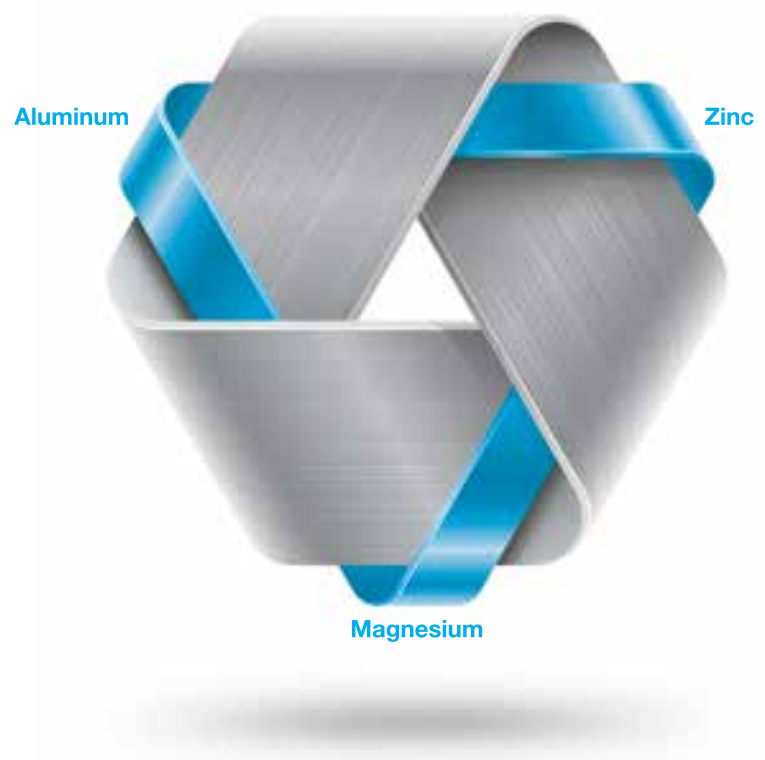
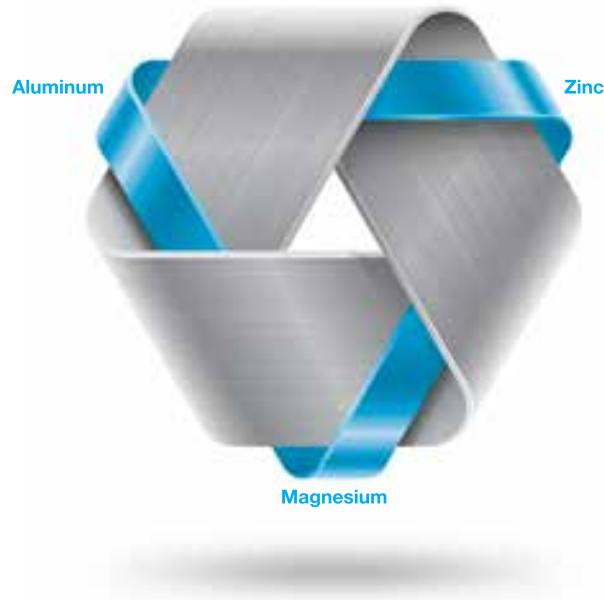


# GIX

**NEXT** GENERATION HOT-DIP **GALVANIZED** STEEL



# What is GIX



GIX is an alloy of zinc, aluminum and magnesium hot-dip coated on steel plate, designed for all applications requiring high corrosion resistance. The alloy plating of GIX is composed of the optimum aluminum and magnesium ratio, proven over a long period of time.

**GIX is the product of top-level plating technology of Dongkuk Steel, which has excellent surface appearance and 5~7 times higher corrosion resistance compared to the existing GI.**

94%  
Zinc

4%  
Aluminum

2%  
Magnesium

## Corrosion Resistance

Due to the effect of alloyed magnesium and aluminum, GIX maintains sacrificial corrosion of zinc method in stabled condition and performs excellent corrosion resistance, definitely in the surface of the plating and even in the scratched part and cross section, which are caused by the bending process and field installation.

## Workability

GIX is superior to GI in various processes, such as roll forming, press, and welding. It can be applied directly to the processing and assembling work environment designed for existing GI.

