



江苏苏讯新材料科技有限公司

SUXUN Jiangsu Suxun New Material Co., Ltd.

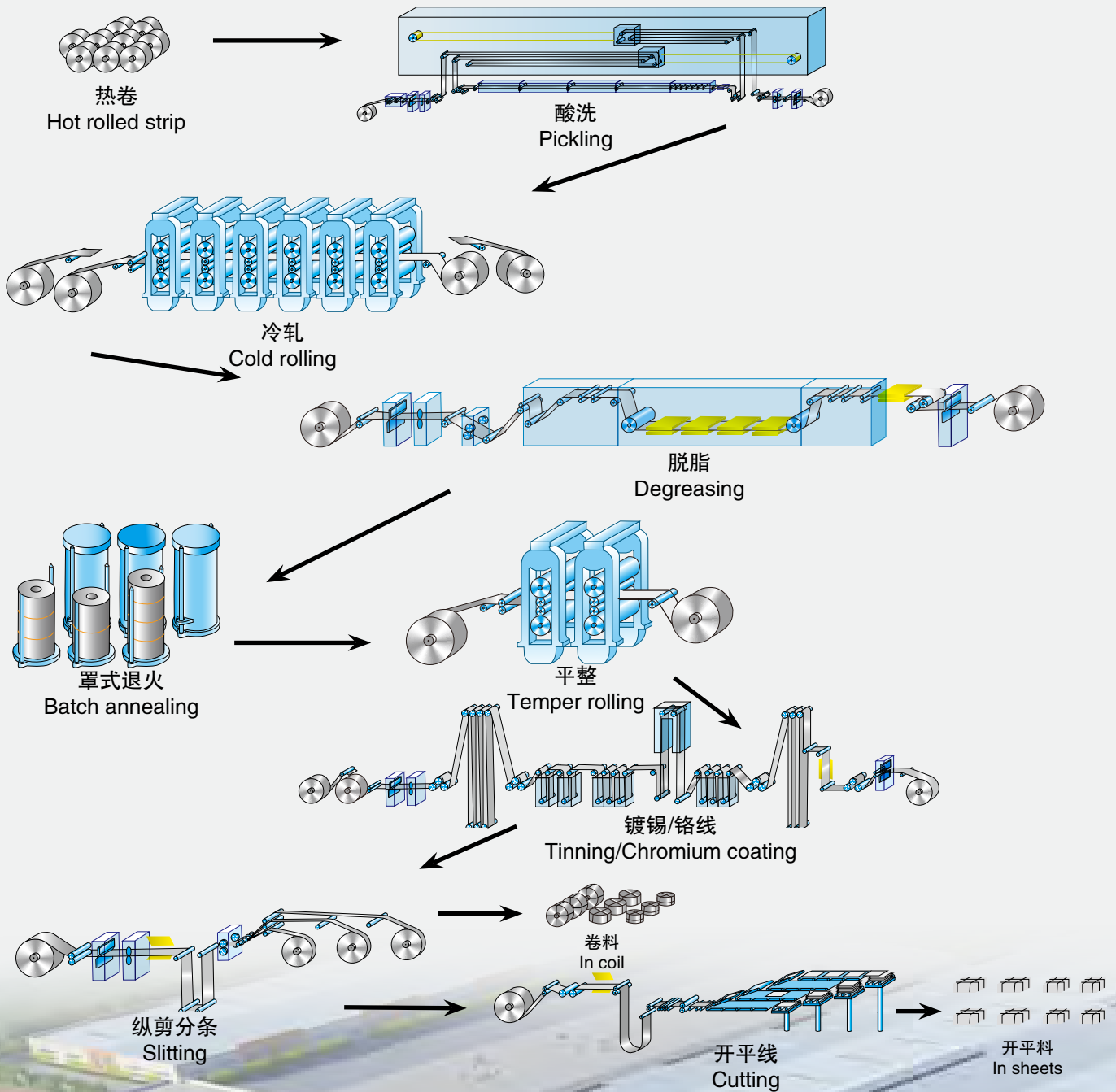


Suxun Steel

Your best choice for metal packaging

镀锡、镀铬生产线

Tinplate/Tin free steel Production



公司简介

The company

座落于素有“虞姬故里、花木之乡”的沭阳，江苏苏讯新材料科技有限公司是集冷轧板、镀锡、镀铬板的研究，生产，经营于一体的高新技术企业。东临连云港港口，交通十分便利，其固定资产7.2亿元，占地300亩，现有员工400多人，各类专业人员80多人。

公司自2007年成立以来，坚持以“信誉至上，用户第一”为宗旨，不断扩大投资规模，提高综合管理能力，调整优化产品结构，以创新的姿态去摸索实践出一套现代企业发展模式。公司拥有目前国内最先进1200电镀铬生产线1条，国内首条1150六辊六机架冷连轧机组,50万吨推拉式酸洗线1条,脱脂清洗线机组2条,罩式退火炉15组,双架平整机组1条。

产品广泛应用于食品包装、光纤光缆、家电板等行业。主要品种有皇冠瓶盖用马口铁、食品三片罐底盖料、食品两片罐罐身料、油墨罐用料、化工罐用料和光纤光缆用钢塑复合带基带及电饭煲用料等。

秉承“团结、勤奋、开拓、创新”的企业精神，公司持之不懈的自我要求为客户提供更好的产品和服务。其产品远销至东南亚，中东，欧洲等二十多个国家和地区。在国际上享有盛誉。千里之行，始于足下，苏讯人将激情迸发，众志成城，为一个更先进，更具活力，更宏大的目标而努力。

Suxun steel had been established in 2007.As one of the Chinese largest production site for metal package, company produce thinned and special chromium coated steel (TFS)&cold rolled sheet steel (CRC) in thickness ranging from 0.13mm to 0.50mm. As the biggest TFS Supplier of crown caps in Asian,Suxun steel supplies over 30 customers in 20countries , specially in Asian.

