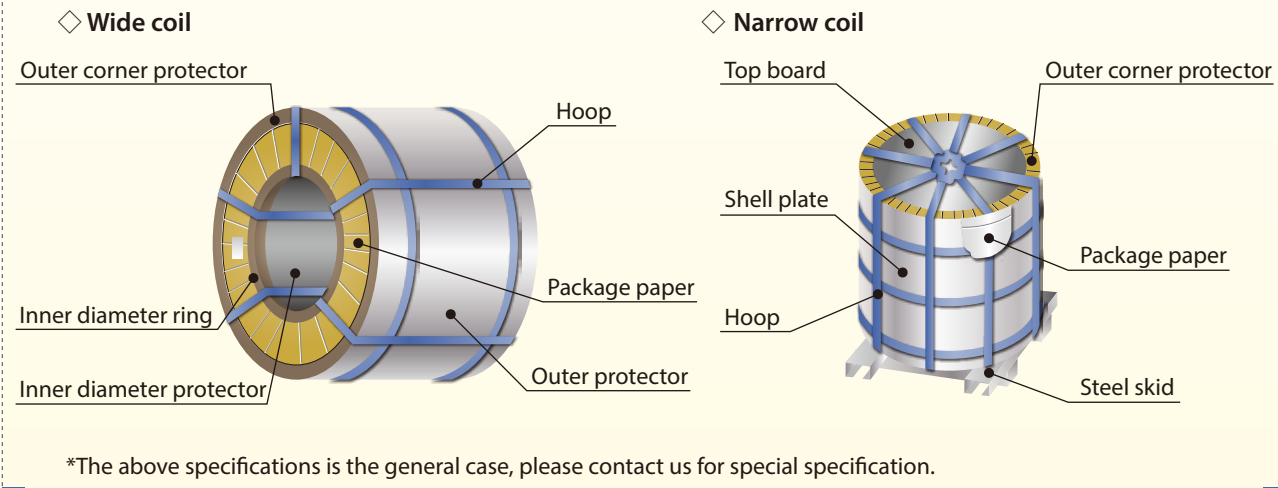


■ Packaging and label

Packaging



Outside label and inside label



It has been born from thorough commitment to manufacturing.

# Silver Top

Electro galvanized Steel Sheet (Silver Top)

Silver Top for non-painting use

Silver Top for painting

Silver Top for soldering

Black Silver Top

SF-Z

**TKWORKS** Toyo Kohan Co., Ltd.

- |  |  |                      |
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- URL <http://www.tkworks.jp>



It has been born from thorough commitment to manufacturing.  
**Silver Top** Electrogalvanized Steel Sheet (Silver Top)

# Eco-friendly highly functional material that has all requested characteristics as a surface treated steel sheet.

We provide a wide lineup of sheet thicknesses from 50μm to 1.6mm with functionality such as beautiful surface finishes, scratch-resistance, workability, printability, solderability and conductivity.

Surface-treated steel sheet is used for many different purposes. Especially, the various types of electrogalvanized steel sheet has the highest market share.

Galvanized steel sheet can be divided into hot-dip galvanized steel sheet and electrogalvanized steel sheet (JIS G3313 EG). Toyo Kohan's "Silver Top" has been the leader in the electrogalvanized steel sheet field. As Silver Top has many superior properties that are not available in other products, ever since the production has started in 1967 it has been used for a wide range of uses and has an excellent reputation.

"Silver Top" keeps on creating new value, and opens the way to the future of surface-treated steel.

