Cold Rolled/ Metallic Coated Steel

CR

GI/GA

SuperGalum®

MgCOT®

ALCOT®

EGI

KG Dongbu Steel

CONTENTS

KG exists to
become a respected
company,
a proud company.

thinK Great

A respected company, a proud company

KG Dongbu Steel

1967

1967 • Produced Korea's first cold rolled steel sheets

1989

1984 • Presented the "$100 million Export Tower" and "Silver Tower Industrial Medal" awards
1985 • Technology Research Center established
• Official corporate name change from Dong-Jin Steel Co., Ltd. to Dongbu Steel Co., Ltd.
1986 • Announce Public Disclosure
1989 • No. 2 RCM, No. 2 CGL started operation

1996

1991 • Coil Service Center commenced operations
1992 • Awarded the 39th Jang Young-sil prize
1995 • Plans to increase No. 2 CGL production capacity completed
• No. 3 CGL started operation (Facility localization success)
1996 • Incheon Works recognized as an environment friendly factory
• Anti-bacteria coated steel sheets developed

1999

1997 • ISO14001-1996 certified Anti-Pollution pre-coated steel sheets developed
• Stainless pre-coated sheets developed
1998 • Mass production of high quality corrosion-proof SuperGalum® steel sheets
• Heat transferred print steel sheets developed for the first time in Korea
1999 • Construction of Asan Bay Works completed
• Established Dongbu Japan Co., Ltd.

2004

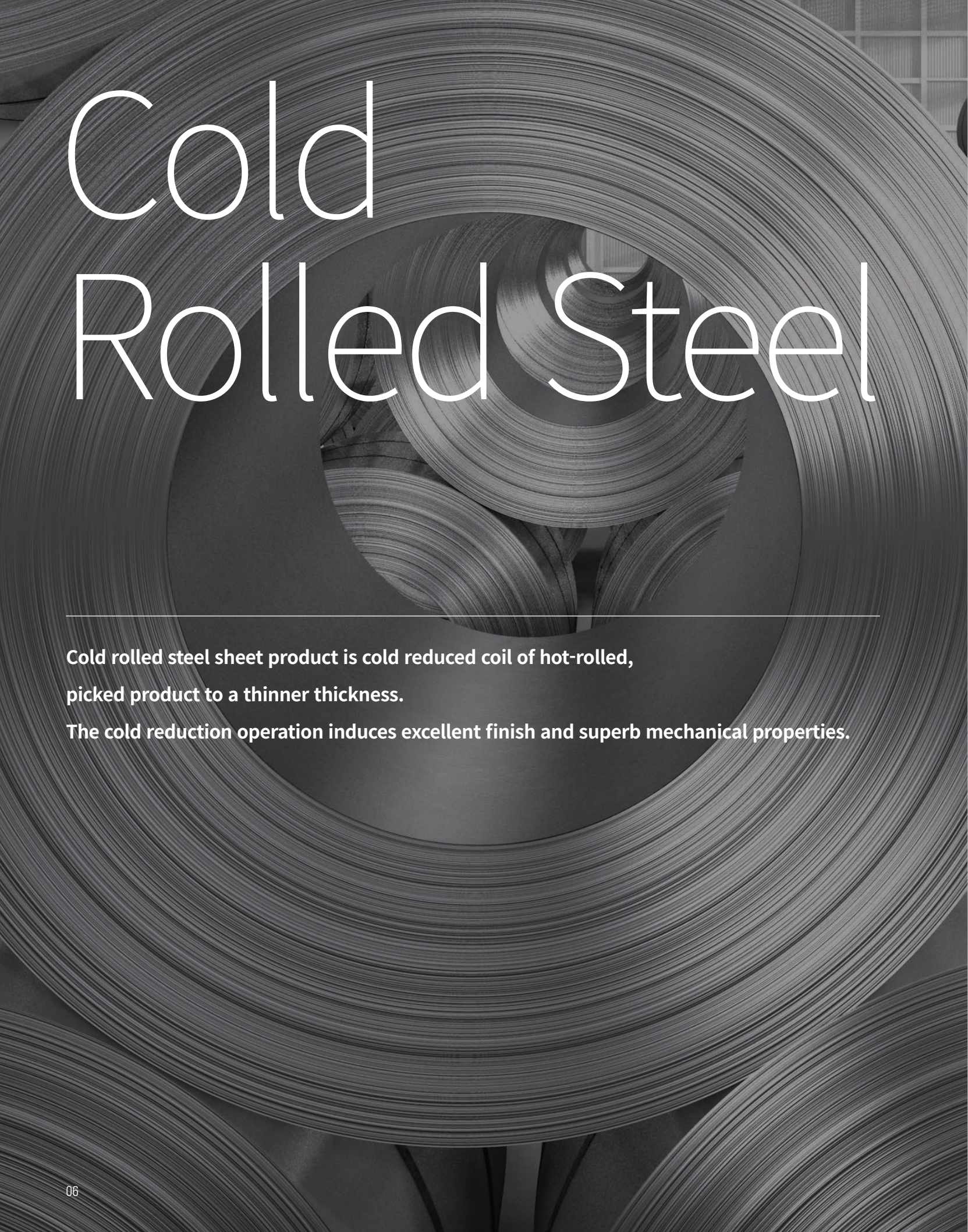
2000 • USD 500 Million Export Tower Awards
2002 • Ultra-thin (0.225t) D&I BP/TP developed
• ISO 9001, QS9000, ISO/TS16949 Quality Certificates acquired
2003 • Operation of No. 4 CCL(MCCL) started
2004 • Incheon Works Steel Gallery opened
• ERP carried out to full scale

2008

2007 • 1st place from Global Green Management Excellence Awards
2008 • Received the Premier Citation for Fair Trade on 'The 7th Fair Trade's day'
• Official corporate name in Korean changed

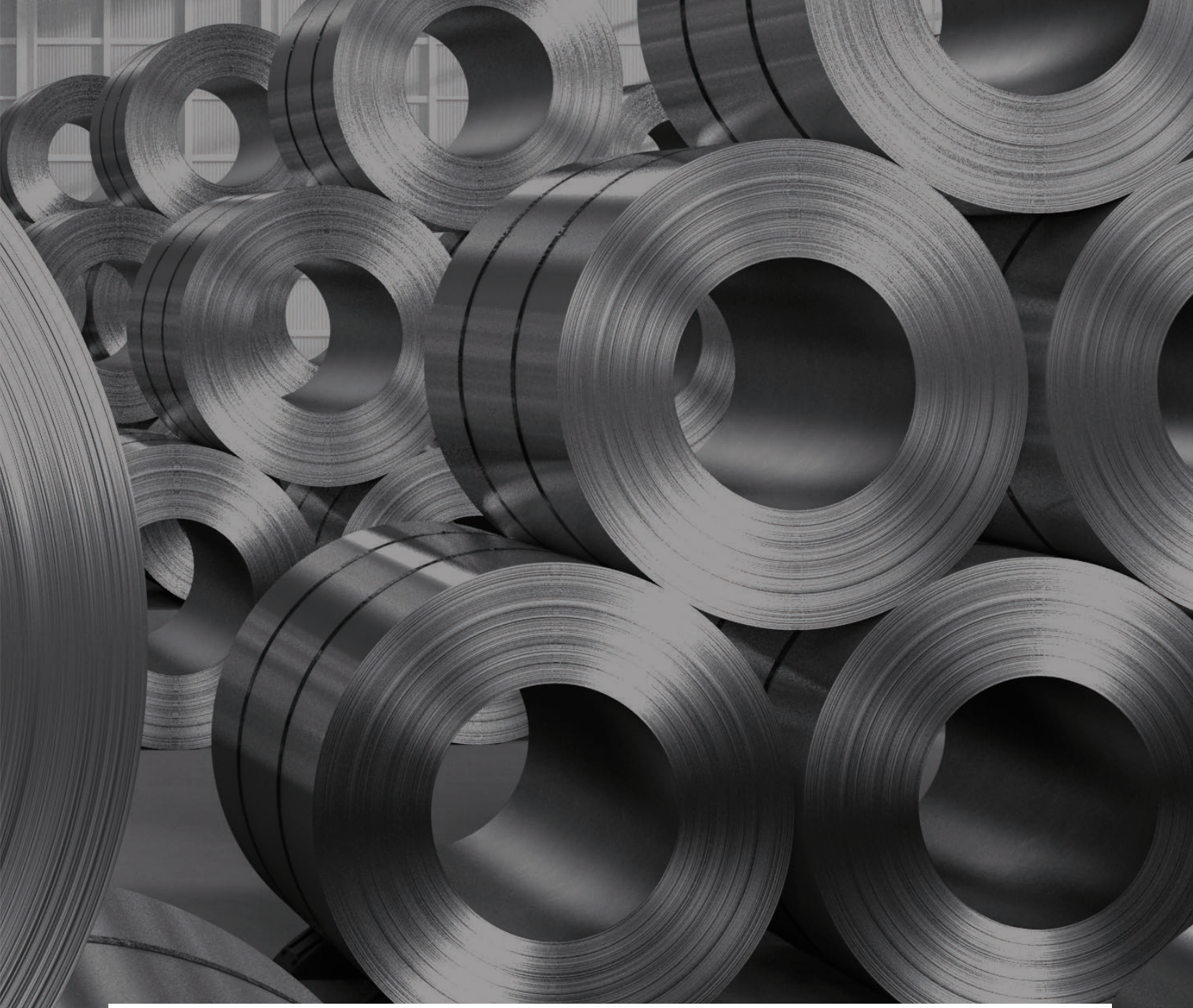
2020

2009 • "Industrial Relation Culture Award" granted by the Korean Ministry of Labor
2010 • Awarded USD 1 billion Export Tower Awards
• Named Green Business, the only one in the domestic steel industry
2011 • Dongbu Thai Steel Co., Ltd. was established
2012 • 'Best company for creating jobs' Award selected
2016 • Redesignated as a green company 6 times in a row
2019 • Joined KG family
• Mass production of high quality corrosion-proof coated steel sheets 'MgCOT®'
2020 • Changed the company name to KG Dongbu Steel Co., Ltd.



Cold Rolled Steel

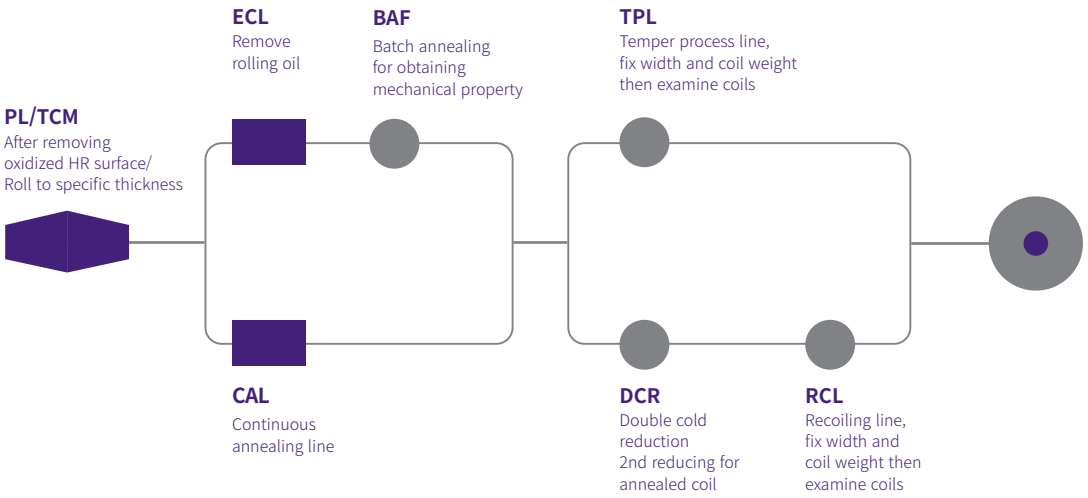
Cold rolled steel sheet product is cold reduced coil of hot-rolled, picked product to a thinner thickness. The cold reduction operation induces excellent finish and superb mechanical properties.



Main application

Automobile	Electronics	Construction	Others
Construction, Door, Door Frame, Front or Rear Fender, Oil Filter, etc.	Refrigerator, Toaster, Fluorescent Lamp Reflector, etc.	Lightweight section steel, Switchboard, Pipe, Welding, Equipment outer sheet, Roofing, etc.	Toys, Furniture , Office Machine Parts, etc.

Manufacturing Process



Specification

Thickness(mm)	0.13 ~ 3.2
Width(mm)	600 ~ 1,600
Coil Weight	Max. 45T
Coil ID(mm)	508/610

Characteristics

Controlled Sheet Thickness
Beautiful Surface Finish
Excellent Flatness
High Formability

Classification by Steel Quality

Classification	Characteristic
Commercial Quality	Standard product for general application such as bending and simple drawing.
Drawing Quality	Product for applications requiring drawing steel characteristics compared SPCC.
Deep Drawing Quality	Improved drawability compared with SPCD. Provides excellent finish even after deep drawing.
Non-aging Deep Drawing Quality	Best for deep drawing, will not induce stretcher strain.
High Strength Steel	Satisfied For Automotive parts, high-strength, high-formed technical needs ※ Specifications : high strength steel 340 / 440 / 590

Classification by Surface Finish

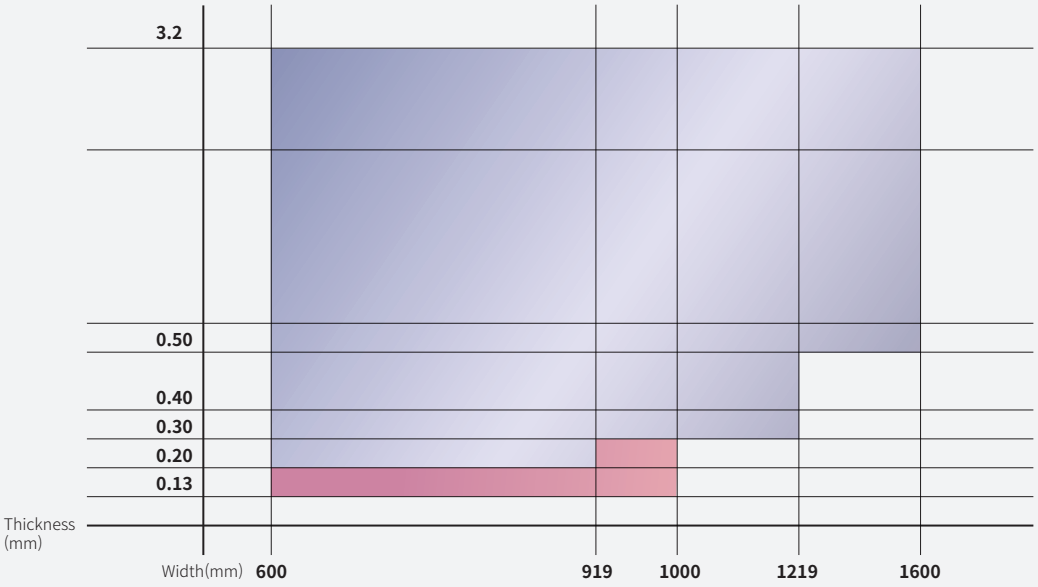
Classification	Characteristic
Dull Finish	Widely used for most application. Uniform dull finish is suitable for painting and lacquering.
Bright Finish	Additionally buffed and polished after plating. Suitable for smooth, reflective bright finish application.

