0.35	±0.23	±0.24	±0.25	±0.28
> 8.0-10.0	±0.32	±0.33	±0.34	±0.40	±0.26	±0.26	±0.27	±0.32
> 10.0-12.5	±0.35	±0.36	±0.37	±0.43	±0.28	±0.29	±0.30	±0.36
> 12.5-15.0	±0.37	±0.38	±0.40	±0.46	±0.30	±0.31	±0.33	±0.39
> 15.0-19.0	±0.40	±0.42	±0.45	±0.50	±0.32	±0.34	±0.37	±0.42

注：规定最小屈服强度 $R_e \geq 345\text{N/mm}^2$ 的钢带，厚度允许偏差应增加 10%。
Note: For steel strips with minimum yield strength $R_e \geq 345\text{N/mm}^2$, the allowable thickness deviation should be increased by 10%.

■ 宽度偏差 Width deviation

	公称宽度 (mm) /Nominal width		宽度偏差 (mm) /Width deviation	
	≤	>	+	0
钢带 / 不切边钢板 Steel strip/uncut steel sheet	≤ 1500		+ 20	0
	> 1500		+ 25	0
切边钢板 Cutting steel plate	≤ 1200		+ 3	0
	> 1200-1500		+ 5	0
	> 1500		+ 6	0

■ 长度偏差 Length deviation

钢板 steel plate	公称长度 (mm) Nominal length	长度允许偏差 (mm) Allowable deviation of length
	2000-8000	5%* 公称长度 5*Nominal length
>8000	+40 0	

■ 不平度 Roughness

钢板 steel plate	公称厚度 (mm) Nominal thickness	公称宽度 (mm) Nominal width	不平度 (mm) Roughness		
			屈服强度 (MPa) The yield strength		
			<220	220-320	>320
≤ 2	≤ 2	≤ 1200	21	26	32
		>1200-1500	25	31	36
		>1500	30	38	45
>2	>2	≤ 1200	18	22	27
		>1200-1500	23	29	34
		>1500	28	35	42

(注: 如用户对钢带的平整度有要求, 在用户开卷设备能保证质量的前提下, 供需双方可以协商规定, 并在合同中注明。)
(Note: If the user has requirements on the irregularity of the steel strip, the supply and demand parties can negotiate and specify the requirements in the contract on the premise that the quality of the user's uncoiling equipment can be guaranteed.)

■ 开平板规格范围 Open the range of flat plate specifications

类别 /Type		厚度 (mm) thickness	宽度 (mm) Width	长度 (mm) Length
钢板 steel plate	切边 EC trimming	1.5-25.4	800-2100	2000-16000
	不切边 EM burrs		800-2130	

■ 开平的钢板强度与厚度对应关系

Corresponding relationship between strength and thickness of steel plate.

最大抗拉强度 (MPa) Maximum tensile strength	最小厚度 (mm) The minimum thickness	最大厚度 (mm) The largest thickness
1200	4.0	10.0
1000	4.0	17.0
800	3.0	20.0
600	2.5	22.5
550	2.5	25.4

Chapter 4 Quality Assurance

第四章 质量保障

- 通过 ISO9001 质量体系认证。
- 通过了 ISO/IEC17025:2005 实验室认证。
- 通过了 GBT19002-2003/ISO10012:2003 测量体系的认证。
- 通过了 ISO/TS16949: 2009; GB/T24001-2004 /ISO14001:2004; GB/T28001-2011 体系认证审核。
- Shougang obtained ISO 9001 certification.
- Shougang obtained ISO/IEC17025:2005 laboratory certification.
- Shougang obtained GBT19002-2003/ISO10012:2003 measurement system certification .
- Shougang obtained ISO/TS16949:2009, GB/T24001-2004/ISO14001:2004, GB/T28001-2011 system certification .



Chapter 5 Packaging and Labeling

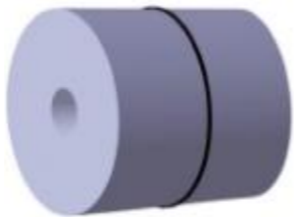
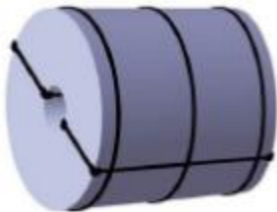
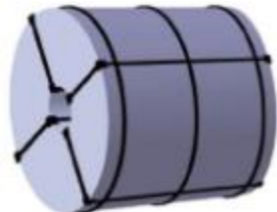

第五章 包装与标识

5.1 产品包装 (Product Packaging)

■ 普通热轧钢卷 (Common Hot Rolled Coils)

根据钢卷的特点和运输方式分为 4 种包装方式。

There are four packaging methods according to the characteristics of coils and th transportation.

适用产品 Applicable products	捆带图示 Illustration of strapping
HR01 内部供冷轧 for internal cold rolling supply	
HR02 商品卷 Commercial coils	
HR03 商品卷 Commercial coils	
HR04 热轧高强度厚钢带 Hot rolled high strength thick steel strip	

■ 普通热轧钢板 (Common Hot Rolled Steel Plate)



- (1) 热轧钢板包装时，按包裸露捆扎，单张成包的不捆扎。
 - (2) 横向捆扎不少于四道，边部可加护角。
 - (3) 两端捆带位置固定在距钢板端部 200-500mm 处。
- (1) Package shall be bundled without packaging paper, and the package with single piece shall not be bundled.
 - (2) Transverse bindings shall be no less than four, and corner protection can be added at the edge.
 - (3) The strapping position at both ends is fixed at 200-500mm away from the end of steel plate.