## Paintability

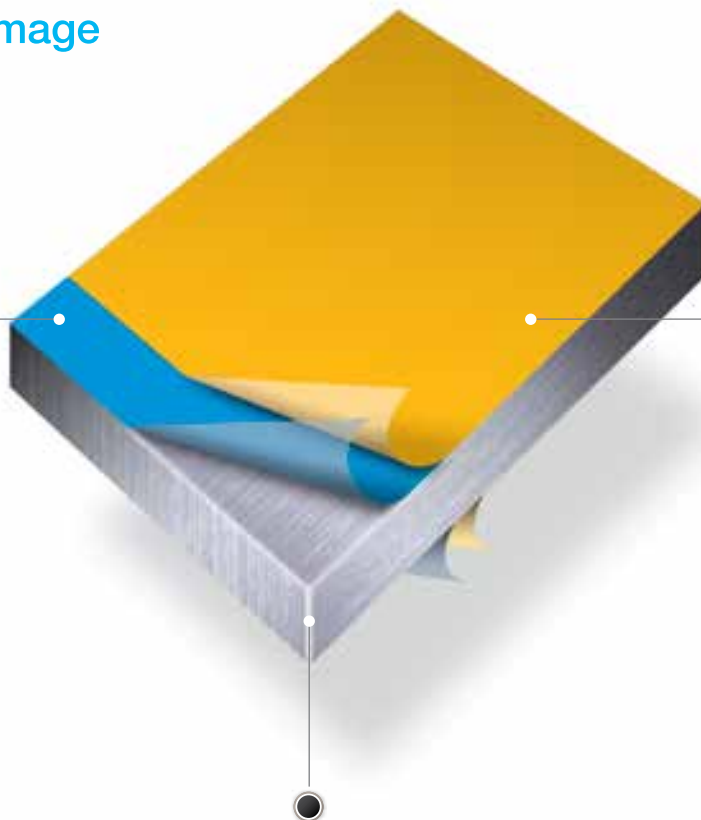
GIX has strong adhesion between plating layer and paint. Excellent performance is delivered, when it is used as a base plate for powder coating after processing and PCM colored steel plate for construction interior and exterior.

## Aesthetic Appearance

Due to the addition of magnesium and aluminum, GIX's spangle miniatures and gloss increases far superior, which makes differentiated exterior from GI. In addition, it can be used as an exterior material without additional painting due to its excellent corrosion resistance, and its unique metallic texture delivers aesthetic satisfaction.



## Schematic image



### GIX Plating Layer

Zn-Al-Mg Alloy Coating	Coating Thickness
60g/m <sup>2</sup>	9μm
80g/m <sup>2</sup>	12μm
100g/m <sup>2</sup>	15μm
120g/m <sup>2</sup>	19μm
140g/m <sup>2</sup>	22μm
180g/m <sup>2</sup>	28μm
200g/m <sup>2</sup>	31μm
220g/m <sup>2</sup>	35μm
250g/m <sup>2</sup>	39μm
275g/m <sup>2</sup>	43μm
310g/m <sup>2</sup>	49μm

### Substrate Iron Specifications

Thickness	0.24 ~ 2.3mm
Width	600 ~ 1,270mm
Length	600 ~ 5,000mm
Material	CQ, CQ-Full, DQ, EDDQ, Gr-A,B,C,D,E

### Post Process

Chromate Cr6+
Chromate Cr3+
Anti Finger Print (Cr-Free)
Anti Finger Print (Cr Type)
Oiling

### Production Specifications

Production Capacity	300,000ton / Year
Unit Weight	22ton MAX
Coil Inner Diameter	508 / 610mm
Coil Outer Diameter	2,100mm MAX