More than 80% of the material produced by Suxun Steel is used in making crown caps,food can ends , general can (chemical or technical),steel for cable wrapping. In 2014, it has been certificated by ISO 9001. .

Found as Tin free steel mill, the plant started chromium coating operation in 2007. In 2009 invested “Hengfeng steel” , the second TFS mill which has already occupied 70% market of steel for crown caps.In 2013, Suxun steel commissioned first six–stand tandem cold rolling mill in China.

With the completion and commissioning of a new chromium coating line for wide strip(1200mm) in 2014, and a new electrolytic tinning line will start trial running in July 2015, Suxun steel will expand its production capacity to 50,0000 metric tons of coated material.Today Suxun steel employs more than 400 people.



酸洗 Pickling



Hot rolled steel strip is the raw material for the production of tinplate. Suxun steel buys it in coils weighing between 15 and 20 metric tons from Baosteel/Shousteel/Heibeisteel etc. This hot rolled wide strip, also called “hot strip” , is 1.8mm to 4.0mm thick. The process at Suxun steel begins with the pickling of the hot rolled strip. The aim is to remove the scale formed during hot rolling in a continuous pickling line.

Hydrochloric acid is used as the pickling agent in concentrations of around 20 percent and at temperatures of around 80°C. All working tanks are separated by squeegee rolls and work with their own closed circuit.

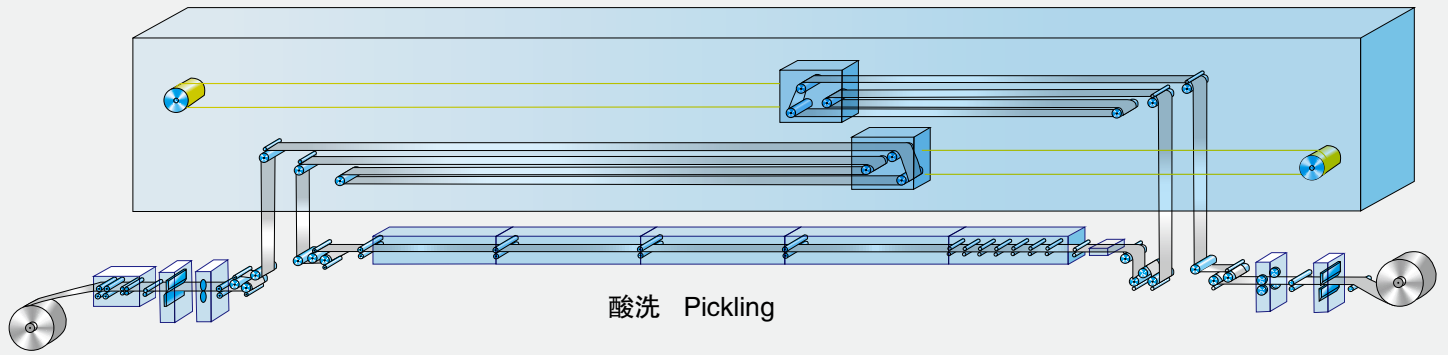
With a line speed of 180m/min and a total pickling length of 150 meters, it will take approximately 50 seconds to produce a scale-free surface.

Finally, the strip is oiled to prevent corrosion, separated and recoiled to weights up to 20 metric tons; the strips can be side-trimmed before winding, depending on their intended application.

热轧钢带是生产马口铁的原料，苏讯从宝钢、首钢、河北钢厂等国有炼钢厂购进卷重15~20吨、厚度1.8mm ~4.0mm 规格的原料。

整个生产过程从热卷酸洗开始，苏讯推拉式酸洗线采用世界上最先进的浅槽紊流酸洗工艺，酸液从酸槽两端喷入，在酸洗槽内形成很强的紊流。经前4道酸洗和后2道盐水洗，其能有效的去除钢板表面的氧化物等杂质，钢表面洁净、光亮，酸洗时间短，酸洗效率高。

整条生产线长150米，最高生产速度为180米/分，酸洗后的热卷根据其用途切边后发往冷轧车间进一步加工。

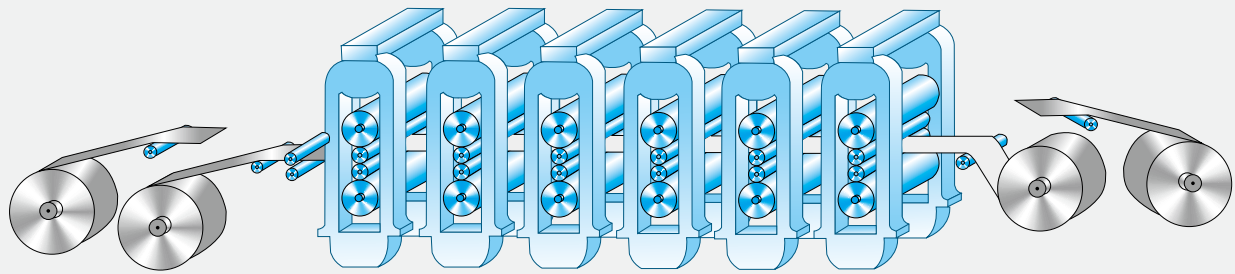


线数	1
酸洗线总长度	150米
酸洗 和清洗线长度和	91米
钢厚度	1.8~4.0mm
钢宽度	700~1050mm
最大酸洗速度	180meter/min
酸洗液	盐酸
酸洗温度	80℃
浓度	20%

line NO	1
Total length	150meters
Length of the pickling and rinsing tanks	91meters
Hot rolled strip thickness	1.8~4.0mm
Hot rolled strip width	700~1050mm
Strip speed pickling section(max.)	180meter/min
Pickling solution	hydrochloric acid
Temperature	80℃
Concentration	20%

冷轧

Cold Rolling



冷轧 Cold rolling

First six-stand tandem cold rolling mill in China. They consist of six four-high stands in tandem, in which the strip is rolled between two work rolls. Because of the high rolling forces, the work rolls are supported by large diameter back-up rolls.

