posco

GALVANIZED STEEL

Hot-dip galvanized steel products are now being used in a wide range of automobiles, electrical equipments and other industrial machinery as well as in civil engineering and construction. Since hot-dip galvanized steel products are characterized in excellent formability, weldability, paintability as well as anticorrosion, they can meet the high quality requirements of the customers.

Contents

GALVANIZED STEEL

posco

Pohang & Gwangyang Steelworks

Upon completion of its first-phase manufacturing facility in 1973, Pohang Steelworks, Korea's first integrated steel mill, was finally completed after 4 stages of construction at Young-il Bay in February 1981.
POSCO is capable of producing and processing a variety of carbon steels and stainless steels. The company's global competitiveness was further enhanced when we opened the world's first FINEX commercialization facility in May 2007.

Main products hot-rolled steel, plate, cold-rolled steel, wire rod, electrical steel, stainless steel, API steel, etc.
Crude steel production 16.185 million tons (as of 2013)

Gwangyang Steelworks is the world's largest integrated steel mill. It features an optimal plant layout with carbon steel processing and high-mill processing capabilities, producing automotive steel, high-strength hot rolled steel, high-quality API steel, and thick plates among other products.
With the goal of specializing in the manufacturing of the world's best automotive steels, Gwangyang Steelworks focuses on enhancing its competitive edge.

Main products hot-rolled steel, plate, cold-rolled steel, car steel, API steel, etc.
Crude steel production 20.231 million tons (as of 2013)

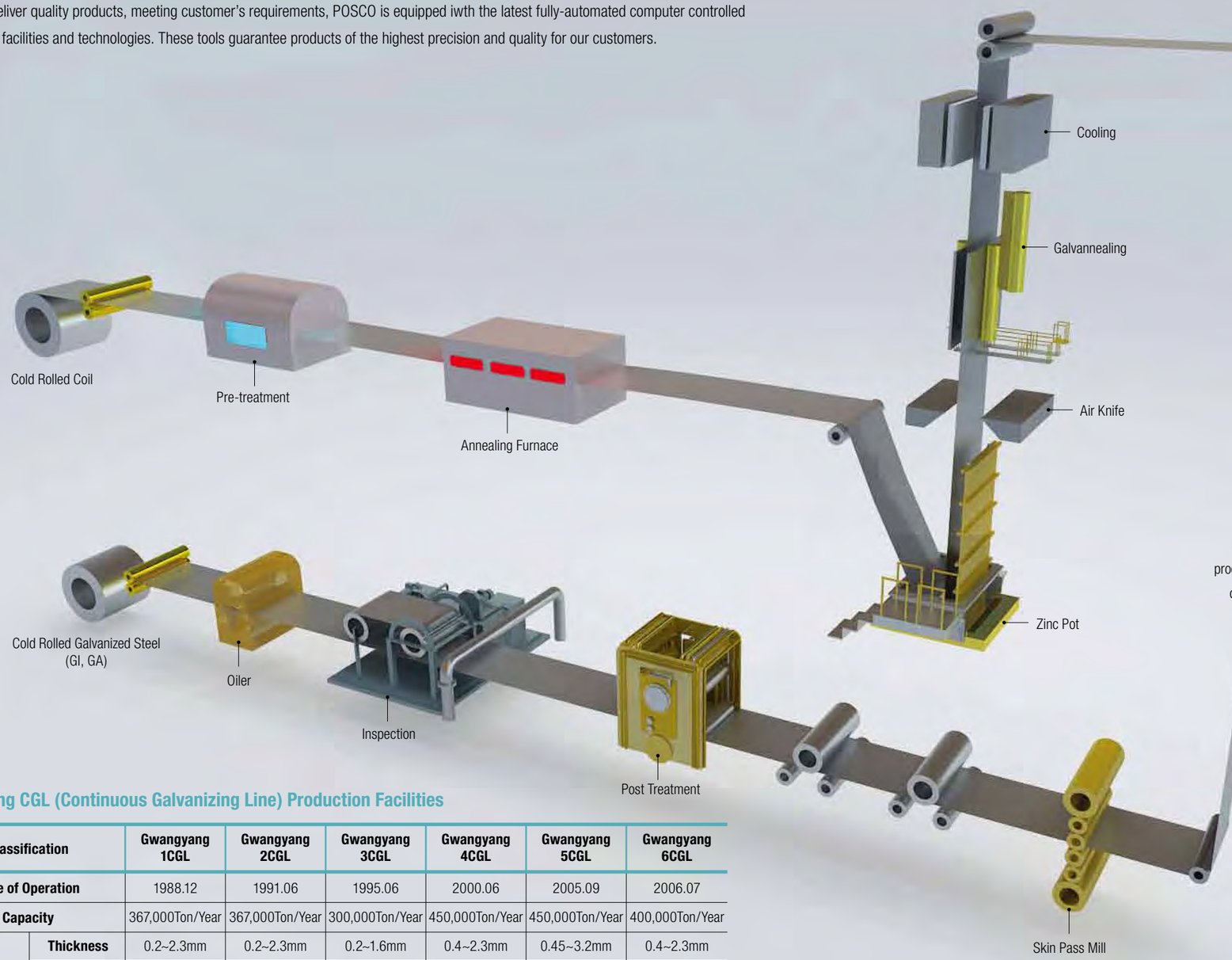
The POSCO Quality

Ultra-High Quality Products Which Touch the Customer's Soul

- **Customer Inside**: We create the best value for customers by keeping their needs foremost.
- **Basic Inside**: We focus on fundamentals and principles, eliminating deviation and waste.
- **Synergy Inside**: We seek to grow alongside our supplier chain through trust and communications.

Manufacturing Processes & Equipment

In order to deliver quality products, meeting customer's requirements, POSCO is equipped iwth the latest fully-automated computer controlled cutting edge facilities and technologies. These tools guarantee products of the highest precision and quality for our customers.



Gwangyang CGL (Continuous Galvanizing Line) Production Facilities

Classification		Gwangyang 1CGL	Gwangyang 2CGL	Gwangyang 3CGL	Gwangyang 4CGL	Gwangyang 5CGL	Gwangyang 6CGL
Date of Operation		1988.12	1991.06	1995.06	2000.06	2005.09	2006.07
Capacity		367,000Ton/Year	367,000Ton/Year	300,000Ton/Year	450,000Ton/Year	450,000Ton/Year	400,000Ton/Year
Available Size	Thickness	0.2~2.3mm	0.2~2.3mm	0.2~1.6mm	0.4~2.3mm	0.45~3.2mm	0.4~2.3mm
	Width	720~1,860mm	720~1,570mm	600~1,270mm	900~1,860mm	800~1,860mm	800~1,860mm
	Weight	5~40ton	5~35ton	5~33ton	5~35ton	5~35ton	5~35ton
Coating Weight		60~300g/m²	60~300g/m²	60~300g/m²	60~300g/m²	60~300g/m²	60~300g/m²
Product Grade		Commercial, (light) Drawing, Deep Drawing, Extra-deep Drawing, Structural, High-strength Steel					
Chemical Treatment		Oiling, Cr-free, Phosphate, Metal Chlorides					
Type of Furnace		Vertical					
Inside Diameter		508 / 610mm					

Galvannealing

The surface of steel sheet can be coated with a zinc compound prior to reheating in an annealing process. Zn atoms diffuse into the Fe to create a Zn-Fe series alloy. This process is referred to as Galvanealing.

SPM & Chemical Treatment

In order to achieve a flat surface and elegant finish, the steel sheet is processed with a skin pass mill. In order to prevent the white rust, which often forms on the surface of activated zinc, and to improve corrosion resistance, the surface is coated with a Cr-free resin.

Inspection & Coiling

Located at the line's exit section are a side trimmer, inspection table and oil coating equipment. At this station all products are inspected and judged relative to material specifications required by the client.

Electrolytic Cleaning

Some rolling oil and other contaminants remain on the surface of cold-rolled steel sheets following processing. These are removed by passing the electrically charged sheet through an alkaline solution which induces an electro-chemical reaction.

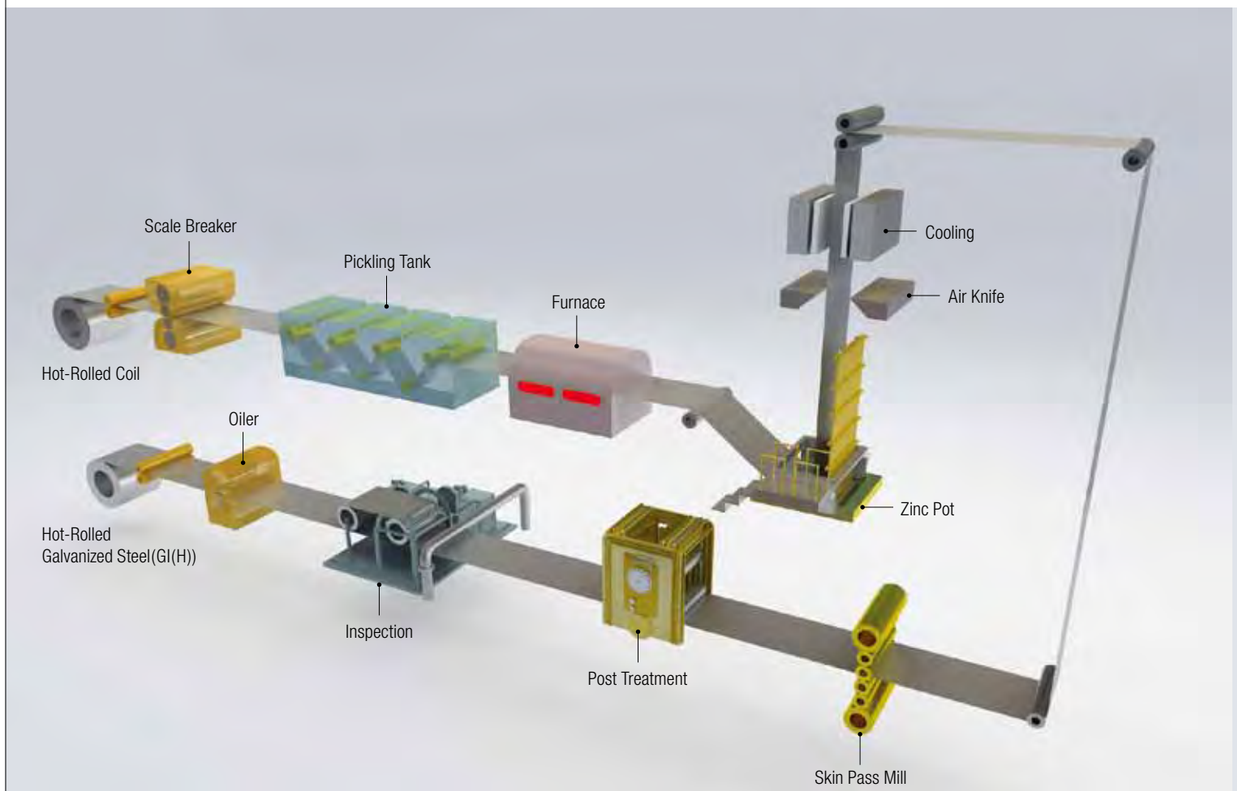
Annealing

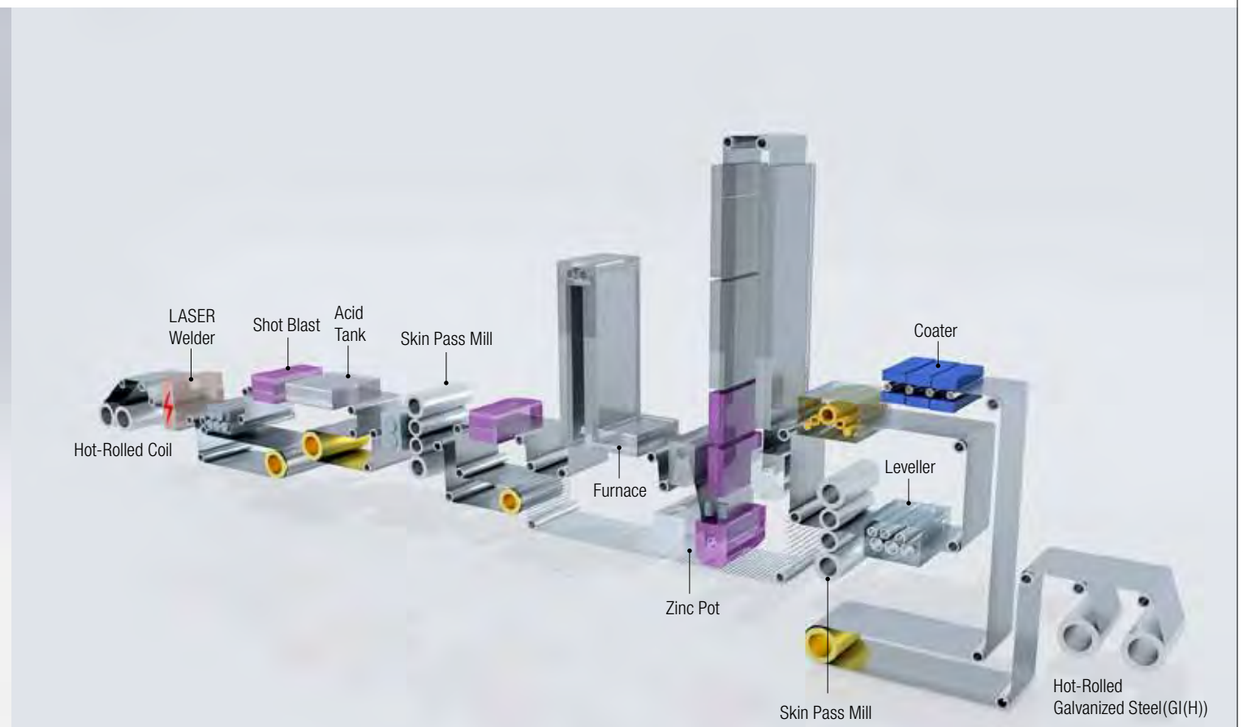
The material properties of pre-treated steel sheet can be altered and improved through re-crystallization during the annealing process.

Hot-Dip Galvanizing

After passing through the annealing furnace, steel sheet is dipped into a zinc pot where molten Zn is coated onto the surface. The desired coating weight is achieved by removing excess zinc before solidification with high pressure air from an air knife.

Manufacturing Processes & Equipment





Gwangyang HCGL (High-speed Continuous Galvanizing Line) Production Facilities

Classification		Gwangyang HCGL
Date of Operation		2005.08
Capacity		616,000Ton/Year
Available Size	Thickness	1.4~4.5mm
	Width	720~1570mm
Coating Weight		~725(g/m^2)
Product Grade		Commercial, Structural
Chemical Treatment		Chromate, Cr-free, Oiling

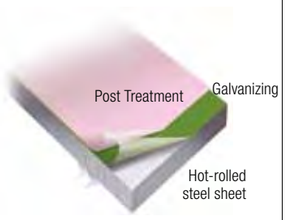
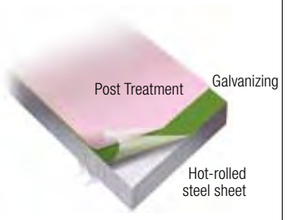
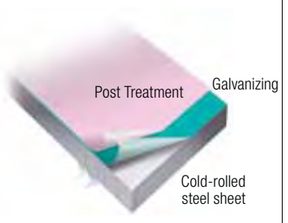
Pohang CGL (Continuous Galvanizing Line) Production Facilities

Classification		Pohang #1CGL
Date of Operation		2012.04
Capacity		750,000Ton/Year
Available Size	Thickness	1.0~4.0mm
	Width	800~1670mm
Coating Weight		~725(g/m^2)
Product Grade		Commercial, Structural
Chemical Treatment		Chromate, Cr-free, Oiling

Product Properties

Hot-dip galvanized steel product properties

The product can be used in various applications such as construction materials, pipe, electronics, furniture, materials with molten zinc to the hot-rolled or cold-rolled steel products.