## Certifications



Korean Patent



Korean Patent



KS Certificate



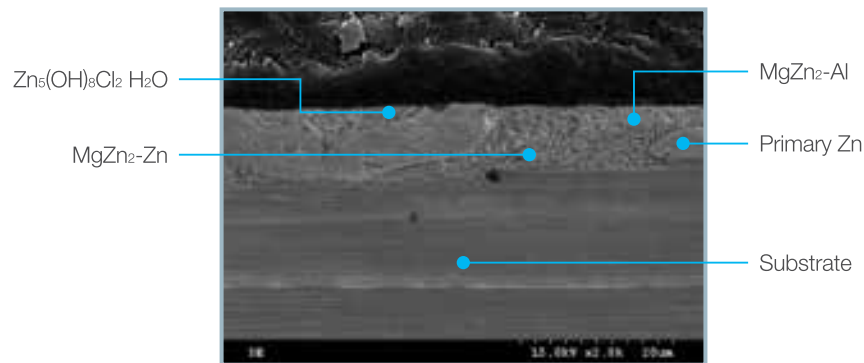
KS Certificate



## GIX Plating Layer Composition and Corrosion Resistance Improvement Process

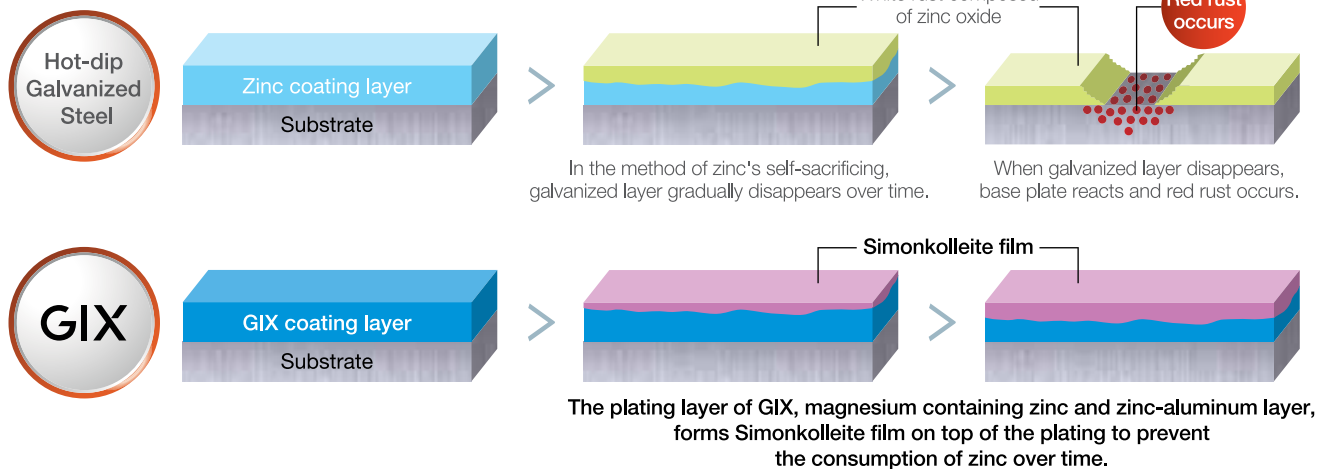
Magnesium containing plating layer **promotes the formation of Simonkolleite ( $Zn_5(OH)_8Cl_2 \cdot H_2O$ )**, which has high stability in sacrificial reactions of zinc. This stable Simonkolleite is formed like a thin film on the surface of the **plating**, which significantly delays the corrosion reaction of the aluminum and zinc alloyed plating layer.

### GIX Cross Section Plating Layer Diagram



### GIX Corrosion Prevention Mechanism

#### Flat Plate Part



#### Cross Section (Salt spray test result on cross section)

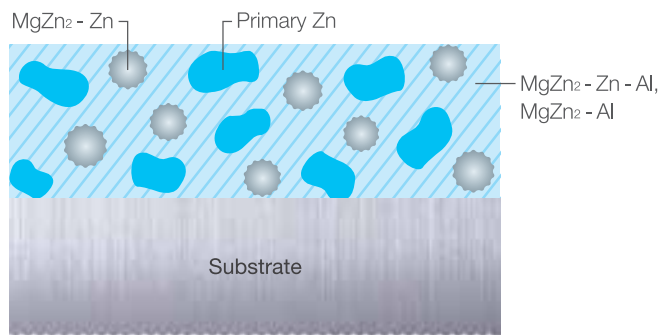
Division	1,000H or more	3,000H or more	Result
GI			For existing GI, when red rust occurs partially on the base plate that is exposed in the air, corrosion does not stop and continues.
GIX			On the other hand, even if the cross section of the base plate is exposed to the air and red rust occurs, the zinc coating containing the magnesium of GIX immediately covers the exposed area to effectively prevent corrosion.