The length of the steel strip is increased during cold rolling, depending on the reduction in thickness in the individual stands. The maximum speed in the last stand of the six-stand tandem cold rolling mills is 800m/min

For ensuring highest production quality within the required, extremely close tolerance the tandem cold rolling mills include, among other technical features:

- Close strip thickness tolerance achieved by automatic thickness control
- Automatic coil feed and discharge
- Automated work roll change on the six-stand tandem mill
- Roll bending devices on each stand and continuous strip flatness measurement and control.

In order to achieve major reductions (thinner thicknesses) at high speeds, a lubricant consisting of a rolling oil/water mixture is used in the roll gap. In addition, the strip and rolls have to be cooled with water to absorb the heat generated during rolling.

The rolling process is computer controlled, thus ensuring the constant monitoring of production and quality.

After one year trial running, the mill improve thickness tolerances, strip flatness and the certainty of their availability.





国内首条六机架冷轧机组。由6台4轴辊连轧机组组成。钢板经轴承辊挤压，因中间的轴辊压下量极大，其需要有两边的大轴辊支撑。

经过冷轧后，钢带的厚度会相应的变薄，对应的长度相应的增加。生产线最高速度为800米/分钟。

为了确保高质量和最小公差，六连轧机组同时必须满足如下条件：

- 通过自动厚度控制仪实现厚度公差最小化
- 自动送料和成品分切
- 六连轧机组全自动换辊
- 弯辊校直装置持续有效的控制版面平整度

为确保轧机高速、高效的轧制钢板，机组运行中要不间断的在轴辊间注入一种水油混合液（乳化液）。此外，要用水冷却机组运行中产生的热量。

所生产过程是通过电脑控制，其有效的保证了生产进程和产品质量的监控。

进过一年以来的试运行，如今的六连轧机组可以有效控制产品厚度公差，保证钢板的平直度，稳定的机械性能。

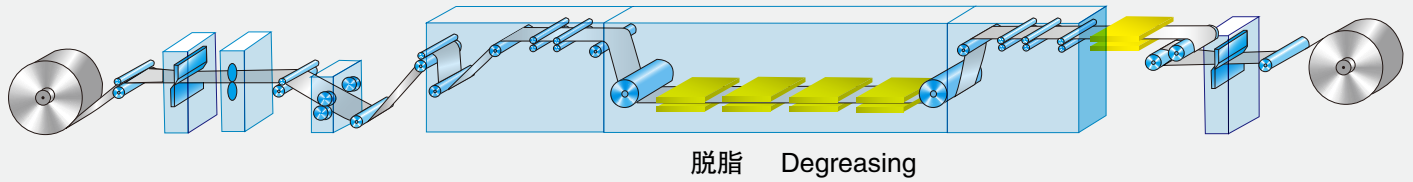


Six-stand Tandem Cold Rolling Mill	
Line NO	1
Strip width	700~1050mm
Entry thickness hot strip	1.8~4.0mm
Finished thickness cold strip	0.18~0.5mm
Rolling Speed(max.)	800meter/min
Coil diameter(max.)	2000mm
Pay-off reel	2000mm
Coiling reel	2000mm
Coil Weight(max.)	20T
Pay-off reel	20T
Coiling reel	20T
Diameter	330mm
Work rolls	450mm
Back-up rolls	1150mm
Barrel length	1200mm
Total power installed	22.5mw

六连轧	
线数	1
钢带宽度	700~1050mm
入料热轧钢带厚度	1.8~4.0mm
冷轧后钢带厚度	0.18~0.5mm
最大速度	800meter/min
钢卷直径（最大）	2000mm
入料口处直径	2000mm
出料口处直径	2000mm
卷重量（最大）	20T
入料口处重量	20T
出料口处重量	20T
轴辊直径	330mm
冷轧辊直径	450mm
支撑辊直径	1150mm
辊长	1200mm
安装总功率	22.5mw

脱脂

Degreasing



Before annealing, the strip must be cleaned of contaminations. For this purpose Suxun steel has two degreasing lines, the individual coils are welded into a continuous strip run through the cleaning process. In a first step a hot alkaline solution is sprayed onto the strip and brushes remove 80 percent of the water and palm oil emulsion from the cold rolling process. The following electrolytic degreasing process makes the strip metallurgically clean. Then, the strip is brushed again, rinsed, dried and rewound into coils weighing up to 15 metric tons.

在退火之前，钢带必须要清洗去除表面污垢。苏讯为此置备了两条脱脂线。单独钢卷通过首尾焊接形成一条不间断的钢带，进入脱脂线进行生产。首先，将热的碱性溶液喷洒在钢带上进行刷洗，此可以去除80%的在冷轧过程中产生的油污。接下来通过电解脱脂工艺，使钢带表面亮洁呈现金属光泽。之后钢带经再次刷洗，漂净，烘干，最后重新卷成每卷为15吨左右的钢卷。





degreasing	
Line NO	2
Total Length	110meter
Strip thickness	0.18~0.5mm
Strip width	700~1050mm
Strip speed(max.)	400meter/min