Product	Coating Layer Structure	Characteristics	Appearance
GI(H)		Hot-rolled steel plate is used as base metal for this product. While molten zinc solidifies on the surface of the steel sheet, normal zinc crystallization is suppressed creating fine crystals.	
GI		Cold-rolled steel plate is used as base metal for this product. While molten zinc solidifies on the surface of the steel sheet, normal zinc crystallization is suppressed creating fine crystals. The surface is flat and has a fine appearance after painting. Paintability is superior to ordinary products.	
GA		Through a thermal diffusion process, steel sheet and zinc react to produce an alloy layer. The weldability and the paintability are superior to traditional galvanized steel sheets. Fe in the alloy coating enhances corrosion resistance.	

■ Galvanized Steel Post Treatment

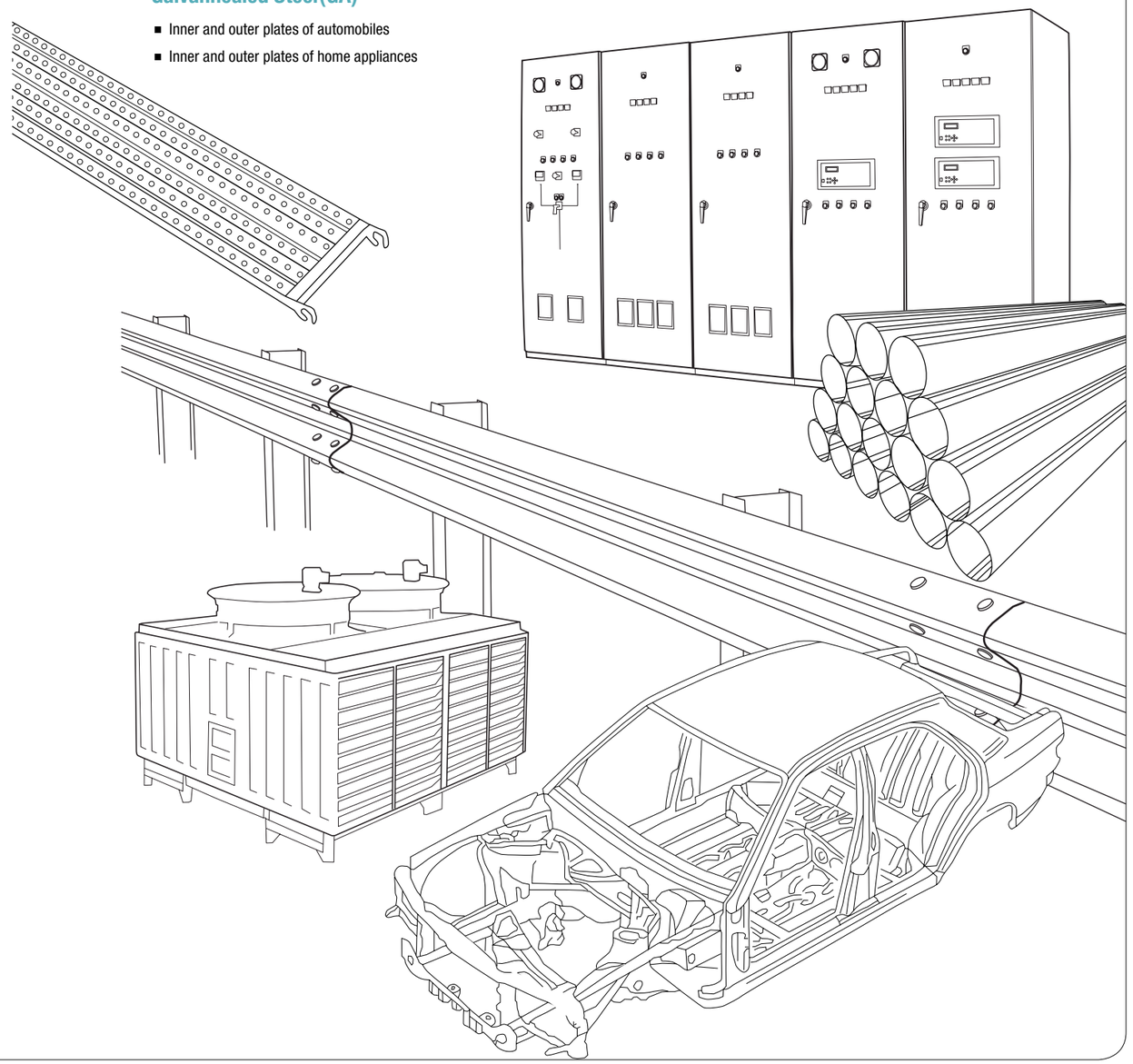
Product	Post Treatment Code	Full Name	Quality Properties	Remarks
GI(H)	NH	Non Chromate HGI	Corrosion Resistance	Gwangyang
	NP	Non Chromate Pohang	Corrosion Resistance	Pohang
	CL	Chromate-Light	Corrosion Resistance	Gwangyang, Pohang
GI	NC	Non Chromate	Corrosion Resistance	Gwangyang
	NE	Non Chromate Excellent	High Corrosion Resistance	Gwangyang
	NW	Non Chromate Weldability	Corrosion Resistance, Weldability	Gwangyang
GA	LP	Lubrication Phosphate	Lubrication	Gwangyang
	LM	Lubrication Metallic	Lubrication, Weldability	Gwangyang

Galvanized Steel(GI)

- Metal furniture
- Inner and outer plates of home appliances
- Material for painted steel
- Inner and outer plates of automobiles
- Construction materials
- Pipe

Galvannealed Steel(GA)

- Inner and outer plates of automobiles
- Inner and outer plates of home appliances



Properties

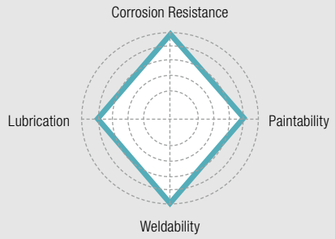
Composition, Mechanical Properties, Coating Weight

Composition / Mechanical properties : The products are composed of various metal components and have various mechanical properties in accordance with the design standards depending on various sizes and uses, such as CQ, DQ, DDQ, structural steel and high tensile steel, and so forth. (No effects on components/mechanical properties from the post-treatment)

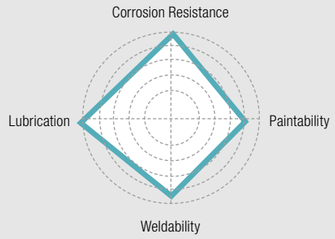
Coating Weight : The products are manufactured with the coating weight ordered by the relevant client company and there is no change in the coating weight after a post-treatment.

Corrosion Resistance, Paintability, Weldability, Lubrication

Existing Cr-Treated Material



Cr-free

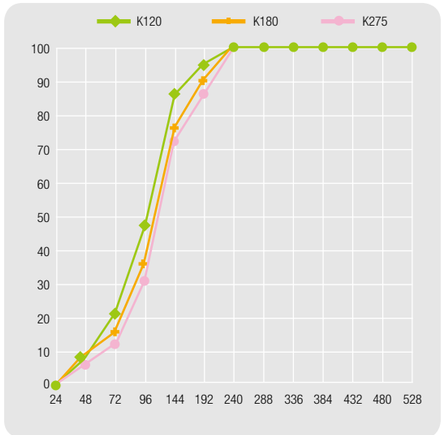
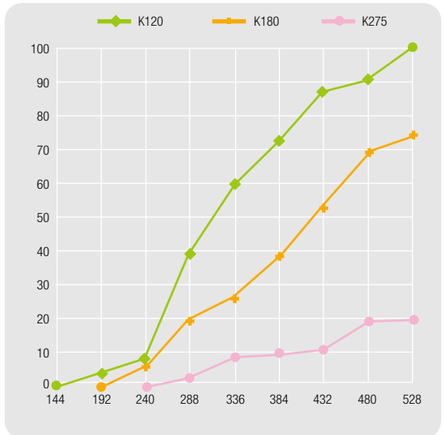
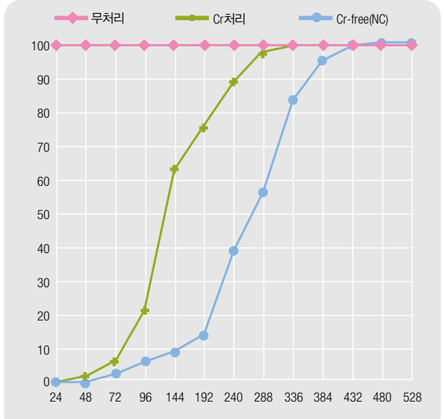
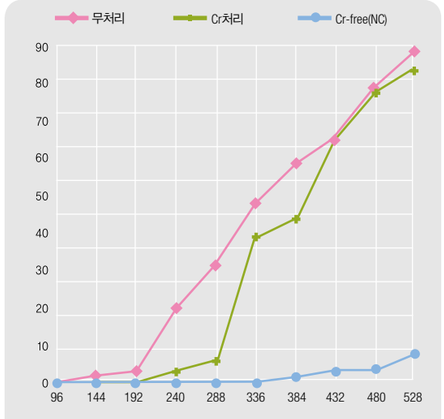


Formability

Hot-dip galvanized steel, produced through continuous galvanized processing, is superior in zinc adhesion and the galvanized layer will almost never exfoliate through the drawing process, due to the commonly fragile iron-zinc alloy layer being super thin. The hot-dip galvanized steel that is produced by vertical furnace, compared to the horizontal furnace-produced product, is superior in its formability, equally to cold-rolled steel. This allows many applications.

Comparing to galvanized steel, galvannealed steel sheet has high hardness and somehow low ductility. This can cause powdering in the galvannealed layer during the severe drawing processes. This effect tends to heighten as coating weight increases and it can also be affected by the oiling and press condition. Fortunately, the adaptation of new technology, such as a high frequency induction heater, to the relevant manufacturing processes and the development of some post-treatment technology for lubrication in order to improve the workability, it became available to apply the galvannealed steel sheets even for some deep drawing parts more extensively.

Corrosion Resistance (Rust Occurrence Rate by Each Coating Weight and Post-Treatment)

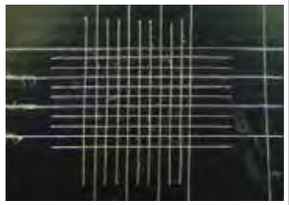
Classification	White Rust Rate	Red Rust Rate
Per Plating Quantity	White rust rate(Normal Chrome)  - No difference of white rust occurrence rate based on zinc coating weight.	Red rust rate(Normal Chrome)  - Red rust greatly decreases as coating weight increases.
Per post processing	White Rust Rate(120g/m²)  - Shows great differences of white rust occurrence due to post processing.	Red Rust Rate(120g/m²)  - After the corrosion of plating layer, it showed the post processing affected the occurrence of red rust in the progressing of ferrum iron corrosion.

Properties

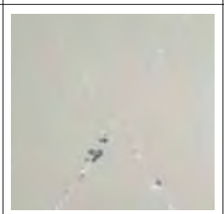
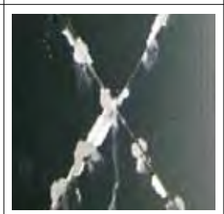
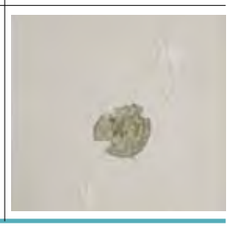
Paintability

The corrosion resistance of painted hot-dip galvanized steel is greatly affected by the pre-coating process. Anti-corrosion oil is commonly applied to untreated steel, so thorough degreasing is essential for reliable adhesion of surface coatings such as phosphate, chromate or Cr-free pre-treatment layers. In addition, a high quality phosphate film can also be attained on galvannealed steel in the form of iron-zinc alloy, which delivers exceptional coating adherence and corrosion resistance compared to commercial quality hot-dip galvanized steel.

Adherence (Cross-Cut Peeling Test)

Classification	Solvent Coating	Electrodeposit Coating	Powder Coating
Adherence			
Heat Cycle			

Salt Spray Test (X Scratch Peeling Test)

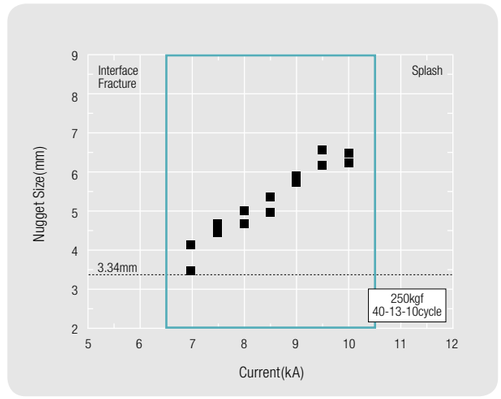
Classification	Bare GI (48hrs)	Solvent Coating(240hrs)	Electrodeposit Coating (360hrs)	Powder Coating (960hrs)
Before Peeling-off				
After Peeling-off	-			

Weldability

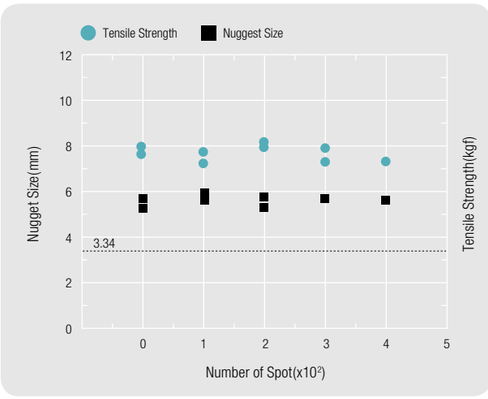
Galvanized Steel (GI)

- The zinc-coated layer has an electrical conductivity greater than that of iron and the amount of generated heat is somewhat decreased by low electrical resistance at the attached area.
- Because the melting point of zinc is lower than that of iron, continuous weldability is impaired by the attachment of zinc at the electrode.
- Because of the ductility of the zinc-coated layer, electrical density is lowered by the large sheet's contact area when compared with the electrode's pressing force.

Optimum Welding Current Range



Heating Pressure/Welding Current : 250kgf/8.5kA



Cr-free Product

Methods for inproving weldability

Spot Welding	Seam Welding
• Raise welding current to 10~30% • Increase the flow-time of the current to 10%. • Slightly increase electrode pressure. • Use conical shaped Cr-Cu alloy electrode. • Serve the electrode frequently and cool it sufficiently with water.	• Set the welding current higher. • Reduce internal defects and bubbles by increasing pressure. • Reduce the welding area while increasing on/off time ratio byalternating currents (adopting intermittent current). • Cool the electrode sufficiently with water.

Arc-Welding

In case of a shielded metal arc welding, it is appropriate to use a welding electrode covered with some surface coating materials having high salinity as a welding electrode with which a good quality of metal can be obtained. KSD7004 in E4303(lime titanium type), E4313(high titanium oxide), E4316(low hydrogen type) are favored.