## Features of Silver Top

### 1. Corrosion resistance

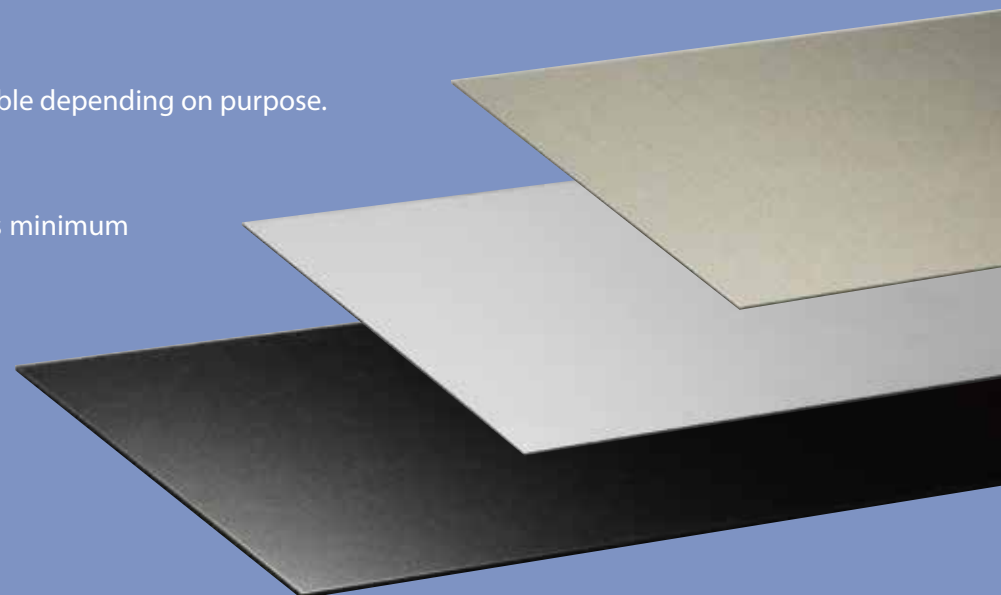
- Protect steel sheet from corrosion through the self-sacrificing corrosion resistance function unique to galvanization.
- Composite Zn-Co-Mo plating enhances corrosion resistance and paint adhesion.

### 2. Diversity

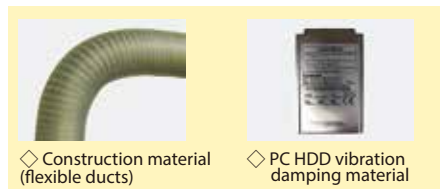
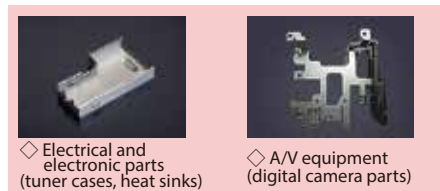
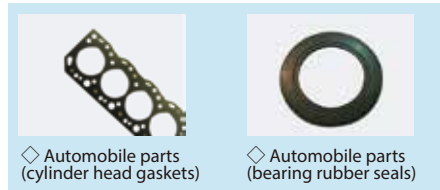
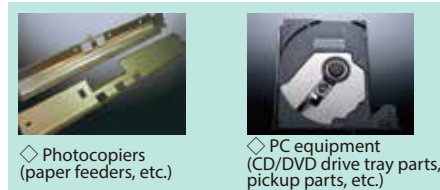
- Diverse product lineup is available depending on purpose.

### 3. Ultra-thin sheeting available

- Fine rolling technology enables minimum thickness of 25μm.



## Silver Top product family



### ◆ Silver Top for non-painting use

Features such as a beautiful metallic appearance, high corrosion resistance, wear resistance, low surface friction, scratch resistance and anti-fingerprint, have received widespread acclaim among other galvanized steel sheet for many years.

### ◆ Silver Top for painting

This product has superior paint adhesion and contributes to excellent painting surface. In addition to these features, minimum thickness down to 0.11mm and highly workable substrates give it a reputation.

### ◆ Silver Top for soldering

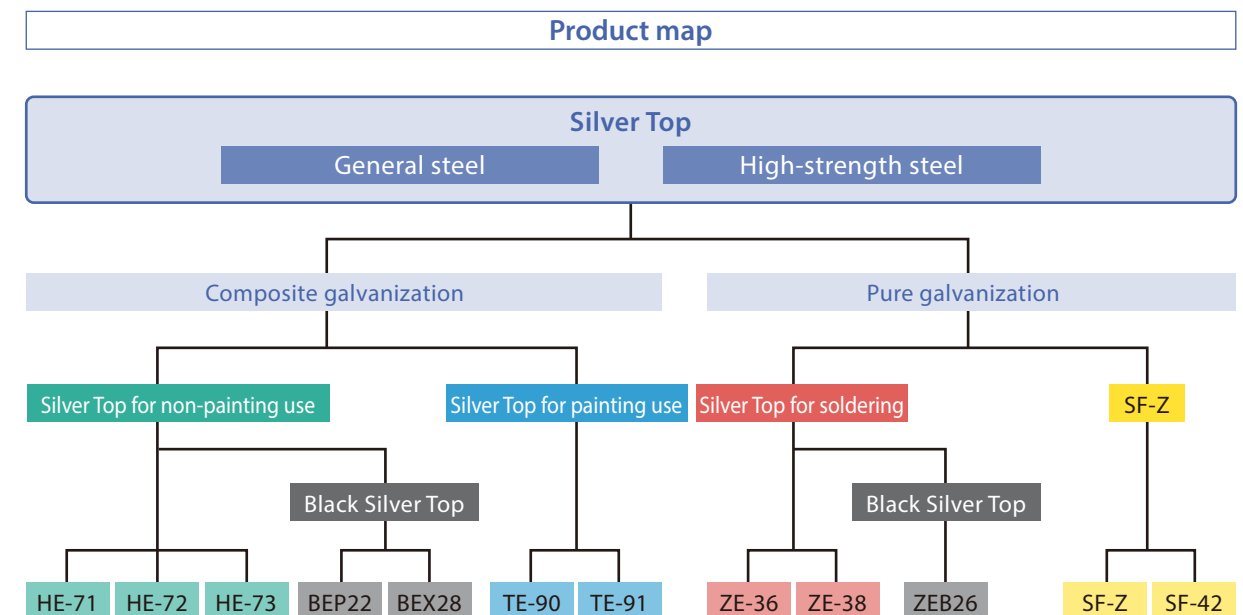
This product has decades of history as a steel sheet for lead-free soldering. This product has the properties required for electronic parts, such as excellent solder adhesion with lead-free solder and deactivated flux, whisker resistance, and a high shielding ability together with high surface conductivity.