脱脂	
线数	2
脱脂线长度	110meter
钢带厚度	0.18~0.5mm
钢带宽度	700~1050mm
钢带最大速度	400meter/min

罩式退火

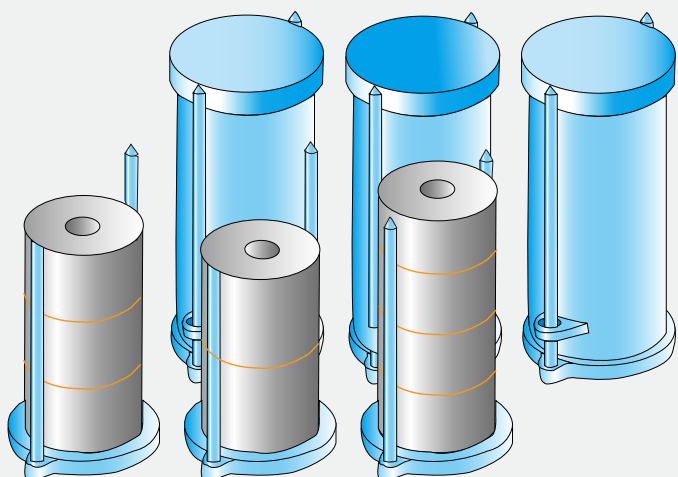
Batch Annealing

Cold rolling makes the strip hard and brittle, in this condition, it is not suitable for use as packaging material. Annealing of the degreased strip restores the necessary ductility.

Batch annealing. The crystal structure of the strip, which is destroyed during cold rolling, is restored in a treatment lasting several days and which includes heating and cooling.

Several coils stacked one on top of the other with a total stack weight of up to 80 metric tons are placed on a base and covered with an inner cover and a furnace cover. An oxygen-free protective atmosphere of nitrogen or hydrogen is used to prevent oxidation of the strip and to provide for an effective heat transfer. The annealing temperatures are in the range of 552 °C —800°C.





罩式退火 Batch annealing

Batch Annealing	
Furnace covers	15 sets(30 pcs)
Annealing bases	30
Annealing temperature	552~800 °C
Natural gas per cover	80Nm ³ /h
Protective atmosphere per cover	8~15Nm ³ /h

退火	
火炉数	15组
退火底座	30
炉内温度范围	552~800 °C
炉内天然气密度	80Nm ³ /h
其他密度	8~15Nm ³ /h

冷轧之后，钢带变得又硬又脆，这种情况下，其已不适合做包装材料。通过退火处理，其能有效的恢复钢板的韧性。

罩式退火，通过罩式退火持续数天的反复加热，冷却，钢带冷轧中破坏的分子结构能有效的恢复原状。

罩式炉内，钢卷一个一个的对应摆起来，总重量可达80吨。里有内罩封闭，外有炉罩封闭。由氮气或氢气组成的无氧环境不仅能防止钢带氧化，还可有效的传导热量。退火炉内的温度范围在552℃—800℃。



平整

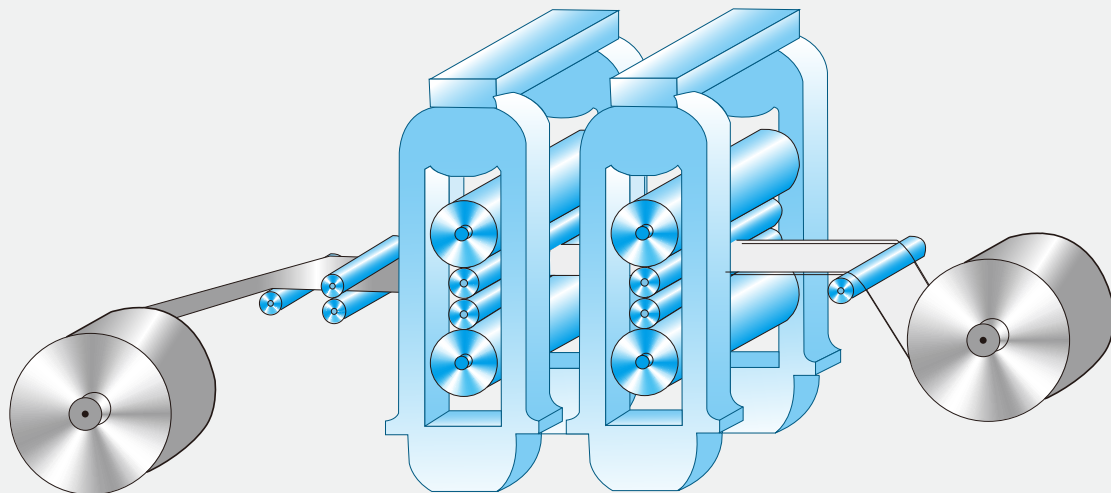
Temper Rolling



Although the crystal structure has been restored by the annealing process, the annealed material cannot yet be used for fabrication into tinplate containers, since this would result in heavy kinks and non-uniform forming behavior. In order to give the strip the necessary forming properties, the annealing process is followed by dry rolling (without lubricant or coolant), also called temper rolling. The overall reduction (temper grade) varies between 0.4 percent and 2 percent. In this operation, the roughness required for the later application is produced, which the flatness of the strip is improved.

Furthermore, temper rolling mills of Suxun steel also have the ability of wet temper rolling. For the customers, this double-reduced steel (DR) means a saving of material, because lower thickness are compensated by higher strength.

After temper rolling, the strip can be sold as black plate in coils, or cut into sheets. However, by far the greater part of the output is coated before leaving the plant.



