一、公司简介 Company Introduction

首钢京唐钢铁联合有限责任公司（以下简称首钢京唐）地处河北省唐山市曹妃甸新区，是首钢搬迁调整的重要载体。首钢京唐是党中央、国务院的重要战略决策，是国家“十一五”规划的重点项目，是完全按照循环经济理念设计建设的具有国际先进水平的钢铁联合企业。公司的建设始终得到党中央、国务院的亲切关怀， 党和国家领导人先后到首钢京唐公司调研并作出重要指示，提出了“高起点、高标准、高要求”的定位和“产品一流、管理一流、环境一流、效益一流”的建设目标。公司钢铁项目一期工程设计年产铁 898 万吨、钢 970 万吨、钢材 913 万吨，并于 2010 年 6 月全面竣工投产。公司钢铁项目二期一步工程设计年产铁 449 万吨、钢 464 万吨、钢材 427 万吨，主要包括 3 号高炉、MCCR、高强镀锌线、高强酸洗线、热基镀锌、十八辊轧机。

首钢京唐按照国家要求已逐步成为“具有国际先进水平的精品板材生产基地和自主创新的示范工厂，成为节能减排和发展循环经济的标志性工厂”。

Shougang Jingtang Steel is located in Tangshan, Hebei Caofeidian New Area. It’s an important carrier of the relocation of Shougang's adjustment. The construction of Shougang Jingtang is an important strategic decision for the Party Central Committee and the State council, is an national key project “Eleventh Five Year Plan”, the iron and steel joint enterprise with international advanced level in accordance with the concept of design and construction of a recycling economy.

Shougang Jingtang Steel is always under the care of the CPC Central Committee and the State Council. The leaders of the party and the state had researched and come up with important instructions when they came for visit. And they put forward the positioning requirements and construction goals: "high starting point, high standard, high demand; first-class products, first-class management, first-class environment, and first-class benefits”. Shougang Jingtang steel design annual production in the first phase is 8.98 million tons of iron, steel 9.7 million tons, 9.13 million tons of rolled steel. On March 12, 2007 Shougang Jingtang started construction. On May 21, 2009, the No. 1 5500m^3 blast furnace air ignition iron, subsequently steelmaking, hot rolling, cold rolling went into operation, Shougang Jingtang Steel is well versed in full line engineering implementation. On June 26, 2010, the main project of Shougang fully completed and put into production.

Since Shougang Jingtang went into production comprehensively and actively explore the operation of modern large-scale equipment and advanced technology operating rules. The level of production and process control capability to gradually improve; the capacity of different processes and technical and economic index achieved design level in June 2012, and continue to maintain. Currently, Shougang Jingtang Steel in accordance with national requirements of the state has gradually become a “quality plate production base with international advanced level and independent innovation demonstration plant, to become energy conservation and development of recycling economy iconic factory ".

二、产线情况 Production Line Introduction

首钢京唐目前有 1 条热基镀锌铝镁产线。

热基镀锌铝镁产品以首钢独创的多模式连续铸轧生产线提供原料，经过高强酸洗线进行酸洗平整后，进入热基镀锌线进行镀锌。热基镀锌线以焦炉煤气为燃料，采用直燃卧式加热方式，能够较好的承载厚规格带钢的通板运行，具有带钢快速提温、高热效率、产能大的优势；生产带钢规格可覆盖 0.8-6.0mm 厚度组距，750-1600mm 宽度组距，镀层厚度双面 80-600g/m2。目标产品为光伏用结构件、建筑结构件和轻工业仓储用板。

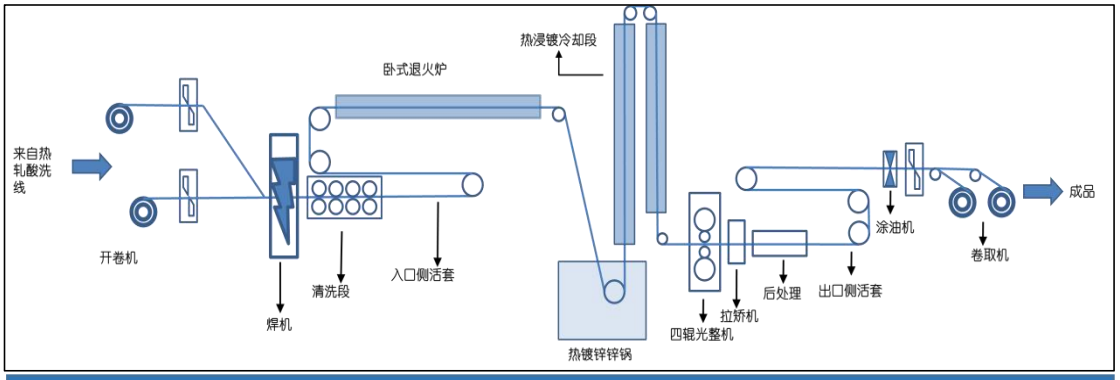
Shougang Jingtang currently has a Hot-Dip Zn-Al-Mg Alloy Coated Hot Rolled Steel Production line.

The raw material of Hot-Dip Zn-Al-Mg Alloy Coated Hot Rolled Steel Production line comes from Shougang's original MCCR production line,after the high strength pickling line, into the hot galvanized line. Hot galvanizing line uses coke oven gas as fuel, direct fired horizontal heating mode is adopted, can carry the through plate of thick specification strip steel well, The direct combustion horizontal heating method has the advantages of fast temperature raising, high heat efficiency and large capacity of strip steel; Production strip specification can cover thickness 0.8-6.0mm,width 750-1600mm, coating thickness of 80-600g/m2. The target products are PV support bracket, Construction and Steel silo.

2.1 产线布局 Production line layout

热基镀锌产线全长 375m，含两台开卷机、一台激光焊机，一座卧式直燃炉，一台四辊光整机，一台拉矫机，一台静电涂油机和两台卷取机。产线核心技术来自比利时 CMI 公司。由其合资公司北京考克利尔与电气供应商普瑞特集成设计。先进的自动化检测控制技术，包括测宽测径装置、锌锅液位和温度传感器、炉鼻子加湿装置、锌层测厚仪等，实现产品质量的闭环控制。

The total length of a Hot-Dip Zn-Al-Mg Alloy Coated Hot Rolled Steel Production line is 375m, including two decoilers, one laser welder, one horizontal direct fired furnace, one four roll finishing machine, one tension leveller, one electrostatic oiler and two coilers. The core technology of the production line comes from CMI company of Belgium. It is designed by its joint venture company Beijing cocklear and electric supplier Pratt. Advanced automatic detection and control technology, including width and diameter measuring device, zinc pot liquid level and temperature sensor, furnace nose humidification device, zinc layer thickness gauge, etc., realizes the closed-loop control of product quality.



热基镀锌工艺流程图/Hot-Dip process flow chart

2.2 原料配套产线 Supply raw material production line

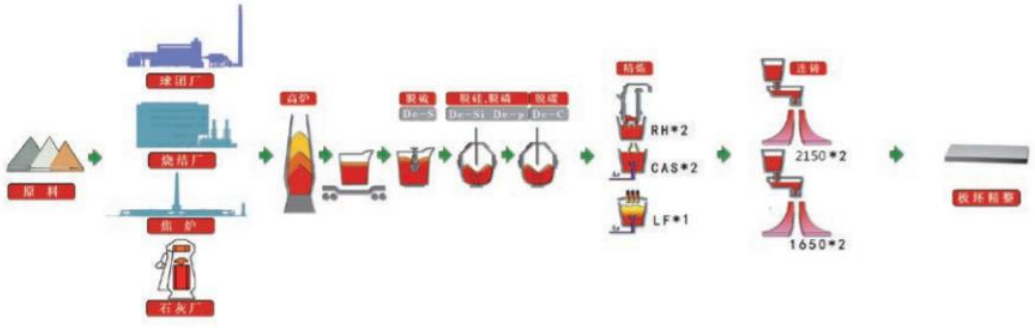
热基镀锌铝镁原料配套产线包括一期炼钢、一期热轧、MCCR 及高强酸洗产线。

Supply raw material production lines for a Hot-Dip Zn-Al-Mg Alloy Coated Hot Rolled Steel Production line include the first phase steel-making, first phase hot rolling, MCCR and high strength acid washing production lines.

2.2.1 炼钢系统 Steel making system

炼钢系统是一座崭新的低成本、高品质洁净钢生产平台。

Steel making system is a brand new platform for Low cost and high quality clean steel production.



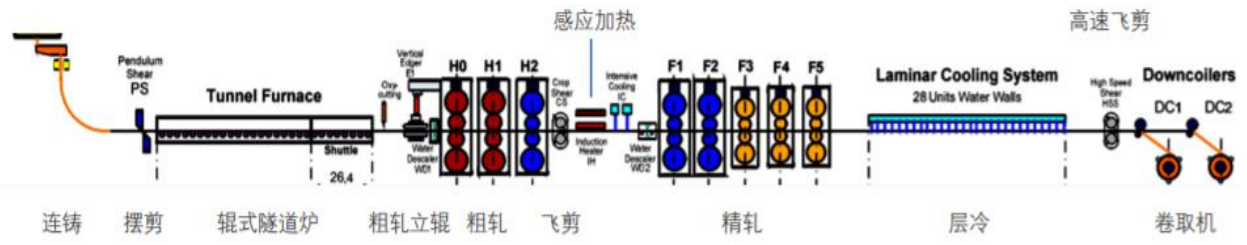
炼钢系统工艺流程图 / Flow Chart illustrating the Steel-making Process

2.2.2 MCCR 系统

MCCR 含一台单流高拉速薄板坯连铸机、一座隧道均热炉和一条热轧带钢生产线，主体设备包括：一 台连铸机，粗轧 3 机架轧机、精轧 5 机架轧机、层流冷却系统和卷取机。

MCCR consists of a single strand high speed thin slab caster, a tunnel soaking furnace and a hot strip production line. The main equipment includes a caster, 3-stand roughing mill, 5-stand

finishing mill, laminar cooling system and coiler.