# Self-sealing

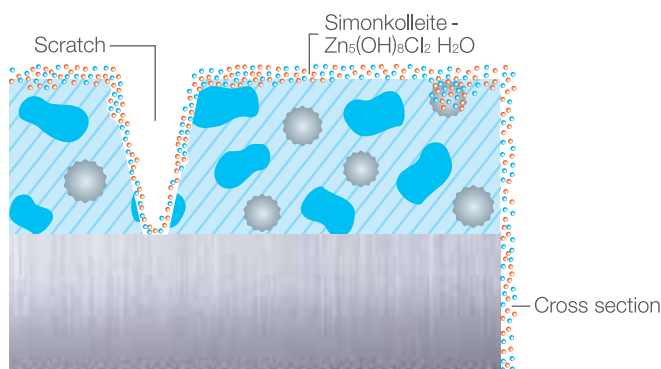
## Activate Mechanism

How does GIX prevent the corrosion of steel substrate on  
cross section and scratched part?



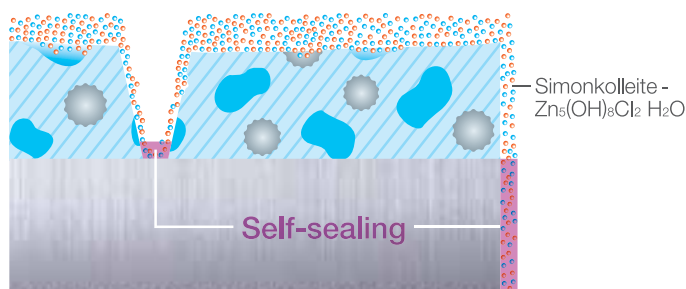
1

The entire plating layer effectively protects the steel substrate and prevents corrosion. When GIX is installed outside and begins to corrode in natural state, magnesium alloy (MgZn<sub>2</sub>) will react first.



2

MgZn<sub>2</sub> promotes the formation of Simonkolleite, a corrosion product. This Simonkolleite is formed like a film on the exposed part, and this acts to prevent corrosion on cross section and scratched part.



3

Afterward, zinc in the plated layer is consumed as self-sacrificial corrosion, and part of aluminum acts as a passive film to protect the steel plate from the external environment. Such interaction of zinc, aluminum, and magnesium effectively protects steel substrate in more severe environments.





## Product Corrosion Resistance Comparison

### Flat Surface Corrosion Resistance Test Result

※ Testing Method : According to ASTM B117-73

Division	Plating Amount	500H or more	1,000H or more	1,500H or more	2,000H or more	3,000H or more	3,500H or more	4,000H or more	5,000H or more
GI	120g								
GIX	120g								
Other Company's High Corrosion Resistant Ternary-Steel Plate	120g								
GI	180g								
GIX	180g								
GI	275g								
GI (Chromate)	300g								
GIX	275g								



## Corrosion Resistance on Cross Section Test Result











Division	Plating Amount (Thickness)	500H or more	1,000H or more	1,500H or more	2,000H or more	3,000H or more	3,500H or more	4,000H or more
GI	120g (0.8T)							
GIX	120g (0.8T)							
GI	180g (0.8T)							
GIX	180g (0.8T)							
GI	275g (1.0T)							
GIX	275g (1.0T)							
GI (Chromate)	300g (1.6T)							
GIX	120g (0.5T)							
Other Company's High Corrosion Resistant Ternary-Steel Plate	120g (0.5T)							

## Corrosion Resistance on 0T Bending Processed Part Test Result

※ Test Product Thickness : 0.6T

Division	Plating Amount	500H or more	1,000H or more	1,500H or more	3,000H or more	3,500H or more
GI	120g					
GIX	120g					
Other Company's High Corrosion Resistant Ternary-Steel Plate	120g					

## Corrosion Resistance on Welded Part of Pipe Test Result

Division	Plating Amount 300g/m <sup>2</sup> + Piping Resin	
	GI	GIX
200H or more		
500H or more		
1,000H or more		
2,000H or more		
5,000H or more		

※ Testing Method : Catalyst 5% salt water test (Cycle Spray – Spray 8 hours, pause 16 hours)



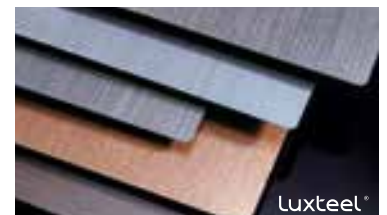
## Application Case

### Applications of Colored Plate



When GIX is used as the base plate of various colored products, performance doubles and life span significantly increases, comparing to existing painted GI products with equivalent plating amount, and performs best in harsh environments, including coastal areas.