Classification by Edge

Classification	Characteristic
Mill Edge	Edges produced by trimming hot rolled coils during the pickling process prior to cold rolling.
Slit Edge(Trimmed Edge)	Edges produced by shearing or slitting at the cold rolling process.

※ Rust Preventive Oils : Provides protection from corrosion (rusting) during shipment & storage.
Customer can choose Anti Rust Oil (Heavy, Normal, Light Oiling), DOS Oiling or Unoiling.

Available Size



1. Sizes indicated in ▭ will be subjected to negotiation.
2. Coils are available inside diameter to be 508mm (20 in) or 610mm (24 in).
3. Coils are available in weight ranging between 2.5Tons(5,500 lbs) and 20Tons(44,000 lbs).

※ There may be restrictions for each type of steel, so please consult with the sales and quality department in advance when ordering new products.

Special Products

Bright

Excellent Surface Finish

• Main use: stationery (binder, tongs), stove reflector, rail, various accessories, jewelry, etc.

Manufacturing Process

Hot coil → PL/TCM → ECL → BAF → DCR / TPL → RCL → Products

Size Availability

Classification	Thickness(mm)	Width(mm)
CQ, 1/4H, 1/8H	0.20 ~ 0.49	700 ~ 1219
	0.49 ~ 2.30	700 ~ 1600
1/2H	0.20 ~ 0.60	700 ~ 1219
	0.61 ~ 0.70	700 ~ 914

Mechanical Properties

Classification	Grade	Hardness(HRB)	Surface Roughness(μRa)	Gloss(Gu20")
Commodity	SB	55 ≥	Max. 0.20	400 ≤
Hard Type	1/8H (8B)	50 ~ 71	Max. 0.20	400 ≤
	1/4H (4B)	65 ~ 80		250 ≤
	1/2H (2B)	74 ~ 89		250 ≤
	F/H (1B)	85 ≤	Max. 0.40	

Door Frame

• Maintains window glass, reduces noises, water tights, supports car structure

Automobile door frame

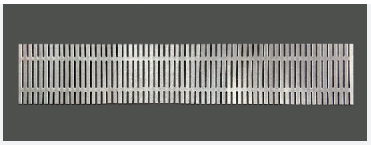
Manufacturing Process

Hot coil → PL/TCM → ECL → BAF → TPL → Products

Size Availability

Thickness(mm)	Width(mm)
0.7 ~ 1.5	914 ~ 1600

Weather Strip Reinforcement



- Weather Strip
  - Waterproof packing that prevents water, dust, etc. from entering by attaching the opening and closing doors of motor vehicles.
- Weather Strip Reinforcement
  - It plays the role of fixing the shape of the car weather strip

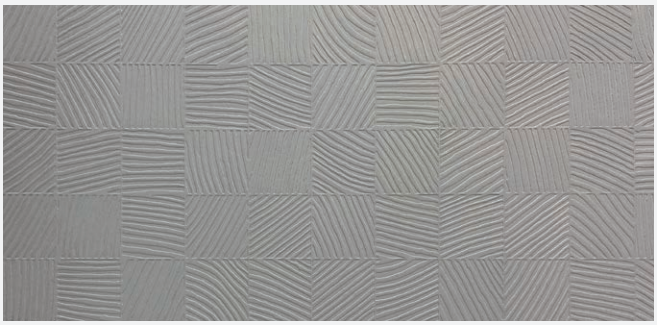
Manufacturing Process

Hot coil — PL/TCM — ECL — BAF — DCR — RCL — Products

Size Availability

Thickness(mm)	Width(mm)
0.3 ~ 0.7	700 ~ 1220

EMBO Steel sheet



- Embossing treatment on the surface of the cold-rolled steel sheet gives a gorgeous feeling and has anti-fingerprint properties
- Can be produced as EGI coated products

Manufacturing Process

Hot coil — PL/TCM — ECL — BAF — TPL — EGL — Products

CAL

Size Availability

	Thickness(mm)	Width(mm)
CR	0.6 ~ 2.0	700 ~ 1600
EGI	0.6 ~ 1.6	700 ~ 1219

※ Prior consultation is required when requesting a new design.

Cold rolled steel

CR Standard Specification

JIS (Japanese Industrial Standard)

G 3141

Classification & Chemical Composition (only for reference)

Symbol	Quality	Chemical composition(%)			
		C	Mn	P	S
SPCC	Commercial Quality	Max. 0.15	Max. 1.00	Max. 0.100	Max. 0.035
SPCD	Drawing Quality	Max. 0.10	Max. 0.50	Max. 0.040	Max. 0.035
SPCE	Deep Drawing Quality	Max. 0.08	Max. 0.45	Max. 0.030	Max. 0.030

Remarks
1. When the steel sheet and coil of standard temper grade and as-annealed one in quality SPCC are requested by the purchaser to guarantee tensile test values, letter symbol T shall be suffixed to the symbol of quality, thus appears SPCCT.
2. When the steel sheet and coil of standard temper grade in quality SPCE are requested by the purchaser to guarantee non-aging property, letter symbol N shall be suffixed to the symbol of quality, thus appears SPCEN.

Mechanical Properties

Tensile Strength, Elogation and non-aging

Tension test	Tensile strength N/mm²	Elogation(%)								Tension test piece
Division by nominal thickness mm / Symbol	0.25 and over	0.25 to 0.30, excl.	0.30 to 0.40, excl.	0.40 to 0.60, excl.	0.60 to 1.0, excl.	1.0 to 1.6, excl.	1.6 to 2.5, excl.	2.5 and over	
SPCC	(Min. 270)	(Min. 28)	(Min. 31)	(Min. 34)	(Min. 36)	(Min. 37)	(Min. 38)	(Min. 39)	No.3 in the direction of rolling
SPCD	Min. 270	Min. 30	Min. 33	Min. 36	Min. 38	Min. 39	Min. 40	Min. 41	
SPCE	Min. 270	Min. 32	Min. 35	Min. 38	Min. 40	Min. 41	Min. 42	Min. 43	

Remarks
1. The tension test value does not usually to Class 1 When required by the purchaser, however, the value in paren these applies.
2. For those less than 0.60 mm in thickness, the tension test shall generally be omitted.
3. This Table applies to those of 30 mm or more in width.
4. When the non-aging is designated for the normally refined steel sheet and strip of Class 3, it shall be guaranteed for 6 months after being delivered by the manufacturing factory. The term "non-aging" means the property not to produce stretcher strain during the time of being worked.
5. Units and numerical values indicated within the parentheses(except the value shown in the upper side of the first column and in the following columns in the Class 1 line) are based on the International System of Units(SI)and are added as informative notes, where 1 n/mm²=1 MPa.

Bending

Temper grade	Symbol of temper grade	Bend test		
		Bend angle	Inside radius	Test piece
As annealed	A	180°	Close contact	No.3 in the direction of rolling
Standard temper grade	S	180°	Close contact	
1/8 hard	8	180°	Close contact	
1/4 hard	4	180°	0.5 x Thickness	
1/2 hard	2	180°	1.0 x Thickness	
Full hard	1	-	-	

Remarks The test maybe omitted for the steel sheet and strip as annealed and standard temper grade.

Hardness

Temper grade	Symbol of temper grade	Hardness	
		HRB	HV
1/8 hard	8	50 ~ 71	95 ~ 130
1/4 hard	4	65 ~ 80	115 ~ 150
1/2 hard	2	74 ~ 89	135 ~ 185
Full hard	1	Min. 85	Min. 170

Remarks Either Rockwell or Vickers hardness shall be used to the hardness.

Permissible Variations in Dimension & Shapes

Thickness Tolerances

(Unit : mm)

Division by nominal thickness \ Division by nominal width	Under 600	600 to 1,000, excl.	1,000 to 1,250, excl.	1,250 to 1,600, excl.	1,600 and over
Under 0.25	±0.03	±0.03	±0.03	-	-
0.25 to 0.40, ecxl.	±0.04	±0.04	±0.04	-	-
0.40 to 0.60, ecxl.	±0.05	±0.05	±0.05	±0.06	-
0.60 to 0.80, ecxl.	±0.06	±0.06	±0.06	±0.06	±0.07
0.80 to 1.00, ecxl.	±0.06	±0.06	±0.07	±0.08	±0.09
1.00 to 1.25, ecxl.	±0.07	±0.07	±0.08	±0.09	±0.11
1.25 to 1.60, ecxl.	±0.08	±0.09	±0.10	±0.11	±0.13
1.60 to 2.00, ecxl.	±0.10	±0.11	±0.12	±0.13	±0.15
2.00 to 2.50, ecxl.	±0.12	±0.13	±0.14	±0.15	±0.17
2.50 to 3.15, ecxl.	±0.14	±0.15	±0.16	±0.17	±0.20
3.15 and over	±0.16	±0.17	±0.19	±0.20	-

Width Tolerances

(Unit : mm)

Division by nominal width	
Under 1,250	1,250 or over
+7	+10
0	0

Remarks To the stretcher-leveler finished steel sheet, the plus side tolerance does not apply.

Length Tolerances

(Unit : mm)

Division by nominal length	
Under 2,000	+10 - 0
2,000 to 4,000 ecxl.	+15 - 0
4,000 to 6,000 ecxl.	+20 - 0

Remarks To the stretcher-leveler finished steel sheet, the plus side tolerance does not apply.

Flatness Tolerances

(Unit : mm)

Division by nominal thickness \ Classfication of warpage	Bow	Edge wave	Centre buckle
Under 1,000	Max. 12	Max. 8	Max. 6
1,000 to 1,250, ecxl.	Max. 15	Max. 9	Max. 8
1,250 to 1,600, ecxl.	Max. 15	Max. 11	Max. 8
1,600 and over	Max. 20	Max. 13	Max. 9

Remarks Flatness shall be measured by the steel sheets put on the surface plate, the value of flatness is the remainder of the maximum strain from which the specified thickness of the steel is subtracted, shall apply to the upper surface of the steel sheets.

Camber Tolerances

(Unit : mm)

Division by nominal thickness \ Division	Steel sheet	
	Under 2,000 in length	Under 2,000 and over in length
30 to 40, ecxl.	Max. 8	Max. 8mm/2,000mm At any point
40 to 600, ecxl.	Max. 4	Max. 4mm/2,000mm At any point
600 or over	Max. 2	Max. 2mm/2,000mm At any point

Remarks The above table does not apply to the abnormal part of steel strip.

Cold rolled steel

CR Standard Specification

ASTM (American Society for Testing and Materials)

A 1008

Classification & Chemical Composition (only for reference)

Designation		C	Mn	P	S	Ai	YP ksi	YP Mpa	EL(%)
CS	Type A ①②③④	Max. 0.10	Max. 0.02	Max. 0.025	Max. 0.035	-	22 to 40	140 to 275	≥ 30
	Type B ①	Max. 0.02 to 0.15							
DS	Type A ②	Max. 0.08	Max. 0.50	Max. 0.020	Max. 0.020	Min. 0.01	22 to 35	150 to 240	≥ 36
	Type B	Max. 0.02 to 0.08				Min. 0.02			
DDS		Max. 0.06	Max. 0.50	Max. 0.020	Max. 0.020	Min. 0.01	17 to 29	115 to 200	≥ 38
EDDS		Max. 0.02	Max. 0.40	Max. 0.020	Max. 0.020	Min. 0.01	15 to 25	105 to 170	≥ 40

① When an aluminum deoxidized steel is required for the application, it is permissible to order Commercial Steel (CS) to a minimum of 0.01% total aluminum.
② Specify Type B to avoid Carbon levels below 0.02%
③ It is permissible to furnish as a vacuum degassed or chemically stabilized steel, or both, at the producer's option.
④ For carbon levels less than or equal to 0.02%, it is permissible to use vanadium, columbium, or titanium, or combination thereof, as stabilizing elements at the producer's option. In such cases, the applicable limit for vanadium or columbium shall be 0.10% max. and the limit on titanium shall be 0.15 max.

Permissible variations in Dimension & Shapes, ASTM A568/568M

Thickness Tolerances

Specified Width, mm		Specified Ordered Thickness, mm[B]				
Over	Through	Through 0.4	Over 0.4 to 1.0, incl.	Over 1.0 to 1.2, incl.	Over 1.2 to 2.5, incl.	Over 2.5 to 4.0, incl.
		Thickness Tolerances Over, mm, No Tolerance Under[C]				
...	1800	0.05	0.08	0.10	0.12	0.15
1800	2000	...[D]	0.08	0.10	0.15	0.18
2000	...[D]	...[D]	0.15	0.15	0.18	0.20

A 0.55 mm minimum thickness for high-strength low-alloy.
B The specified thickness range captions apply independent of whether the ordered thickness is stated as a nominal or minimum.
C The tolerrances provided in the table are based on minimum thickness (tolerance over, no tolerance under). For nominal thickness, the tolerance is divided equally over and under.
D Where an ellipsis (...) appears in the table, the requirements have not been defined.

With Tolerances

Specified Width, mm		Width Tolerance, Over Only, mm
Over	**Through**	
...	600 A	3
600	1200	5
1200	1500	6
1500	1800	8
1800	...	10

Length Tolerances

Specified Length, mm		Tolerance Over Specified Length (No Tolerance Under), mm
Over	**Through**	
300	1500	6
1500	3000	20
3000	6000	35
6000	...	45

Flatness Tolerances

It has not been practical to formulate flatness tolerance for cold-rolled carbon steel strip to represent the wide range of widths and thicknesses and variety of tempers produced.

Temper and Hardness

Temper	Thickness, in.	Rockwell Hardness	
		Min.	Max.(approx)
No.1 (hard)	Under 0.300 to 0.070, incl.	B84.0	-
	Under 0.070 to 0.040, incl.	B90.0	-
	Under 0.040 to 0.025, incl.	30T 76	-
	Under 0.025	15T 90	-
Softer Tempers [A]			
No.2 (half-hard)	Under 0.300 to 0.040, incl.	B 70.0	B85
	Under 0.040 to 0.025, incl.	30T 63.5	30T 73.5
	Under 0.025	30T 83.5	15T 88.5
No.3 (quarter-hard)	Under 0.300 to 0.040, incl.	B60	B75
	Under 0.040 to 0.025, incl.	30T 56.5	30T 67
	Under 0.025	15T 80	15T 85
No.4 [B] (skin-rolled)	Under 0.300 to 0.040, incl.	-	B 70.0
	Under 0.040 to 0.025, incl.	-	B65
	Under 0.025	-	B65
No.5 [B] (dead-soft)	Under 0.300 to 0.040, incl.	-	B55
	Under 0.040 to 0.025, incl.	-	30T 53
	Under 0.025	-	15T 78.5

A Rockwell hardness values apply at time of shipment. Aging may cause slightly higher values when tested at a later date.
B Number 4 and 5 temper may sometime be ordered with a carbon range of 0.15~0.25%. In each instance the maximum hardness requirement is established by agreement.

Camber Tolerances

Specified Width, in (mm)		Camber Tolerance, in (mm)
Over	Through	
...	1200	4
1200	1800	5
1800	2400	6
2400	3000	8
3000	3700	10
3700	4300	13
4300	4900	16
4900	5500	19
5500	6000	22
6000	9000	32
9000	12200	38

A The Camber tolerance for coils is 25.0 mm in any 6000 mm.