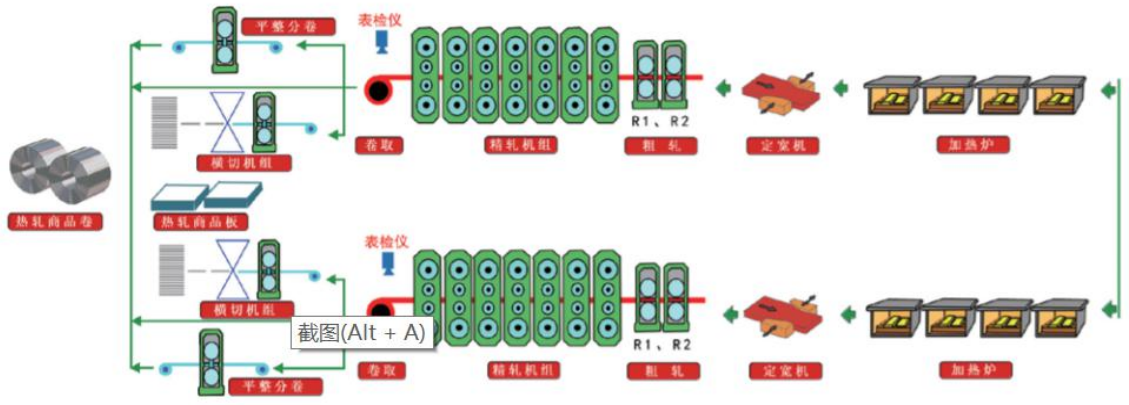


MCCR 工艺流程图 MCCR process flow chart

2.2.3 热轧系统

首钢京唐一期热轧拥有 1580mm 和 2250mm 两条热轧生产线，采用了热送热装工艺、工艺润滑技术、大侧压定宽机、自动宽度 控制、自动厚度控制、板形控制、控轧控冷以及表面质量在线检测系统等技术。

Shougang Jingtang Steel has two Hot Rolling lines, one is 1580mm Hot Rolling line, and the other is 2250mm. The system adopts hot charging technology, processing lubrication technology, side pressure fixed width machine, automatic width control, automatic thickness control, strip flatness control, controlled rolling & cooling, as well as the online surface quality inspection system.



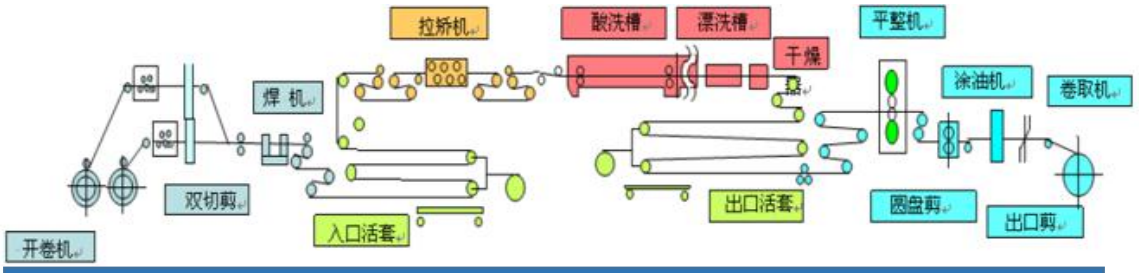
热轧生产线工艺流程图 / Flow Chart illustrating the Hot Rolling Process

2.2.4 高强酸洗产线

高强酸洗年产能 150 万吨 / 年，产品厚度 0.8 ~ 6.0 mm，宽度 750 ~ 1630mm；屈服强度最高 1000MPa；配备有激光焊机、强力破鳞机（拉矫）、平整机（湿）、张力拉矫机， 提供高表面质量要求的酸洗产品。

The annual production capacity of high strength acid washing is 1.5 million tons / year, the product thickness is 0.8-6.0 mm, and the width is 750-1630 mm; The highest yield strength is

1000 MPa; Equipped with laser welding machine, strong scale breaking machine (tension leveler), temper mill (wet), tension leveler, provide pickling products with high surface quality requirements.



高强酸洗生产工艺流程图 Process flow chart of high strength pickling

三、产品介绍 Products introduction

3.1 产品特性 Product features

热基镀锌铝镁板是热板经过酸洗后直接在带钢表面镀锌，与传统冷轧镀锌铝镁板相比，减少了冷轧工序，节约了投资，同时由于流程短、能耗低，大大降低了生产成本，有着明显的成本优势。与传统的热基镀锌产品对比，凭借锌铝镁镀层优良的耐蚀性，又能在相同耐蚀性能需求的基础上，降低锌层重量，从而降低镀层成本，提升产品竞争力。

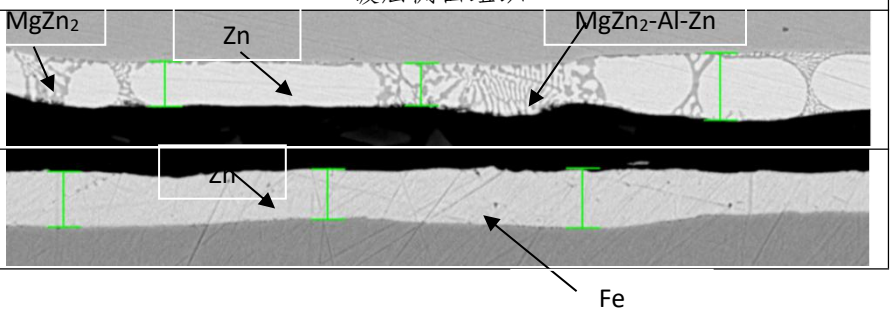
锌铝镁镀层是通过铝和镁的作用，使热浸镀镀层具备优良的耐蚀性、耐磨性和加工性，可广泛用于各个领域。锌铝镁镀层钢板可以让 GI 产品客户在不改变现有的加工、组装、涂漆等工序情况下，直接替换为锌铝镁镀层钢板。

锌铝镁三元合金镀层钢板具有高耐蚀性，其耐蚀性是同等镀层重量纯锌镀层产品（GI）的 4 倍以上，切口的耐蚀性尤其明显，可以取代成形后加工再热浸镀锌的钢板。

The Hot-Dip Zn-Al-Mg Alloy Coated Hot Rolled Steel plate is galvanized directly on the surface of hot-rolling strip after pickling. Compared with traditional cold-rolled Zn-Al-Mg Coated Steel plate, it reduces the cold rolling process and saves investment. At the same time, due to the short process and low energy consumption, the production cost is greatly reduced, and has obvious cost advantage. Compared with traditional Hot-Dip galvanized products, With the excellent corrosion resistance of Zn-Al-Mg Alloy Coated, the weight of coating can be reduced on the basis of the same corrosion resistance requirements, so as to reduce the cost of coating and enhance the competitiveness of products.

Zn-Al-Mg coating has excellent corrosion resistance, wear resistance and processability through the action of aluminum and magnesium, It can be widely used in various fields. GI steel plate can be directly replaced by Zn-Al-Mg coated steel plate without changing the existing processing, assembly, painting and other processes of GI products.

The corrosion resistance of Zn-Al-Mg alloy coated steel sheet is more than 4 times of that of GI coated products with the same coating weight. The corrosion resistance of notch is especially obvious, which can replace the hot-dip galvanized steel sheet processed after forming.

	镀层侧面组织
锌铝镁镀层 （Zn-6%A1-3%Mg）	
纯锌镀层 （Zn-0.2%A1）	

3.2 质量特性 Quality characteristics

3.2.1 优势分析 Advantage analysis

锌铝镁镀层产品是在传统热镀纯锌镀层产品的基础上，通过在镀液中添加适当的 A1、Mg 以及其他微量合金元素，得到的合金镀层产品。由于 A1、Mg 合金元素的协同作用，使得这种热镀锌铝镁镀层产品相比纯锌镀层具有更突出的特性。

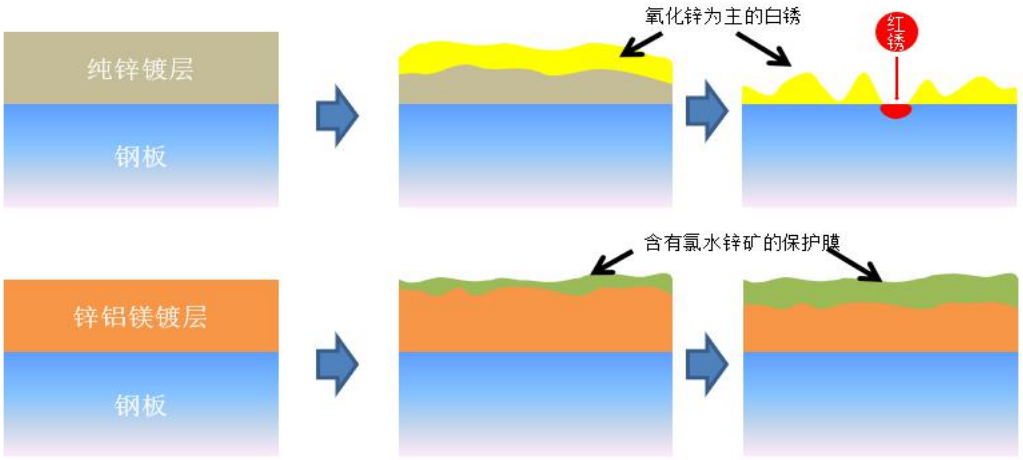
Zn-Al-Mg coated plate is a kind of alloy coating product based on the traditional GI coating product by adding appropriate Al, Mg and other trace alloy elements into the bath. Due to the synergistic effect of Al and Mg alloy elements, this kind of Zn-Al-Mg coated plate has more outstanding characteristics than GI coating.