Please experience the result of Dongkuk Steel's top coating technology combined with GIX; the high-performance Luxteel.







## Construction Applications



GIX contributes to the production of clean and renewable energy by providing advanced solutions to the structure of solar panels that are exposed to harsh environments.

It is also suitable for a variety of architectural applications, such as building walls, rain gutters, structural light-weight steel and side rails on the road. Especially, when used in coastal areas and agricultural buildings that are vulnerable to corrosion, it performs excellent corrosion resistance.



## Agricultural Applications



GIX is also applicable to various agricultural materials. It is used for various agricultural supports and greenhouse pipes including vineyards, and maximizes the life span of the product.

Especially, it performs higher durability in various pens, including poultry farms, where large amount of ammonia gas is emitted. In addition, environmental effect is minimized by remarkably reduced use of zinc, compared to GI with the same level of corrosion resistance.



## Home Electronics Applications with High Corrosion Resistance



Based on its high paintability and corrosion resistance, GIX can be used in a wide range of home electronics and other electronic devices, and significantly increases life span of devices compared to existing GI.

In addition, due to the high workability of GIX, products can be utilized in various forms.





## Dimension Tolerances

### Thickness Tolerances

Thickness	Width		
	$W < 630$	$630 \leq W < 1,000$	$1,000 \leq W < 1,270$
$T < \text{Below } 0.25$	$\pm 0.04$	$\pm 0.04$	$\pm 0.04$
$0.25 \leq T < 0.40$	$\pm 0.05$	$\pm 0.05$	$\pm 0.05$
$0.40 \leq T < 0.60$	$\pm 0.06$	$\pm 0.06$	$\pm 0.06$
$0.60 \leq T < 0.80$	$\pm 0.07$	$\pm 0.07$	$\pm 0.07$
$0.80 \leq T < 1.00$	$\pm 0.07$	$\pm 0.07$	$\pm 0.08$
$1.00 \leq T < 1.25$	$\pm 0.08$	$\pm 0.08$	$\pm 0.09$
$1.25 \leq T < 1.60$	$\pm 0.09$	$\pm 0.10$	$\pm 0.11$
$1.60 \leq T < 2.00$	$\pm 0.11$	$\pm 0.12$	$\pm 0.13$
$2.00 \leq T < 2.30$	$\pm 0.13$	$\pm 0.14$	$\pm 0.15$
$2.30 \leq T$	$\pm 0.15$	$\pm 0.16$	$\pm 0.17$

### Width Tolerances

When cold-rolled plate is used	
$W \leq 1,500$	$W > 1,500$
0, +7	0, +10

### Length Tolerances

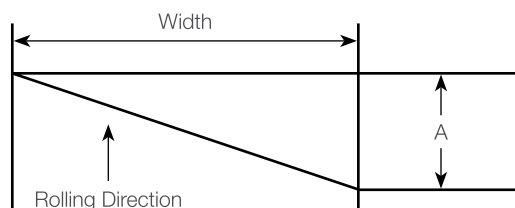
When cold-rolled plate is used
0, +15

### Shape Tolerances

#### - Linearity

Width	Types		
	Bow	Edge Wave	Center Wave
$W < 1,000$	12 or less	8 or less	6 or less
$1,000 \leq W < 1,250$	15 or less	9 or less	8 or less
$1,250 \leq W < 1,600$	15 or less	11 or less	8 or less