Note
1. Camber is the greatest deviation of a side edge from a straight line, the measurement being taken on the concave side with a straight edge.
2. Camber tolerances as shown in the table are for any 8 ft.(2000 mm) of length. For strip length under 8 ft.(2000 mm), camber tolerance shall be subject to negotiation.
3. When the camber tolerances shown in Table are suitable for a particular purpose, cold-rolled strip is sometimes machine straightened.

Metallic Coated Steel

KG Dongbu Steel's Metallic Coated Steel Sheet is produced by our riched operating experience and advanced technology, and it has a beautiful surface and excellent quality.

Incheon Works

No. 1 CGL SPECIFICATION

Thickness	0.3 ~ 1.6mm
Width	700 ~ 1,250mm
Coating weight	60 ~ 300g/m²
Inner diameter/ Outer diameter (I.D / O.D)	508 and 610mm / Max. 1880mm
Unit weight	Max. 20 ton
Product	GI

No. 2 CGL SPECIFICATION

Thickness	0.35 ~ 2.3mm
Width	700 ~ 1,380mm
Coating weight	SuperGalum® 30 ~ 200g/m² ALCOT® 50 ~ 160g/m²
Inner diameter/ Outer diameter (I.D / O.D)	508 and 610mm / Max. 2100mm
Unit weight	Max. 20 ton
Product	SuperGalum®, ALCOT®

* Depending on the product, there may be restrictions on Spec.

Dangjin Works

No. 3 CGL SPECIFICATION

Thickness	0.35 ~ 3.0mm
Width	800 ~ 1,600mm
Coating weight	GI 80 ~ 600g/m², SuperGalum® 60 ~ 200g/m²
Inner diameter/ Outer diameter (I.D / O.D)	508 and 610mm / Max. 2100mm
Unit weight	Max. 25 ton
Product	GI, GA, SuperGalum®

No. 4 CGL SPECIFICATION

Thickness	0.25 ~ 1.2mm (SuperGalum® Max. 0.8mm)
Width	800 ~ 1,350mm
Coating weight	MgCOT® 80 ~ 300g/m², SuperGalum® 60 ~ 180g/m²
Inner diameter/ Outer diameter (I.D / O.D)	508 and 610mm / Max. 2100mm
Unit weight	Max. 25 ton
Product	MgCOT®, SuperGalum®

* Depending on the product, there may be restrictions on Spec.

GI/GA

Continuous Galvanization

Produced in a thoroughly modern continuous galvanizing line based on techniques acquired through the years of experiences, KG Dongbu Steel's "Hot-Dip Galvanized Steel Sheet" provides a smooth and cutting-edge quality products. KG Dongbu Steel has been fully committed to offer galvanized steel sheets with a broad range of base metals quality, including commercial, lock-forming, drawing, and structural quality. Moreover, each product may be supplied chromated to minimize the possibility of rust.

Super Formability

Highly workable steel sheets and strips are used as raw materials for all the galvanized steel sheet products at the Cold-Rolled Mill of KG Dongbu Steel Co., LTD. The raw materials in coil forms are continuously annealed, galvanized, and properly leveled, granting final products superior formability.

Excellent Corrosion Resistance

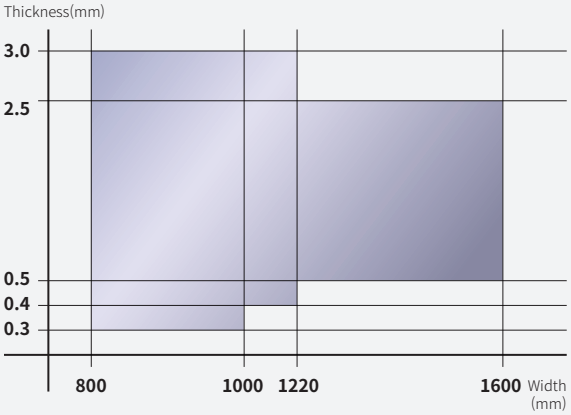
Galvanized steel sheet products are treated with chromic acid in order to minimize the possibility of rust, which also enables surface luster to last longer.

Uniform Quality

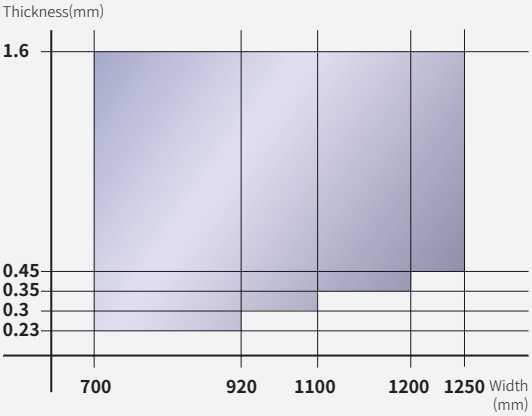
Production is carried out through a strict quality control and inspection in order to maximize customers' satisfaction.

Size Availabilty

Dangjin



Incheon



※ There may be restrictions for each type of steel, so please consult with the sales and quality department in advance when ordering new products.

Specification

Designation	KS D 3506		JIS G 3302		ASTM A653	EN 10346
Type	**CR**	**HR**	**CR**	**HR**		
Commercial Quality	SGCC	SGHC	SGCC	SGHC	CS Type A&B	DX51D
Lock Forming Quality	SGCC-F	-	SGCC-F	-	CS Type C	
Commercial Soft Quality	SGCC-L	-	SGCC-L	-	FS Type A&B	DX52D
Commercial Hard Quality	SGCH	-	SGCH	-		DX53D
Drawing Quality	SGCD1 SGCD2 SGCD3	-	SGCD1 SGCD2 SGCD3	-	DDS EDDS	DX54D DX56D DX57D
Structural Quality	SGC245Y SGC295Y SGC335Y SGC365Y SGC560Y	SGH245Y SGH295Y SGH335Y SGH365Y SGH400Y	SGC340 SGC400 SGC440 SGC490 SGC570	SGH340 SGH400 SGH440 SGH490 SGH540	Grade 230 Grade 255 Grade 275 Grade 340 class 1,2,3 Grade 550	S220GD S250GD S280GD S320GD S350GD S390GD S420GD S450GD S550GD

High strength steel 340 / 440 / 590

Surface Treatment

Type	Main Applications
No Chromate	General painting
Chromate	General
Non-Cr	Home appliances
Antimicrobial Coating	Antimicrobial

* Organic Coating enhances Anti Fingerprint Properties and drawability.

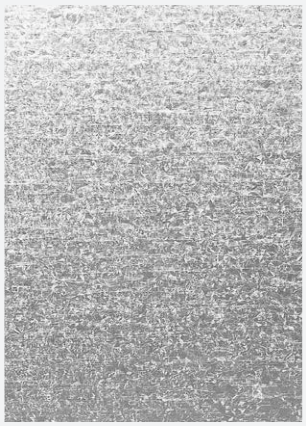
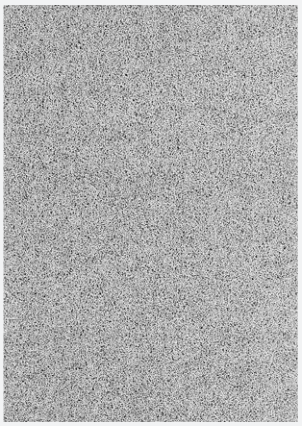
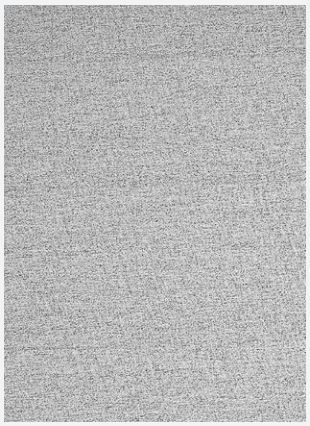
Oiling

Oiling Classification
No-oiled
Oiled

Surface Finish

Type	Surface Finish
Zero Spangle Finish (No Skinpass)	Skinpass X, Excellent gloss
Zero Spangle Finish (Skinpass)	Skinpass O, Surface is beautiful, Excellent processability due to removal of elongation at yield point
Galvannealed Finish	Galvannealed steel sheets have a highly workable iron-zinc alloy layer. Good paint-adherence properties, corrosion resistance and weldability make them ideal for use in automobile home appliances and buildings.

Surface Finish & Applications

Classification	Zero Spangle Finish (No Skinpass)	Zero Spangle Finish (Skinpass)	Galvannealed Finish
Surface Finish			
Weight of Zinc Coating	Z05 - Z60	Z05 - Z60	F06 - F18
Quality	CQ DQ SQ	CQ DQ SQ	CQ DQ SQ
Application	· Steel furniture & office equipment · For painting	· Steel furniture & office equipment · For painting · Home applications	· Home applications (Washer, Micro wave oven) · Building materials · Automotive parts

SuperGalum®

Excellent Durability

SuperGalum® has three to six times better corrosion resistance compared to zinc coated (galvanized) steel sheet of the same coating thickness.
KG Dongbu Steel issues a 25.5 year warranty for SuperGalum in case of residential applications.

Heat Resistance

The capacity ratio of the aluminum in coated layer of SuperGalum® is over 80%, enabling the products to withstand a prolonged temperature of 315°C without discoloration or oxidization.

Heat Reflectivity

SuperGalum® provides high energy efficiency with its superior heat reflectivity, resulting in low heat consumption.

Smooth Surface

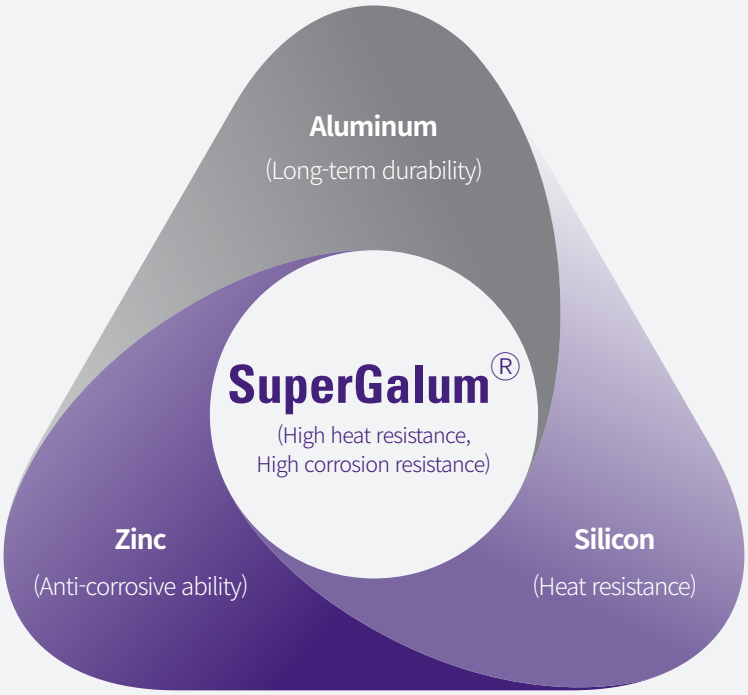
Having a consistent and brilliant silver spangle, SuperGalum® is highly appropriate for decorative uses.

Economical Efficiency

With available widths of five feet (Maximum 1600mm), SuperGalum® reduces the loss and is suitable for manufacturing ducts and other construction materials.

Excellent Paintability and Workability

SuperGalum® has better adhesiveness of paints to its coated layer compared to galvanized steel sheet. The workability of SuperGalum is similar to that of galvanized steel sheet. Its ability to suppress fine cracks on the coating layer enhances the durability of the processed area.



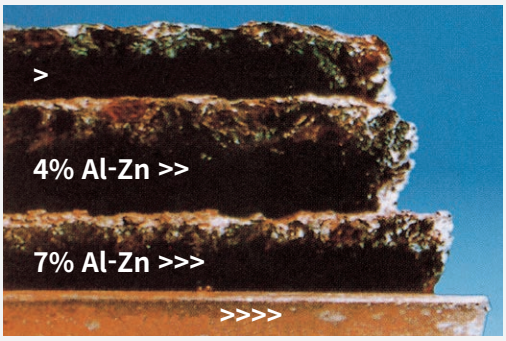
SuperGalum®

Supergalum® is a brand name for 55% aluminum-zinc coated steel sheet produced by KG Dongbu Steel. Having combined properties of aluminum and zinc, SuperGalum® provides excellent heat and corrosion resistance, durability, and formability. SuperGalum® has three to six times superior corrosion resistance compared to zinc coated (galvanized) steel sheet of the same coating thickness. KG Dongbu Steel issues 25.5 year warranties for SuperGalum® in case of residential applications. Since 1998, KG Dongbu Steel has been producing SuperGalum® under the licensing agreement with BIEC International Inc.

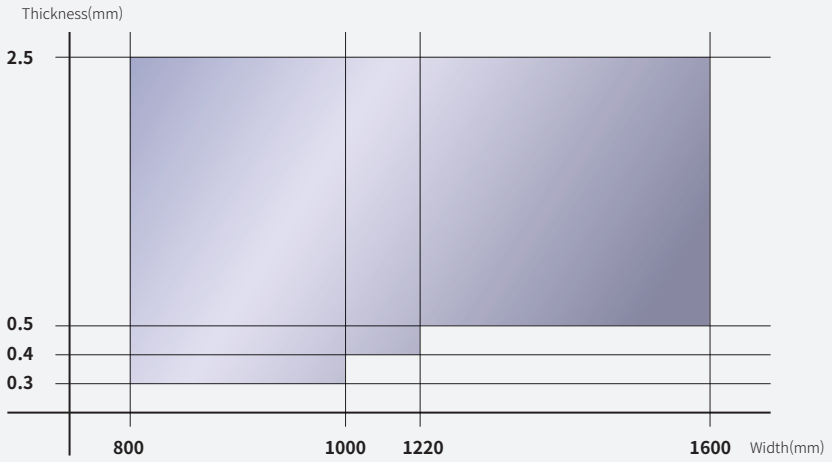
Composition of Coated Layers

Composition	Weight Ratio(%)	Capacity Ratio(%)
Aluminum	55.0	80
Zinc	43.4	19
Silicon	1.6	1

Results of a 17 year exposure test



Size Availabilty



※ There may be restrictions for each type of steel, so please consult with the sales and quality department in advance when ordering new products.

Classification by Coating Weight

KS D 3770 JIS G 3321	ASTM A792	EN 10346	Single-sided Coating thickness (mm)	Double-sided(g/m²)	
				Triple-Spot Test	Single-Spot Test
(AZ70)	-	-	9	(70)	(60)
AZ90	-	-	12	90	76
-	-	100	13	100	85
AZ120	-	-	16	120	102
AZ150	AZM150, AZ50	150	20	150	130
-	AZM165, AZ55	-	22	165	150
AZ170		-	22	170	145
-	AZM180, AZ70	-	24	180	155
(AZ185)	-	185	25	185	160
(AZ185)	-	-	26	(200)	(170)

* ( )May be applied according to the agreement between the order and the manufacturer.