产品特性 Product features	锌铝镁与纯锌对比 Comparison between Zn-Al-Mg coating and GI coating
切口耐腐蚀性能 Notch corrosion resistance	锌铝镁切口位置的耐蚀性远高于传统纯锌镀层 The notch corrosion resistance of Zn-Al-Mg coating is much better than GI coating
平面耐腐蚀性能 Corrosion resistance of plane	中性盐雾试验：锌铝镁镀层是传统纯锌镀层的 3~7 倍 Neutral salt spray test: Zn-Al-Mg coating is 3 ~ 7 times of GI coating
	大气长期腐蚀：锌铝镁镀层能达到纯锌镀层的 2 倍 Atmospheric long-term corrosion: Zn-Al-Mg coating is 2 times of GI coating
低摩擦系数 Low friction coefficient	锌铝镁镀层的摩擦系数比纯锌镀层低 15% The friction coefficient of Zn-Al-Mg coating is 15% lower than GI coating
耐磨损性能 Wear resistance	锌铝镁镀层的硬度是纯锌镀层的 3 倍左右 The hardness of Zn-Al-Mg coating is about 3 times of GI coating

3.2.2 耐蚀性能原理 Corrosion resistance mechanism

镀层中的镁(Mg)成分有利于促进生成状态非常稳定且组织缜密的细致保护膜-氯水锌矿(Zn5(OH)8C12 · H2O)，在镀层表面生成并维持膜状的覆盖层，从而保证优异的耐蚀性。

Mg in the coating is conducive to the formation of a very stable and meticulous protective film - Zn5 (OH) 8Cl2 · H2O), which forms and maintains a film like coating on the surface of the coating, thus ensuring excellent corrosion resistance.



平面耐蚀机理示意图 Schematic diagram of plane corrosion resistance mechanism

钢板经过加工的切面部位，上部的镀层发生溶解并逐步覆盖切面，促进状态稳定的保护膜的生成。在初期过程中裸露在外的切面部位会发生红锈，但保护膜在切面形成膜状覆盖物后，将发挥优异的耐蚀作用。

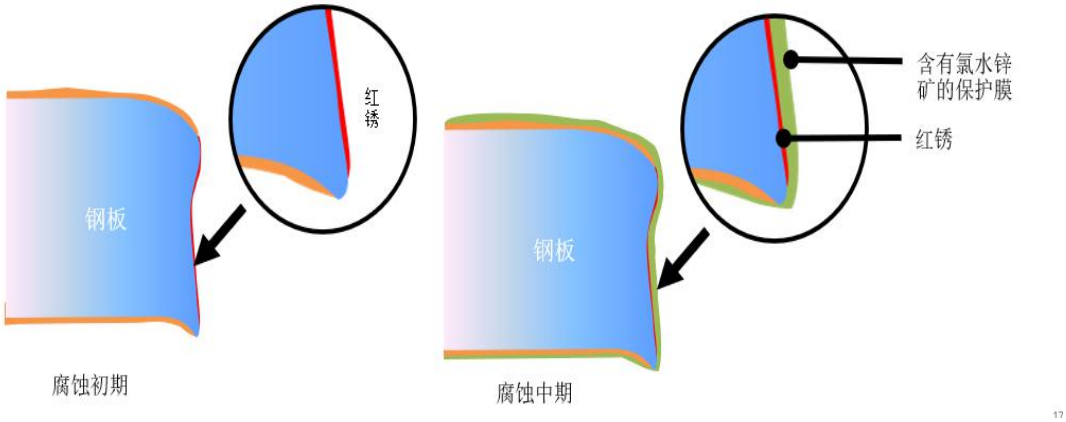
镀层表面形成稳定、致密的保护膜，具有优异的耐蚀性。

钢板镀层溶解覆盖加工切面，形成保护膜，提高切口耐蚀性。

The coating of the processed section of the steel plate dissolves and gradually covers the section, which promotes the formation of a stable protective film. In the initial stage, red rust will occur on the exposed section, but the protective film will play an excellent role in corrosion resistance after the film covering is formed on the section.

Stable and dense protective film is formed on the surface of the coating, which has excellent corrosion resistance.

The steel plate coating dissolves and covers the processing section to form a protective film and improve the corrosion resistance of the incision.



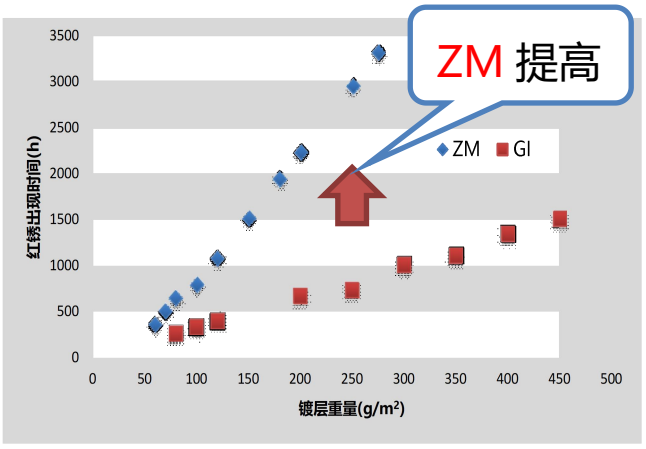
切面耐蚀机理示意图 Schematic diagram of corrosion resistance of section

表面耐蚀性对比：锌铝镁产品耐蚀性较纯锌产品提高 3 倍；切口耐蚀性对比：锌铝镁镀层产品切口耐蚀性优于 GI 板和 GA 板；在相同耐蚀性需求下，锌铝镁镀层更薄，可实现镀层减重。

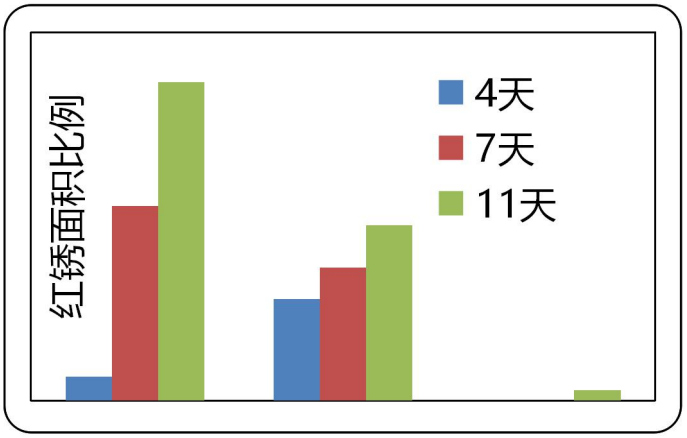
Corrosion resistance of plane： The corrosion resistance of Zn-Al-Mg coating products is 3 times better than GI products.

Notch corrosion resistance： The corrosion resistance of the notch of Zn-Al-Mg products is

better than GI and GA products. Under the same corrosion resistance, the Zn-Al-Mg coating is thinner, which can reduce the weight of the coating.



表面耐蚀性对比 Corrosion resistance of plane



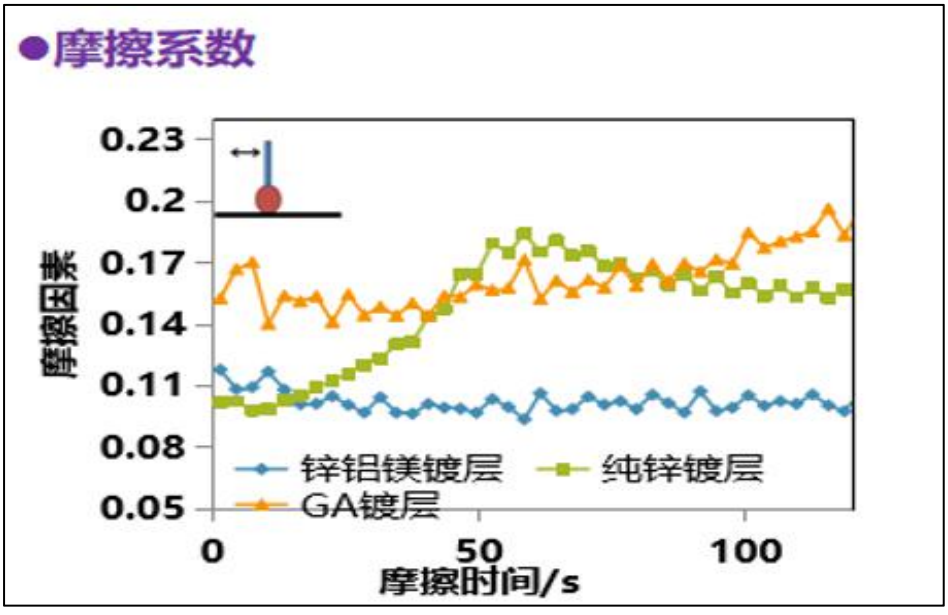
切口耐蚀性对比 Notch corrosion resistance

3.2.3 摩擦性能 Friction

摩擦性对比：锌铝镁材料摩擦系数较 GI 和 GA 材料优化 10%-15%；锌铝镁镀层摩擦系数显著低于纯锌镀层，而且多次摩擦稳定性显著优于纯锌镀层。

Friction comparison: The friction coefficient of Zn-Al-Mg material is 10% - 15% better than GI and GA material

The friction coefficient of Zn-Al-Mg coating is significantly lower than GI coating, and the multiple friction stability is significantly better than GI coating.