Solderability

The soldering of galvanized sheet is made easier by using a suitable solvent without the need to remove the film by sandpaper. Chromated galvanized sheet is particularly excellent for soldering. Non-corrosive zinc chloride (15~20%), ammonium chloride (3.3~5%), or a mixture of both can be used as good solvents. After using solvent, it is necessary to wash the sheet sufficiently and dry it.

Galvannealed Steel Sheet (GA)

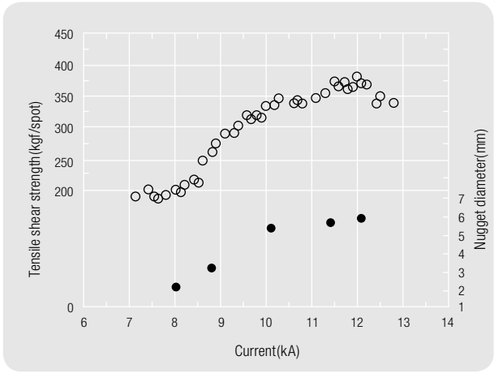
Resistance Welding

Welding galvanized steel is more difficult than welding cold rolled steel because it has lower electric resistance, a lower melting point, and wider contact area under electrode pressure. Galvannealed steel sheet, coated with a Fe-Zn alloy, has a higher melting point and greater hardness than pure zinc coated steel; thus weldability is enhanced.

Shield Metal Arc Welding

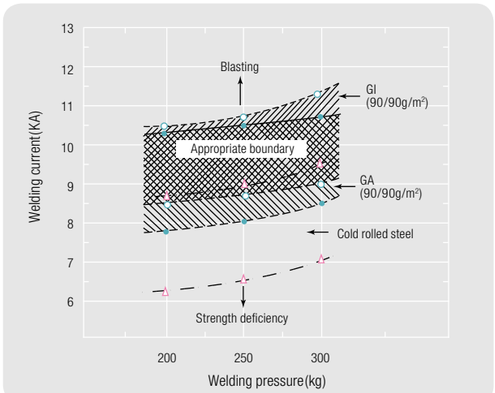
Has similar fine weldability to cold-rolled sheets

Change of strength of welded part and nugget diameter in accordance with welding current

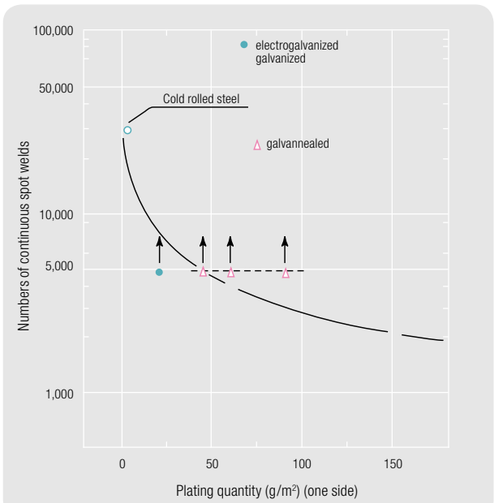


The illustration on the right shows the appropriate welding condition of galvanized plating steel sheet. The welding current boundary of galvannealed steel sheet is better than cold-rolled steel sheet.

※ Thickness : 0.8mm
Electrode : 5.0mmø(Cylinder-type with ends cut)
Time : 10seconds



If the galvannealed steel sheet is continuously spot-welded, zinc covers electrode and deteriorates the weldability. This tendency goes up as the zinc amount increases. It is possible to continuously weld electrogalvanized steel sheets, which have low amount plating, more than 5,000 times. However the coating weight means higher electrode conditioning is required. It is possible to weld 5,000 times continuously with galvannealed steel sheet.



Using Cold-Rolled Steel Plate

Classification \ Standards	POSCO	KS D 3506	JIS G3302	ASTM 89	ASTM 95	EN
General Use	CGCC	SGCC	SGCC	A526	A653-CQ	DX51D
Lock Forming	CGCF	SGCD1	SGCD1	A527	A653-LFQ	-
Drawing	CGCD	SGCD2	SGCD2	A578	A653-DQ	DX52D
Deep Drawing	CGCP	SGCD3	SGCD3	-	-	DX53D
Non-aging(stabilized) deep drawing	CGCN	SGCD3N	SGCD3N	A642	A653-DQSK	DX54D
Non-aging extra deep drawing	CGCE	-	-	-	-	-
Structural Quality *1)	CGC35	SGC340	SGC340	A446 Gr A*1)	A653-SQ230	S220GD
	-	-	-	Gr B	A653-SQ255	S250GD
	CGC41	SGC400	SGC400	Gr C	A653-SQ275	S280GD
	CGC45	SGC440	SGC440	Gr D	A653-SQ340	S320GD
	CGC50	SGC490	SGC490	Gr F	-	S350GD
High Strength Steel	CGCHS35	-	-	-	-	-
	CGCHS40					
	CGCHS45					
	CGCHS50					
	CGCHS60					

Remarks) 1. Size for EN Structural Quality is EN10147.
2. The tensile strength of A446 Grade A is 310MPa(N/mm²)

Using Hot-Rolled Steel Plate

Classification \ Standards	POSCO	KS D 3506	JIS G3302	ASTM 89	ASTM 95	EN
Drawing	CGHD	-	-	-	-	-
General Use	CGHC	SGHC	SGHC	A526-H	A653-CQ	EN-DX51DH
Lock Forming	-	-	-	A527-H	A653-LFQ	-
Structural Quality *1)	CGH35	SGH340	SGH340	-	-	EN-S250GDH
	CGH41	SGH400	SGH400	-	A653-SQ275	EN-S280GDH
	CGH45	SGH440	SGH440	A446-DH	A653-SQ341	EN-S320GDH
	CGH50	SGH490	SGH490	A446-FH	A653-SQ343	EN-S350GDH
	CGH55	SGH540	SGH540	A446-EMH	-	-

Specifications

KS Standard (KS 3506 95 : Hot-Dip Galvanized Steel and Coil)

■ Yield Point, Tensile Strength, Elongation and Non-aging Property

Using Cold-Rolled Steel Plate

Classification	Yield Point min N/mm²	Tensile Strength min N/mm²	Elongation, min., % Thickness, mm						Test Piece
			0.25 ≤ t < 0.40	0.40 ≤ t < 0.60	0.60 ≤ t < 1.00	1.00 ≤ t < 1.60	1.60 ≤ t < 2.50	t ≤ 2.50	
SGCC	-	-	-	-	-	-	-	-	No.5 Rolling Direction
SGCD1	-	270	-	34	36	37	38	-	
SGCD2	-	270	-	36	38	39	40	-	
SGCD3	-	270	-	38	40	41	42	-	
SGC340	245	340	20	20	20	20	20	20	
SGC400	295	400	18	18	18	18	18	18	
SGC440	335	440	18	18	18	18	18	18	
SGC490	365	490	16	16	16	16	16	16	

Remarks) 1. When the anti-aging characteristics is featured in the SGCD3 sheets and coils, the anti-aging characteristics is guaranteed for six (6) months after shipment from the manufacturer. Anti-aging refers to the characteristic preventing stretcher strains from occurring during manufacturing.
2. In principle, tensile strength tests are not performed on plates with thickness under 0.25mm.
3. SGCC products usually have a yield point more than 205N/mm² and a tensile strength more than 270N/mm².

Using Hot-Rolled Steel Plate

Classification	Yield Point (min., N/mm²)	Tensile Strength (min., N/mm²)	Elongation, min., %	Test Piece
SGHC	-	-	-	No.5 Rolling Direction
SGH340	245	340	20	
SGH400	295	400	18	
SGH440	335	440	18	
SGH490	365	490	16	
SGH540	400	540	-	

Remarks) SGHC products usually have a yield point more than 205N/mm2 and a tensile strength more than 270N/mm².

■ Coating Weight

Minimum Coating Weight (both-sided coating)

Coating Weight Code	Average Value of Double-sided, Triple Spots Method	Average Value of Double-sided, Single Spot Method	KS D 3506	JIS G 3302	POSCO
60	60	51	(Z06), F06	(Z06), F06	K060, S060
80	80	68	Z08, F08	Z08, F08	K080, S080
100	100	85	Z10, F10	Z10, F10	K100, S100
120	120	102	Z12, F12	Z12, F12	K120, S120
180	180	153	Z18, (F18)	Z18, (F18)	K180
200	200	170	Z20	Z20	K200
220	220	187	Z22	Z22	K220
250	250	213	Z25	Z25	K250
275	275	234	Z27	Z27	K275
350	350	298	Z35	Z35	K350
450	450	383	Z45	Z45	K450
600	600	510	Z60	Z60	K600

Remarks) 1. For non-alloy products, “Z” is added in the front of KS and JS, “K” in front of POSCO products. For alloy products, “F” is added in front of KS and JS, and “S” in front of POSCO products.
2. Coat weight types Z35, Z45, Z60, F10, F12 and F18 are not applied to screw type 1, 2, and 3.
3. For both-side, triple spots coating weight, the average value of the measurement of 3 test pieces is applied.
4. For one-side, single spot coating weight, the minimum value of the measurement of 3 test pieces is applied.
5. Separate consultation is available for the maximum coating weight on both sides.

⚠ Coating weight, thickness, width, length and shape correspond to KS standards. Please consult our quality manager for details.

■ Thickness Tolerances

Using Cold-Rolled Steel Plate

(Unit : mm)

Thickness \ Width	w < 630	630 ≤ w < 1,000	1,000 ≤ w < 1,250	1,250 ≤ w < 1,600	w ≤ 1,600
t < 0.25	±0.04	±0.04	±0.04	-	-
0.25 ≤ t < 0.40	±0.05	±0.05	±0.05	±0.06	-
0.40 ≤ t < 0.60	±0.06	±0.06	±0.06	±0.07	±0.08
0.60 ≤ t < 0.80	±0.07	±0.07	±0.07	±0.07	±0.08
0.80 ≤ t < 1.00	±0.07	±0.07	±0.08	±0.09	±0.10
1.00 ≤ t < 1.25	±0.08	±0.08	±0.09	±0.10	±0.12
1.25 ≤ t < 1.60	±0.09	±0.10	±0.11	±0.12	±0.14
1.60 ≤ t < 2.00	±0.11	±0.12	±0.13	±0.14	±0.16
2.00 ≤ t < 2.50	±0.13	±0.14	±0.15	±0.16	±0.18
2.50 ≤ t < 3.15	±0.15	±0.16	±0.17	±0.18	±0.21
t ≤ 3.15	±0.17	±0.20	±0.20	±0.21	-

Using Hot-Rolled Steel Plate for Commercial Quality

(Unit : mm)

Thickness \ Width	w < 1,200	1,200 ≤ w < 1,500	1,500 ≤ w < 1,800	1,800 ≤ w < 2,300
t < 0.25	±0.16	±0.17	±0.18	-
1.20 ≤ t < 1.60	±0.17	±0.18	±0.19	±0.22*
1.60 ≤ t < 2.00	±0.18	±0.20	±0.22	±0.26*
2.00 ≤ t < 2.50	±0.20	±0.22	±0.25	±0.27*
2.50 ≤ t < 4.00	±0.22	±0.24	±0.27	±0.28*
4.00 ≤ t < 5.00	±0.25	±0.27	-	-
5.00 ≤ t < 6.00	±0.27	±0.27	-	-
6.00 < t	±0.30	±0.31	-	-

Remarks) *It is applied for a product with less than 2,000mm of the width.

Using Hot-Rolled Steel Plate for Structural Quality

(Unit : mm)

Thickness \ Width	w ≤ 1,600	1,600 ≤ w < 2,000
1.20 ≤ t < 1.60	±0.19	-
1.60 ≤ t < 2.00	±0.20	0.24
2.00 ≤ t < 2.50	±0.21	0.26
2.50 ≤ t < 3.15	±0.23	0.30
3.15 ≤ t < 4.00	±0.25	0.35
4.00 ≤ t < 5.00	±0.46	-
5.00 ≤ t < 6.00	±0.51	-

Specifications

■ Thickness of Upper Plating Layer

(Unit : mm)

Signs Marking the Coating Weights (Non-Alloyed)	Z06	Z08	Z10	Z12	Z18	Z20	Z22	Z25	Z27
Coating Thickness	0.013	0.017	0.021	0.026	0.034	0.040	0.043	0.049	0.054
Signs Marking the Coating Weights (Non-Alloyed)	Z35	Z45	Z60	F04	F06	F08	F10	F12	F18
Coating Thickness	0.064	0.080	0.102	0.008	0.013	0.017	0.021	0.026	0.034

■ Width Tolerance

(Unit : mm)

width	Tolerances		
	Using hot-rolled steel plate		Using cold rolled steel plate
	Mill Edge	Slit Edge	
w < 1,500	+25	+10	+7 0
1,500 < w	0	0	+10 0

■ Length Tolerance (sheet)

(Unit : mm)

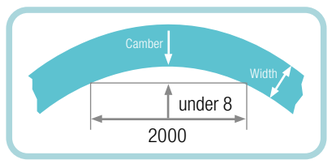
Using hot-rolled steel plate	Using cold rolled steel plate
+15 0	+15 0

■ Shape: Camber

Using Cold Rolled Steel Plate for Commercial Quality

(Unit : mm)

Length / Width	Sheet		Coil
	l < 2,000	2,000 ≤ l	
w < 630	4	4 to 2,000 to any given length	
630 ≤ w	2	2 to 2,000 to any given length	



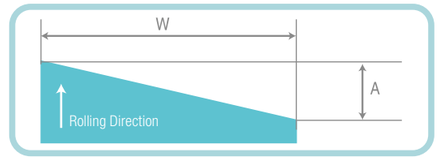
Using Hot-Rolled Steel Plate for Commercial Quality

Length / Width	Sheet			Coil
	l < 2,500	2,500 ≤ l < 4,000	4,000 ≤ l	
w < 630	5	8	12	5 to 2,000 to any given length
630 ≤ w < 1,000	4	6	10	
1,000 ≤ w	3	5	8	

⚠ Coating weight, thickness, width, length and shape correspond to KS standards. Please consult our quality manager for details.

■ Squareness Camber

The squareness camber of galvanized plain sheets shall be indicated in A/Wx100(%) shown in Fig. It shall not exceed 1%.



■ Flatness

Using Cold-Rolled Steel Plate

(Unit : mm)

Width	Wave	Center Wave	Edge Wave
w < 1,000	≤ 12	≤ 8	≤ 6
1,000 ≤ w < 1,250	≤ 15	≤ 9	≤ 8
1,250 ≤ w < 1,600	≤ 15	≤ 11	≤ 8
1,600 ≤ w	≤ 20	≤ 13	≤ 9

Using Hot-Rolled Steel Plate for Commercial Quality

Thickness / Width	w < 1,250	1,250 ≤ w < 1,600	1,600 ≤ w < 2,000	2,000 ≤ w < 3,000	3,000 ≤ w
1.20 ≤ t < 1.60	≤ 18	≤ 20	-	-	-
1.60 ≤ t < 3.15	≤ 16	≤ 18	≤ 20	-	-
3.15 ≤ t < 4.00	-	≤ 16	-	-	-
4.00 ≤ t < 5.00	-	≤ 14	-	≤ 24	≤ 25
6.00 ≤ t	-	≤ 13	-	≤ 21	≤ 22

Remarks) Unless otherwise specified, the maximum value of steel flatness shall be 1.5 times of the above table on the steels of the minimum tensile strength spec of over 570N/mm² or the minimum yield point spec of over 430N/mm² or having equivalent chemical element or hardness.