Classification by Post-Treatment

Type	Main Applications
No Chromate	General painting
Chromate	General
Organic	Drawing
Non-Cr	Home appliances
Antimicrobial Coating	Antimicrobial

Oiling

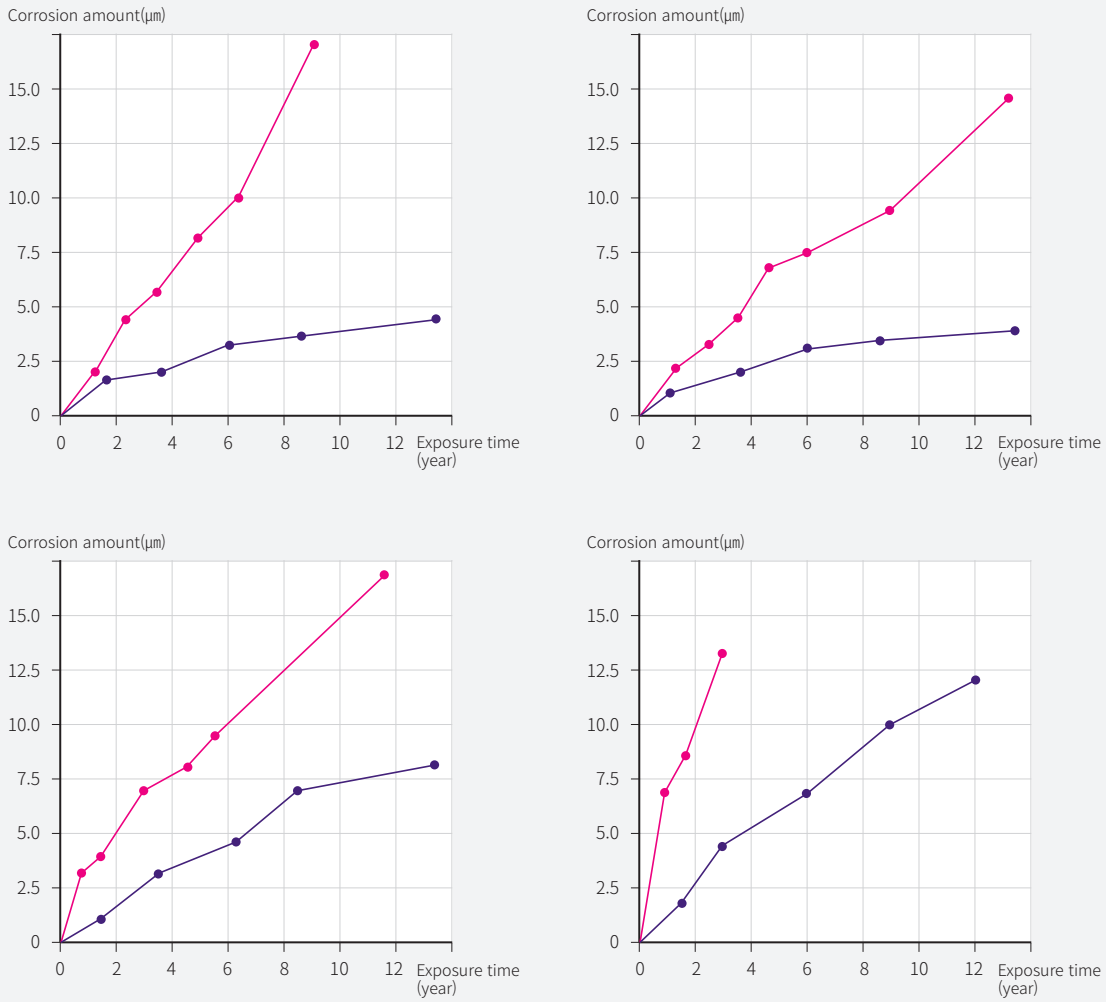
Oiling Classification
No-oiled
Oiled

Durability

SuperGalum® has three to six times superior corrosion resistance compared to zinc coated (galvanized) steel sheet of the same coating thickness. Sheared or cut spot of Supergalum® has better corrosion and stretch resistance compared to aluminum coated steel sheet. KG Dongbu Steel issues 25.5 year warranties for SuperGalum® in case of residential applications.

Corrosion Test(Outdoor Exposure Test)

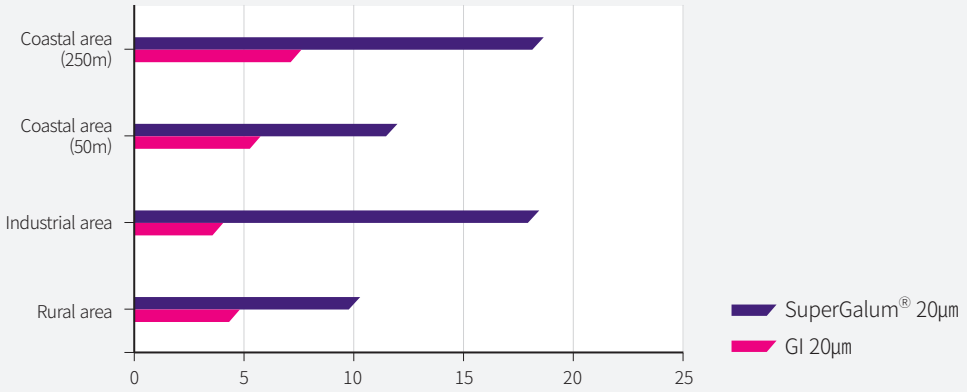
While galvanized steel shows a continuous rate of corrosion, corrosion of SuperGalum® tends to slow down over time. This outstanding corrosion resistance is attributed to the anti-corrosion properties of its coated layer.



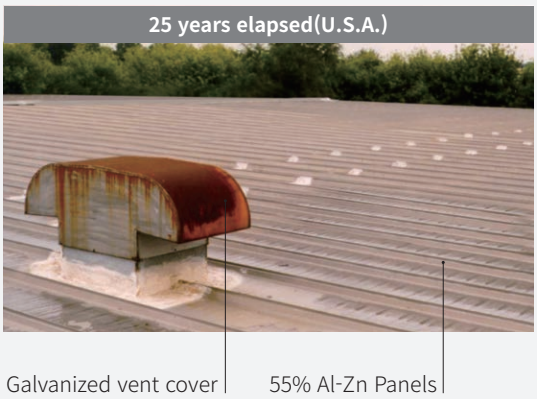
The Outdoor exposure test results under various corrosive environments of each material

● GI ● SuperGalum®

Exposure test comparing levels of corrosion (Test period: 13 Years)

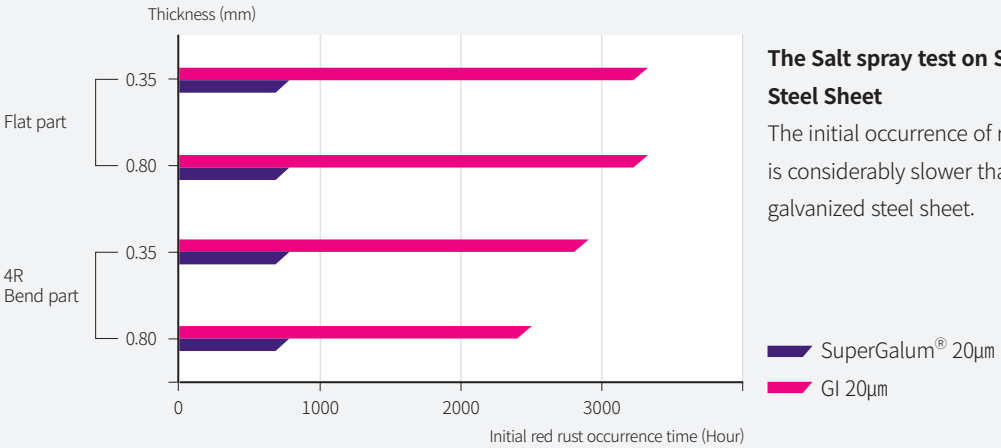


Building long term use result



※ InterZac '04, An Overview of the Long-Term Performance of 55% Al-Zn Coated Steel, BIEC

Salt spray test



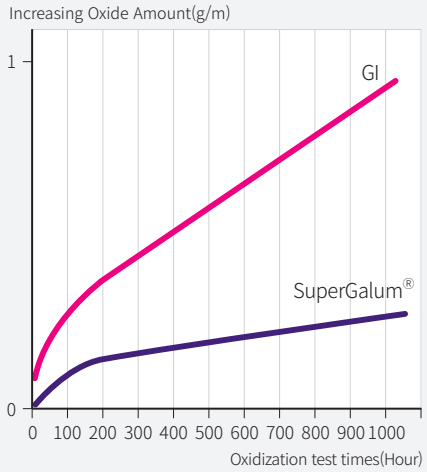
The Salt spray test on SuperGalum® Steel Sheet

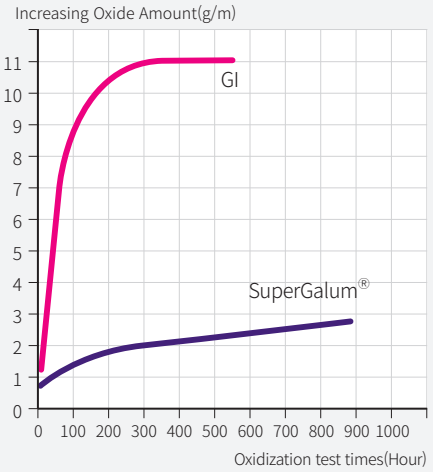
The initial occurrence of red rust is considerably slower than that of galvanized steel sheet.

Heat Resistance

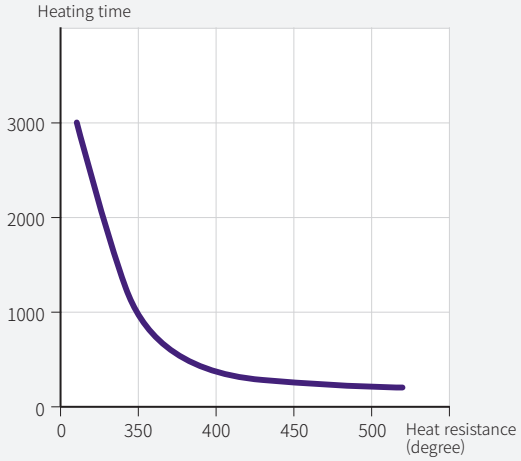
The capacity ratio of the aluminum in coated layer of SuperGalum® is over 80%, enabling the products to withstand a prolonged temperature of 315°C without discoloration or oxidization.

Rate of oxidization from continuous heat

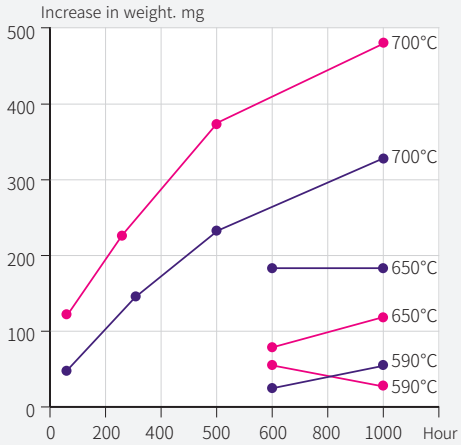




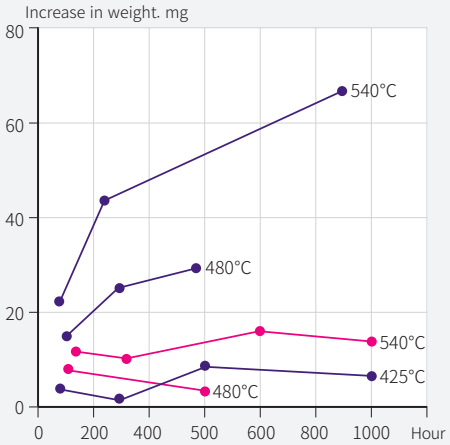
Heat Resistance of SuperGalum® Steel Sheet



Comparison of corrosion resistance at high temperatures



Test results ranging from 590°C ~ 700°C



Test results ranging from 425°C ~ 540°C

- 480°C ~ 540°C, SuperGalum® 〈 Al Coated Steel
- 590°C ~ 650°C, SuperGalum® = Al Coated Steel
- 700°C or higher, SuperGalum® 〉 Al Coated Steel

● SuperGalum®
● Al-coated

Heat Reflectivity

SuperGalum® steel sheet boasts superior heat reflectivity, which produces increased energy efficiency, making it an excellent material for the interior of electronic home appliances. Used as a roofing material, SuperGalum® inhibits the rise of temperature in buildings, thereby lowering the cost of air conditioning. Food storage buildings covered with SuperGalum® also enjoy the additional benefit of stored grains protected from quality changes.

Comparison of heat reflectivity by product

Product	Heat Reflectivity Ratio(%)
SuperGalum® Steel Sheet	70 ~ 75
Galvanized Steel Sheet	30 ~ 40
Prepainted Steel Sheet(Silver)	50 ~ 60
Prepainted Steel Sheet(Gray)	45 ~ 50
Prepainted Steel Sheet(Blue)	10 ~ 15
Prepainted Steel Sheet(Brown)	10 ~ 15
Tile, Slate	10 ~ 20

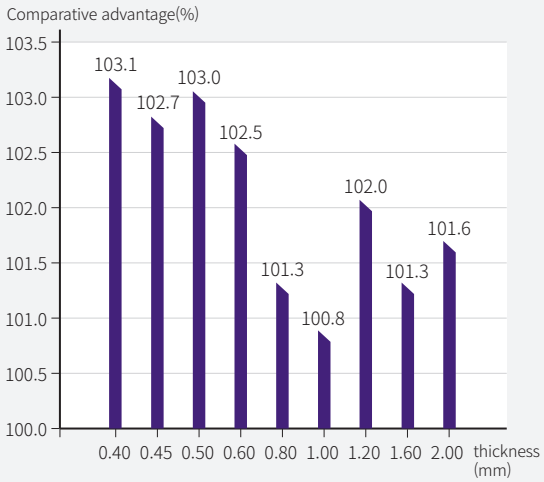
Comparison of heat transfer by product

Product	Heat Transfer(W/m^2)
ALCOT® Steel(Type2, 300g/m^2)	40
SuperGalum®(150g/m^2)	65
Galvanized Steel(275g/m^2)	120
Asbestos Ciment	150
Clay Tile	150

Economical Efficiency

The density of the coated layer of SuperGalum® steel shows 3.75g/cm^3, which is lower than that of galvanized steel (7.14g/cm^3), thereby increasing the surface area per ton and enhancing the economical efficiency.

Thickness (mm)	Area per ton (m^2/ton)			
	SuperGalum®		GI	
0.40	AZ 150 (150g/m^2)	336	Z 275 (275g/m^2)	321
0.45		297		285
0.50		266		257
0.60		220		214
0.80		164		160
1.00		130		128
1.20		108		106
1.60		81		80
2.00		64		64



Paintability

SuperGalum® has better adhesiveness of paints to its coated layer compared to galvanized steel sheet. SuperGalum® used for general purposes does not require any pre-treatment before painting.

Weldability

The weldability of SuperGalum® is similar to that of galvanized steel sheet. Special attention, however, is required before welding, including welding current, time, electrode pressure, and so forth.