平整 Temper rolling



Temper Rolling	
line NO	1
Strip thickness	0.18~0.5mm
strip width	700~1050mm
Rolling speed(max.)	400meter/min
Coil diameter(max.)	2000mm
Coil weight(max.)	
Pay-off reel	20T
Coiling reel	20T
Diameter	
Work rolls	450
Back-up rolls	900
Barrel length	1200mm
Total power installed	18MW

精平整	
线数	1
钢带厚度	0.18~0.5mm
钢带宽度	700~1050mm
最大转速	400meter/min
最大卷直径	2000mm
卷重(最大值)	
入料口处最大卷重量	20T
出料口处最大卷重量	20T
直径	
精轧辊直径	450
支撑辊直径	900
辊长	1200mm
安装总功率	18MW

通过退火处理，钢带晶体结构得以恢复，但是即使如此，退火后的钢材还不能直接应用到制作最终产品上，因为其会出现翻边，不平整等问题。为了保证钢带的平整性，在退火之后，需要对钢带进行干平整（即平整时不加润滑剂和冷却剂）。干平整后，钢带硬度会有0.4%~2%的变化，同时钢带的平整度得以提高。

不仅如此，苏讯的平整机通过油平整可以轧制出更薄更硬的钢带，我们称之为二次冷轧。对客户而言，钢带厚度减少的同时，其硬度对应的增加了，二次轧压的钢带更能节省原料。

经过精平整后，钢带可以已成卷基板销售，或开平销售。但真正能大批量出货的还是接下来我们要介绍的镀锡（或镀铬）板。



镀锡/铬线

Tinning /Chromium Coating.

It is only at the next stage that the blackplate is transformed into packaging steel. For this purpose SuXun has Two chromium coating line and one tinning line is under construction .

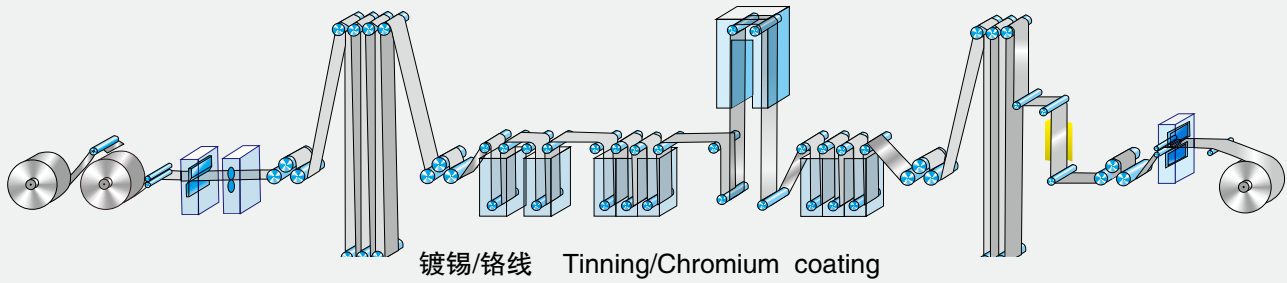
In the chromium coating lines, the coils of steel strip are first welded into a continuous strip. The amount of strip held in the looping towers permits the continuous passage of the strip through the chromium section, even during down-times required for welding or changing the coils. After thorough cleaning by an electrolytic alkaline treatment and by pickling with subsequent rinsing, the strip, as a cathode, passes through a chromium-containing electrolyte between two banks of chromium anodes.

The chromium of the anodes is dissolved electrolytically and is then deposited on the strip. chromium can be electrolytically deposited in any required thickness. Nowadays, chromium coatings generally come in thickness ranging from 80mg/m² to 120mg/m². The process ends with oiling using just a few milligrams of oil per m² to improve the sliding properties of the strip during processing at customer plants.ECCS can be used for any application where welding is not required

An operator inspects the running strip for surface defects. Production know-how based on long years of experience, combined with extensive controls and quality assurance measures, guarantees the uniformly high quality of Suxun steel's TFS.

A similar process to chromium is used to produce tinning coated material, The tinning is deposited on the strip in thickness between 1.0g/m² to 5.6g/m² by feeding an electric current.





基板只有经过电镀加工处理后，其才能应用于包装材料。为此苏讯配备了两条镀铬线，一条镀锡线在建。

在镀铬线，不同的钢卷通过首尾焊接成一条不间断的钢带。俩边的进出口活套能使整条线不间断的运行，解决了因焊接（或换卷）不能继续传送钢带问题。通过二次脱脂、酸洗、漂洗，钢带此时作为一个负极体，穿过充满含铬电解质的阳极电解槽。

在电镀槽内，带正电子的铬分子被溶解电镀在含负极电子的钢带上。电镀量可以按照要求来设定，适用于任何厚度的钢带。当今，镀铬量范围在80mg/m² to 120mg/m²。钢板在电镀结束后会涂上一层浅浅的油膜，其能增进钢带表面的润滑性。镀铬铁可以被用在很多领域，但是唯一缺点就是其不易被焊接。

镀铬线有专人监察钢带表面是否有瑕疵,基于多年的生产经验，我们已经谙熟生产工艺，结合对产品质量的综合管控使得苏讯的镀铬板达到高质量水平。

类似的工艺也适用于镀锡板，通过对电流的控制，镀锡层的厚度控制在1.0g/m²~5.6g/m²。



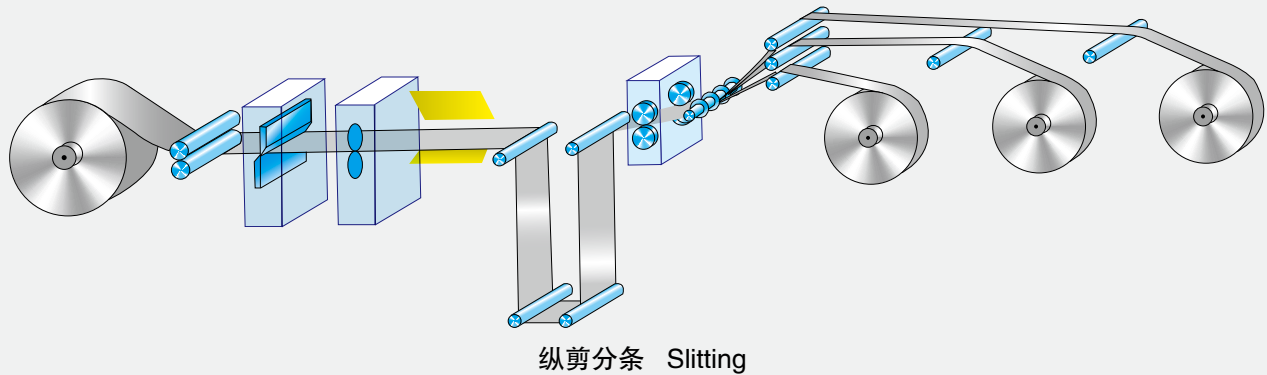
Tinning/Chromium Coating	
Line NO	2
Total length	140meter
Strip thickness	0.1~0.6mm
Strip speed(max.)	180meter/min
Coil weight(max.)	
Pay-off section	20T
Coiling section	20T
Coil diameter(Max.)	1800mm
Eleetrolyte	sodium hydrate