5.2 标签 (Label)

首钢集团 SHOUGANG GROUP				
品牌 BRAND	首钢	品名 PRODUCT	生产日期 DATE	
牌号 STEEL GRADE		标准 SPECIFICATION		
规格 (mm) SIZE		张数 SHEETS	重量 (t) WEIGHT	
钢卷号 COIL No.		捆带号 PACK No.	炉号 HEAT No.	
合同号 CONTRACT No.		许可证号 LICENSE No.		
客户名称 PURCHASER				
交货地 DESTINATION				
其它 OTHER				
制 造 厂：首钢股份有限公司炼钢事业部 MANUFACTURER: SHOUGANG QIAN' AN IRON&STEEL COMPANY MADE IN CHINA				

北京首钢股份有限公司
Beijing Shougang Co.,Ltd.
http://www.sggf.com.cn

首钢智慧营销平台
Shougang Intelligent Marketing Platform
https://imp.sggf.com.cn

上海首钢钢铁贸易有限公司
Shanghai Shougang Steel Trading Co. Ltd.
电话: 021-50930789
传真: 021-50931008

天津首钢钢铁贸易有限公司
Tianjin Shougang Steel Trade Co., Ltd.
电话: 022-84914552
传真: 022-84918191

广州首钢钢铁贸易有限公司
Guangzhou Shougang Steel Trade Co., Ltd.
电话: 020-22123069
传真: 020-22123691

武汉首钢钢铁贸易有限公司
Wuhan Shougang Steel Trade Co., Ltd.
电话: 027-59710209
传真: 027-59710258

山东首钢钢铁贸易有限公司
Shandong Shougang Steel Trade Co., Ltd.
电话: 0532-80667080
传真: 0532-80667087

首钢鹏龙钢材有限公司
电话: 010-81470116

佛山首钢中金钢材加工配送有限公司
电话: 0757-81861600

苏州首钢钢材加工配送有限公司
电话: 0512-53995377

首钢(青岛)钢业有限公司
电话: 0532-86682569

宁波首钢浙金钢材有限公司
电话: 0574-86283086

株洲首鹏汇隆钢材加工配送有限公司
电话: 0731-22330180

宁波首钢汽车部件有限公司
电话: 0574-23455501

天津物产首钢钢材加工配送有限公司
电话: 022-59060812

哈尔滨首钢武中钢材加工配送有限公司
电话: 0451-51640025

重庆首钢武中汽车部件有限公司
电话: 023-63173616

沈阳首钢钢材加工配送有限公司
电话: 024-83960710

中国首钢印度有限公司
China Shougang India Private Limited
Tel: 0091 124 4100380/1
Tax: 0091 124 4100381

首钢国际(马来西亚)有限公司
Shougang International(Malaysia)SDN.BHD.
Tel: 0060 03 33778968/8972
Tax: 0060 03 33920293

首钢国际(新加坡)有限公司
Shougang International(Singapore) PTE. Limited
Tel: 0065 62251706
Tax: 0065 62252617


首钢国际(韩国)有限公司
Shougang International(Korea)CO.,LTD
Tel: 0082 220519118
Tax: 0082 517459117

首钢国际(奥地利)有限公司
Shougang International(Austria)GmbH
Tel: 0043 1 802 1995 10
Tax: 0043 1 802 1995 50

首钢国际(香港)投资有限公司
Shougang International(Hong Kong) Investment Limited
Tel: 00852- 28910011
Tax: 00852- 28910011

首钢国际(加拿大)投资有限公司
Shougang International(Canada)Investment LTD.
Tel: 001 6046970128
Tax: 001 6046970113

卓航海运(新加坡)有限公司
Superior Ocean Shipping(Singapore)PTE.LTD.
Tel: 0065-62251706
Tax: 0065-62252617

注册商标	商标名称	商标简述	主要牌号
	首钢车轮钢 Wheel Steel	<p>首钢车轮钢热轧板卷, 采用不同强化方式设计形成普通碳锰、高强低合金、低温相变强化三大系列产品, 具有良好的焊接性能、成形性能和疲劳性能, 尺寸精度高、表面质量优异, 广泛应用于国内外不同轻量化水平的商用车、乘用车车轮轮辋和轮辐制造。</p> <p>The continuously hot rolled steel sheet and strip for automobile wheel were designed with different strengthening processes to form three series of products: C-Mn, HSLA and low-temperature transformation hardening steels. With good weldability, formability and fatigue performance, high precision of dimension and outstanding surface quality, the products are widely used in the manufacturing of domestic and overseas commercial and passenger automobile wheel rims and discs with different lightweight levels.</p>	<p>S330~700LW、S330~700LF、330~650CL、S420LW-M、S500LF-M、S500LW-M、S550LW-M、SQ235PL、SDP590、DP690、SHR590DP、SHR590FB、SHR590HE、SHR650DP、SHR650FB、SHR690DP、SHR690FB、SHR700FB、SHR780FB、SHR800DP、SPFH540、SRS590、SRS650 等</p>



首钢智慧营销平台
Shougang for WeChat



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Beijing Shougang Co., Ltd.



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