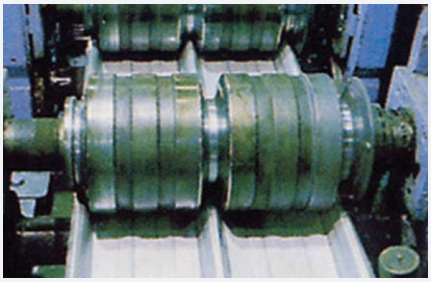
Spot Welding Conditions

Thickness(mm)	Electric Current(A)	Pressure(Kg)	Welding Time(Cycle=1/60sec.)	Electrode Diameter(mm)
0.56	11,000	160	10	4.75
0.71	11,300	180	12	4.75
0.91	12,500	230	14	6.35
1.02	12,800	230	14	6.35
1.35	13,000	250	14	6.35
1.65	13,400	300	18	6.35

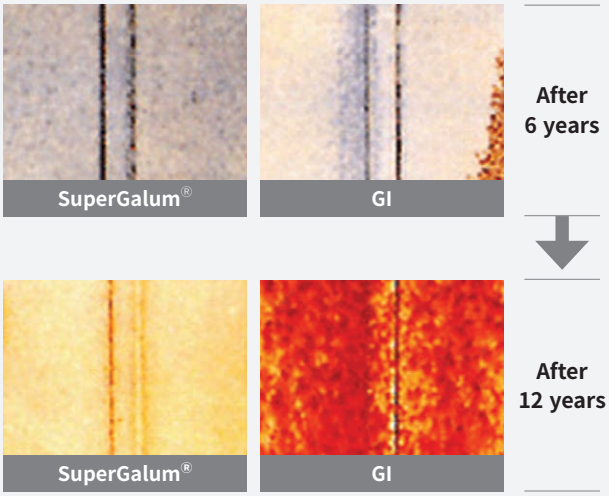
Workability

The workability of SuperGalum® is similar to that of galvanized steel sheet. Its ability to suppress fine cracks on the coating layer enhances the durability of the processed area.

• Superior roll forming property



• Excellent durability for treatment area



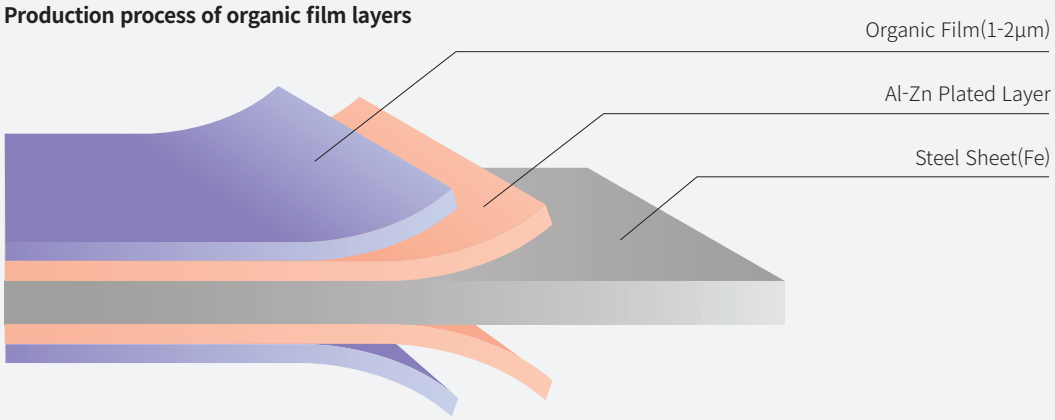
Test results from exposure in coastal area

SuperGalum® Organic Coating Process

Organic film treatment of the SuperGalum® steel sheet is carried out in an in-line coater, applying acryl resin organic film containing 1~2μm of chromate. In comparison with the temporary corrosion resistant property of the conventional chromate passivation, organic treatment offers superior quality as follows:

- **High corrosion resistance**
- **Lubrication properties** (No need for lubrication oil)
- **Paintability**
- **Anti-fingerprint properties**

Production process of organic film layers



GI/GA/SuperGalum®

Standard Specification

JIS GI : G3302
SuperGalum® : G3321
ASTM GI : A653 / SuperGalum® : A7921
EN GI, SuperGalum® : 10346

Thickness Tolerances

● JIS

(Unit : mm)

Nominal Thickness	Width				
	Up to 630	630 and over, up to 1000	1000 and over, up to 1250	1250 and over, up to 1600	1250 and over, up to 1600
Up to 0.25	± 0.04	± 0.04	± 0.04	-	-
0.25 and over, up to 0.40	± 0.05	± 0.05	± 0.05	± 0.06	-
0.40 and over, up to 0.60	± 0.06	± 0.06	± 0.06	± 0.07	± 0.08
0.60 and over, up to 0.80	± 0.07	± 0.07	± 0.07	± 0.07	± 0.08
0.80 and over, up to 1.00	± 0.07	± 0.07	± 0.08	± 0.09	± 0.10
1.00 and over, up to 1.25	± 0.08	± 0.08	± 0.09	± 0.10	± 0.12
1.25 and over, up to 1.60	± 0.09	± 0.10	± 0.11	± 0.12	± 0.14
1.60 and over, up to 2.00	± 0.11	± 0.12	± 0.13	± 0.14	± 0.16
2.00 and over, up to 2.50	± 0.13	± 0.15	± 0.15	± 0.16	± 0.18
2.50 and over, up to 3.15	± 0.15	± 0.17	± 0.17	± 0.18	± 0.21
3.15 and over	± 0.17	± 0.20	± 0.20	± 0.21	-

● ASTM

Specified Width, mm	Sl Units							
	Specified Thickness, mm[A]							
	0.4 and thinner	Over 0.4 Through 1.0, inclusive	Over 0.4 Through 1.5, inclusive	Over 1.5 Through 2.0, inclusive[B]	Over 2.0 Through 2.5, inclusive	Over 2.5 Through 5.0, inclusive	Over 5.0 Through 6.0, inclusive	Over 6.0 Through 6.3, inclusive
	Thickness Tolerances, Over, mm, No Tolerance Under[C]							
To 1500, inclusive	0.08	0.10	0.13	0.15	0.30	0.34	0.42	0.50
Over 1500	0.08	0.10	0.13	0.15	0.34	0.34	0.46	0.52

A The Specified thickness range captions apply independently of whether the ordered thickness is stated as a nominal or minimum. B
B If hot rolled substrate is used, it is permissible for the seller to provide total thickness tolerance 0.009 in. [0.23 mm], provided that the purchaser is notified and agrees.
C The tolerances provided in the table are based on minimum thickness (tolerance over, no tolerance under). For nominal thickness, the tolerance is divided equally over and under (tolerance over, tolerance under).

● EN

Tolerances for steel grades with specified minimum yield strength R_e or specified minimum proof strength $R_{p0.2}$< 260 MPa

Nominal Thickness t	Nomal tolerances [a] for a nominal width w			Special tolerances (S) [a] for a nominal width w		
	≤ 1200 [b]	1200 < w ≤ 1500	> 1500	≤ 1200 [b]	1200 < w ≤ 1500	> 1500
0.20 < t ≤ 0.40	± 0.04	± 0.05	± 0.06	± 0.030	± 0.035	± 0.040
0.40 < t ≤ 0.60	± 0.04	± 0.05	± 0.06	± 0.035	± 0.040	± 0.045
0.60 < t ≤ 0.80	± 0.05	± 0.06	± 0.07	± 0.040	± 0.045	± 0.050
0.80 < t ≤ 1.00	± 0.06	± 0.07	± 0.08	± 0.045	± 0.050	± 0.060
1.00 < t ≤ 1.20	± 0.07	± 0.08	± 0.09	± 0.050	± 0.060	± 0.070
1.20 < t ≤ 1.60	± 0.10	± 0.11	± 0.12	± 0.060	± 0.070	± 0.080
1.60 < t ≤ 2.00	± 0.12	± 0.13	± 0.14	± 0.070	± 0.080	± 0.090
2.00 < t ≤ 2.50	± 0.14	± 0.15	± 0.16	± 0.090	± 0.100	± 0.110
2.50 < t ≤ 3.00	± 0.17	± 0.17	± 0.18	± 0.110	± 0.120	± 0.130
3.00 < t ≤ 5.00	± 0.20	± 0.20	± 0.21	± 0.15	± 0.16	± 0.17
5.00 < t ≤ 6.50	± 0.22	± 0.22	± 0.23	± 0.17	± 0.18	± 0.19

a The thickness tolerance in the region of coil welds may be increased by a maximum of 50% over a length of 10 m. This increase is applicable to all thicknesses and, unless otherwise agreed at the time of enquiry and order, to nomal and special (negative and positive) tolerances.
b Wide strip : width ≥ 600 mm; slit wide strip: rolling width ≥ 600 mm, slit to width less than 600 mm.

Tolerances for steel grades with specified minimum proof strength $R_{p0.2}$< 360 MPa and for grades DX51D and S550GD

Nominal Thickness t	Nomal tolerances [a] for a nominal width w			Special tolerances (S) [a] for a nominal width w		
	≤ 1200 [b]	1200 < w ≤ 1500	> 1500	≤ 1200 [b]	1200 < w ≤ 1500	> 1500
0.20 < t ≤ 0.40	± 0.05	± 0.06	± 0.07	± 0.035	± 0.040	± 0.045
0.40 < t ≤ 0.60	± 0.05	± 0.06	± 0.07	± 0.040	± 0.045	± 0.050
0.60 < t ≤ 0.80	± 0.06	± 0.07	± 0.08	± 0.045	± 0.050	± 0.060
0.80 < t ≤ 1.00	± 0.07	± 0.08	± 0.09	± 0.050	± 0.060	± 0.070
1.00 < t ≤ 1.20	± 0.08	± 0.09	± 0.11	± 0.060	± 0.070	± 0.080
1.20 < t ≤ 1.60	± 0.11	± 0.13	± 0.14	± 0.070	± 0.080	± 0.090
1.60 < t ≤ 2.00	± 0.14	± 0.15	± 0.16	± 0.080	± 0.100	± 0.110
2.00 < t ≤ 2.50	± 0.16	± 0.17	± 0.18	± 0.110	± 0.120	± 0.130
2.50 < t ≤ 3.00	± 0.19	± 0.20	± 0.20	± 0.130	± 0.140	± 0.150
3.00 < t ≤ 5.00	± 0.22	± 0.24	± 0.25	± 0.17	± 0.16	± 0.17
5.00 < t ≤ 6.50	± 0.24	± 0.25	± 0.26	± 0.19	± 0.18	± 0.19

a The thickness tolerance in the region of coil welds may be increased by a maximum of 50% over a length of 10 m. This increase is applicable to all thicknesses and, unless otherwise agreed at the time of enquiry and order, to nomal and special (negative and positive) tolerances.

b Wide strip : width ≥ 600 mm; slit wide strip: rolling width ≥ 600 mm, slit to width less than 600 mm.

Tolerances for steel grades with specified minimum proof strength 360 MPa ≤ $R_{p0.2}$ ≤ 420 MPa

Nominal Thickness t	Nomal tolerances [a] for a nominal width w			Special tolerances (S) [a] for a nominal width w		
	≤ 1200 [b]	1200 < w ≤ 1500	> 1500	≤ 1200 [b]	1200 < w ≤ 1500	> 1500
0.35 < t ≤ 0.40	± 0.05	± 0.06	± 0.07	± 0.040	± 0.045	± 0.050
0.40 < t ≤ 0.60	± 0.06	± 0.07	± 0.08	± 0.045	± 0.050	± 0.060
0.60 < t ≤ 0.80	± 0.07	± 0.08	± 0.09	± 0.050	± 0.060	± 0.070
0.80 < t ≤ 1.00	± 0.08	± 0.09	± 0.11	± 0.060	± 0.070	± 0.080
1.00 < t ≤ 1.20	± 0.10	± 0.11	± 0.12	± 0.070	± 0.080	± 0.090
1.20 < t ≤ 1.60	± 0.13	± 0.14	± 0.16	± 0.080	± 0.090	± 0.110
1.60 < t ≤ 2.00	± 0.16	± 0.17	± 0.19	± 0.090	± 0.110	± 0.120
2.00 < t ≤ 2.50	± 0.18	± 0.20	± 0.21	± 0.120	± 0.130	± 0.140
2.50 < t ≤ 3.00	± 0.22	± 0.22	± 0.23	± 0.140	± 0.150	± 0.160
3.00 < t ≤ 5.00	± 0.22	± 0.24	± 0.25	± 0.17	± 0.18	± 0.19
5.00 < t ≤ 6.50	± 0.24	± 0.25	± 0.26	± 0.19	± 0.20	± 0.21

a The thickness tolerance in the region of coil welds may be increased by a maximum of 50% over a length of 10 m. This increase is applicable to all thicknesses and, unless otherwise agreed at the time of enquiry and order, to nomal and special (negative and positive) tolerances.

b Wide strip : width ≥ 600 mm; slit wide strip: rolling width ≥ 600 mm, slit to width less than 600 mm.

Tolerances for steel grades with specified minimum proof strength 420 MPa < $R_{p0.2}$ < 900 MPa

Nominal Thickness t	Nomal tolerances [a] for a nominal width w			Special tolerances (S) [a] for a nominal width w		
	≤ 1200 [b]	1200 < w ≤ 1500	> 1500	≤ 1200 [b]	1200 < w ≤ 1500	> 1500
0.35 < t ≤ 0.40	± 0.06	± 0.07	± 0.08	± 0.045	± 0.050	± 0.060
0.40 < t ≤ 0.60	± 0.06	± 0.08	± 0.09	± 0.050	± 0.060	± 0.070
0.60 < t ≤ 0.80	± 0.07	± 0.09	± 0.11	± 0.060	± 0.070	± 0.080
0.80 < t ≤ 1.00	± 0.09	± 0.11	± 0.12	± 0.070	± 0.080	± 0.090
1.00 < t ≤ 1.20	± 0.11	± 0.13	± 0.14	± 0.080	± 0.090	± 0.110
1.20 < t ≤ 1.60	± 0.15	± 0.16	± 0.18	± 0.090	± 0.110	± 0.120
1.60 < t ≤ 2.00	± 0.18	± 0.19	± 0.21	± 0.110	± 0.120	± 0.140
2.00 < t ≤ 2.50	± 0.21	± 0.22	± 0.24	± 0.140	± 0.150	± 0.170
2.50 < t ≤ 3.00	± 0.24	± 0.25	± 0.26	± 0.170	± 0.180	± 0.190
3.00 < t ≤ 5.00	± 0.26	± 0.27	± 0.28	± 0.23	± 0.24	± 0.26
5.00 < t ≤ 6.50	± 0.28	± 0.29	± 0.30	± 0.25	± 0.26	± 0.28

a The thickness tolerance in the region of coil welds may be increased by a maximum of 50% over a length of 10 m. This increase is applicable to all thicknesses and, unless otherwise agreed at the time of enquiry and order, to nomal and special (negative and positive) tolerances.

b Wide strip : width ≥ 600 mm; slit wide strip: rolling width ≥ 600 mm, slit to width less than 600 mm.