镀铬线	
线数	2
镀铬线长度	140meter
钢带厚度	0.1~0.6mm
钢带最大速度	180meter/min
卷重（最大值）	
入料口处最大卷重	20T
出料口处 最大卷重量	20T
最大卷直径	1800mm
电解质（比如甲磺酸）	氢氧化钠



分切

Slitting and Cutting

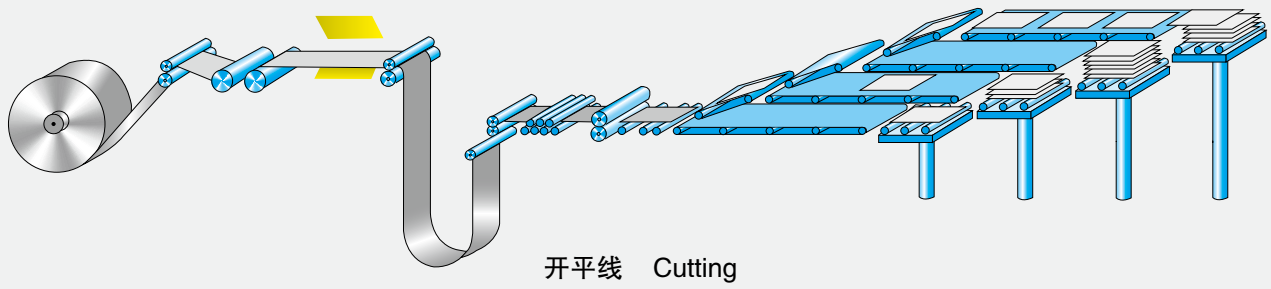


More and more, Tin free steel is ordered by customers for delivery in coils, if not, the product is cut to length as desired on cutting lines with direct drives or cut into scrolled sheets on a scroll cutting line.

Online sensor systems check each sheet for dimensional tolerance. Defective sheets semi-automatically, thus ensuring that only high-quality products leave the plant.

Precious and modern cutting technology makes it possible to keep within even the closest width tolerances.





现在越来越多的客户要求，镀锡板以成卷的方式出货。也有一些客户要求平板出货，或者波剪开平出货。

线上自动传感器会自动测量每张板的尺寸。不合格的产品将被分拣出来，这样就能保证留下来的是高质量的产品。

现代精密的分切技术使得钢板分切能实现最小公差化。



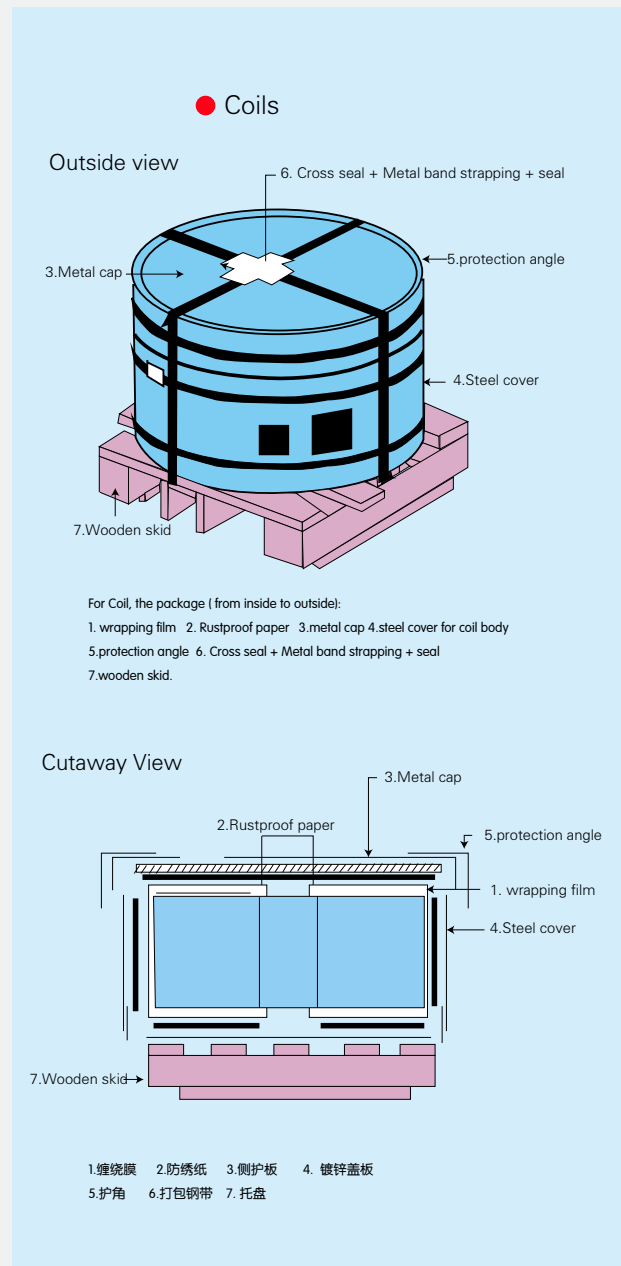
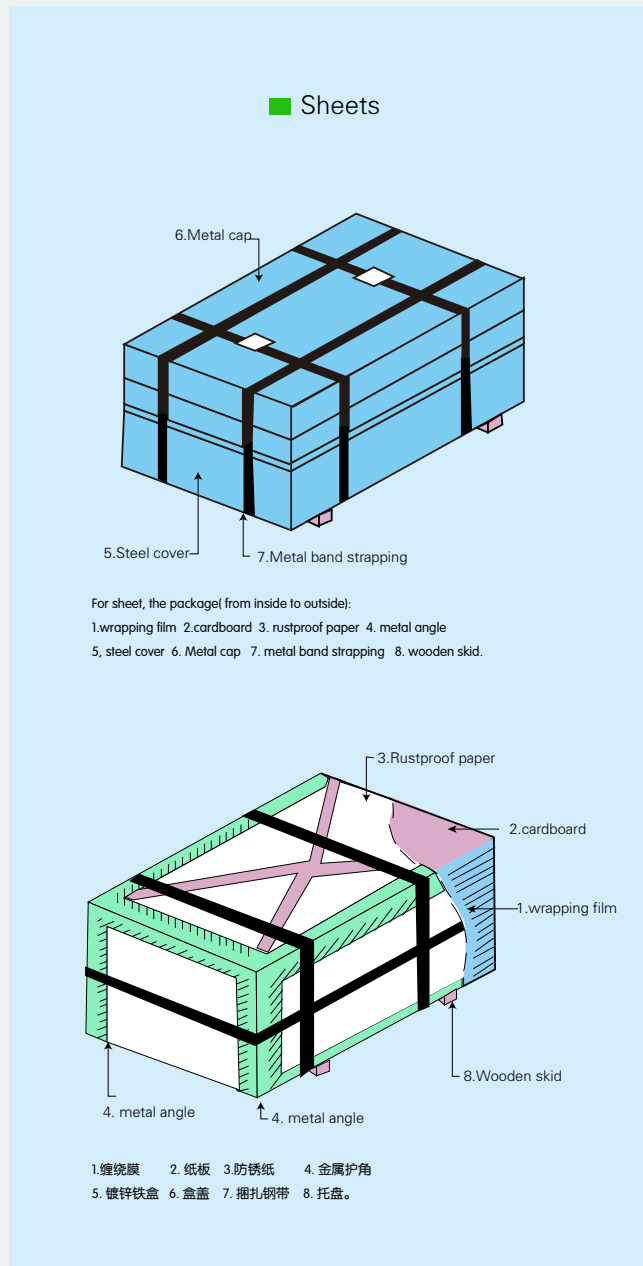
包装说明