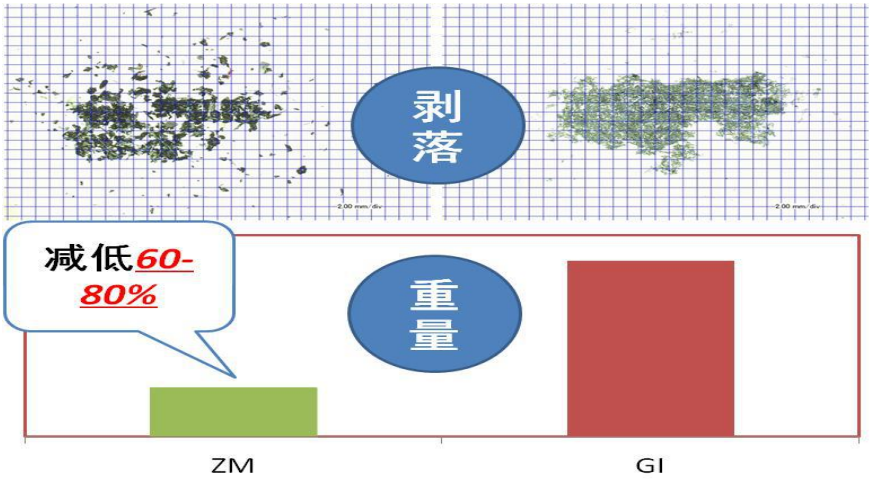


摩擦性对比 Friction comparison

3.2.4 耐剥离性能 Peel resistance

耐剥离性能优异：锌镁材料较纯锌材料抗剥落性提升 60%-80%。

Excellent peeling resistance: the peeling resistance of Zn-Al-Mg material is 60% - 80% better than GI material.



耐剥离性对比 Comparison of peel resistance

3.3 特性实验 Characteristic experiment

3.3.1 平面耐蚀性 Plane corrosion resistance

中性盐雾试验条件下，首钢热基锌铝镁镀层的平面耐蚀性达到热浸镀锌镀层的 6 倍以上。

Under neutral salt spray test conditions, the plane corrosion resistance of Shougang a Hot-Dip Zn-Al-Mg Alloy Coated Hot Rolled Steel is more than 6 times that of GI.

镀层种类 Coating type	镀层重量 Coating weight (g/m^2)	镀层厚度Coating thickness (um)	出现红锈时间 Red rust time (h)	腐蚀形貌 Corrosion morphology
纯锌镀层	600/600	85/85	712	
Zn-6%Al-3%Mg	140/140	22/22	>5000	

3.3.2 切口耐蚀性 Notch corrosion resistance

中性盐雾试验条件下，首钢热基锌铝镁镀层的切口耐蚀性达到热浸镀锌镀层的 20 倍以上。

Under neutral salt spray test conditions, the notch corrosion resistance of Shougang a Hot-Dip Zn-Al-Mg Alloy Coated Hot Rolled Steel is more than 20 times that of GI.

镀层种类 Coating type	镀层重量Coating weight (g/m²)	镀层厚度Coating thickness (um)	钢板厚Steel thickness(mm)	出现红锈时间Red rust time (h)	腐蚀形貌Corrosion morphology
纯锌镀层 Zn	600/600	85/85	4.0	130	
锌铝镁镀层 Zn-Al-Mg	140/140	22/22	3.0	3300	
锌铝镁镀层 Zn-Al-Mg	140/140	22/22	6.0	>980	

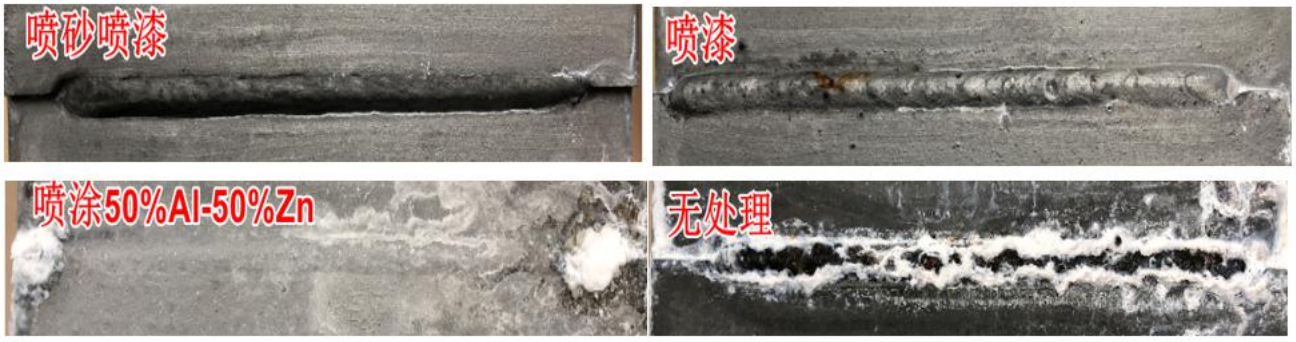
不同厚度切口性 Different thickness of incision

镀层种类Coating type	镀层重量 Coating weight (g/m²)	镀层厚度 Coating thickness (um)	钢板厚Steel thickness(mm)	出现红锈时间 Red rust time (h)	腐蚀形貌Corrosion morphology
Zn-6%Al-3%Mg	50/50	8/8	2.5mm	>2400h	
Zn-6%Al-3%Mg	140/140	22/22	5.0mm	>2000h	
Zn-6%Al-3%Mg	140/140	22/22	5.5mm	>2000h	
Zn-6%Al-3%Mg	140/140	22/22	6.0mm	>1500h	

3.3.3 焊缝耐蚀性 Corrosion resistance of weld

中性盐雾试验条件下，无处理的热基锌铝镁镀层的焊缝在 24 小时出现红锈，480 小时红锈被白锈覆盖，1992 小时二次出现红锈（与焊缝宽度、镀层厚度相关，焊缝越窄、镀层越厚越好）。行喷漆、喷涂和喷砂+喷漆处理后的焊缝在 3000 小时均没有出现红锈。

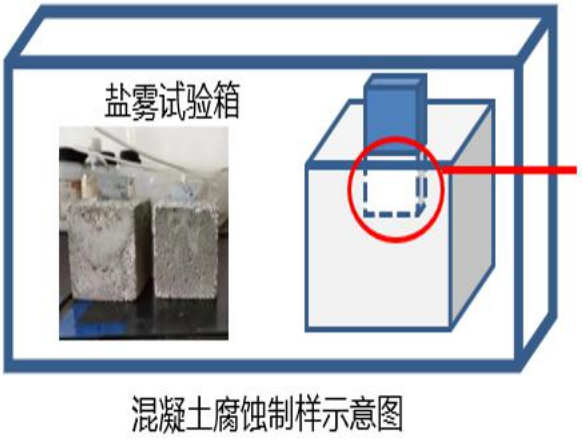
Under neutral salt spray test conditions, the weld of a Hot-Dip Zn-Al-Mg Alloy Coated Hot Rolled Steel without treatment appeared red rust in 24 hours, red rust was covered by white rust in 480 hours, and red rust appeared twice in 1992 hours (related to weld width and coating thickness, the narrower the weld, the thicker the coating). After spraying, spraying and sandblasting + spraying, no red rust appeared in the weld after 3000 hours.



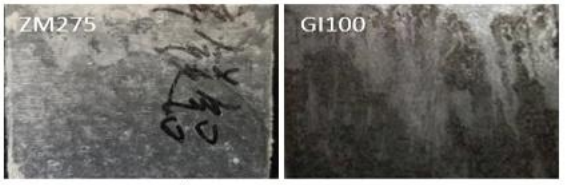
3.3.4 混凝土耐蚀性 Corrosion resistance in concrete environment

中性盐雾试验条件下，在混凝土腐蚀环境下锌铝镁镀层在经过初期表面发黑之后，表面形成致密羟基锌酸钙 (Ca (Zn (OH) 3) 2•2H2O)，耐蚀性明显优于纯锌镀层。

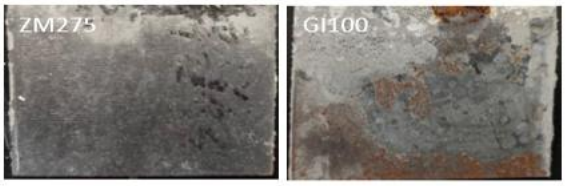
Under neutral salt spray test conditions, In the corrosive environment of concrete, dense calcium hydroxyzincate (Ca (Zn (OH) 3) 2 · 2H2O) is formed on the surface of Zn-Al-Mg coating after initial surface blackening, and its corrosion resistance is obviously better than that of GI coating.