Zinc Coating

GI

Nominal Thickness	Triple	Single	JIS	ASTM	EN
060	060	51	Z06	-	-
080	080	68	Z08	-	-
90	90	75	-	G30 (Z90)	-
100	100	85	Z10	-	Z100
120	120	102	Z12	G40 (Z120)	-
140	140	120	Z14	-	Z140
180	180	153	Z18	G60 (Z180)	-
200	200	170	Z20	-	Z200
220	220	187	Z22	-	-
225	225	195	-	-	Z225
250	250	213	Z25	-	-
275	275	234	Z27	G90 (Z275)	Z275
300	300	255	-	-	-
350	350	298	Z35	G115 (Z350)	Z350
370	370	315	Z37	-	-
450	450	383	Z45	G140 (Z450)	Z450
500	500	425	-	G165 (Z500)	-
600	600	510	Z60	G21 (Z600)	Z600

GA

Coating Weight Code	Triple Spot Test	Singles Spot Test	JIS	ASTM	EN
040	40	34	F04	-	-
060	60	51	F06	-	-
075	75	60	-	A25 (ZF75)	-
080	80	68	F08	-	-
100	100	85	F10	-	ZF100
120	120	102	F12	A40 (ZF120)	ZF120
140	140	120	-	-	ZF140
180	180	153	F18	A60 (ZF180)	-

SuperGalum®

Coating Weight Code	Triple Spot Test	Singles Spot Test	JIS	ASTM	EN
070	70	60	AZ70	-	-
090	90	76	AZ90	-	-
100	100	85	-	AZ30 (AZM100)	AZ100
110	110	95	-	AZ35 (AZM110)	-
120	120	102	AZ120	AZ40 (AZM120)	-
150	150	130	AZ150	AZ50 (AZM150)	AZ150
165	165	150	-	AZ55 (AZM165)	-
170	170	145	AZ170	-	-
180	180	155	-	AZ60 (AZM180)	-
185	185	160	AZ185	-	AZ185
200	200	170	AZ200	-	-
210	210	180	-	AZ70 (AZM210)	-

Type

Designation Type	JIS		ASTM	EN
	GI	SuperGalum®		
Commercial Quality	SGCC	SGLCC	CS	DX51D, DX52D
Lock Forming Quality			FS	DX53D
Drawing Quality	SGCD1	SGLCD	DDS	DX54D
	SGCD2			DX54D
	SGCD3	SGLCDD	EDDS	DX56D, DX57D
Structural Quality	SGC340		Grade 230	S220GD
	SGC400	SGLC400	Grade 255	S280GD
	SGC440	SGLC440	Grade 275	S320GD
	SGC490	SGLC 490	Grade 340	S350GD
	SGC570	SGLC570	Grade 550	S550GD

Mechanical Properties & Chemical Composition

● JIS | GI/GA

Classified Symbol	Yield Point (N/mm²)	Tensile Strength (N/mm²)	Elongation % Nominal Thickness mm 0.25 and over up to 0.40	0.40 and over up to 0.60	0.60 and over up to 1.0	1.0 and over up to 1.6	1.6 and over up to 2.5	2.5 and over	Test Piece and direction of tensile test
SGCC	-	-	-	-	-	-	-	-	No.5 in rolling direction
SGCH	-	-	-	-	-	-	-	-	
SGCD1	-	Min. 270	-	Min. 34	Min. 36	Min. 37	Min. 38	-	
SGCD2	-	Min. 270	-	Min. 36	Min. 38	Min. 39	Min. 40	-	
SGCD3	-	Min. 270	-	Min. 38	Min. 40	Min. 41	Min. 42	-	
SGCD4	-	Min. 270	-	Min. 40	Min. 42	Min. 43	Min. 44	-	
SGC340	Min. 245	Min. 340	Min. 20	Min. 20	Min. 20	Min. 20	Min. 20	Min. 20	
SGC400	Min. 295	Min. 400	Min. 18	Min. 18	Min. 18	Min. 18	Min. 18	Min. 18	
SGC440	Min. 335	Min. 440	Min. 18	Min. 18	Min. 18	Min. 18	Min. 18	Min. 18	
SGC490	Min. 365	Min. 490	Min. 16	Min. 16	Min. 16	Min. 16	Min. 16	Min. 16	
SGC570	Min. 560	Min. 570	-	-	-	-	-	-	

● JIS | SuperGalum®

Classified Symbol	Yield Point (N/mm²)	Tensile Strength (N/mm²)	Elongation % Nominal Thickness mm 0.25 and over up to 0.40	0.40 and over up to 0.60	0.60 and over up to 1.0	1.0 and over up to 1.6	1.6 and over up to 2.5	Test Piece and direction of tensile test
SGLCC	(205↑)	(270↑)	(20↑)	(21↑)	(24↑)	(24↑)	(25↑)	No.5 in rolling direction
SGLCD	-	270↑	-	27↑	31↑	32↑	33↑	
SGLCDD	-	270↑	-	29↑	32↑	34↑	35↑	
SGLC400	295↑	400↑	16	17↑	18↑	18↑	18↑	
SGLC440	335↑	440↑	14	15↑	17↑	18↑	18↑	
SGLC490	365↑	490↑	12	13↑	14↑	16↑	16↑	
SGLC570	560↑	570↑	-	-	-	-	-	

● ASTM | Commercial Drawing Quality

Designation	Chemical Composition % C, Max.	Mn, Max.	P, Max.	S, Max.	Al, Min.	Mechanical Properties(Nonmandatory) Yield Point Ksi(Mpa)	Elongation Min.%	r Value	n Value
CS Type A	0.10	0.60	0.030	0.035	-	25/55(170/380)	20	-	-
CS Type B	0.02-0.15	0.60	0.030	0.035	-	30/55(205/380)	20	-	-
CS Type C	0.08	0.60	0.100	0.035	-	25/60(170/410)	15	-	-
FS Type A	0.10	0.50	0.020	0.035	-	25/45(170/310)	26	1.0/1.4	0.17/0.21
FS Type B	0.02-0.10	0.50	0.020	0.030	-	25/45(170/310)	26	1.0/1.4	0.17/0.21
DDS Type A	0.06	0.50	0.020	0.025	-	20/35(140/240)	32	1.4/1.8	0.19/0.24
DDS Type C	0.02	0.50	0.020	0.025	0.01	25/40(170/280)	32	1.2/1.8	0.17/0.24
EDDS	0.02	0.40	0.020	0.020	0.01	15/25(105/170)	40	1.6/2.1	0.22/0.27

* For CS and, specify Type B to avoid carbon level 0.02%
* When a deoxidized steel is required for the application, CS may be ordered to aminimum of 0.01% total aluminum.

● ASTM | Structural Quality

	Designation	Chemical Composition %					Mechanical Properties(Nonmandatory)				
		C, Max.	Mn, Max.	P, Max.	A, Max.	Al, Max.	Tensile Strength. Min.		Yield Point. Min.		Elongation Min. %
							Ksi	Mpa	Ksi	Mpa	
SS Grade	Grade 33(230)	0.20	1.35	0.10	0.04	-	45	310	33	230	20
	Grade 37(255)	0.20	1.35	0.10	0.04	-	52	360	37	255	18
	Grade 40(275)	0.25	1.35	0.10	0.04	-	55	380	40	275	16
	Grade 50(340) Class1	0.25	1.35	0.20	0.04	-	65	450	50	340	12
	Grade 50(340) Class2	0.25	1.35	0.20	0.04	-	-	-	50	340	12
	Grade 50(340) Class3	0.25	1.35	0.04	0.04	-	70	480	50	340	12
	Grade 50(340) Class4	0.25	1.35	0.20	0.04	-	60	410	50	340	12
	Grade 55(380)	0.25	1.35	0.04	0.04	-	70	480	55	380	11
	Grade 80(550) Class1	0.20	1.35	0.04	0.04	-	82	570	80	550	-
	Grade 80(550) Class2	0.20	1.35	0.05	0.02	-	82	570	80	500	-
HSLAS	Grade40(275)	0.20	1.20	-	0.035	-	50	340	40	275	22
	Grade50(340)	0.20	1.20	-	0.035	-	60	410	50	340	20
	Grade55(380) Class1	0.25	1.35	-	0.035	-	70	480	55	380	16
	Grade55(380) Class2	0.15	1.20	-	0.035	-	65	450	55	380	18
	Grade60(410)	0.20	1.35	-	0.035	-	70	480	60	410	16
	Grade70(480)	0.20	1.65	-	0.035	-	80	550	70	480	12
	Grade80(550)	0.20	1.65	-	0.035	-	90	620	80	550	10
HSLAS-f	Grade40(275)	0.15	1.20	-	0.035	-	50	340	40	275	24
	Grade50(340)	0.15	1.20	-	0.035	-	60	410	50	340	22
	Grade55(380) Class1	0.20	1.35	-	0.035	-	70	480	55	380	18
	Grade55(380) Class2	0.15	1.20	-	0.035	-	65	450	55	380	20
	Grade60(410)	0.15	1.20	-	0.035	-	70	480	60	410	18
	Grade70(480)	0.15	1.65	-	0.035	-	80	550	70	480	14
	Grade80(550)	0.15	1.65	-	0.035	-	90	620	80	550	12

● EN | Commercial Drawing Quality

Designation		Symbols for the type of hot-dip coating	Mechanical Properties		
Steel Grade			Yield Strength, Mpa	Tensile Strength, Mpa	Elongation, % Min.
Steel Name	Steel No.				
DX51D	1.0917	+Z, +ZF, +AZ, +ZM, +AS	-	270 to 500	22
DX52D	1.0918	+Z, +ZF, +AZ, +ZM, +AS	140 to 300	270 to 420	26
DX53D	1.0951	+Z, +ZF, +AZ, +ZM, +AS	140 to 260	270 to 380	30
DX54D	1.0952	+Z	120 to 220	260 to 350	36
DX54D	1.0952	+ZF, +ZM	120 to 220	260 to 350	34
DX56D	1.0963	+Z	120 to 180	260 to 350	39
DX56D	1.0963	+ZF, +ZM	120 to 180	260 to 350	37
DX57D	1.0853	+Z	120 to 170	260 to 350	41
DX57D	1.0853	+ZF, +ZM	120 to 170	260 to 350	39

● EN | Structural Quality

Designation		Symbols for the type of hot-dip coating	Mechanical Properties		
Steel Grade			Yield Strength, Mpa Min.	Tensile Strength, Mpa Min.	Elongation, % Min.
Steel Name	Steel No.				
S220GD	1.0241	+Z, +ZF, +AZ	220	300	20
S250GD	1.0242	+Z, +ZF, +AZ	250	330	19
S280GD	1.0244	+Z, +ZF, +AZ	280	360	18
S320GD	1.0250	+Z, +ZF, +AZ	320	390	17
S350GD	1.0529	+Z, +ZF, +AZ	350	420	16
S550GD	1.0531	+Z, +ZF, +AZ	550	560	-

MgCOT®

High Corrosion Resistance

This product is 4~9 times superior in corrosion rate compare to same coating mass GI.
Also equivalent or better in corrosion rate compare to same coating mass SuperGalum®.

Excellent Deformed zone Corrosion Resistance

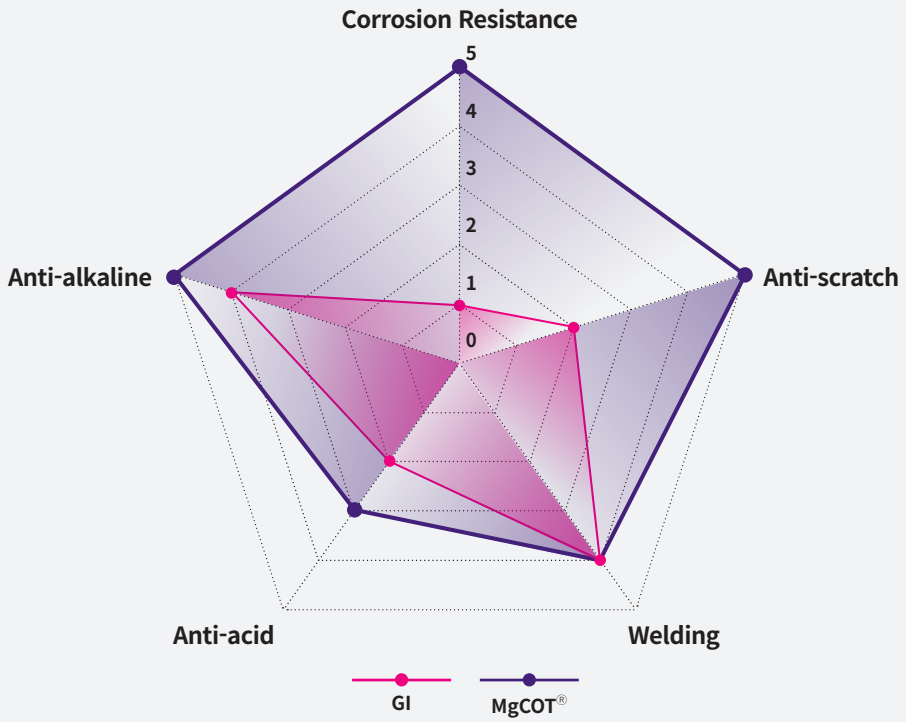
This product is over 10 times superior than GI in deformed zone corrosion resistance.

High Chemical Resistance

This product is superior in chemical resistance under acidic and alkaline environment compare to GI so it can be applied to building stock farm or other construction usage.

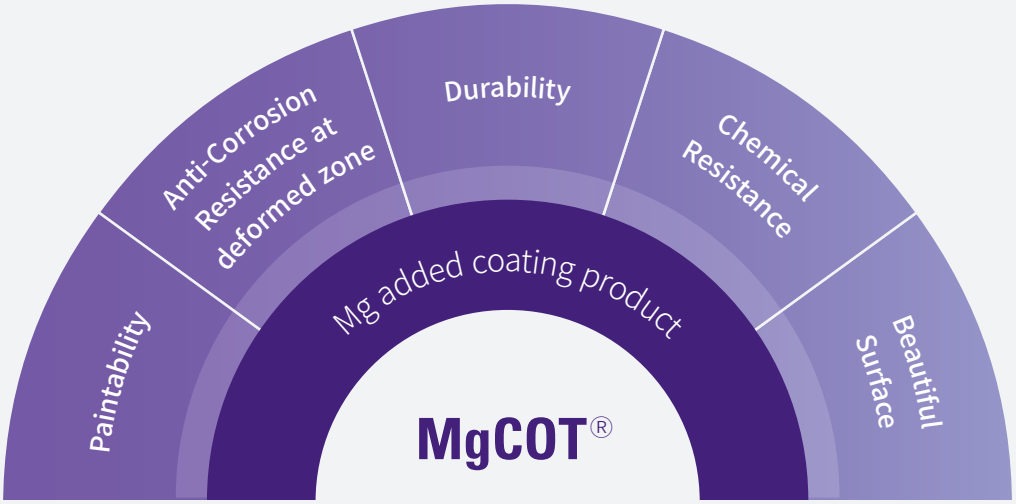
Excellent Paintability

This product can be painted same as GI with high excellent paint adhesion and has better corrosion rate than GI after painted.



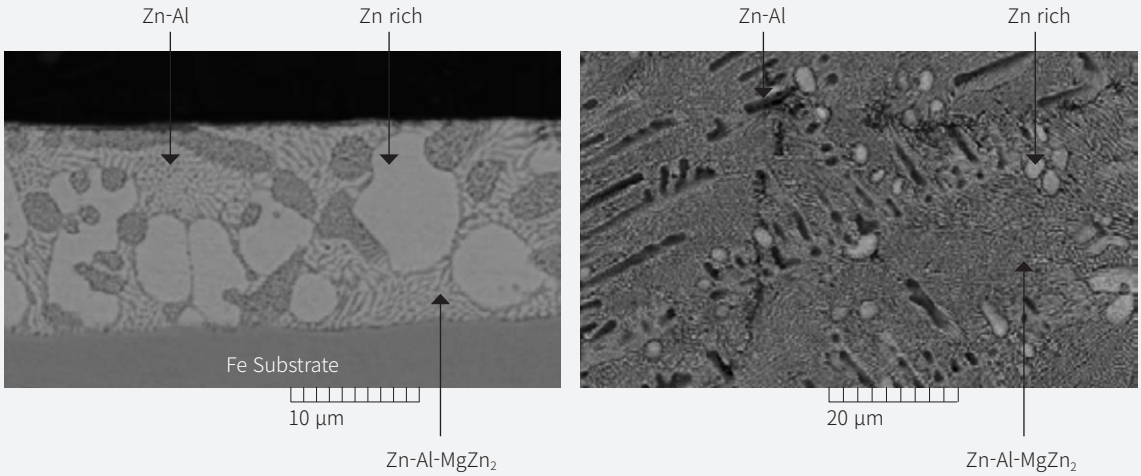
MgCOT®

MgCOT® results from KG Dongbu Steel Corporation's project for more advanced coated product featuring a zinc - 6% aluminum - 2% magnesium alloy coated steel. MgCOT® provides super-improved durability, chemical resistance, excellent corrosion resistance at deformed zone when compared to existing GI.
It is future-oriented and environmentally friendly.