### ◆ Black Silver Top

Made with our original production methods, this product has the necessary properties to replace painted steel sheet, as a greatly improved black appearance, properties common to Silver Top for non-painting use, and heat radiation properties.

### ◆ SF-Z

This is an ultra-thin galvanized steel sheet from 50 to 100 μm thickness that is made with our ultra-thin rolling technology. Thickness of over 100μm would be applied to all Silver Top line-up.



## Composite galvanization

Type and usage	Silver Top for non-painting use			Silver Top for painting use		Black Silver Top	
Code	HE-71	HE-72	HE-73	TE-90	TE-91	BEP22	BEX28
Cross section							
Functions	Corrosion resistance Conductivity Smooth surface Scratch resistance Fingerprint resistance	Corrosion resistance Smooth surface Scratch resistance Fingerprint resistance	Corrosion resistance Wear resistance Smooth surface Scratch resistance Fingerprint resistance	Paint adhesion	Paint adhesion (Heat resistance)	Corrosion resistance Smooth surface Fingerprint resistance Heat radiation	Conductivity Smooth surface Fingerprint resistance Heat radiation
Coating mass (Zn)	3~20 g/m <sup>2</sup>	3~20 g/m <sup>2</sup>	3~20 g/m <sup>2</sup>	3~20 g/m <sup>2</sup>	3~20 g/m <sup>2</sup>	3~20 g/m <sup>2</sup>	3~20 g/m <sup>2</sup>
Thickness	0.15~1.6mm*	0.15~1.6mm*	0.11~1.6mm*	0.11~1.6mm*	0.11~1.6mm*	0.15~1.6mm*	0.15~1.6mm*