混凝土腐蚀制样示意图



96小时SST（混凝土腐蚀环境）

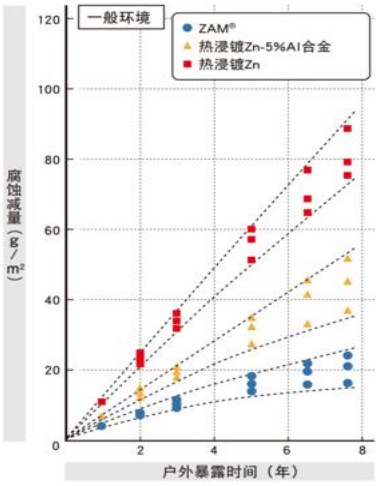


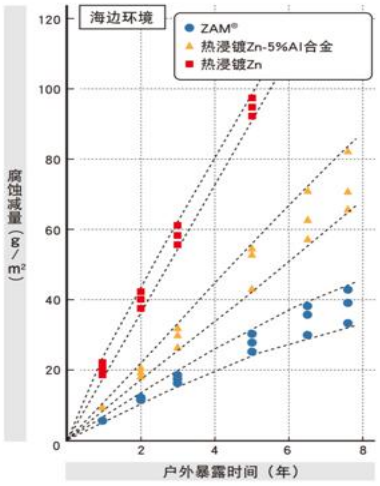
500小时SST（混凝土腐蚀环境）

3.3.5 耐大气腐蚀性 Atmospheric corrosion resistance

在大气腐蚀环境中，热基锌铝镁镀层的耐蚀性达到热浸镀锌镀层的 4-5 倍。唐热基锌铝镁耐大气腐蚀试验评价在进行中。（青岛、吐鲁番、海南万宁和重庆江津）。

In atmospheric corrosion environment, the corrosion resistance of Hot-Dip Zn-Al-Mg Alloy Coated Hot Rolled Steel is 4-5 times of that of GI. The evaluation of atmospheric corrosion resistance test of Shougang Hot-Dip Zn-Al-Mg Alloy Coated Hot Rolled Steel is in progress （ Qingdao, Turpan, Wanning, Hainan and Jiangjin, Chongqing).

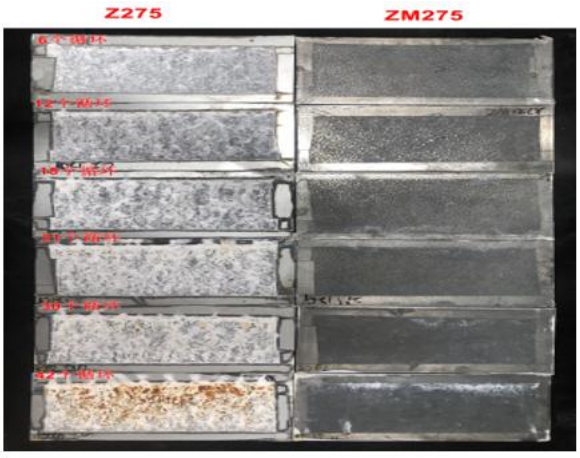




3.3.6 循环腐蚀试验 Cyclic corrosion test

在循环腐蚀试验条件下，GB/T 20854 循环腐蚀试验(ISO 14993:2001, IDT)： 被测材料经1000 小时循环腐蚀试验，125 周期，未见红绣。热浸镀纯锌镀层（Z275）材料经 30 周期循环腐蚀试验后表面出现零星红锈，经过 42 周期循环腐蚀试验后表面出现大量红锈，同期热基锌铝镁镀层（ZM275）未见红绣。

Under the condition of cyclic corrosion test, GB / T 20854 cyclic corrosion test (ISO 14993:2001, IDT): after 1000 hours cyclic corrosion test, 125 cycles, no red embroidery is found. After 30 cycles of cyclic corrosion test, sporadic red rust appeared on the surface of GI (Z275), and after 42 cycles of cyclic corrosion test, a large number of red rust appeared on the surface of Hot-Dip Zn-Al-Mg Alloy Coated Hot Rolled Steel (ZM275).



ZM275 1号样 1000小时

ZM275 2号样 1000小时

3.4 牌号及标准 Standard and grade

3.4.1 品种规格结构 Supply specification ranges

规格：0.8-6.0 mm*900-1600 mm。
镀层：80¯600g/m2 （双面）
标准：Q/SGJS 0014-2020a
后处理:涂油、钝化（三价铬钝化、耐指纹钝化）、钝化+涂油
卷径要求：610mm。

Specification: 0.8-6.0 mm * 900-1600 mm
Coating:80~600g/m2 (both sides)
Standard: Q/SGJS 0014-2020a
Post treatment: oiling, passivation (trivalent chromium passivation, fingerprint resistant passivation), passivation + oiling
Coil diameter: 610mmo

按钢种分类	牌号		主要用途
	钢种标识	镀层种类标识	
低碳钢	DD51D	+ZM	一般用
	DD52D	+ZM	冲压用
	SGHCD	+ZM	一般用

按钢种分类	牌号		主要用途
	钢种标识	镀层种类标识	
碳素结构钢/低合金钢	S220GD	+ZM	结构用
	S250GD	+ZM	
	S280GD	+ZM	
	S300GD	+ZM	
	S320GD	+ZM	
	S350GD	+ZM	
	S390GD	+ZM	
	S400GD	+ZM	
	S420GD	+ZM	
	S450GD	+ZM	
	S500GD	+ZM	
	S550GD	+ZM	
	SGH340D	+ZM	
	SGH400D	+ZM	
	SGH440D	+ZM	
	SGH490D	+ZM	
	SGH540D	+ZM	
高强度低合金钢	HD300LAD	+ZM	结构件、加强件
	HD340LAD	+ZM	
	HD380LAD	+ZM	
	HD420LAD	+ZM	
	HD460LAD	+ZM	
	HD500LAD	+ZM	
	HD550LAD	+ZM	
	HD700LAD	+ZM	
双相钢	HD330/580DPD	+ZM	结构件、加强件
铁素体-贝氏体钢	HD300/450FBD	+ZM	
	HD440/580FBD	+ZM	
	HD600/780FBD	+ZM	
复相钢	HD660/760CPD	+ZM	

3.4.2 公差范围 Tolerance range

厚度下限	厚度上限	PT.A 公差带	PT.B 公差带
0.8	1	0.1	0.08
1.001	1.2	0.12	0.1
1.201	1.6	0.14	0.1
1.601	1.9	0.15	0.12
1.901	2.499	0.2	0.18
2.5	3	0.2	0.18
3.001	6	0.24	0.2
宽度公差切边 0-5mm，不切边 0-20mm。			

3.4.3 化学成分 Chemical composition

钢种	C≤	Si≤	Mn≤	P≤	S≤	Ti[a]≤
DD51D	0.18	0.50	1.20	0.12	0.045	0.30

DD52D	0.12	0.50	0.60	0.10	0.045	0.30
SGHCD	0.15	0.80	0.05	0.05		
[a]可用 Nb 代替部分 Ti,此时 Nb 和 Ti 的总含量应不大于 0.30%。						

钢种	C≤	Si≤	Mn≤	P≤	S≤
S220GD、S250GD、S280GD、S300GD、S320GD、S350GD、S390GD、S400GD、S420GD、S450GD、S500GD、S550GD	0.20	0.60	1.70	0.10	0.045

钢种	C≤	Si≤	Mn≤	P≤	S≤	Al≥	Ti≤	Nb≤	Cu≤
HD300LAD	0.12	0.50	1.30	0.030	0.025	0.015	0.15	0.10	0.20
HD340LAD	0.12	0.50	1.50	0.030	0.025	0.015	0.15	0.10	0.20
HD380LAD	0.12	0.50	1.50	0.030	0.025	0.015	0.15	0.10	0.20
HD420LAD	0.12	0.50	1.60	0.030	0.025	0.015	0.15	0.10	0.20
HD460LAD	0.12	0.50	1.65	0.030	0.025	0.015	0.15	0.10	0.20
HD500LAD	0.12	0.50	1.70	0.030	0.025	0.015	0.15	0.10	0.20
HD550LAD	0.12	0.60	1.80	0.030	0.025	0.015	0.15	0.10	0.20
HD700LAD	0.12	0.60	2.10	0.030	0.025	0.015	0.20	0.10	0.20

钢种	C≤	Si≤	Mn≤	P≤	S≤	Al	Ti+Nb≤	Cr+Mo≤	B≤	Cu≤
HD330/580DPD	0.14	1.0	2.20	0.060	0.010	0.015～0.1	0.15	1.40	0.005	0.20
HD300/450FBD	0.18	0.50	2.00	0.050	0.010	0.015～2.0	0.15	1.00	0.005	0.20
HD440/580FBD	0.18	0.50	2.00	0.050	0.010	0.015～2.0	0.15	1.00	0.010	0.20
HD600/780FBD	0.18	0.50	2.00	0.050	0.010	0.015～2.0	0.15	1.00	0.010	0.20
HD660/760CPD	0.18	1.00	2.20	0.050	0.010	0.015～1.2	0.25	1.00	0.005	0.20