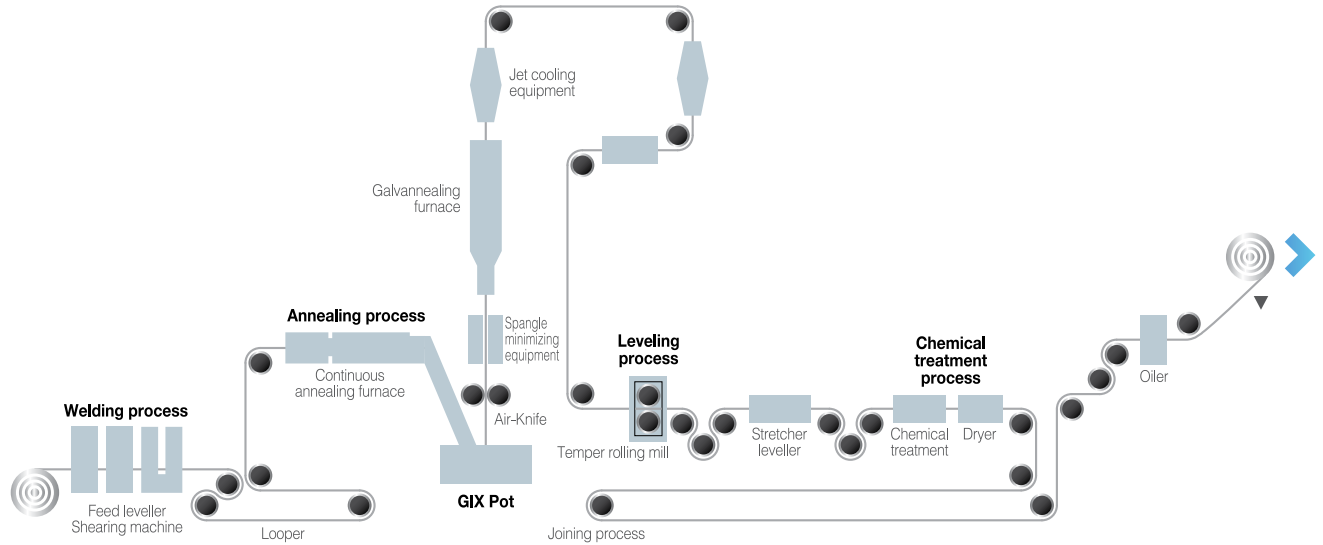
#### - Squareness



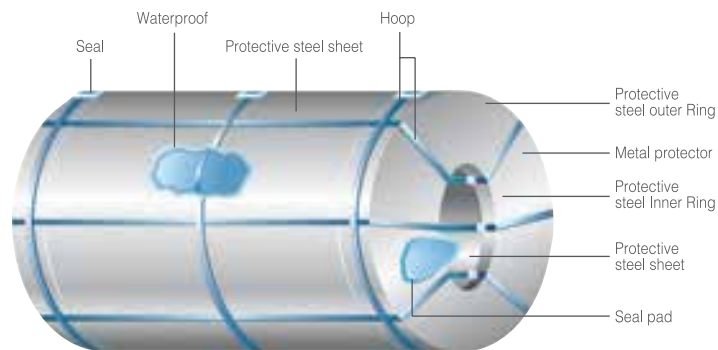
Squareness is indicated as  $A/W \times 100(\%)$  of the figure, and it should not exceed 1%.



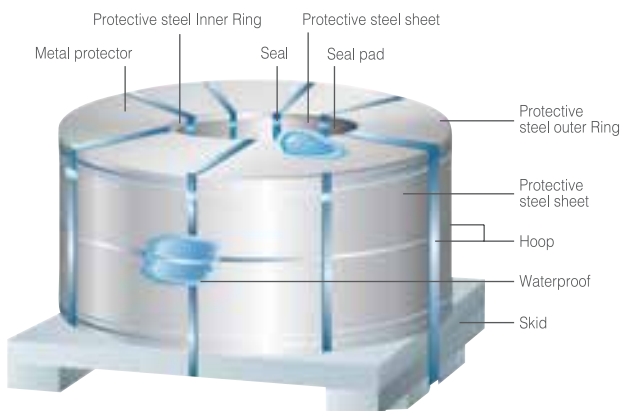
## GIX Production Process



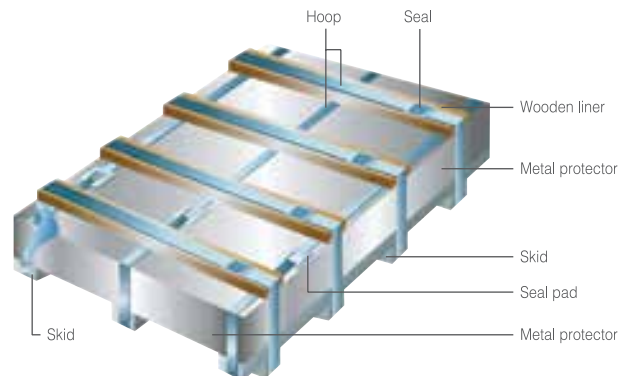
## Standard Packaging



• Horizontal Type •



• Vertical Type •



• Sheet •



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