POSCO Specifications

■ Yield Point, Tensile Strength, Elongation

Using Cold-Rolled Steel Plate

POSCO Standards	Yield Point min N/mm² (MPa)	Tensile Strength min N/mm² (MPa)	Elongation, min., % Thickness, mm 0.25 ≤ t < 0.40	0.40 ≤ t < 0.60	0.60 ≤ t < 1.00	1.00 ≤ t < 1.60	1.60 ≤ t ≤ 2.30	JS, KS Correspond Specs
CGCC(-E)	-	-	-	-	-	-	-	SGCC
CGCF-E	-	270	-	34	36	37	38	SGCD1
CGCD-E	-	270	-	36	38	39	40	SGCD2
CGCN-E	-	270	-	38	40	41	42	SGCD3
CGCE(-E)	-	270	-	40	42	43	44	-
CGCX(-E)	-	-	-	-	-	-	-	-
CGC35	245	340	20	20	20	20	20	SGC340
CGC41	295	400	18	18	18	18	18	SGC400
CGC45	335	440	18	18	18	18	18	SGC440
CGC50	365	490	16	16	16	16	16	SGC490
CGCHS35 (-E, BH, BH-E, ES, ES-E)	186	340	30	30	30	30	30	-
CGCHS40 (-E, BH, BH-E)	215	390	27	27	27	27	27	-
CGCHS45	275	440	25	25	25	25	25	-
CGCHS50	333	490	21	21	21	21	21	-
CGCHS60DP	340	590	20	20	20	20	20	-

Remarks) 1. CGCN, CGCE, CGCX are assured of their non-aging properties for 6 months after the shipment from the factory.
2. (-E) of CODE spec : External plate spec, BH : Bake Hardening, ES : Deep Drawing Quality
3. Consult the quality manager for more detailed property info on high tensile strength steel (CGCH~).

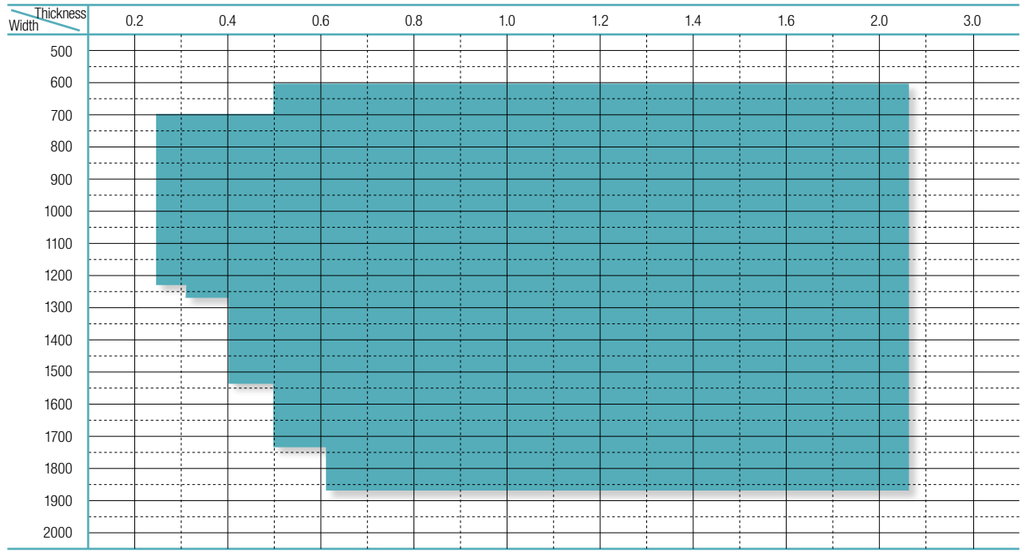
Using Hot-Rolled Sheet Plate

POSCO Standards	Yield Point min., N/mm²	Tensile Strength min., N/mm²	Elongation min., %	JS, KS Correspond Specs
CGHC	-	270	-	SGHC
CGHD	-	275	38	-
CGH35	245	340	20	SGH340
CGH41	295	400	18	SGH400
CGH45	335	440	18	SGH440
CGH50	365	490	16	SGH490
CGH55	400	540	16	SGH540

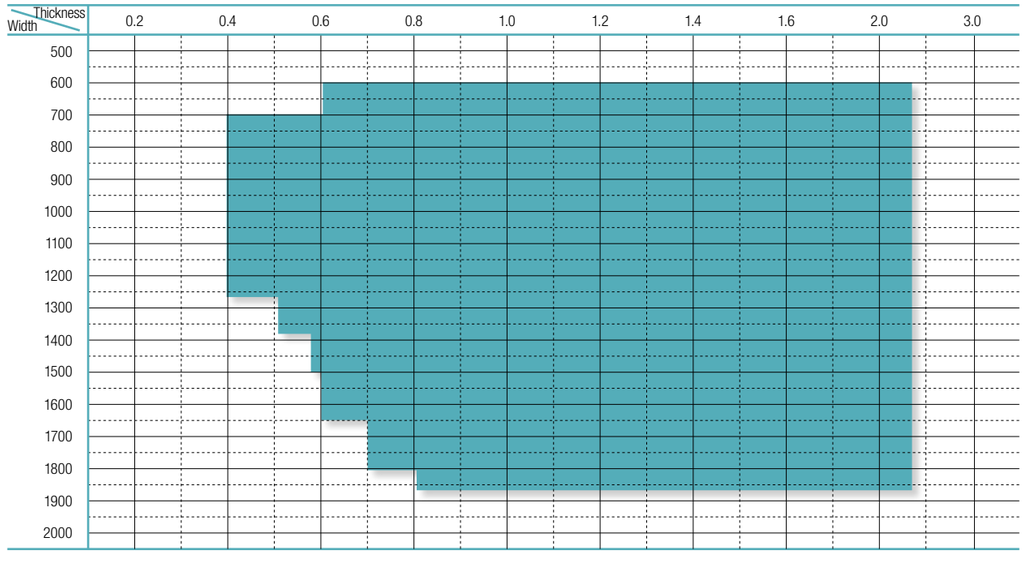
Remarks) CGHD: This product as a HGI for drawing is applied to some parts of cars and home electronics. (A switch box, etc.)

Galvanized Steel(GI, GA)

■ GI(CQ, LFQ)

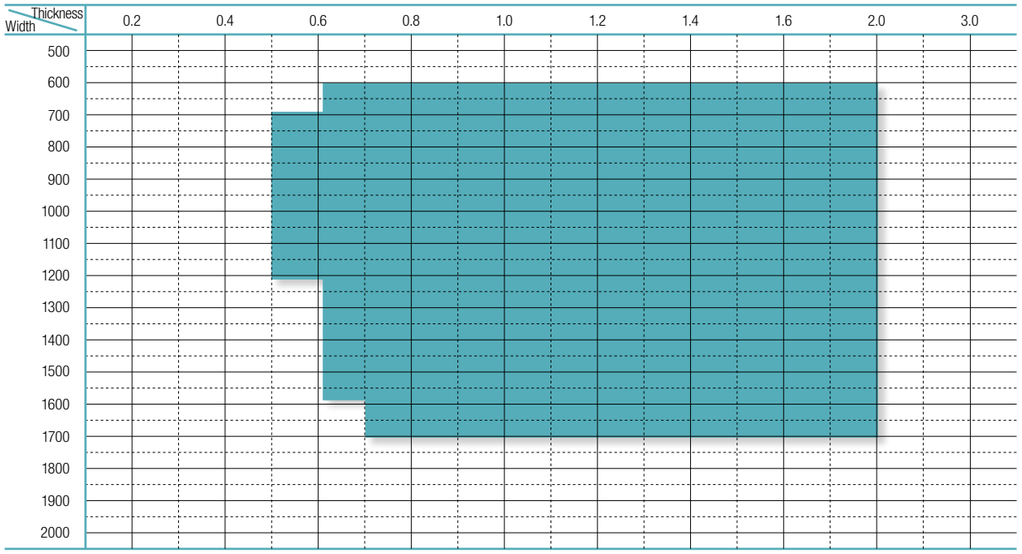


■ GI(DQ, DDQ, DDN)