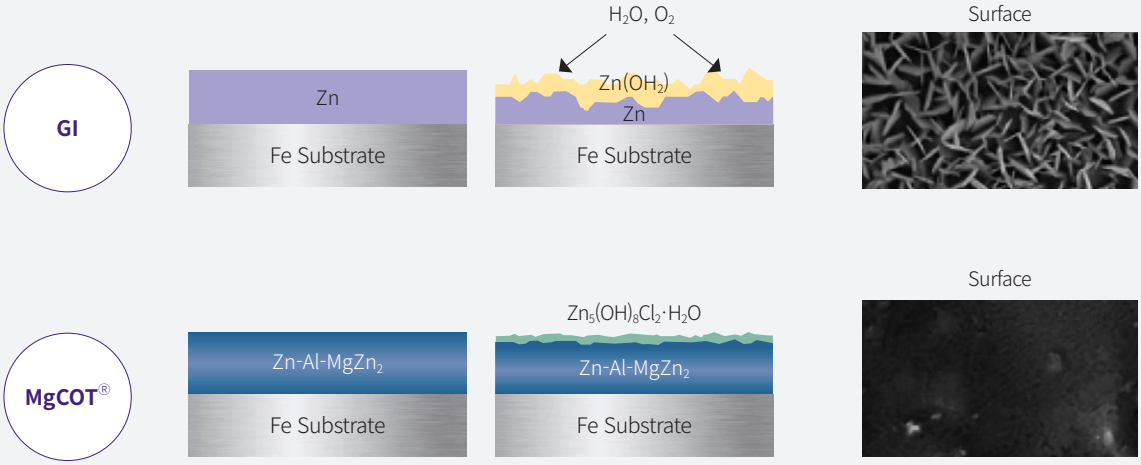
Coating layer characteristics

The coating layer is composed of Zn Rich, Zn-Al, Zn-Al-$MgZn_2$, these three materials promote the formation of dense corrosion products, providing highly corrosion resistance.



Anti Corrosion Mechanism

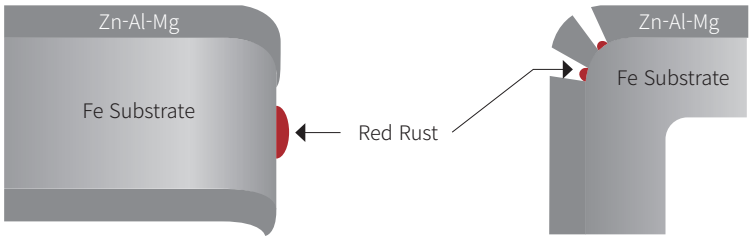
GI makes corrosion products [$Zn(OH)_2$], which are large and porous, on the surface of the coating layer, whereas MgCOT® containing Al and Mg to create small, dense particles produces stable corrosion products [Simonkolleite, $Zn_5(OH)_8Cl_2 \cdot H_2O$]. This corrosion product creates protective film to prevent penetration of water or oxygen, providing a long term corrosion resistance of steel sheets.



Anti Corrosion Mechanism of shearing surface

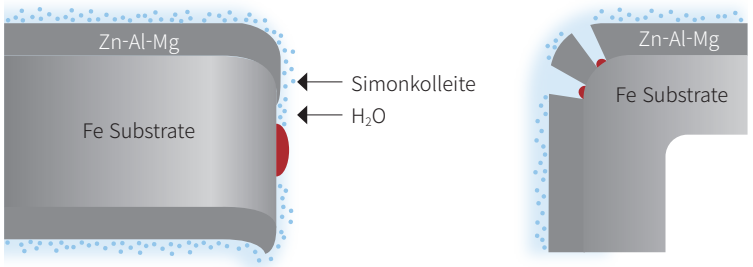
Self Curing Coating Technology

Initial Stage (several weeks)



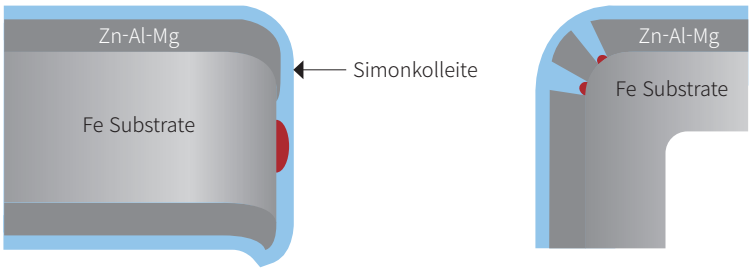
- About one-third of the shear section is covered with coating materials pushed by the shear.
- Red Rust can occur in areas where coating material is not covered(cut end, deformed zone) at the beginning of exposure by moisture and oxygen contact.

Middle Stage (several weeks to months)



- Zn-Al-Mg coating material released from the surface by moisture, etc. cover the shear surface, producing corrosion products called Simonkolleite.

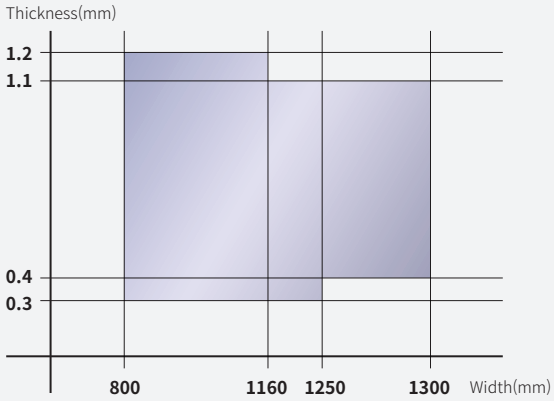
Long Term Stage (more than a year)



- Simonkolleite covering the shear surface include Al and Mg, making a stable protective film due to the small and dense particles.
- This protective film covers the initial red rust, preventing further corrosion occuring.

Manufacturing Specification

Available Range



Thickness	0.3 ~ 1.2 mm
Width	800 ~ 1300 mm
Coil I.D	508 / 610mm
O.D	Max. 2100 mm
Weight	Max. 23 ton

※ There may be restrictions for each type of steel, so please consult with the sales and quality department in advance when ordering new products.

Steel Grade Specification

Type	Classied Symbol	Yield Point (N/mm^2)	Tensile Strength (N/mm^2)	Elongation(%)			
				0.25≤t<0.40	0.40≤t<0.60	0.60≤t<1.00	1.00≤t<1.60
Commercial Quality	SGMCC	(≥ 270)	(≥ 270)	-	-	-	-
Drawing Quality	SGMCD1	-	≥ 270	-	≥ 34	≥ 36	≥ 37
	SGMCD2	-	≥ 270	-	≥ 36	≥ 38	≥ 39
	SGMCD3	-	≥ 270	-	≥ 38	≥ 40	≥ 41
Structural Quality	SGMC245Y	≥ 245	≥ 340	≥ 20	≥ 20	≥ 20	≥ 20
	SGMC295Y	≥ 295	≥ 400	≥ 18	≥ 18	≥ 18	≥ 18
	SGMC335Y	≥ 335	≥ 440	≥ 18	≥ 18	≥ 18	≥ 18
	SGMC365Y	≥ 365	≥ 490	≥ 16	≥ 16	≥ 16	≥ 16
	SGMC560Y	≥ 560	≥ 570	-	-	-	-

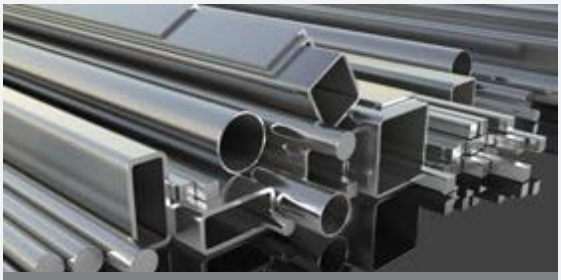
Coating Mass

Coating Designation	(M06)*	M08	M10	M12	M14	M18	M20	M22	M25	M27	(M35)*	(M45)*
Triple spot test	60	80	100	120	140	180	200	220	250	270	350	450
Single spot test	51	68	85	102	119	153	170	187	213	234	398	383

*( ) means consultation between customer and manufacturer is required.

Applications

Structural building material with exterior exposed shear surface



Pipes

Photovoltaic supports

Structures requiring alkaline or anti-ammonia environment

Cattle shed

Building structure

Structural products requiring anti-scratch

Structural guardrail

Safe guard

Home appliances and auto parts

Automotive parts

Outdoor Equipment of air conditioner

ALCOT®

Superior Heat Resistance

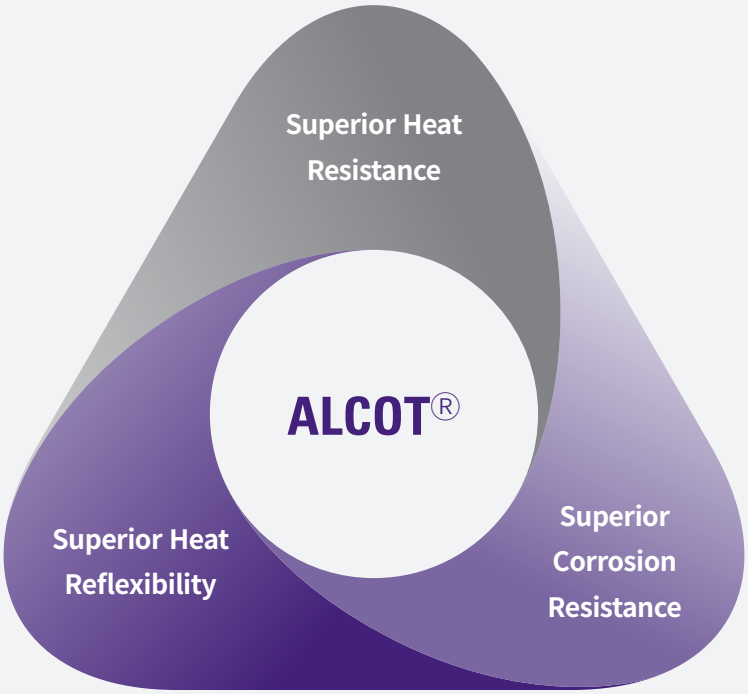
Lengthy exposure to temperatures up to 450°C causes very little change in ALCOT® and does not affect its attractive surface brightness, compared with galvanized steel sheet and cold rolled steel sheet.

Superior Heat Reflexibility

The highly elegant surface of ALCOT® reflects about 80% of the heat at a temperature of 450°C. Its reflection rate goes up to 95% where infrared rays are present. This makes ALCOT® the ideal choice for producing the heat reflector plates in toasters, ovens, gas ranges and oil stoves.

Superior Corrosion Resistance

Because the aluminum easily forms a fine oxide film when exposed to air, ALCOT® has an excellent corrosion resistance. The aluminum, as a sacrificial anode, protects the steel from the corrosion in saltwater.



Superior Heat Resistance

Heat Resistance Test Results

Test conditions : Naked eye comparison the sheet after two rounds of test procedures (Heating (1.5 Hr), maintaining (5 Hr), cooling (17 Hr))

	300°C	350°C	400°C	450°C	500°C	550°C	600°C
ALCOT®	○	○	○	○	△	△	X
SuperGalum®	○	○	○	△	△ ~ X	X	X
GI	△	△ ~ X	X	X	X	X	X

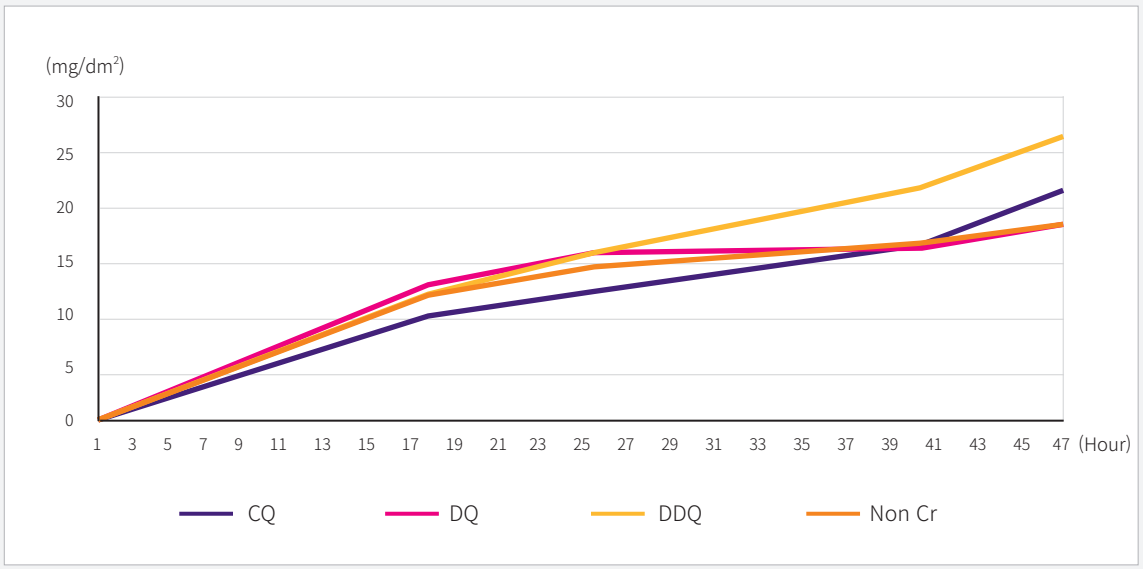
○: No change, △: Luster down, X: Tums blackish

Heat Resistant Equipment using ALCOT® steel

When heated, an oxide film is formed on the surface as the alloy layer is activated, protecting its surface.

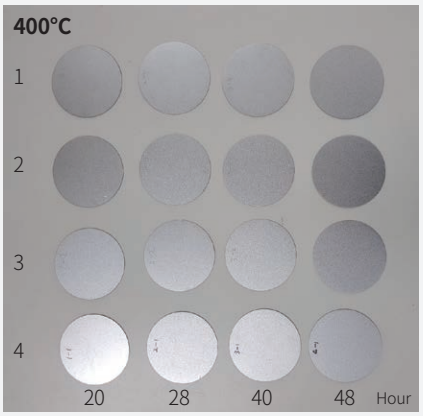
Measurement of oxidation weight by steel grade

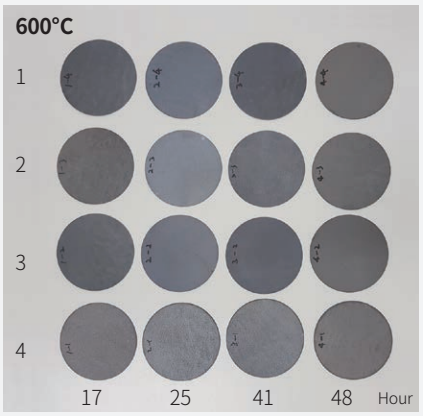
- No change in weight when heated at 400°C for 48 hours.
- Following oxidation weight observed when heated at 600°C for 48 hours.