钢种	C≤	Mn≤	P≤	S≤
SGHCD	0.15	0.80	0.05	0.05
SGH340D	0.25	1.70	0.20	0.05
SGH400D	0.25	1.70	0.20	0.05
SGH440D	0.25	2.00	0.20	0.05
SGH490D	0.30	2.00	0.20	0.05
SGH540D	0.30	2.50	0.20	0.05
注：必要时可添加本表中不含的合金元素。				

3.4.4 力学性能 Mechanical property

牌号		屈服强度[a,b]	抗拉强度[a]	断后伸长率[a,c], A_{80mm}, %, ≥
钢种	镀层种类	MPa	R_m, MPa	
DD51D[d]	+ZM	—	270～500	22
DD52D[d]	+ZM	140～300[e]	270～420	26
[a]试样为 GB/T 228.1-2010 中的 P6 试样(L_0=80mm, b_0=20mm),试样方向为横向。 [b]无明显屈服现象时采用 $R_{p0.2}$,否则采用下屈服强度 R_{eL}。 [c]当镀层种类为 ZM 时,断后伸长率最小值可比表中规定值减小两个单位。 [d]力学性能有效期为制造完成后 1 个月内。[e]表面质量为 FB 时，DD52D 的屈服上限为 360MPa。				

牌号		屈服强度[a,b]	抗拉强度[a,c]	断后伸长率[a,d], A_{80mm}, %, ≥
钢种	镀层种类	Rp0.2、Reh MPa, ≥	R_m, MPa, ≥	
S220GD	+ZM	220	300	20
S250GD	+ZM	250	330	19
S280GD	+ZM	280	360	18
S300GD	+ZM	300	370	18
S320GD	+ZM	320	390	17
S350GD	+ZM	350	420	16
S390GD	+ZM	390	460	16

S400GD	+ZM	400	470	15
S420GD	+ZM	420	480	15
S450GD	+ZM	450	510	14
S500GD	+ZM	500	530	—
S550GD	+ZM	550	550	—

表中力学性能有效期为制造完成后 1 个月内。

[a] 试样为 GB/T 228.1-2010 中的 P6 试样(L_0=80mm, b_0=20mm)，试样方向为纵向。
[b] 无明显屈服现象时采用 $R_{p0.2}$，否则采用上屈服强度 R_{eH}。
[c] 除 S550GD+ZM 外，其他牌号的抗拉强度可要求 140MPa 的范围值。
[d] 当镀层种类为 ZM 时，断后伸长率最小值可比表中规定值减小两个单位。

牌号		屈服强度 [a,b] MPa	抗拉强度 [a] R_m, MPa	断后伸长率 [a,c], A_{80mm}, %, ≥	n 值 [a] $n_{10-20/Ag}$ ≥
钢种	镀层种类				
HD300LAD	+ZM	300～380	380～500	24	0.14
HD340LAD	+ZM	340～440	420～540	22	0.13
HD380LAD	+ZM	380～480	450～570	20	-
HD420LAD	+ZM	420～520	480～600	18	-
HD460LAD	+ZM	460～560	520～640	16	-
HD500LAD	+ZM	500～620	560～700	14	-
HD550LAD	+ZM	550～670	610～750	12	-
HD700LAD	+ZM	700～850	750～950	10	-

[a] 试样为 GB/T 228.1-2010 中的 P6 试样(L_0=80mm, b_0=20mm)，试样方向为纵向。
[b] 无明显屈服现象时采用 $R_{p0.2}$，否则采用下屈服强度 R_{eL}。
[c] 当镀层种类为 ZM 时，断后伸长率最小值可比表中规定值减小两个单位。

牌号		屈服强度 [a,b] MPa	抗拉强度 [a] R_m, MPa	断后伸长率 [a,c], A_{80mm}, %, ≥	n 值 [a]		BH_2 [a] MPa, ≥
钢种	镀层种类				n_{4-6}, ≥	$n_{10-20/Ag}$, ≥	
HD330/580DPD	+ZM	330～450	580～680	19	0.16	0.13	30

[a] 试样为 GB/T 228.1-2010 中的 P6 试样(L_0=80mm, b_0=20mm)，试样方向为纵向。
[b] 无明显屈服现象时采用 $R_{p0.2}$，否则采用下屈服强度 R_{eL}。
[c] 当镀层种类为 ZM 时，断后伸长率最小值可比表中规定值减小两个单位。

牌号		屈服强度 [a,b] Rp0.2、ReI MPa	抗拉强度 [a] R_m, MPa	断后伸长率 [a,c], A_{80mm}, %, ≥	BH_2 [a] MPa, ≥
钢种	镀层种类				
HD300/450FBD	+ZM	300～400	450～550	24	30
HD440/580FBD	+ZM	440～600	580～700	15	30
HD600/780FBD	+ZM	600～760	780～920	12	30
HD660/760CPD	+ZM	660～820	760～960	10	30

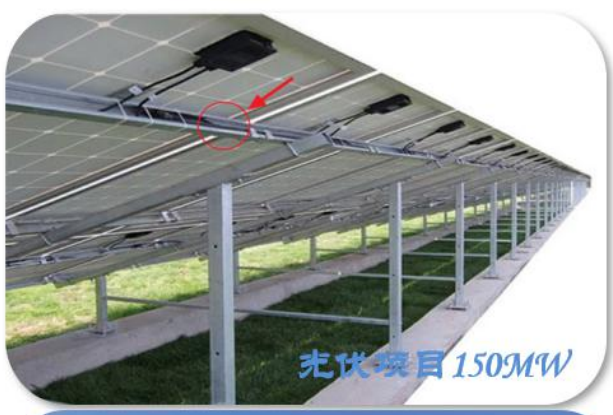
[a] 试样为 GB/T 228.1-2010 中的 P6 试样(L_0=80mm, b_0=20mm)，试样方向为纵向。
[b] 无明显屈服现象时采用 $R_{p0.2}$，否则采用下屈服强度 R_{eL}。
[c] 当镀层种类为 ZM 时，断后伸长率最小值可比表中规定值减小两个单位。

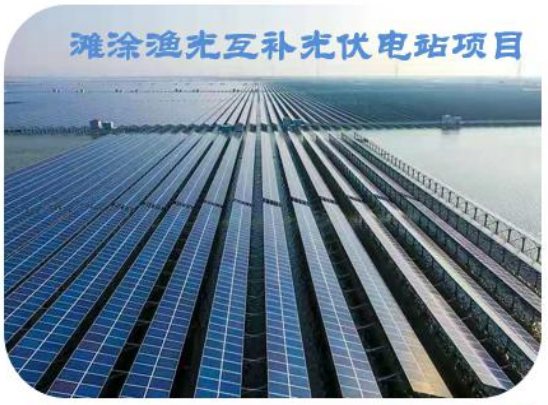
牌号		屈服强度 [a,b] MPa，≥	抗拉强度 [a] R_m, MPa，≥	断后伸长率 [a], A_{50mm}, %, ≥
钢种	镀层种类			
SGHCD	+ZM	205	270	-
SGH340D	+ZM	245	340	20
SGH400D	+ZM	295	400	18
SGH440D	+ZM	335	440	
SGH490D	+ZM	365	490	16
SGH540D	+ZM	400	540	

[a] 试样为 JIS Z 2241 规定的 No.5 试样，试样方向为纵向。

[b] 无明显屈服现象时采用 $R_{p0.2}$，否则采用上屈服强度 R_{eH}。

3.5 产品典型应用 Typical application of products





四、质量保障 Quality assurance system

4.1 体系认证 System certification

首钢京唐遵循整体策划、分步实施的原则，建立 ISO9001（质 量）、 ISO/TS16949（汽车行业质量）、ISO14001（环境）和 OHSAS18001（职业健康安全）“四标合一”管理体系。按照过 程方法识别了顾客导向、管理和支持性三类过程，搭建起建立文 件化体系。 2009.11.04 获得德国莱茵认证公司 ISO9001：2008 质量管 理体系认证证书 ； 2011.09.30 获得汽车行业 ISO/TS16949 管理体系认证证书。 2012.10.10 获 得 德 国 莱 茵 认 证 公 司 ISO14001：2004 + Cor.1:2009 管理体系认证证书 ； 2012 年 10.11 获得了了 BS OHSAS 18001:2007 职业健康安 全管理体系证书 2012.10.10 汽车行业 BS OHSAS18001:2007 管理体系认证 证书。2013.7.2 获得 ISO 10012：2003 测量管理体系认证证书。 2017.09.24 获得 IATF16949：2016 管理体系认证证书。

Following the principle of overall planning and step-by-step implementation, Shougang Jingtang has established the "four standards in one" management system of ISO9001 (quality), ISO / TS16949 (automobile industry quality), ISO14001 (environment) and OHSAS18001 (occupational health and safety). According to the process method, the customer-oriented process, management process and supporting process are identified, and a documented system is established. On November 4, 2009, we obtained the ISO9001:2008 quality management system certificate of Rhine certification company; On September 30, 2011, the company obtained ISO / TS16949 management system certification in automobile industry. On October 10, 2012, the company obtained the ISO14001:2004 + cor.1:2009 management system certificate of German Rhine certification company; On October 11, 2012, the company obtained the BS OHSAS 18001:2007 occupational health and safety management system certificate. On October 10, 2012, the company obtained the BS OHSAS 18001:2007 management system certificate of automobile industry. 2013.7.2 obtained ISO 10012:2003 measurement management system certification. Obtained iatf16949:2016 management system certification on September 24, 2017.