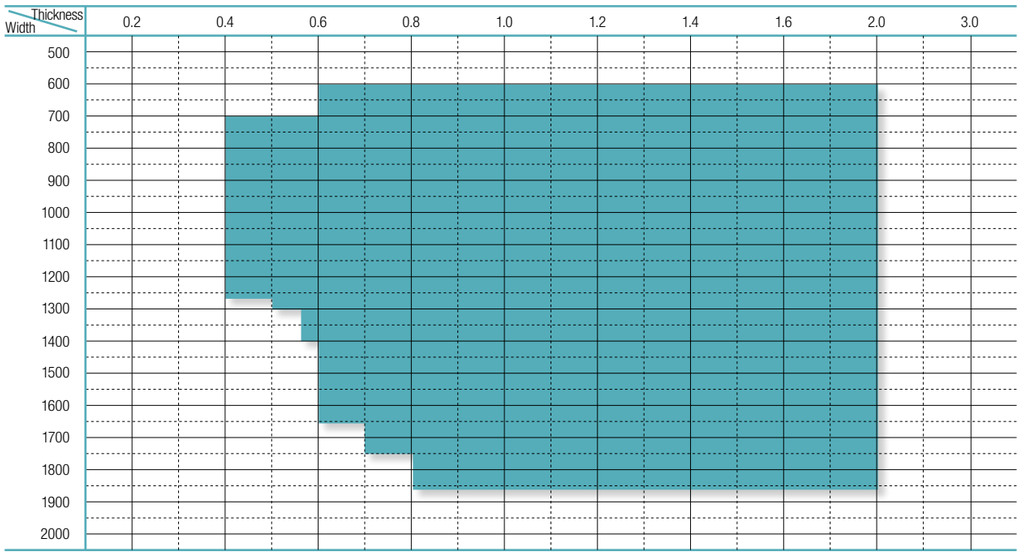


Available Dimensions

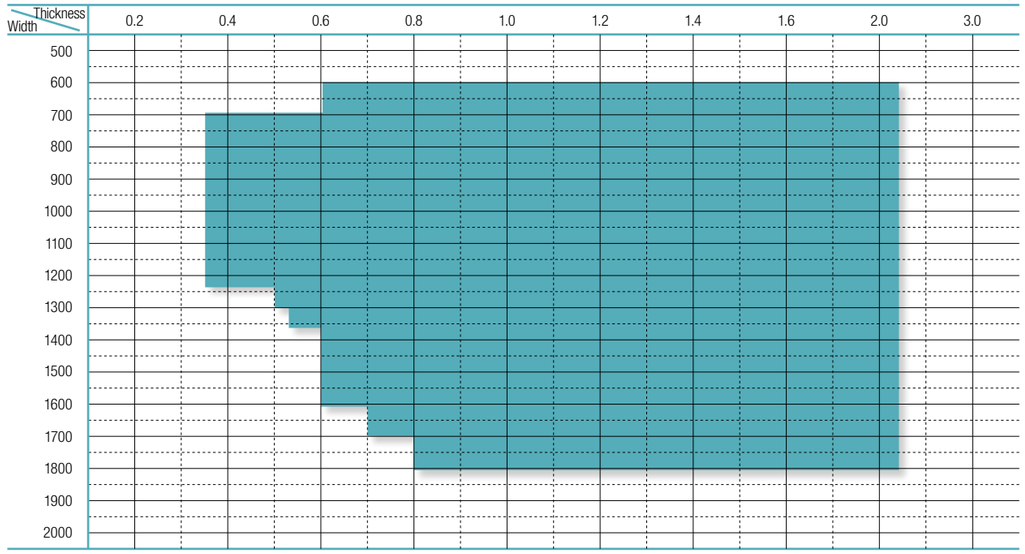
■ **GI(EDDQ)**



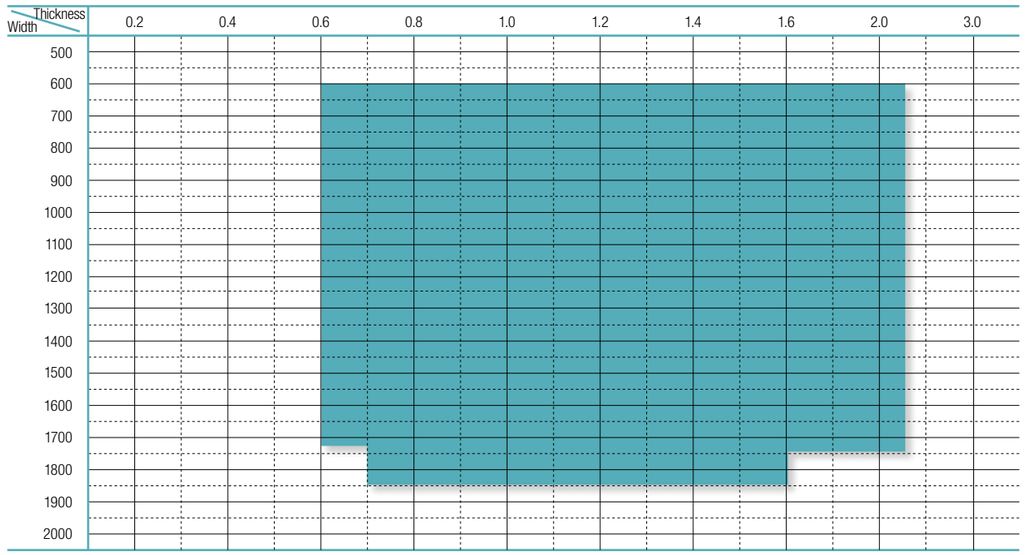
■ **GI(High Tensile Strength Steel)**



■ **GI(Structural Quality)**

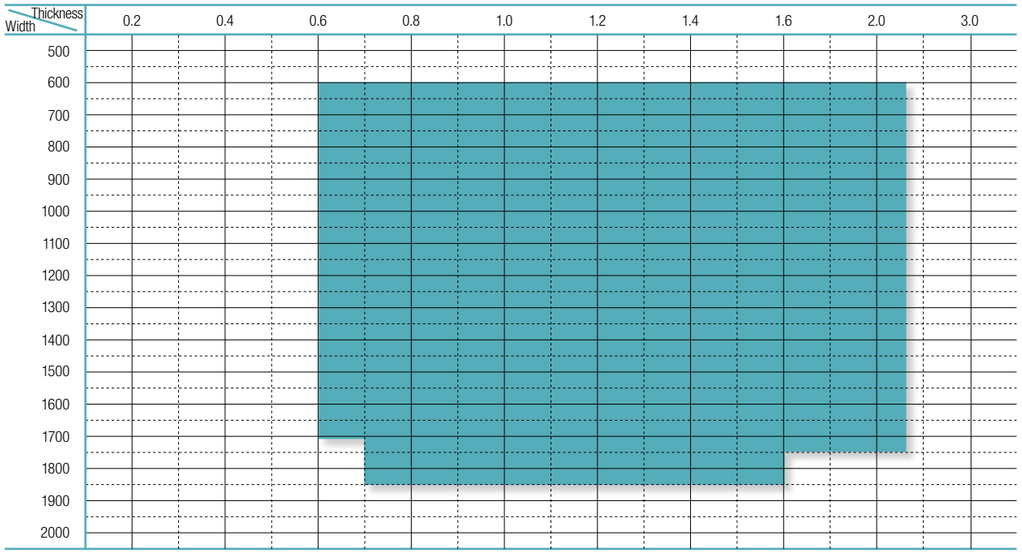


■ **GA(CQ, DQ, DDQ)**

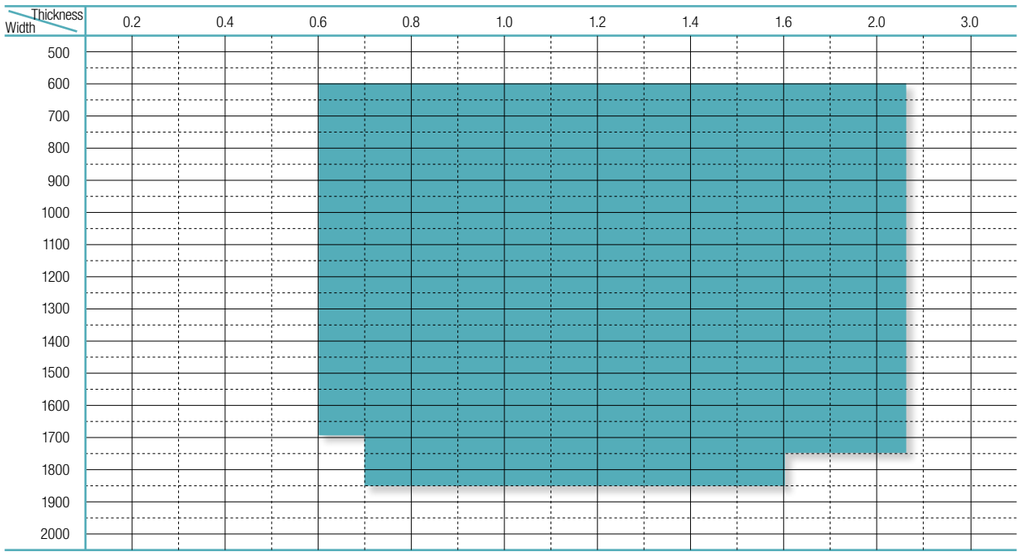


Available Dimensions

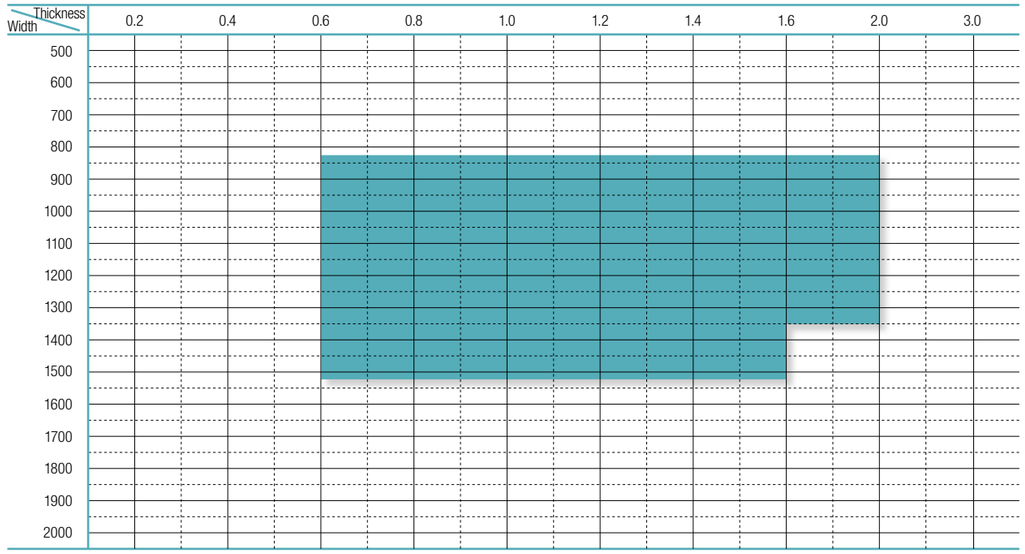
■ **GA(EDDQ)**



■ **GA(High Tensile Strength Steel)**



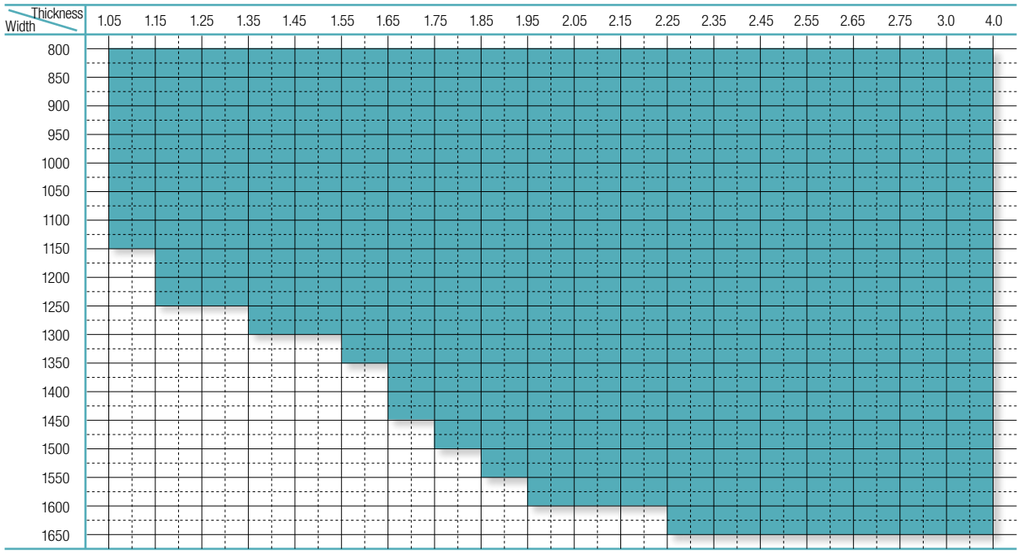
■ **GA(Structural Quality)**



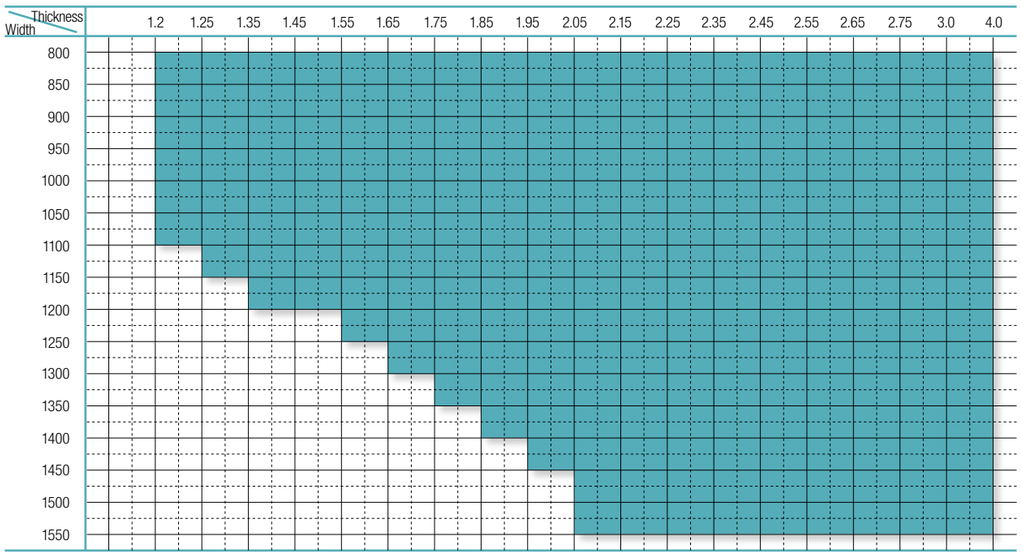
Available Dimensions

Available Dimensions for Pohang GI(H)

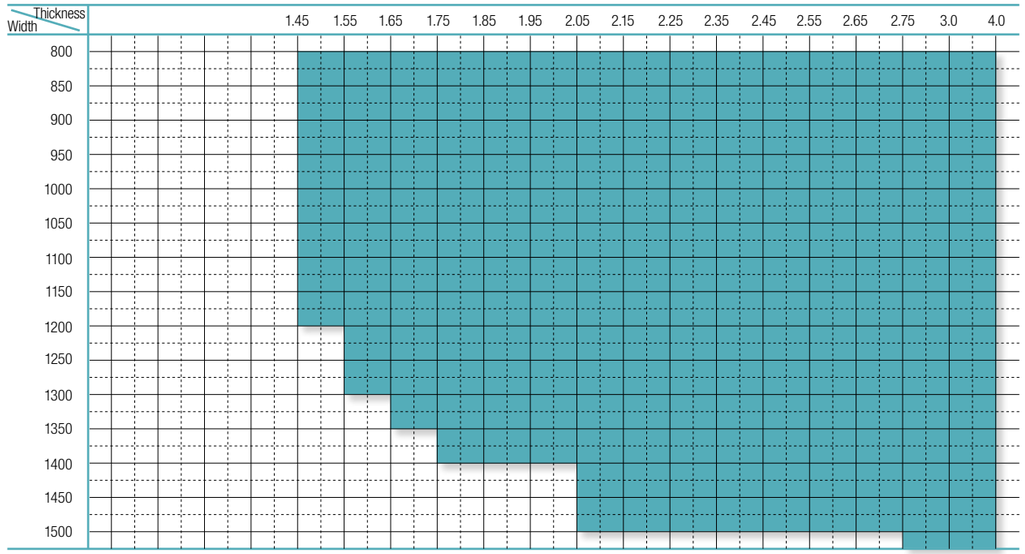
■ **SGHC, SGH340**



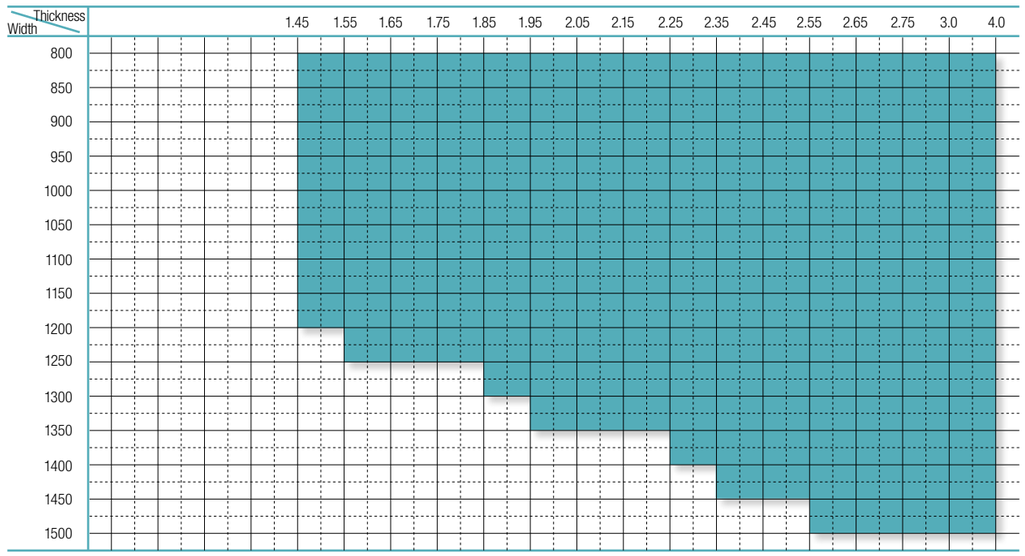
■ **SGH400**



■ **SGH440, SGH490**



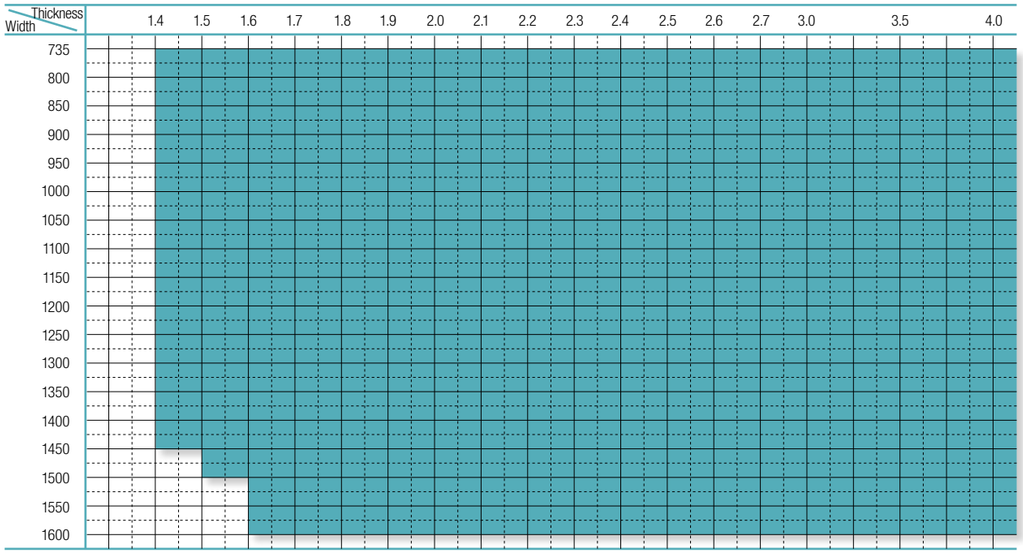
■ **SGH540**



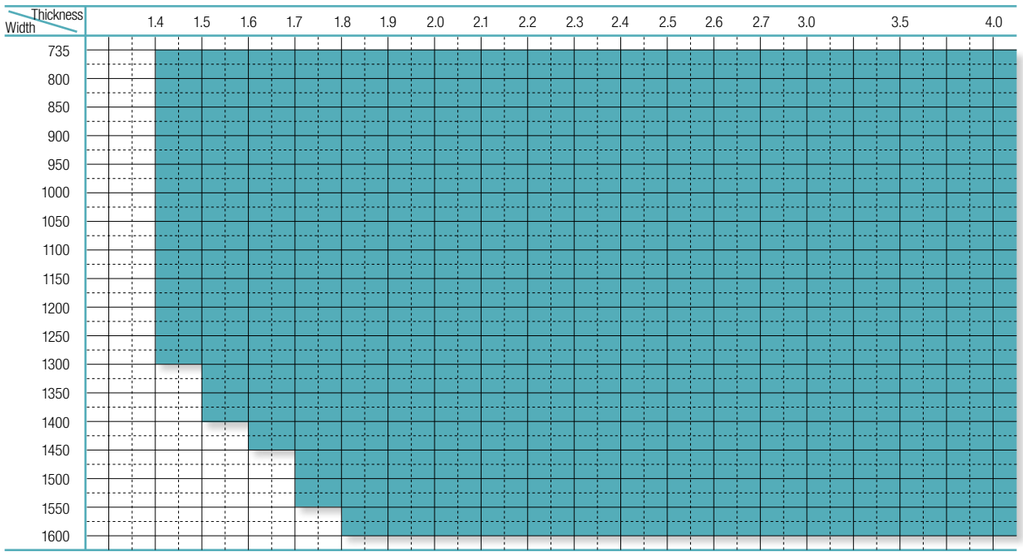
Available Dimensions

Available Dimensions for Gwangyang GI(H)