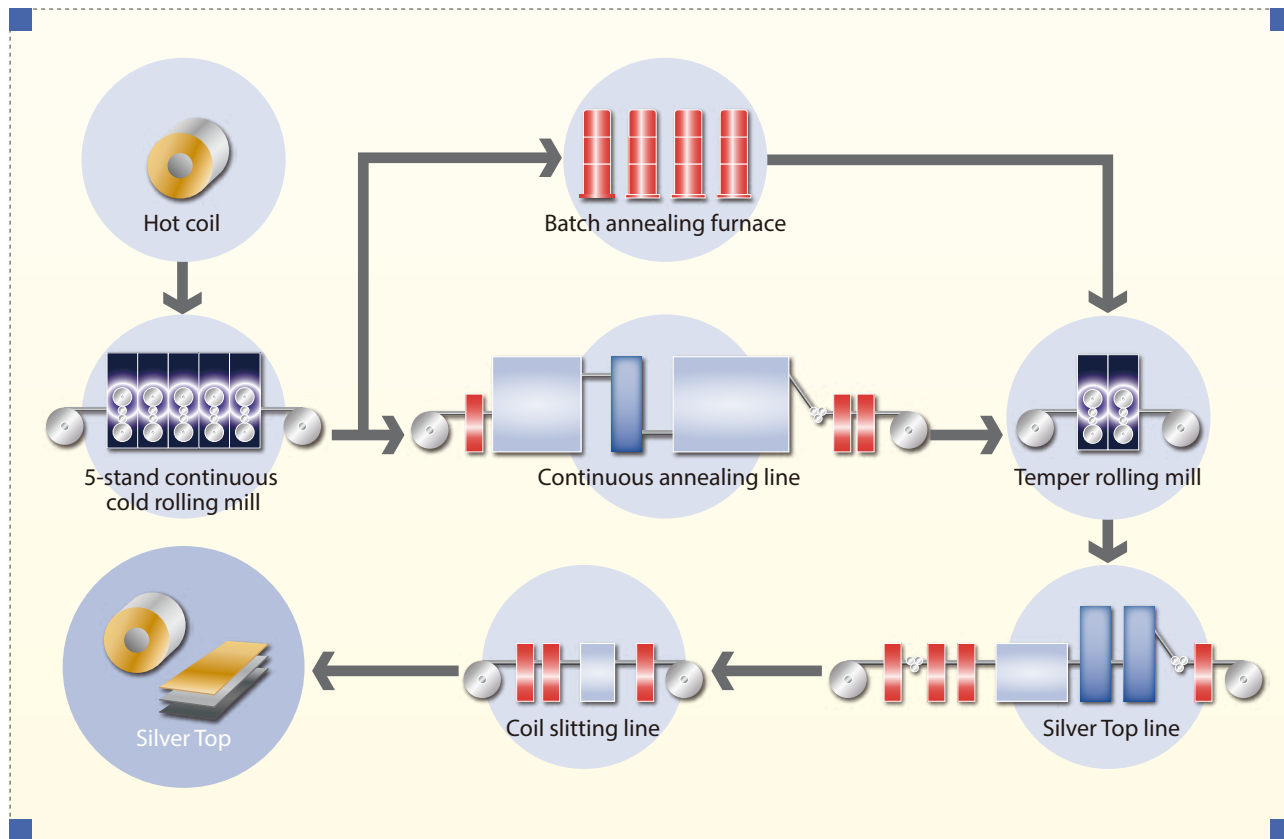
## Pure galvanization

Type and usage	Silver Top for soldering		Black soldering Silver Top	SF-Z	
Code	ZE-36	ZE-38	ZEB26	SF-Z (Chromate)	SF-42 (Eco)
Cross section					
Functions	Solderability Conductivity	Solderability Conductivity	Solderability Conductivity Heat radiation	Corrosion resistance Paint adhesion	Corrosion resistance Paint adhesion
Coating mass (Zn)	3~20 g/m <sup>2</sup>	3~20 g/m <sup>2</sup>	3~20 g/m <sup>2</sup>	3~20g/m <sup>2</sup>	3~20 g/m <sup>2</sup>
Thickness	0.15~1.2mm*	0.15~1.2mm*	0.15~1.2mm*	0.05~0.10mm*	0.05~0.10mm*

\*For more information please check at page 7 "production possible size".

## Production process

In order to assure the quality that meets requirements, Silver Top is produced with state of the art equipment and technology under strict quality controls.



## Standards

### Types of substrates and temper categories

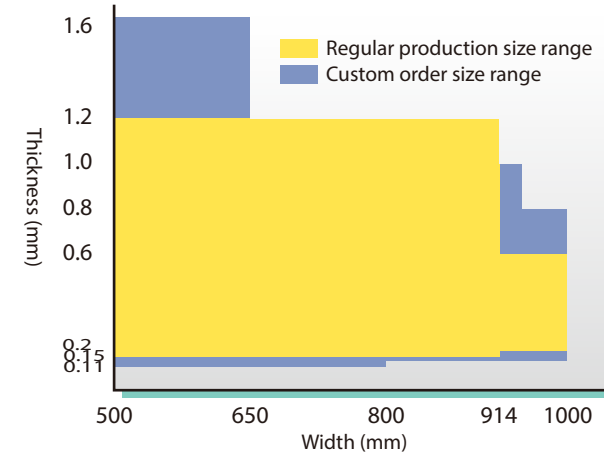
Type	Equivalent JIS standard		Toyoko Kohan Standard	Hardness(reference)	
	Temper category	Temper symbol	Temper symbol	HR-30T	HV
SPCC	Standard	S	SN, SO, SE	58 or lower	115 or lower
	1/8 hardness	8	SUS	48~62	95~130
	1/4 hardness	4	SU4, SU5	58~68	115~150
	1/2 hardness	2	2, 2C	67~74	135~185
	Hard	1	9C, 1, 1R	71 or higher	170 or higher
SPCD	Standard	S	SD, SD-CA	58 or lower	115 or lower