Packing and marking

成品产品包装如下，此包装能有效的保护产品在运输中受到损坏。

外包装上贴一张对应产品说明的标签，除此包装内还会放一张说明卡。

标签和卡片会显示如下信息：规格，尺寸，级别，开平张数，重量，卷号和生产日期等。





Packing and marking

The products are packed in the manners shown below in order to prevent them from being damaged.

A label that indicates the manufacturing history is affixed to the outside of the package. In addition, a service card is contained inside.

The label and service card show the following information on each packaging: specification, size, grade, number of sheets (for cut-to-length products), weight, inspection number, coil number, and production date.



集装箱

Container package



For coil, the package: when the pallet upload onto the container, first of all to use the small pieces of wood stuck at the skid feet, then cross the steel rope into each pallet and stick it with the container. All this is to protect the coils slip around and fall down upon the container. Afterwards desiccant is sprayed in the container to keep the steel from rust.

卷料出货：当装上货物后，首先托盘底部要用小木块卡住，之后用钢丝绳把钢卷和集装箱固定在一起。最后整个集装箱内撒上干燥剂。



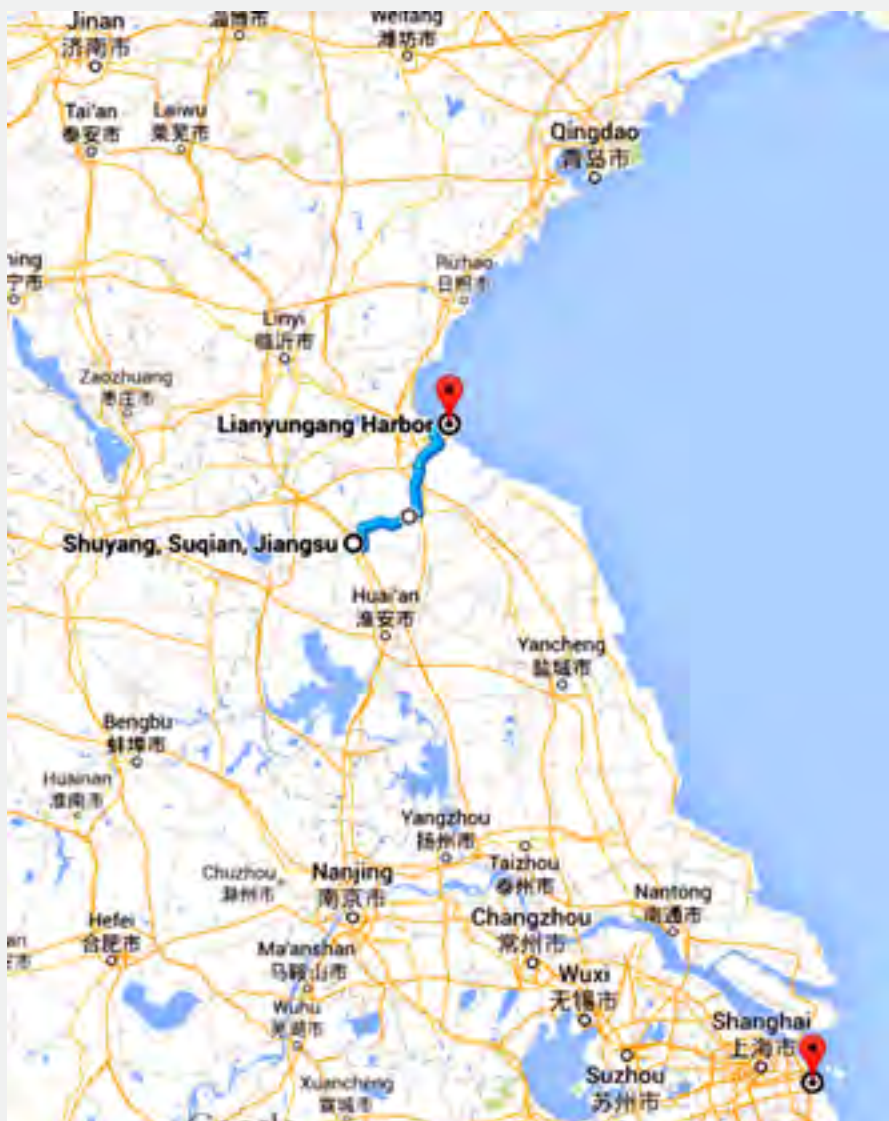


For sheet, the package: upload the sheet skids and stack two layers per the photo, use the small pieces of wood stuck at the skid feet to protect it from slipping around. Afterwards desiccant is sprayed in the container to keep the steel from rust.

开平料出货：托盘堆放成两层，用小木块把托盘底部卡住，最后整个集装箱内撒上干燥剂。

运输

Transportation



Company's location

With short distance(2 hours driving) from Shuyang to Lianyungang(international seaport), the transportation is very convenient.

公司地理位置

优越的地理位置，其距国际海运港口—连云港仅有2小时的车程。



MOQ	standard container	capacity	coil number/20FT	weight/coil
25MT	20FT	24~26MT	3~4	5~8.5 MT

最小起订量	标准货柜	容装量	每柜可装卷数	每卷重量范围
25MT	20FT	24~26MT	3~4	5~8.5 MT

质量保证

Quality Assurance

During the production process from hot rolled strip to tinplate, there are numerous quality controls pertinent to each processing stage.

At the final inspection stage, the finished material is subjected to various physical and chemical tests.

Furthermore everyday(in the morning and afternoon), a central meeting takes place where current topics of the day relating to industrial safety, production and quality are discussed. Participants are executives from all production facilities, research and development and quality assurance.