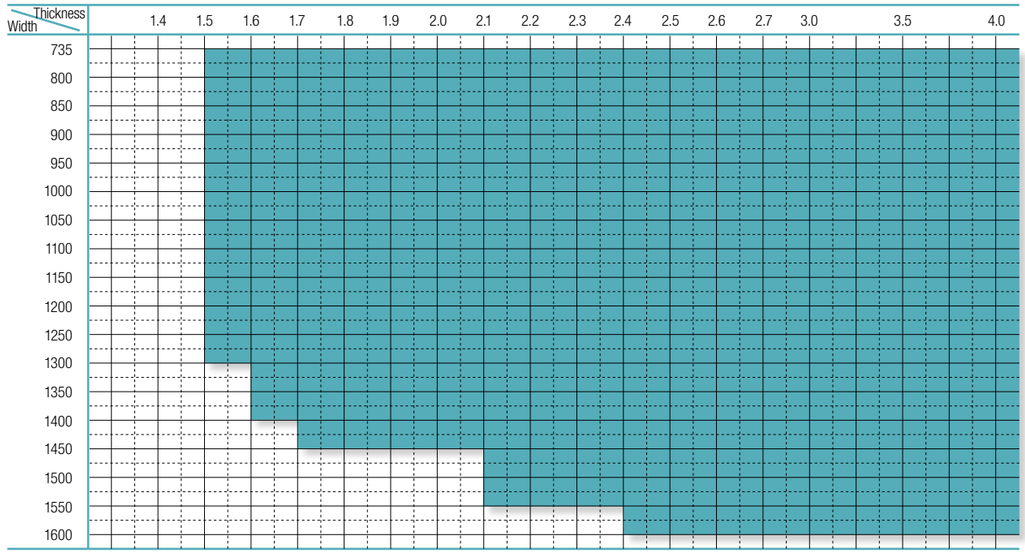
■ **SGHC, SGH340**



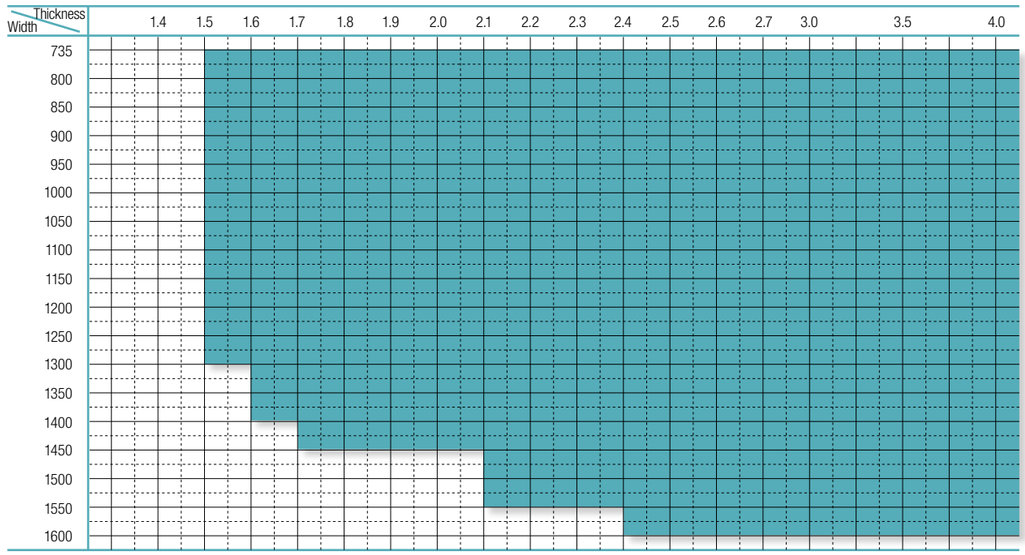
■ **SGH400**



■ **SGH440**



■ **SGH490, SGH540**



Order Guide

Please refer to the instructions mentioned below in order for you to select the products appropriate to your final usage when you place an order.

Specifications

It is important for you to select specific size appropriate for your final usage when you place an order for a product.
In addition, since there are various grades of products which you can choose from even in case of a product for commercial use, please consult with us when you place an order.

Surface treatment

Please select a post-treatment method of the product after the surface treatment and a surface treatment method appropriate to a condition under which the final product is used referring to the relevant catalog.

Post-Treatment

Cr-treated or Cr-free treated materials for a post-treatment is effective in preventing any white rust from the surface of a galvanized steel sheet.

Coating Weight

Please select a proper coating weight according to the targeted durable life-span of the coating weight and consider the conditions of usage, proccesing and the final product as well. A post-plating treated product is better under the enviroment that cause some corrosion, on the other hand, a foil plating method is better for a product requiring good formability and weldability.

Oiling

Customer can choose the oiling amount according to the usage conditions. However, if you place an order for untreated and un-oiled products at the same time, some white rust can be formed on the surface of the product.

Dimensions

The dimensions of a product greatly affect the actual yield ratio and the formability. If strict dimensions are required within the available sizes in the catalogs, please consult with us about it when you place an order.

Edge

In case of a product with which an edge can be selected, customer can either select a product with mill edge or slit edge depending on the product usage. If the edge of our company's product is used as that of a final product of a customer as it is, it is better to place an order as slit edge.

Weld Zone

In case of a coil product, a pickled weld zone and a plated weld zone could be mingled. Although such weld zones are relatively small parts of the product, their hardness is high and they are a little thick. Therefore, in case that it is hard for a customer to remove such parts, please select an option, 'No Mingle', then, we will take a measure for it.

Packaging

A packaging type could be selected according to the conditions of the transportation and storage of a product, but if nude packaging is selected, any warranty against white rust is not given.

Cautions on Use

Since hot-dip galvanized steel sheet cannot exert its characteristics well enough when used inappropriately, please take caution on the following matters.

Storage

Please be careful not to keep the products in a place where some moist or water can be smeared or the daily range of temperature is wide, but keep them in an airy place inside. And in case the wrapping paper, etc, is damaged while it is kept, please repair it right away and since some white rust is progressed to be formed in case of keeping them without using for a long time, even though the packing is perfect, please be careful for it not to be kept for a long time in stock. In case some moist or water is smeared onto the surface, please dry it right away and please be careful for the plated surface not to be damaged during transportation or working.

Processing

Since some lubricant containing a special additive makes zinc erode, please use some lubricant without any corrosive properties and, in case of using such corrosive lubricant inevitably, please remove it and treat the surface with an anti-corrosion agent after processing. In case of a product for processing, please select a size appropriate to the usage. Please avoid processing a product under the conditions with high moist, serious sulfurous acid gas or sooty smoke while taking much care of the processing environment.

Welding

In case of a resistance welding (RW), since zinc is attached to the electrode, it is necessary to clean it periodically. In case of a seam welding, the life span of the electrode can be extended by using the KNURL-GEAR DRIVE System. In case of a high-temperature brazing, especially, please avoid brazing with a GA material. Since some fumes are generated when welding, please weld a product at an airy place.
Usually, a hot-dip galvanized product is not good for soldering with some general flux.

Degreasing

It is good for degreasing to use a weak alkaline degreasing agent, a natural degreasing agent or an organic solvent. Since a strong alkaline degreasing agent corrodes zinc, please do not use such agents.

Coating

Since zinc is a highly active metal, it is hard to get a superior adhesiveness if it is coated directly to the surface of a hot-dip galvanized steel sheet without some additional treatments.

Aging

As time passes, a product can have some problems with deteriorated formability, stretcher-strain or fluting phenomena.
Therefore, please use a non-aging steel sheet in order for you to prevent such problems.

Usage

In case of using in a different way from the original usage from the time ordered, it can have some problems while being processed, so, please be careful not to use it in such a way.

The others

In case of using a processed product, if some special treatments, such as coating, etc., are not done on the plated surface, the effect of using a plated steel sheet decreases. (The corrosion levels of the products can be varied depending on the conditions to be used.) So, please be careful of it.

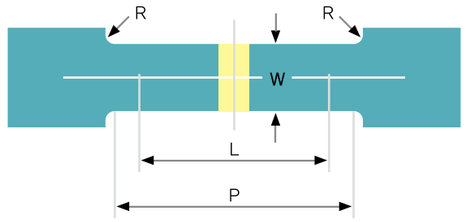
Testing Methods

Tension Test

A tension test is a basic testing method to measure the yield point, the tensile strength and the elongation of a steel sheet. In case of a usual tension test, some load is increased until the test piece is broken while some load is added to a fixed test piece.

Test Piece

The kinds and sizes, etc. of test pieces are specified in all of the specifications, such as KS, JIS and ASTM, etc. in order for you to prepare for a test piece to be used for a tension test. In case of a cold-rolled steel sheet, a way of selecting a test piece, which is specified in KS B 0801 No.5, is generally used.



P Parallel Body Length = around 60mm
L Gauge Length
W Width
R Shoulder Radius= 15mm

Results from a Tension Test

The results from a tension test are used as the most basic standards to judge the workability and formability.

- Elongation(E ℓ)

The higher the elongation is, the better the formability is.

- Yield Point(YP)

The lower the yield point is, the better the shape of a final product is.

- Yield Ratio ($\frac{\text{Yield Point}}{\text{Tensile Strength}}$, YR)

The lower the yield ratio is, the wider the gap between the yield point and the tensile strength is, and the wider the gap is, the better the shape freezing property of a steel sheet is when it is processed at the same strength level.

- Elastic Modulus(E)

A elastic modulus is inversely proportional to the inverse elasticity of a steel sheet. The lower the inverse elasticity is, the better the shape of a final product is.

- Work Hardening Exponent(n)

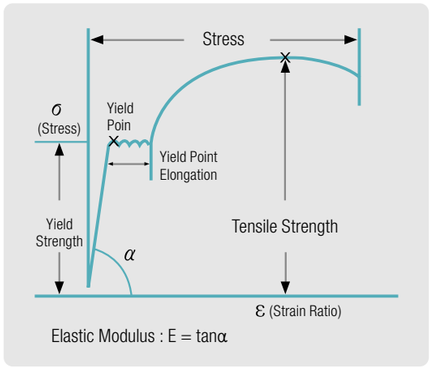
When some stress is put onto materials, a deformed part becomes hard in order for it to be constrained not to be deformed more and the force of deformation is spread to the other un-deformed parts in order for the whole parts of a material to be deformed evenly. Since the bigger the work hardening exponent is, the quicker and the evener the spread of deformation becomes, such kind of material is considered as the one with a good formability.

- Plastic Deformation Factor(r)

$$\frac{\ln wo/w}{\ln to/t}$$

(wo, w= width before or after a test, to, t= thickness before or after a test)

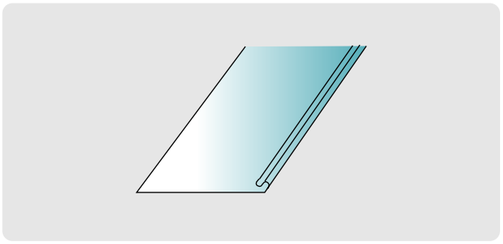
The reduction ratio of the part in the thickness-wise direction is inversely proportional to the vale, r, and the reduction ratio of the part in the width-wise direction is proportional to the value, r. And the bigger the value, r, is, the harder a steel sheet is cracked and the easier the steel sheet is worked.



Coating Weight/adhesiveness Test

The coating weight and adhesiveness test are done after sampling some test pieces from the top and bottom of each coil.

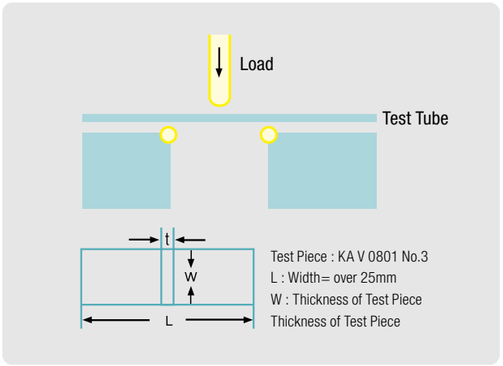
- Coating Weight: It is judged with the average value calculated by measuring the coating weights on the front and the back side of three areas widthwise by using an X-ray dry analysis method.
- Adhesiveness: After conducting a lock forming test, the plated status of the deformed area should be checked with the naked eye.



▲ Shape of a Steel Strip after it passes a Lock Forming Machine

Hardness Test

The hardness of steel sheets is closely related to the unique characteristics, such as their strength, durability and workability, etc. Therefore, a hardness test is often used as a means of understanding the other characteristics of steel sheets since it makes us understand the unique characteristics of steel sheets relatively easily. Rockwell hardness test is usually used to measure the hardness of a cold-rolled steel sheet.



■ Unit Weight of a Steel Sheet

Thickness of Sheet \ Mass of Zinc-Coating (g/m²)	60	100	120	180	220	275
0.20	1.670	17.20	1.753	1.814	1.875	1.951
0.23	1.906	19.56	1.989	2.050	2.111	2.187
0.25	2.062	2.112	2.145	2.206	2.267	2.343
0.27	2.220	2.270	2.303	2.364	2.425	2.501
0.30	2.455	2.505	2.538	2.599	2.660	2.736
0.35	2.848	2.898	2.931	2.992	3.053	3.129
0.40	3.240	3.290	3.323	3.384	3.445	3.521
0.45	3.632	3.682	3.715	3.776	3.837	3.913
0.50	4.025	4.075	4.108	4.169	4.230	4.306
0.55	4.418	4.468	4.501	4.562	4.623	4.699
0.60	4.810	4.860	4.893	4.954	5.015	5.091
0.70	5.595	5.645	5.678	5.739	5.800	5.876
0.80	6.380	6.430	6.463	6.524	6.585	6.661
0.90	7.165	7.215	7.248	7.309	7.370	7.446
1.0	7.950	8.000	8.033	8.094	8.155	8.231
1.2	9.520	9.570	9.603	9.664	9.725	9.801
1.4	11.09	11.14	11.17	11.23	11.30	11.37
1.6	12.66	12.71	12.74	12.80	12.86	12.94
1.8	14.23	14.28	14.31	14.37	14.44	14.51
2.0	15.80	15.85	15.88	15.94	16.00	16.08
2.3	18.16	18.21	18.24	18.30	18.36	18.44
2.8	22.08	22.13	22.16	22.22	22.28	22.36
3.2	25.22	25.27	25.30	25.36	25.42	25.50