### Zn coating mass (Per side)

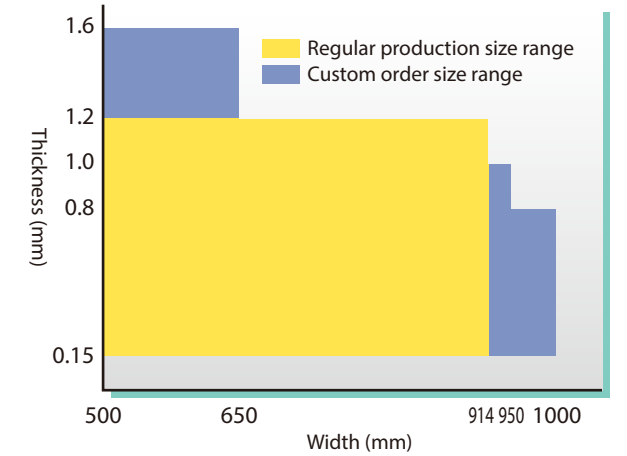
Nominal mass (g/m <sup>2</sup> )	Minimum mass (g/m <sup>2</sup> )	Comparable plating thickness (μm)
3	2.6	0.4
5	4.3	0.7
10	8.50	1.4
15	12.8	2.1
20	17.00	2.8

## Available sizes

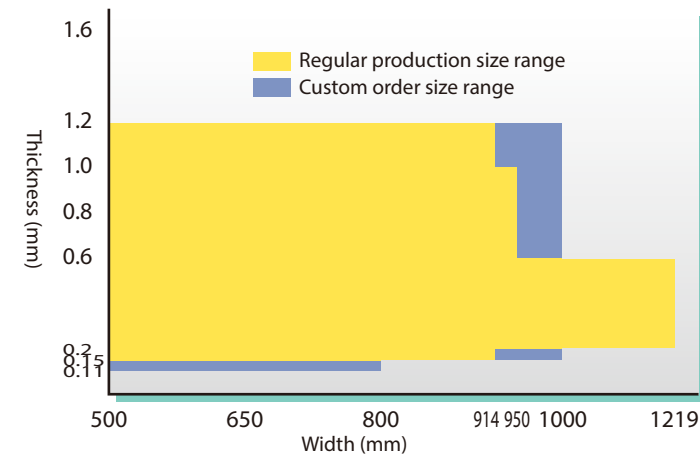
### Silver Top for non-painting use and Silver Top for painting



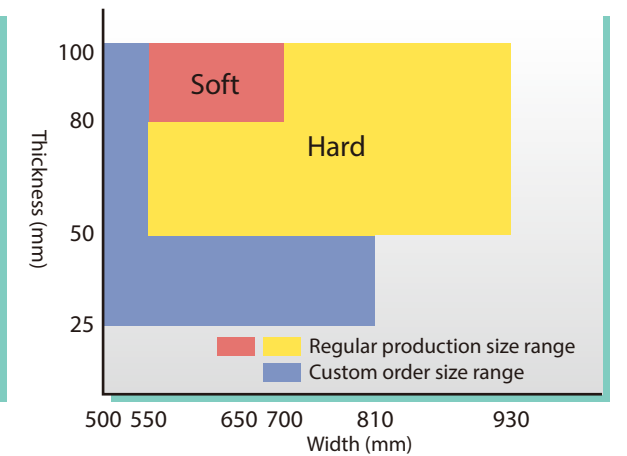
### Black Silver Top



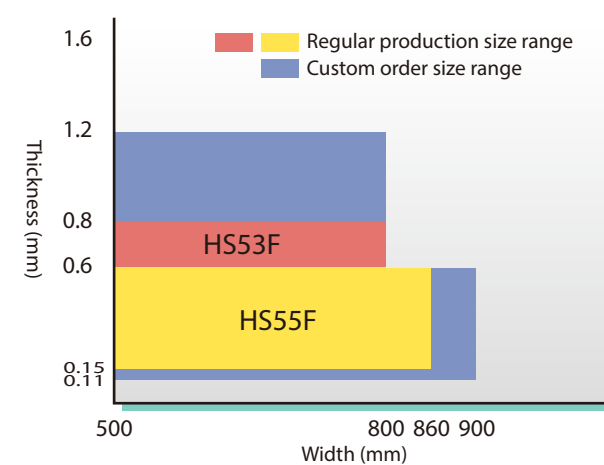
### Silver Top for soldering



### SF-Z



### High-strength Silver Top (forming)



### High-strength Silver Top (spring)