The quality management system of Suxun is certified to ISO 9001.



从热轧酸洗到镀锡生产，公司采取一系列的保证措施保证产品能保质保量的完成。

出货之前，产品都要经过不同的物理测试和化学测试，测试合格后，其方可出货。

不仅如此，每天早晨和下午，由各车间主任，研发，质检人员组成的会议准时召开，就当天遇到的关于生产，质量的问题进行讨论，找出解决方法。

公司现有的管理体系：ISO 9001.

Testing Equipment 测试仪器



Tensile machine 拉伸机



Compression tester 抗折弯仪



Temper tester 硬度测试机



Coating analyzer 镀层厚度仪



Roughness tester 粗糙度测试机



PH Meter PH 值测试仪

硬度对照表

Standard for temper



Chinese Standard 国标	Japanese Standard 日标	American Standard 美标	European Standard 欧标
GB/T 24180-2009	JIS G3315-2008	ASTM A623M	BS EN10202-2001
T1	T1	T1(T49)	TS230
T1.5	—	—	—
T2	T2	T2(T53)	TS245
T2.5	T2.5	—	TS260
T3	T3	T3(T57)	TS275
T3.5	—	—	TS290
T4	T4	T4(T61)	TH415
T5	T5	T5(T65)	TH435
DR-7M	—	DR-7.5	TH520
DR-8	DR-8	DR-8	TH550
DR-8M	—	DR-8.5	TH580
DR-9	DR-9	DR-9	TH620

镀铬量

Coating weights for ECCS



	min. (最小量)	max. (最大量)	average coating weight 平均镀铬量
Chromium metal 金属铬量	—	150mg/m ²	80 ~ 120mg/m ² (total chromium is the sum of metallic chromium and chromium oxide)
Chromium oxide 氧化铬量	—	15mg/m ²	

表面处理

Surface finish



Surface finish	Melted	Roughness(um Ra)
Bright光面	Yes	≤ 0.35
Stone细毛化	Yes	0.25~0.60
Matt 粗毛化	Yes	0.40~0.80

OIL(DOS 油) TMBP/BP/TFS



	TMBP (基板)	BP(black plate) 黑钢板	TFS(tin free steel) 镀铬板
	mg/m ² per side (每面 mg/m ²)	mg/m ² per side (每面 mg/m ²) mg/m ²	per side (每面 mg/m ²)
DOS	50~200	—	3~5

尺寸

Dimensions

Coils Dimensions		
卷料		
Thickness mm	SR BA width mm(一次冷轧)	DR BA width mm (二次冷轧)
0.17	700~1050	700~1050
0.18	700~1050	700~1050
0.19	700~1050	700~1050
0.20	700~1050	---
0.21~0.24	700~1050	---
0.25~0.28	700~1050	---
0.29~0.36	700~1050	---
Sheets Dimensions		
开平料		
Thickness mm	width mm	Length mm
0.17	700~1050	600~1200
0.18	700~1050	600~1200
0.19	700~1050	600~1200
0.20	700~1050	600~1200
0.21~0.24	700~1050	600~1200
0.25~0.28	700~1050	600~1200
0.29~0.36	700~1050	600~1200

卷重、开平尺寸

Shipping weights and dimensions



	Max.packing	Coil diameter 卷直径	
		Inside 内径	Outside 外径
Coil 钢卷料	5~8.5MT	508mm/405mm	1100~1350mm
Sheet 开平料	1~2.5MT	—	—



SUXUN

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