4.2 实验能力 Experimental capacity

首钢中试基地位于技术研究院内，拥有从冶炼到轧制再到后续处理的多套中试设备，可以对科技成果进行成熟化处理和工业化实验。自首钢中试基地正式投入使用后，已先后完成管线、汽车、高强、耐候等 7 大类 30 余个钢种的中试研发，并实现了相应的商业化生产。主要设备有：500kg 多功能中频感应炉、500kg 多功能真空感应炉、50kg 真空感应炉。

550mm 热轧试验轧机：成品最大宽度 400 mm，最小厚度 2mm，最大长度 5200mm；冷轧试验轧机：成品最大宽度 320 mm，最小厚度 0.2mm；多功能连退模拟器。

汽车板综合技术实验室：涉及汽车板成形技术、耐腐蚀及涂装工艺等汽车板使用技术相关领域研究，配置的仪器设备主要有：板材综合成形试验机、应变测量系统、薄板拉延筋／摩擦试验机、抗凹性试验机、三维显微分析系统、粗糙度仪、电化学分析仪等。

Shougang Pilot-plant Base is located in Shougang Research Institute of Technology. It is equipped with multiple sets of pilot machines, varied from smelting, rolling to post-treatment equipment. The processing of scientific products and industrial experiments could be conducted in this base. Since Shougang Pilot-plant Base was officially put into use, more than 30 grades, 7 main categories, of new grade steel have been developed at this site and implemented into

batch production. Major equipments are as follows: 500 kg multi-function medium-frequency induction furnace, 500 kg multi-function vacuum induction furnace, and 50 kg vacuum induction furnace.

550mm hot rolling testing machine: the maximum width of hot rolled strips is 400mm; the minimum thickness is 2mm; and maximum length is 5200mm; Cold rolling testing machine: the maximum width of final products reaches 320mm, and the minimum thickness is 0.2mm; Multi-functional continuous annealing simulator.

Auto-sheet comprehensive technology lab: investigates in the relevant area of auto-sheet application technology, such as the auto-sheet forming, anti-corrosion and coating techniques, etc. The main instruments equipped in this lab include: sheet forming testing machine, strain measurement system, strip drawbead/friction testing machine, dent resistance testing machine, 3D microscopic analysis system, roughmeter and electrochemical analyser, etc.





4.3 检测能力 Inspection capacity of the production line

产品质量检验由原料分析中心、冶炼分析中心、轧钢测试中心组成，具有完整的物理实验室、化学实验室、油质实验室、金相实验室、低倍实验室。从原料进厂、生产过程到产品出厂，都经过严格检验，全过程实现了自动化和信息化，为生产高端精品板材产品提供了可靠保证。 实验室通过了中国合格评定国家认可委员会实验室认可，符合 ISO/EC 17025: 2005《检测和校准实验室能力的通用要求》的要求，具备承担矿石、燃料、锰硅合金、钢铁、金属和金属制品、铁磁材料 6 大项中 32 小项检测服务的能力。根据 CNAS 认可准则要求，建立和实施质检监督部管理体系。

The quality inspection institution is constructed with raw material analysis center, smelting analysis center and steel rolling testing center. It is equipped with a set of experiment labs, including physics labs, chemical labs, oil quality labs, metallographic labs and low-magnification microscopic labs. From the raw material import, manufacturing to the final product delivery, all procedures are strictly controlled. Automation and informatization have been achieved for each procedure, which provides reliable assurance for producing high-end sheet products.

All labs have got the certificate of China National Accreditation (CNAS) of laboratory accreditation. And the labs also fulfill the requirements of ISO/EC 17025:2005. They possess the

capacity of detection service of 32 minor terms attributable to 6 main terms, which include mineral, fuel, manganese-silicon, steel, metal products and ferromagnetic materials. On the basis of the requirements of CNAS criteria, quality control system has been established and implemented.

4.4 质量承诺书 Quality warranty

承 诺 书

各位用户：

首钢京唐钢铁联合有限责任公司对用户郑重承诺如下：

首钢结构用锌铝镁镀层产品是首钢锌铝镁系列产品家族的一员，钢结构用锌铝镁镀层产品（符合 YBT 4761-2019、JIS G3323-2012、AS 1397-2011 中的 ZM 镀层、ASTM A1046/A1046M-2014 中的 type 1 镀层标准），自出厂之日起，在钢结构用途的正常加工和使用条件下，可以保证达到：

1. 30 年内，不会出现红锈
2. 35 年内，不会出现腐蚀穿孔

特别说明：

1. 正常储运和使用条件的含义如下：
   ① 在通常的气候条件下，且距离重工业和海岸线 1000 米以外
   ② 使用温度不超过 100℃
   ③ 用于首钢生产的镀层重量不低于 275 g/㎡（双面）的结构用锌铝镁镀层产品
   ④ 钢板表面不存在腐蚀异物
2. 本承诺书不对下列情况造成的损伤进行保证：
   ① 加工前后或加工过程中镀层受到机械或化学损伤
   ② 深冲压导致镀层减薄
   ③ 与不匹配的惰性物质接触（如铅、石墨、铜合金、不锈钢等）
   ④ 长时间与沉积物、铁屑或者油污接触
   ⑤ 与长期潮湿混凝土和木材接触
   ⑥ 受其他不可控或不可预见的人为或自然灾害的影响

用户须知：

本质量承诺自生效之日起，用户必须提供下列完整的可追溯资料：

① 合同号、钢卷号
② 工程竣工验收记录
③ 原始钢卷采购凭证
④ 其他必要的资料文件等

本承诺书即日起生效，最终解释权归首钢京唐联合钢铁有限责任公司制造部。

首钢京唐钢铁联合有限责任公司制造部

2020 年 9 月

30 years warranty for Steel Structure

Relating to the quality of zinc-aluminum-magnesium alloy coated steel in accordance with specifications including QSGJS 0014-2020, YBT 4761-2019, JIS G3323-2012, AS 1397-2011, and type 1 in ASTM A1046/A1046M-2014, this warranty covers the steel structure integrity of hot-dip zinc-aluminum-magnesium alloy coated steel sheet, coated with 275 g/m^2, used for steel structure for a period of 30 years without red rust and a period of 35 years without perforation, from the date of shipping by Shougang Jingtang United Steel Co., Ltd.

Application conditions

(1) Situated in areas with a distance of at least 1,000 meters from the seafront and without heavy industrial pollution (atmospheric corrosivity category C5 for steel from EN ISO 12944-2: 2017).

(2) Temperature does not exceed 100℃.

(3)Exposed to moderate corrosive emissions, in other words excluding the fallout of corrosive chemical products, deposits or particles of heavy metals such as lead, copper or stainless steel,alkaline products such as ash, impregnated wood, wet insulation materials such as graphite,scrap, soil, animal excrement or oil.

(4) Without mechanical or chemical damage on the coating.

(5) Without feed layer thinning due to deep stamping.

(6) Without the effects of other uncontrollable or unforeseeable disasters or natural disasters.

All warranty claims should be sent as soon as possible in detail the precise identification of the materials deemed to be non-compliant, including the order number, the invoice number, the coil number, the shipping date and the installation date and project acceptance record.

Final interpretation right belongs to Shougang Jingtang United Steel Co., Ltd. Manufacture Division.

Shougang Jingtang United Steel Co., Ltd. Manufacture Division

Sep 2020

五、服务体系 Product Service System

首钢京唐秉承以用户为中心的经营理念。 全面深化与用户的战略协作。 在新品研发、材料选用、资源配置、拓展合作渠道等方面进行深层次合作。

Upholding the user-centered operation philosophy, Shougang Jingtang deepens strategic cooperation with users in an all-round way through carrying out deep-level cooperation in such aspects as new product research & development, material selection, resource configuration and expansion of cooperation channels.

售前服务 Pre-sale service

- 提供详细的产品介绍材料与标准
- 为用户提供正确的选材指导
- Providing detailed instruction data and standards of Shougang Jingtang's sheets.
- Serving users with instructions on correct selection of material.

售中服务 In-sale service

- 合同跟踪
  提供详细的用户合同跟踪信息，确保交货期
- Order tracking
  Providing detailed user order tracking information to ensure punctual goods delivery.

售后服务 After-sale service

- 质保书查询
- 为用户提供网上质保书查询功能
- 技术支持
- 为用户提供首钢京唐产品在使用中各类问题的咨询以及使用现场跟踪服务
- 异议处理
- 快速有效的处理产品质量异议，包括现场的跟踪调整试验，提供异议材料紧急替代方案，满足用户生产需求
- 客户信息反馈
- 通过各种渠道收集客户信息，整理分类，改进产品，反馈用户，满足用户需求

- Query for certifica ted quality level
- Providing users with online query for certificated quality level.
- Technical supports
- Providing users with advisories for various problems met during the application of Shougang Jingtang's products and site tracking service on product application.
- Claim handling
- Quickly and effectively handling claims on product quality, including site tracking & adjustment tests, provision of emergent substitute proposal against claimed materials to meet users' production demands.
- Customer information feedback
- Collecting customers' information through various means, sorting and classifying the information, improving products accordingly, feeding back information to users and satisfying users' requirements.