■ Hardness Conversion Table

Rockwell Hardness			Vikers Hardness HV	Brinell Hardness HB(10/500)	Rockwell Hardness			Vikers Hardness HV	Brinell Hardness HB(10/500)
B	**F**	**30-T**			**B**	**F**	**30-T**		
100	113.3	80.8	235	202	55	88.1	51.9	100	89
99	112.7	80.1	229	195	54	87.5	51.3	99	87
98	112.1	79.5	224	193	53	87.0	50.7	98	86
97	111.6	78.9	218	184	52	86.5	50.0	96	85
96	111.0	78.2	214	179	51	85.9	49.4	95	84
95	110.5	77.6	209	175	50	85.3	48.7	94	83
94	109.9	76.9	205	171	49	84.8	48.1	93	82
93	109.3	76.3	200	167	48	84.2	47.5	92	81
92	108.8	75.7	196	163	47	83.7	46.8	91	80
91	108.2	75.0	192	160	46	83.1	46.2	90	79
90	107.7	74.4	188	157	45	82.5	45.5	89	79
89	107.1	73.7	184	154	44	82.0	44.9	88	78
88	106.6	73.1	180	151	43	81.4	44.3	87	77
87	106.0	72.4	176	148	42	80.9	43.6	86	76
86	105.4	71.8	173	145	41	80.3	43.0	85	75
85	104.9	71.2	170	142	40	79.8	42.3	84	75
84	104.3	70.5	166	140	39	79.2	41.7	83	74
83	103.8	69.9	163	137	38	78.6	41.1	82	73
82	103.2	69.2	160	135	37	78.1	40.4	81	72
81	102.6	68.6	156	133	36	77.5	39.8	80	72
80	102.1	68.0	154	130	35	77.0	39.1	80	71
79	101.5	67.3	150	128	34	76.4	38.5	79	70
78	101.0	66.7	147	126	33	75.8	37.9	78	69
77	100.4	66.0	145	124	32	75.3	37.2	78	69
76	99.9	65.4	142	122	31	74.7	36.6	77	68
75	99.3	64.8	140	120	30	74.2	35.9	77	67
74	98.7	64.1	137	118	28	73.1	34.6	-	66
73	98.2	63.5	134	116	26	71.9	33.4	-	65
72	97.6	62.8	132	114	24	70.8	32.1	-	64
71	97.1	62.2	129	112	22	69.7	30.8	-	63
70	96.5	61.6	127	110	20	68.6	29.5	-	61
69	95.9	60.9	125	109	18	67.5	28.2	-	60
68	95.4	60.3	123	107	16	66.4	27.0	-	59
67	94.8	59.6	120	106	14	65.2	25.7	-	59
66	94.3	59.0	119	104	12	64.1	24.4	-	58
65	93.7	58.4	117	102	10	63.0	23.1	-	57
64	93.2	57.7	115	101	8	61.9	21.8	-	56
63	92.6	57.1	113	99	6	60.8	20.6	-	55
62	92.0	56.4	111	98	4	89.7	19.3	-	55
61	91.5	55.8	109	96	2	58.5	18.0	-	54
60	90.9	55.2	107	95	0	57.4	16.7	-	53
59	90.4	54.5	106	94					
58	89.8	53.9	104	92					
57	89.2	53.2	103	91					
56	88.7	52.6	102	90					

■ Weight for One Steel Sheet by Ordered Coating Grade

Mass of Zinc-coating	60g/m²															100g/m²					
Width (mm)	762					914					1,000	1,219				762					914
Length (mm) / Thickness of Sheet (mm)	1,829	2,131	2,438	2,743	3,048	1,829	2,134	2,438	2,743	3,048	2,000	2,438	2,743	3,048	3,658	1,829	2,134	2,438	2,743	3,048	1,829
0.20	2.33	2.72	3.10	3.49	3.88	2.79	3.26	3.72	4.19	4.65	3.34	4.96	5.58	6.21	7.45	2.40	2.80	3.20	3.59	4.00	2.88
0.23	2.66	3.10	3.54	3.98	4.43	3.19	3.72	4.25	4.78	5.31	3.81	5.66	6.37	7.08	8.50	2.73	3.18	3.63	4.09	4.54	3.27
0.25	2.88	3.35	3.83	4.31	4.79	3.45	4.02	4.59	5.17	5.74	4.12	6.13	6.90	7.66	9.19	2.94	3.43	3.92	4.41	4.91	3.53
0.27	3.09	3.61	4.12	4.64	5.16	3.71	4.33	4.95	5.57	6.18	4.44	6.60	7.42	8.25	9.90	3.16	3.69	4.22	4.74	5.27	3.80
0.30	3.42	3.99	4.56	5.13	5.70	4.10	4.79	5.47	6.15	6.84	4.91	7.30	8.21	9.12	10.9	3.49	4.07	4.65	5.24	5.82	4.19
0.35	3.97	4.63	5.29	5.95	6.62	4.76	5.55	6.35	7.14	7.93	5.70	8.46	9.52	10.6	12.7	4.04	4.71	5.38	6.06	6.73	4.85
0.40	4.52	5.27	6.02	6.77	7.53	5.42	6.32	7.22	8.12	9.03	6.48	9.63	10.8	12.0	14.4	4.59	5.35	6.11	6.88	7.64	5.50
0.45	5.06	5.91	6.75	7.59	8.44	6.07	7.08	8.09	9.11	10.1	7.26	10.8	12.1	13.5	16.2	5.13	5.59	6.84	7.70	8.55	6.16
0.50	5.61	6.54	7.48	8.41	9.35	6.73	7.85	8.97	10.1	11.2	8.05	12.0	13.5	15.0	17.9	5.68	6.63	7.57	8.52	9.47	6.81
0.55	6.16	7.18	8.21	9.23	10.3	7.39	8.62	9.84	11.1	12.3	8.84	13.1	14.8	16.4	19.7	6.23	7.26	8.30	9.34	10.4	7.47
0.60	6.71	7.82	8.94	10.1	11.2	8.04	9.38	10.7	12.1	13.4	9.62	14.3	16.1	17.9	21.4	6.77	7.90	9.03	10.2	11.3	8.13
0.70	7.80	9.10	10.4	11.7	13.0	9.35	10.9	12.5	14.0	15.6	11.2	16.6	18.7	20.8	24.9	7.87	9.18	10.5	11.8	13.1	9.44
0.80	8.88	10.4	11.9	13.3	14.8	10.7	12.4	14.2	16.0	17.8	12.8	19.0	21.3	23.7	28.4	8.96	10.5	11.9	13.4	14.9	10.8
0.90	9.99	11.7	13.3	15.0	16.6	12.0	14.0	16.0	18.0	20.2	14.3	21.3	24.0	26.6	31.9	10.1	11.7	13.4	15.1	16.8	12.1
1.0	11.1	12.9	14.8	16.6	18.5	13.3	15.5	17.7	19.9	22.1	15.9	23.6	26.6	29.5	35.4	11.2	13.0	14.9	16.7	18.6	13.4
1.2	13.3	15.5	17.7	19.9	22.1	15.9	18.6	21.2	23.9	26.5	19.0	28.3	31.8	35.4	42.4	13.3	15.6	17.8	20.0	22.2	16.0
1.4	15.5	18.0	20.6	23.2	25.8	18.5	21.6	24.2	27.8	30.9	22.2	33.0	37.1	41.2	49.5	15.5	18.1	20.7	23.32	25.9	18.6
1.6	17.6	20.6	23.5	26.5	29.4	21.2	24.7	28.2	31.7	35.3	25.3	37.6	42.3	47.0	56.5	17.7	20.7	23.6	6.6	29.5	21.3
1.8	19.8	23.1	26.4	29.7	33.1	23.8	27.7	31.7	35.7	39.6	28.5	42.3	47.6	52.9	63.5	19.9	23.2	26.5	29.8	33.2	23.9
2.0	22.0	25.7	29.4	33.0	36.7	26.4	30.8	35.2	39.6	44.0	31.6	47.0	52.8	58.7	70.5	22.1	25.8	29.4	33.1	36.8	26.5
2.3	25.3	29.5	33.7	38.0	42.2	30.4	35.4	40.5	45.5	50.6	36.3	54.0	60.7	67.5	81.0	25.4	29.6	33.8	38.1	42.3	30.4
2.8	30.8	35.9	41.0	46.1	51.3	36.9	43.1	49.2	55.4	61.5	44.2	65.6	73.8	82.0	98.5	30.8	36.0	41.1	46.3	51.4	37.0
3.2	35.2	41.0	46.9	52.7	58.6	42.2	49.2	56.2	63.2	70.3	50.4	75.0	84.3	93.7	112	35.2	41.1	47.0	52.8	58.7	42.3

Mass of Zinc-coating	180g/m²															220g/m²					
Width (mm)	762					914					1,000	1,219				762					914
Length (mm) / Thickness of Sheet (mm)	1,829	2,131	2,438	2,743	3,048	1,829	2,134	2,438	2,743	3,048	2,000	2,438	2,743	3,048	3,658	1,829	2,134	2,438	2,743	3,048	1,829
0.20	2.53	2.95	3.37	3.79	4.21	3.03	3.54	4.04	4.56	5.05	3.63	5.39	6.07	6.74	8.09	2.61	3.05	3.48	3.92	4.36	3.14
0.23	2.86	3.33	3.84	4.28	4.76	3.43	4.00	4.57	5.14	5.71	4.10	6.09	6.86	7.62	9.14	2.94	3.43	3.92	4.41	4.90	3.53
0.25	3.08	3.59	4.10	4.61	5.12	3.69	4.30	4.91	5.53	6.15	4.41	6.56	7.38	8.20	9.84	3.16	3.69	4.21	4.74	5.27	3.79
0.27	3.30	3.84	4.39	4.94	5.49	3.95	4.61	5.27	5.93	6.59	4.73	7.03	7.91	8.78	10.5	3.38	3.94	4.51	5.07	5.63	4.05
0.30	3.62	4.23	4.83	5.43	6.04	4.35	5.07	5.79	6.52	7.24	5.20	7.72	8.69	9.66	11.6	3.71	4.33	4.94	5.56	6.18	4.45
0.35	4.17	4.86	5.56	6.25	6.95	5.00	5.83	6.67	7.50	8.34	5.98	8.89	10.0	11.1	13.3	4.26	4.96	5.67	6.38	7.09	5.10
0.40	4.72	5.50	6.29	7.07	7.86	5.66	6.60	7.54	8.48	9.43	6.77	10.1	11.3	12.6	15.1	4.80	5.60	6.40	7.20	8.00	5.76
0.45	5.26	6.14	7.02	7.89	8.77	6.31	7.36	8.41	9.47	10.5	7.55	11.2	12.6	14.0	16.8	5.35	6.24	7.13	8.02	8.91	6.42
0.50	5.81	6.78	7.75	8.71	9.68	6.97	8.13	9.29	10.5	11.6	8.34	12.4	13.9	15.5	18.6	5.90	6.88	7.86	8.84	9.83	7.07
0.55	6.36	7.42	8.48	9.53	10.6	7.63	8.90	10.2	11.4	12.7	9.12	13.6	15.3	17.0	20.3	6.44	7.52	8.59	9.66	10.7	7.73
0.60	6.91	8.06	9.20	10.4	11.5	8.28	9.66	11.0	12.4	13.8	9.91	14.7	16.6	18.4	22.1	6.99	8.15	9.32	10.5	11.6	8.39
0.70	8.00	9.33	10.7	12.0	13.3	9.60	11.2	12.8	14.4	16.0	11.5	17.1	19.2	21.3	25.6	8.09	9.43	10.8	12.1	13.5	9.70
0.80	9.09	10.6	12.1	13.6	15.2	10.9	12.7	14.5	16.4	18.2	13.0	19.4	21.8	24.2	29.1	9.18	10.7	12.2	13.8	15.3	11.0
0.90	10.2	11.9	13.6	15.3	17.0	12.2	14.3	16.3	18.3	20.4	14.6	21.7	24.4	27.2	32.6	10.3	12.0	13.7	15.4	17.1	12.3
1.0	11.3	13.2	15.0	16.9	18.8	13.5	15.8	18.0	20.3	22.5	16.2	24.1	27.1	30.1	36.1	11.4	13.3	15.2	17.0	18.9	13.6
1.2	13.5	15.7	18.0	20.2	22.4	16.2	18.8	21.5	24.2	26.9	19.3	28.7	32.3	35.9	43.1	13.6	15.8	18.1	20.3	22.6	16.3
1.4	15.7	18.3	20.9	23.5	26.1	18.8	21.9	25.0	28.2	31.3	22.5	33.4	37.6	41.7	50.1	15.8	18.4	21.0	23.6	26.2	18.9
1.6	17.8	20.8	23.8	26.8	29.7	21.4	25.0	28.5	32.1	35.7	25.6	38.0	42.8	47.6	57.1	17.9	20.9	23.9	26.9	29.9	21.5
1.8	20.0	23.4	26.7	30.0	33.4	24.0	28.0	32.0	36.0	40.0	28.7	42.7	48.1	53.4	64.1	20.1	23.5	26.8	30.2	33.5	24.1
2.0	22.2	25.9	29.6	33.3	37.0	26.7	31.1	35.5	40.0	44.4	31.9	47.4	53.3	59.2	71.1	22.3	26.0	29.7	33.4	37.2	26.8
2.3	25.5	29.8	34.0	38.2	42.5	30.6	35.7	40.8	45.9	51.0	36.6	54.4	61.2	68.0	81.6	25.6	29.9	34.1	38.4	42.7	30.7
2.8	31.0	36.1	41.3	46.4	51.6	37.2	43.3	49.5	55.7	61.9	44.4	66.0	74.3	82.6	99.1	31.1	36.2	41.4	46.6	51.8	37.3
3.2	35.4	41.2	47.1	53.0	58.9	42.4	49.5	56.5	63.6	70.7	50.7	75.4	84.8	94.2	113	35.4	41.3	47.2	53.1	59.1	42.5

60g/m²									120g/m²										
914				1,000	1,219				762					914				1,000	2,134			
2,134	2,438	2,743	3,048	2,000	2,438	2,743	3,048	3,658	1,829	2,134	2,438	2,743	3,048	1,829	2,134	2,438	2,743	3,048	2,000	2,438	2,743	3,048	3,658
3.35	3.83	4.31	4.79	3.44	5.11	5.75	6.39	7.67	2.44	2.85	3.26	3.66	4.07	2.93	3.42	3.91	4.39	4.88	3.51	5.21	5.86	6.51	7.82
3.81	4.36	4.90	5.45	3.91	5.81	6.54	7.27	8.72	2.77	3.23	3.70	4.16	4.62	3.33	3.88	4.43	4.99	5.54	3.98	5.91	6.65	7.39	8.87
4.12	4.71	5.29	5.88	4.22	6.28	7.06	7.85	9.42	2.99	3.49	3.99	4.48	4.98	3.59	4.18	4.78	5.38	5.98	4.29	6.37	7.17	7.97	9.56
4.43	5.06	5.69	6.32	4.54	6.75	7.59	8.44	10.1	3.21	3.74	4.28	4.81	5.35	3.85	4.49	5.13	5.77	6.42	4.61	6.84	7.70	8.56	10.3
4.88	5.58	6.28	6.98	5.01	7.44	8.38	9.31	11.2	3.54	4.13	4.72	5.30	5.90	4.24	4.95	5.65	6.36	7.07	5.08	7.54	8.49	9.43	11.3
5.65	6.46	7.27	8.07	5.80	8.61	9.69	10.8	12.9	4.09	4.77	5.45	6.13	6.81	4.90	5.72	6.53	7.35	8.17	5.86	8.71	9.801	10.9	13.1
6.42	7.33	8.25	9.17	6.58	9.78	11.0	12.2	14.7	4.63	5.40	6.17	6.95	7.72	5.56	6.48	7.40	8.33	9.26	6.65	9.88	1.1	12.3	14.8
7.18	8.20	9.23	10.3	7.36	10.9	12.3	13.7	16.4	5.18	6.04	6.90	7.76	8.63	6.21	7.24	8.28	9.31	10.3	7.43	11.0	12.4	13.8	16.6
7.95	9.08	10.2	11.4	8.15	12.1	13.6	15.1	18.2	5.60	6.53	7.47	8.40	9.331	6.72	7.84	8.95	10.1	11.2	8.04	11.9	13.4	14.9	17.9
8.71	9.95	11.2	12.4	8.94	13.3	14.9	16.6	19.9	6.27	7.32	8.36	9.41	10.5	7.53	8.78	10.0	11.3	12.5	9.00	13.4	15.1	16.7	20.1
9.48	10.8	12.2	13.5	9.72	14.4	16.3	18.1	21.7	6.82	7.96	9.09	10.2	11.4	8.18	9.54	10.9	12.3	13.6	9.79	14.5	16.4	18.2	21.8
11.0	12.6	14.2	15.7	11.3	16.8	18.9	21.0	25.2	7.92	9.23	10.5	11.9	13.2	9.49	11.1	12.7	14.2	15.8	11.4	16.9	19.0	21.2	25.3
12.5	14.3	16.1	17.9	12.9	19.1	21.5	23.9	28.7	9.01	10.5	12.0	13.5	15.0	10.8	12.6	14.4	16.2	18.0	12.9	19.2	21.6	24.0	28.8
14.1	16.1	18.1	20.1	14.4	21.4	24.1	26.8	32.2	10.1	11.8	13.5	15.1	16.8	12.1	14.1	16.1	18.2	20.2	14.5	21.5	24.2	26.9	32.3
15.6	17.8	20.1	22.3	16.0	23.8	26.8	29.7	35.7	11.2	13.1	14.9	16.8	18.7	13.4	15.7	17.9	20.1	22.4	16.1	23.9	26.9	29.9	35.8
18.7	21.3	24.0	26.7	19.1	28.4	32.0	35.6	42.7	12.6	14.7	16.8	18.9	21.1	15.2	17.7	20.2	22.7	25.2	18.1	26.9	30.3	33.7	40.4
21.7	24.8	27.9	31.0	22.3	33.1	37.3	41.4	49.7	15.6	18.2	20.8	23.3	25.9	18.7	21.8	24.9	28.0	31.1	22.3	33.2	37.4	41.5	49.8
24.8	28.3	31.9	35.4	25.4	37.8	42.5	47.2	56.7	17.8	20.7	23.7	26.6	29.6	21.3	24.8	28.4	31.9	35.5	25.5	37.9	42.6	47.3	56.8
27.8	31.8	35.8	39.8	28.6	42.4	47.8	53.1	63.7	19.9	23.3	26.6	29.9	33.2	23.9	27.9	31.9	35.9	39.9	28.6	42.5	47.9	53.2	63.8
30.9	35.3	39.7	44.2	31.7	47.1	53.0	58.9	70.7	22.1	25.8	29.5	33.2	36.9	26.6	31.0	35.4	39.8	44.2	31.8	47.2	53.1	59.0	70.8
35.5	40.6	45.7	50.7	36.4	54.1	60.9	67.7	81.2	25.4	29.7	33.9	38.1	42.4	30.5	35.6	40.6	45.7	50.8	36.5	54.2	61.0	67.8	81.3
43.2	49.3	55.5	61.7	44.3	65.8	74.0	82.2	98.7	30.9	36.0	41.2	46.3	51.5	37.1	43.4	49.4	55.6	61.8	44.3	65.9	74.18	82.3	98.8
49.3	56.3	63.4	70.4	50.5	75.1	84.5	93.9	113	65.3	41.1	47.0	52.9	58.8	42.3	50.6	56.4	63.4	70.5	50.6	75.2	84.6	94.0	113