以“用户为中心”的服务体系 User centered service system

布局区域公司及加工中心 Layout of regional companies and machining centers

实现协同保障 Realize collaborative support

5 个区域公司 5 regional companies

13 个剪切加工中心 13 cutting centers

首钢钢材加工中心分布图 Distribution of Shougang steel processing center

六、订货及联系方式 Order and contact information

6.1 订货所需信息 Necessary information

订货时用户需提供下列信息

A user needs to provide following information while placing an order

1 产品名称
Product designation

2 本产品标准号
Product standard number

3 牌号
Steel grade

4 产品规格及尺寸精度（包括厚度、宽度、长度）
Product specification and size accuracy(Incl. thickness, width and length)

5 边缘状态
Edge status

6 表面质量级别
Surface quality level

7 不平度精度
Flatness accuracy

8 涂镀产品需提供镀层种类、镀层重量及表面处理
Coating type, coating weight and surface treatment in case of coated products

9 热镀锌产品需提供表面结构
Surface structure in case of hot dip galvanized products

10 重量
Weight

11 包装方式
Packing method

12 用途
Application

13 其他特殊要求
Other special requirements

6.2 产品标签及包装方式 Product tags and packing methods

标志内容按需要可包括：商标、供方名称、品名、标准、规格、捆包号、用户合同号、炉号、镀层重量、生产日 期、计重方式、净重、毛重、收货单位、防护标志等。

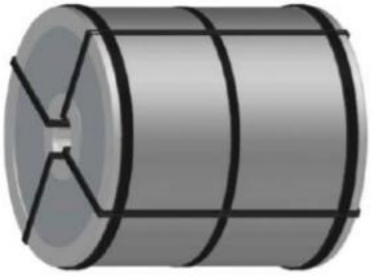
The Shipping Mark should consist of: Trade mark, Seller's name, Product name, Applicable standards, Specifications, Package No., Contract No., Heat No., Weight of zinc film, Production date, Weighing method, Net weight, Grossweight, Consignee and Protection symbols, etc..

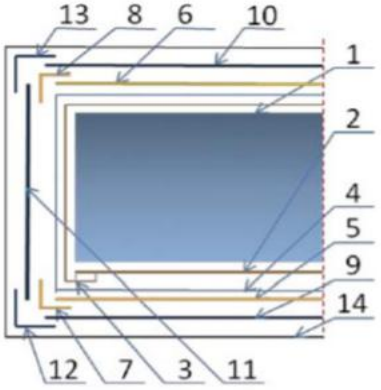
每批交货的钢板及钢带（钢卷）必须开具质保书。质保书上按需要应注明：商标、供方名称、品名、标准、产品规格、 钢卷号或捆包号、用户合同号、炉号、重量、订货单位、件数、标准中规定的各项试验的结果、交货日期、质保书签 发日期、质量管理部门负责人的签字等。

Each shipment of delivered steel sheets or steel coils should be attached with the Quality Certificate. The Quality Certificate should cover: Trade mark, seller's name, Product name, Applicable standards, Product specifications, Coil No. & Package No., Contract No., Heat No., Weight, Buyer, Quantity, Test Results as per standards, Delivery time, Quality Certificate issuance date, Signature by Chief of the Quality Control Dept., etc..

包装方式 Packing methods

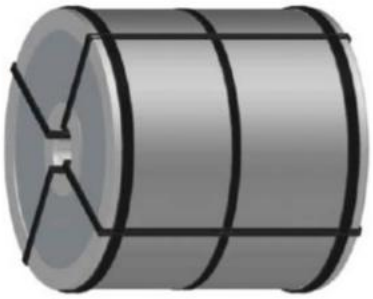
普通包装方式 General packing method

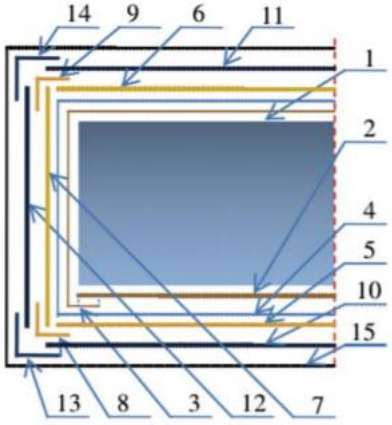




1. 钢卷	1.coil
2. 内芯纸板	2.inner packing boarding
3. 防锈包装纸	3.antirust paper
4. 普通工业膜	4.industrial film
5. 内周瓦楞纸护板	5.insidecorrugated paperprotective plate
6. 外周瓦楞纸护板	6.outsidecorrugated paper protective plate
7. 内纸护角	7.inside paper angle bead
8. 外纸护角	8.outside paper angle bead
9. 内周钢护板	9.inside iron protective plate
10. 外周钢护板	10.outside iron protective plate
11. 端部塑料护板	11.round platic protective plate
12. 内钢护角	12.inside iron angle bead
13. 外钢护角	13.outside iron angle bead
14. 径向钢捆带	14.radial binding belt

精包装方式 Advanced packing method





1. 钢卷	1.coil
2. 内芯纸板	2.inner packing boarding
3. 防锈包装纸	3.antirust paper
4. 普通工业膜	4.industrial film
5. 内周瓦楞纸护板	5.insidecorrugated paper protective plate
6. 外周硬纸护板	6.outsidecardboard protective plate
7. 端部瓦楞纸护板	7.round corrugated paper protective plate
8. 内纸护角	8.inside paper angle bead
9. 外纸护角	9.outside paper angle bead
10. 内周钢护板	10.inside iron protective plate
11. 外周钢护板	11.outside iron protective plate
12. 端部钢护板	12.round iron protective plate
13. 内钢护角	13.inside iron angle bead
14. 外钢护角	14.outside iron angle bead
15. 径向钢捆带	15.radial binding belt

6.3 钢材加工配送中心联系方式

首钢鹏龙钢材有限公司
地址：北京市顺义区李桥镇任李路 200 号首钢冷轧薄板厂区内
电话：010-81470108

苏州首钢隆兴加工配送中心
地址 :江苏省太仓市港口开发区沪太新路 400 号
苏州首钢钢材加工配送有限公司
地址：江苏省太仓市沪太新路 400 号
电话：0512-53995388

宁波首钢浙金钢材有限公司
地址 :浙江省宁波市镇海区招宝山街道平海路 298 号
电话：0574-86283086

宁波首钢汽车部件有限公司
地址：浙江省宁波市杭州湾新区兴慈二路 528 号
电话：0574 - 23455513 0574-23455501

广东首钢中山金属钢材加工配送有限公司
地址：广东省中山市港口镇沙港东路 6 号
电话：0760-89922628

佛山首钢中金钢材加工配送有限公司
地址：广东省佛山市南海区九江镇沙咀村敦上大道 19 号
电话：0757-81861699

首钢青岛钢业有限公司
地址：山东省青岛市黄岛区经济技术开发区茂山路 884 号
电话：0532-86682569

鄂尔多斯市包钢首瑞材料技术有限公司
地址：内蒙古鄂尔多斯东胜区装备制造基地汽车零部件园区
电话：0477-8399080

株洲首鹏汇隆钢材加工配送有限公司
地址 :湖南省株洲市天元区栗雨工业园黑龙江路 605 号汇隆科技园内
电话：0731-28626260

天津物产首钢钢材加工配送有限公司
地址 :天津市滨海高新区高新二路 216 号

电话：022-59060812

哈尔滨首钢武中钢材加工配送有限公司
地址：哈尔滨经济技术开发区哈南工业新城核心区哈南三路 18 号
电话：0451-51640011　0451-51640025

沈阳首钢钢材加工配送有限公司
地址：辽宁省沈阳市经济技术开发区开发二十三号路 4-2 号
电话：024-83811431 024-83960710

重庆首钢武中汽车部件有限公司
地址：重庆市北碚区蔡家组团同兴工业园
电话：023-63173606

6.4 联系方式

国内销售公司联系方式

（1）北京首钢股份有限公司营销中心
地址：北京市石景山区古城西路首特钢创业大厦
电话：010-88294501

（2）天津首钢钢铁贸易有限公司
地址：天津市东丽区军粮城工业园伯克利大厦
电话：022-84818183　　022-84914552
传真：022-8491818191　022-84918191

（3）上海首钢钢铁贸易有限公司
地址：上海市浦东大道 1200 号巨洋大厦 9 层
电话：021-50930789-401　021-50930789
传真：021-50938260　　021-50931008

（4）山东首钢钢铁贸易有限公司

地址：青岛市南区香港中路 10 号颐和国际 A 座东厅 3704

电话：0532-80667084　0532-80667080

传真：0532-80667084　0532-80667087

（5）武汉首钢钢铁贸易有限公司

地址：武汉市经济技术开发区（沌口）东风三路 1 号东合中心 E 座 10 楼

电话：027-59710286　　电话：027-59710209

传真：027-59710258

（6）广州首钢钢铁贸易有限公司

地址：广州珠江新城华夏路 49 号津滨腾越大厦北塔 23A
广州天河区珠江新城华夏路 49 号津滨腾越大厦北塔 23A

电话：027-59710286　020-22123069

传真：027-59710258　020-22123691

国外销售公司联系方式

（1）中国首钢国际贸易工程有限公司

地址：北京市海淀区西直门北大街 60 号

电话：010-82291388

传真：010-82295000

China Shougang International Trade & Engineering Corporation

Address:No.60, North Street, Xizhimen Haidian District, Beijing,China

Tel: 010-82291388

Tax: 010-82295000