200g/m²									275g/m²										
914				1,000	1,219				762					914				1,000	2,134			
2,134	2,438	2,743	3,048	2,000	2,438	2,743	3,048	3,658	1,829	2,134	2,438	2,743	3,048	1,829	2,134	2,438	2,743	3,048	2,000	2,438	2,743	3,048	3,658
3.66	4.18	4.70	5.22	3.75	5.57	6.27	6.97	8.36	2.72	3.17	3.62	4.08	4.53	3.26	3.80	4.35	4.89	5.44	3.90	5.80	6.52	7.25	8.70
4.12	4.70	5.29	5.88	4.22	6.27	7.06	7.84	9.41	3.05	3.56	4.06	4.57	5.08	3.66	4.26	4.87	5.48	6.09	4.37	6.50	7.31	8.13	9.75
4.42	5.05	5.68	6.32	4.53	6.74	7.58	8.42	10.1	3.27	3.81	4.35	4.90	5.44	3.92	4.57	5.22	5.87	6.53	4.69	6.96	7.83	8.71	10.4
4.73	5.40	6.08	6.76	4.85	7.21	8.11	9.01	10.8	3.49	4.07	4.65	5.23	5.81	4.18	4.88	5.57	6.27	6.97	5.00	7.43	8.36	9.29	11.2
5.19	5.93	6.67	7.41	5.32	7.91	8.90	9.88	11.9	3.81	4.45	5.08	5.72	6.36	4.57	5.34	6.10	6.86	7.62	5.47	8.13	9.15	10.2	12.2
5.95	6.80	7.65	8.51	6.11	9.07	10.2	11.3	13.6	4.36	5.09	5.81	6.54	7.27	5.23	6.10	6.97	7.84	8.72	6.26	9.30	10.5	11.6	14.0
6.72	7.68	8.64	9.60	6.89	10.2	11.5	12.8	15.4	4.91	5.73	6.54	7.36	8.18	5.89	6.87	7.84	8.83	9.81	7.04	10.5	11.8	13.1	15.7
7.48	8.55	9.62	10.7	7.67	11.4	12.8	14.3	17.1	5.45	6.36	7.27	8.18	9.00	6.54	7.63	8.72	9.81	10.9	7.83	11.6	13.1	14.5	17.4
8.25	9.42	10.6	11.8	8.46	12.6	14.1	15.7	18.9	6.00	7.00	8.00	9.09	10.0	7.20	8.40	9.59	10.8	12.0	8.61	12.8	14.4	16.0	19.2
9.01	10.3	11.6	12.9	9.25	13.7	15.5	17.2	20.6	6.55	7.64	8.73	9.82	10.9	7.86	9.16	10.5	11.8	13.1	9.40	14.0	15.7	17.5	21.0
9.78	11.2	12.6	14.0	10.0	14.9	16.8	18.6	22.4	7.10	8.28	9.46	10.6	11.8	8.51	9.93	11.3	12.8	14.2	10.2	15.1	17.0	18.9	22.7
11.3	12.9	14.5	16.2	11.6	17.2	19.4	21.6	25.9	8.19	9.55	10.9	12.3	13.6	9.82	11.5	13.1	14.7	16.4	11.8	17.5	19.6	21.8	26.2
12.8	14.7	16.5	18.3	13.2	19.6	22.0	24.5	29.4	9.29	10.8	12.4	13.9	15.5	11.1	13.0	14.8	16.7	18.6	13.3	19.8	22.3	24.8	29.7
14.4	16.4	18.5	20.5	14.7	21.9	24.6	27.4	32.9	10.4	12.1	13.8	15.6	17.3	12.4	14.5	16.6	18.7	20.7	14.9	22.1	24.9	27.7	33.2
15.9	18.2	20.4	22.7	16.3	24.2	27.3	30.3	36.4	11.5	13.4	15.3	17.2	19.1	13.8	16.1	18.3	20.6	22.9	16.5	24.5	27.5	30.6	36.7
19.0	21.7	24.4	27.1	19.5	28.9	32.5	36.1	43.4	13.7	15.9	18.2	20.5	22.8	16.4	19.1	24.6	24.6	27.3	19.6	29.1	32.8	36.4	43.7
22.0	25.2	28.3	31.5	22.6	33.6	37.8	42.0	50.4	15.8	18.5	21.1	23.8	26.4	19.0	22.2	25.3	28.5	31.7	22.7	33.8	38.0	42.3	50.7
25.1	28.7	32.2	35.8	25.7	38.2	43.0	47.8	57.3	18.0	21.0	24.0	27.0	30.1	21.6	25.2	28.8	32.4	36.1	25.9	38.5	43.3	48.1	57.7
28.2	32.2	36.2	40.2	28.9	42.9	48.3	53.7	64.4	20.2	23.6	27.0	30.3	33.7	24.3	28.3	32.3	36.4	40.4	29.0	43.1	48.5	53.9	64.7
31.2	35.6	40.1	44.6	32.0	47.6	53.5	59.5	71.3	22.4	26.1	29.9	33.6	37.4	26.9	31.4	35.8	40.3	44.8	32.2	47.8	53.8	59.8	71.7
35.8	40.9	46.0	51.2	36.7	54.6	61.4	68.2	81.9	25.7	30.0	34.3	38.5	42.8	30.8	36.0	41.1	46.2	51.4	36.9	54.8	61.7	68.5	82.2
43.4	49.6	55.9	62.1	44.6	66.2	74.5	82.8	99.3	31.2	36.4	41.5	46.7	51.9	37.4	43.6	49.8	56.1	62.3	44.7	66.5	74.8	83.1	99.7
49.6	56.6	63.7	70.8	50.8	75.5	85.0	94.5	113	35.5	41.5	47.4	53.3	59.2	42.6	49.07	56.8	63.9	71.0	51.0	75.8	85.3	94.8	114

■ **Dimensions Comparison Table**

Dimen-sions	U. S. G		B. W. G		B. G		S. W. G		M. S. G		C. S. G	
	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.
10	3.572	0.1406	3.40	0.134	3.175	0.1250	3.251	0.128	3.416	0.1345	-	-
11	3.175	0.1250	3.05	0.120	2.827	0.1113	2.946	0.116	3.037	0.1196	-	-
12	2.778	0.1094	2.77	0.109	2.517	0.0991	2.64	0.104	2.657	0.1046	2.753	0.1084
13	2.381	0.0938	2.41	0.095	2.240	0.0882	2.34	0.092	2.278	0.0897	2.372	0.0934
14	1.984	0.0781	2.11	0.083	1.994	0.0785	2.03	0.080	1.897	0.0747	1.994	0.0785
15	1.786	0.0703	1.83	0.072	1.775	0.0699	1.83	0.072	1.709	0.0673	1.803	0.0710
16	1.558	0.0625	1.65	0.065	1.588	0.0625	1.63	0.064	1.519	0.0598	1.163	0.0635
17	1.429	0.0563	1.47	0.058	1.412	0.0553	1.42	0.056	1.367	0.0538	1.461	0.0575
18	1.2700	0.0500	1.25	0.049	1.257	0.0495	1.22	0.048	1.214	0.0478	1.311	0.0516
19	1.1113	0.0438	1.07	0.042	1.118	0.0440	1.02	0.040	1.062	0.0418	1.158	0.0456
20	0.0525	0.0375	0.89	0.035	0.996	0.0392	0.91	0.036	0.912	0.0359	1.006	0.0396
21	0.8731	0.0344	0.81	0.032	0.886	0.0349	0.81	0.032	0.836	0.0329	0.930	0.0366
22	0.7938	0.0313	0.71	0.028	0.794	0.0313	0.71	0.028	0.760	0.0299	0.853	0.0336
23	0.7144	0.0281	0.64	0.025	0.707	0.0278	0.61	0.024	0.683	0.0269	0.777	0.0306
24	0.6350	0.0250	0.56	0.022	0.629	0.0248	0.56	0.022	0.607	0.0239	0.701	0.0276
25	0.5556	0.0219	0.51	0.020	0.560	0.0220	0.51	0.020	0.531	0.0209	0.627	0.0247
26	0.4763	0.0188	0.46	0.018	0.498	0.0196	0.46	0.018	0.455	0.0179	0.551	0.0217
27	0.4366	0.0172	0.41	0.016	0.443	0.0175	0.417	0.0164	0.417	0.0164	0.513	0.0202
28	0.3969	0.0156	0.36	0.014	0.397	0.0156	0.346	0.0148	0.378	0.0149	0.475	0.0187
29	0.3572	0.0141	0.33	0.013	0.353	0.0139	0.345	0.0136	0.343	0.0135	0.437	0.0172
30	0.3175	0.0125	0.30	0.012	0.312	0.0123	0.315	0.0124	0.305	0.0120	0.399	0.0157
31	0.2778	0.0109	0.25	0.011	0.279	0.0110	0.295	0.0116	0.267	0.0105	0.361	0.0142
32	0.2580	0.0102	0.23	0.009	0.249	0.0098	0.274	0.0108	0.246	0.0097	0.340	0.0134
33	0.2381	0.0094	0.20	0.008	0.221	0.0087	0.254	0.0100	0.229	0.0090	-	-
34	0.2183	0.0086	0.18	0.007	0.196	0.0077	0.234	0.0092	0.208	0.0082	-	-
35	0.1984	0.0078	0.13	0.005	0.175	0.0069	0.213	0.0084	0.191	0.0075	-	-

Unit Conversion Table

■ **Weight**

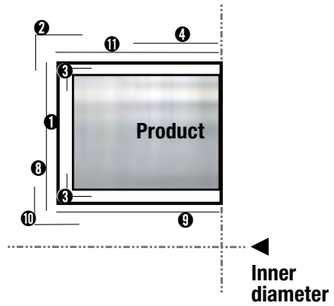
Dimensions	Kilogram	Ounce	Pound	Net Ton	Gross Ton	Metric Ton
	kg	oz	lb	nt	gt	t
Kilogram(kg)	1	35.2740	2.20463	0.001102	0.(3)9842	0.001
Ounce(oz)	0.02835	1	0.06250	0.(4)3125	0.(4)2790	0.(4)285
Pound(lb)	0.045359	16	1	0.0050	0.(3)4464	0.(3)4536
Net Ton(nt)	907.185	32000	2000	1	0.89286	0.90719
Gross Ton(gt)	1016.05	35840	2240	1.12	1	1.0605
Metric Ton(t)	1000	35274	2204.62	1.10231	0.9842	1

■ **Length**

Dimensions	Millimeter	Centimeter	Meter	Inch	Foot	Yard	Mile
	mm	cm	m	in	ft	yd	mi
Millimeter(mm)	1	0.1	0.001	0.03937	0.0032808	0.0010936	0.(6)6214
Centimeter(cm)	10	1	0.01	0.3937	0.032808	0.010936	0.(5)6214
Meter(m)	1000	100	1	39.37	3.28084	1.09361	0.(3)6214
Inch(in)	25.40	2.540	0.0254	1	0.0833	0.02778	0.(4)1578
Foot(ft)	304.8	30.48	0.3048	12	1	0.3333	0.(3)1894
Yard(yd)	914.4	91.44	0.9144	36	3	1	0.(3)5682
Mile(mi)	1609350	160935	1609.35	63360	5280	1760	1

Packaging

Name of outer pack



Name of cross-sectional pack

NO	Name	Meterial
❶	PP VCI WRAP	VINYL
❷	OUTER RING	STEEL
❸	CORNER WRAP	ANTI-RUST BOARD
❹	OUTER PROTECT BOARD	STEEL
❺	HORIZONTAL BAND	STEEL
❻	CENTER BAND	PET
❼	VERTICAL BAND	STEEL
❽	SIDE BOARD	PLASTIC
❾	INNER PROTECT BOARD	PLASTIC
❿	INNER RING	STEEL
⓫	OUTER PROTECT BOARD	ANTI-RUST BOARD

* Packing Type and materials are changeable.

GALVANIZED STEEL

Contact Us

POSCO Center 440, Teheran-ro,
Gangnam-gu, Seoul, Korea
Global Technical Center
TEL 82-2-3457-2597

Headquarters
6261, Donghaean-ro, Nam-gu, Pohang-si,
Gyeongsangbuk-do 790-300, Korea
TEL 82-54-220-0114
FAX 82-54-220-6000

Seoul Office
POSCO Center, 440, Teheran-ro,
Gangnam-gu, Seoul 135-777, Korea
TEL 82-2-3457-0114
FAX 82-2-3457-6000

Pohang Works
6261, Donghaean-ro, Nam-gu, Pohang-si,
Gyeongsangbuk-do 790-785, Korea
TEL 82-54-220-0114
FAX 82-54-220-6000

Gwangyang Works
20-26, Pokposarang-gil, Gwangyang-si,
Jeollanam-do 545-711, Korea
TEL 82-61-790-0114
FAX 82-61-790-7000

posco www.posco.com www.steel-n.com