Surface color change

- At 400°C, no change in surface color.
- At 600°C, the surface color turns black due to overalloy.





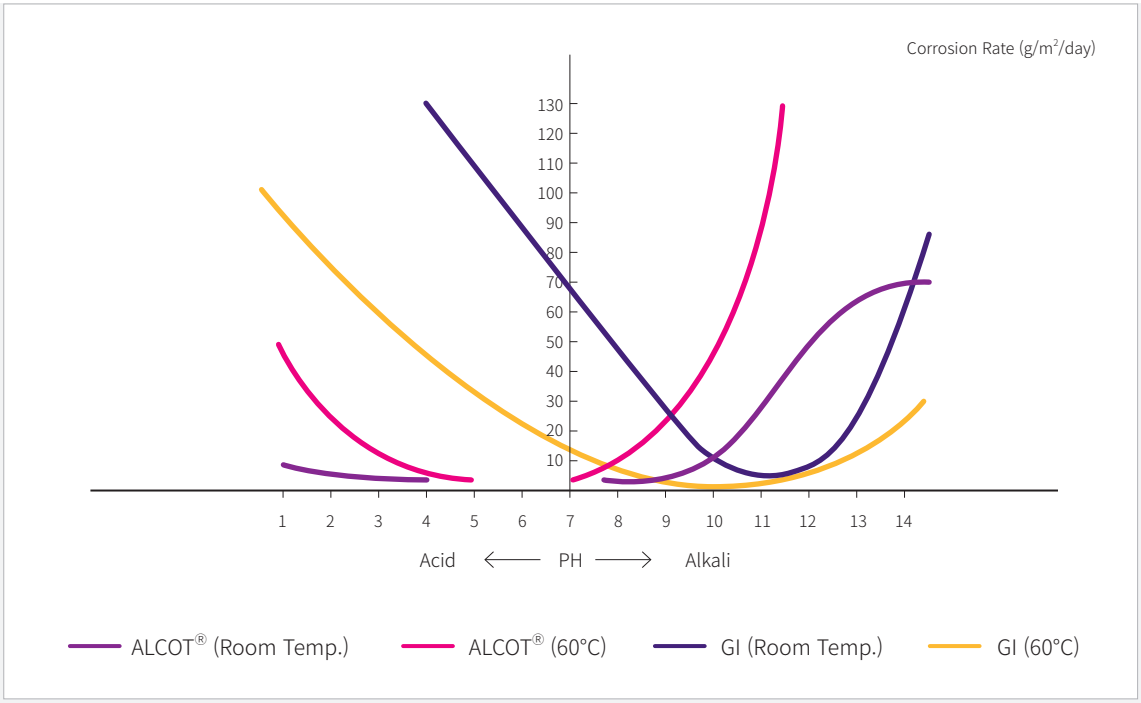
1 : CQ
2 : DQ
3 : DDQ
4 : Non Cr

Superior Heat Reflectivity

Heat Reflectivity

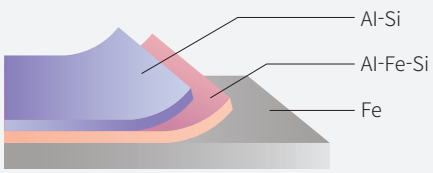
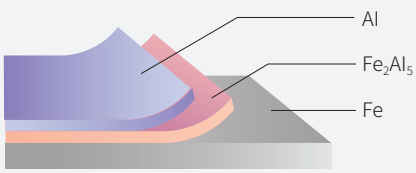
Classification	ALCOT®	GI
100°CX 24hr	80%	80%
450°CX 24hr	80%	15%

Superior Corrosion Resistance

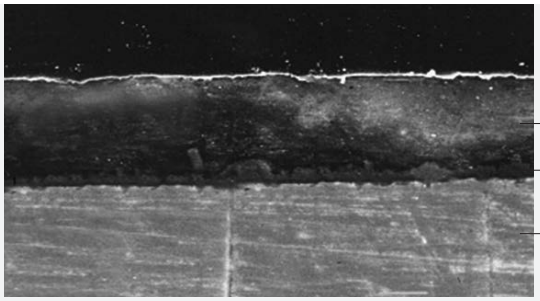


Coating Layers

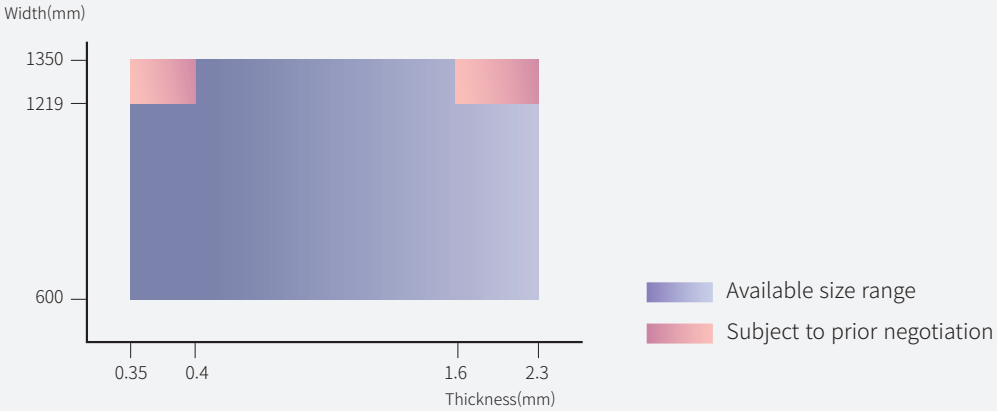
Types of ALCOT® steel sheet are categorized by the components of the molten pot. Applications are as follows.

Classification	Type I Alumininized (Can be produced by KG Dongbu Steel)	Type II Alumininized
Components of the molten pot	Al-Si(8~10%)	Al
Components of the alloy layer		
Application	Heat Resistance Treatment	Weather Resistance (Construction material)

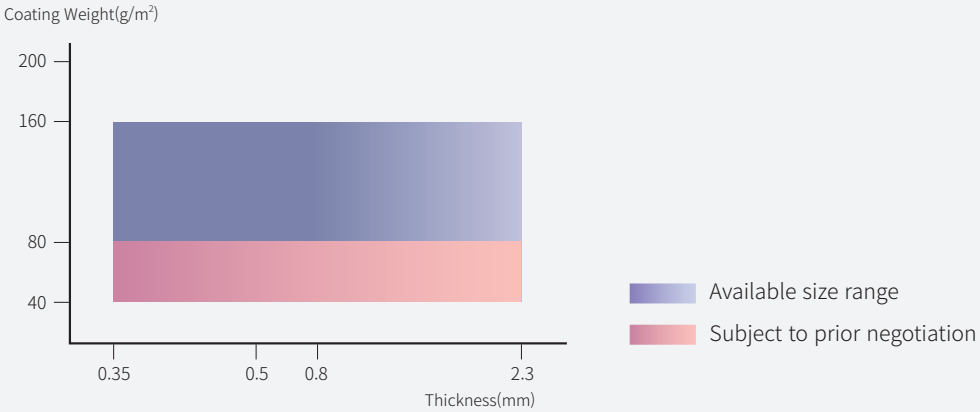
Cross section of ALCOT® steel sheet of the coated layers



Size Availability



Size Availability by Coating Weight



Post-Treatment

Chromated	Oiled	Chromated & Oiled	No Treatment	Non-Cr
○	○	○	○	○
* Chromating - Average : 9mg/m² (One side) - Range : 6 ~ 11mg/m² (One side)		* Oiling - Slightly : 500 ~ 800mg/m² (Both side) - Normal : 1,000 ~ 1,400mg/m² (Both side) - Heavy : 1,400 ~ 2,000mg/m² (Both side)	* Non-Cr - Average : 250 ~ 400mg/m² (t≤1.4)	

Grade and Symbol

	KS D3544 / JIS G3314	ASTM A 463	ASTM A 463-463M	EN 10346
CQ	SA1C	CQ	CS TYPE A	DX51D
			CS TYPE B	DX52D
			CS TYPE C	
DQ1		ADQ	-	DX53D
DQ2	SA1D	DQ	FS	DX54D
			DDS	
DQ3	SA1E	DQSK	EDDS	DX56D
Grade A	SAC31		Grade230	S220GD
Grade B	SAC35	SQ-B	Grade225	S250GD
				S280GD
Grade C	SAC41	SQ-C	Grade275	S320GD
Grade D	SAC45	SQ-D	Grade340 Class1	S350GD
			Grade340 Class2	
		-	Grade340 Class3	
Grade E	-	-	Grade550	S550GD

Mechanical Properties

Classification			Symbol	Tensile Strength (kgf/mm²) Thickness(mm)	Yield point (kgf/mm²) Thickness(mm)		Elongation(%) Thickness(mm)		
					t≤0.5	0.5<t	t≤0.5	0.5<t≤1.2	1.2<t
Commercial	1-C	CQ	SA1C, CQ						
Quality (Type 1)	1-L	CQ	SA1L, CQ-L	(40)↓	30	30	32	36	38
	1-N	CQ-N	SA1C-N	-	-	-	-	-	-
Drawing Quality (Type 1)	3-A	DQ1	SA1D-A, ADQ	28	26	25	34	36	38
	3-D	DQ2	SA4D, DQ	28	24	23	36	38	40
	3-E	DQ3	SA1E, DQSK	28	21	20	38	40	42
	(3-S)	(EDDQ)	(SA1E-S, EDDQ)	(26)	19	18	40	42	44
Structural Quality (Type 1)	4-A	Grade A	SAC31, SQ-A	31~35	21	21	20	20	20
	4-B	Grade B	SAC35, S-B	35~48	25	25	20	20	20
	4-C	Grade C	SAC41, SQ-C	41~52	30	30	18	18	18
	4-D	Grade D	SAC45, SQ-D	45~56	37	37	18	18	18

※ There may be some differences by standard (the table is based on our management).

Applications

Automotive Components	Muffler, Exhaust Pipes
Home Appliances	Electric stove, Gas range, Bread machine, Electric stove, Toaster, Frying pan, Dryer
Heating Equipment	Heat exchanger, Stovepipe, Pre-heater, Dryer, Duct
Construction	Wall and roof of chemical factories, Fireproof wall
Other	Steam cover, Other chemical equipments

EGI Electrolytic Galvanized Iron

Excellent Durability

KG Dongbu Steel EGI is “Non Cr (100% Cr Free)” product, excluding any hazardous substance such as Cr+6/Cr+3.

Eco-friendly

The brand-new post treatment facility is designed to focus on “Eco-Friendly” concept. We produce and supply EGI within the restriction of hazardous substances(RoHS : EU ELV directive).

Non-Cr / Phosphated EGI

Phosphated electrolytic galvanized iron, mainly for home appliance and painting feed of construction.

Non-Cr / Phosphated & Anti-fingerprint EGI

First phosphated and organic coated electrolytic galvanized iron, excellent in antifinger print property, lubricity, corrosion resistance and paint ability. It is mainly used for home appliance and office equipment.

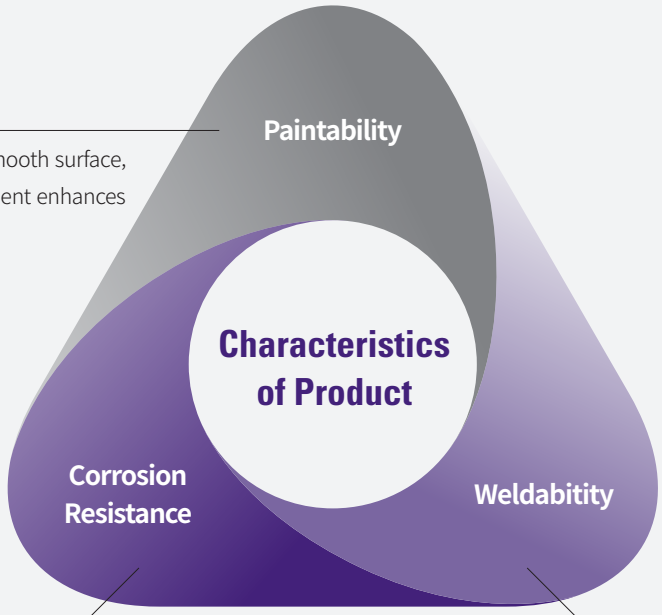
Non-Cr / Zinc & Anti-fingerprint EGI

Organic coated electrolytic galvanized iron, excellent in anti-finger print property, lubricity and surface conductivity. It is mainly used for computer, LCD, Copy machine component.

Electrolytic Galvanized Iron

KG Dongbu Steel is the 1st korean mill to produce thickness down to 0.2mm(0.0079 inch) EGI :
We are willing to contribute to society by localizing and building up competitiveness in related industries.

EGI has a flawless and smooth surface, and its phosphate treatment enhances paint adhesiveness.



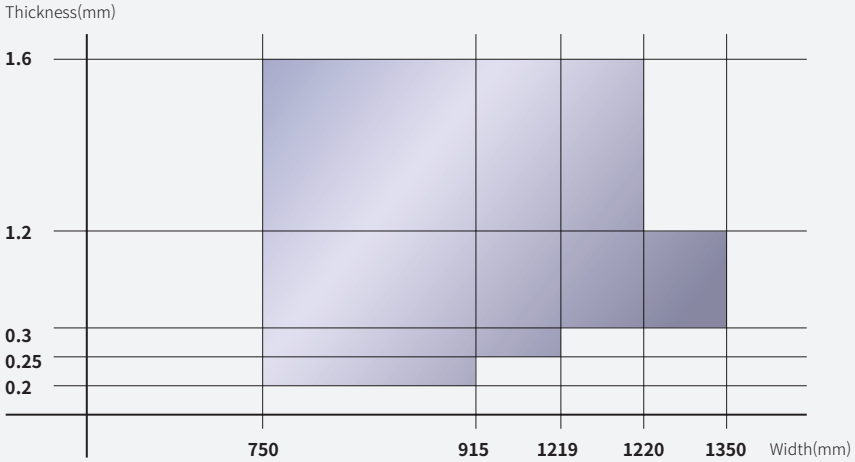
By the galvanic action of evenly coated zinc, EGI has higher corrosion resistant characteristic.

EGI has the highest weldability among all coated steel.(Both spot welding and seam welding are possible.)

Products with Zn Base Post-Galvanized

Products		Code	Galvanized Structure	Feature	uses
Pure-Zn	Non-treatment	X	Zn (3-50g/m²) Steel	Non-treatment product does not provide guarantee of white rust and must be used immediately after delivery.	Pre-coated sheet
	Oiled			This product has superior resistance to white rust, and can be oiled either separately or after phosphate treatment.	Home appliance
	Phosphated	P	P (1.5-2.5g/m²) Zn (3-50g/m²) Steel	This type of product is appropriate for the coating steel without pre-treatment. Processability could be decreased under the decline of the friction coefficient.	Home appliance, Construction material
	AFP (Anti-finger print)	D	AFP (0.8-2.0g/m²) P (1.5-2.5g/m²) Zn (3-50g/m²) Steel	Superior in corrosion resistance and processability, this product prevents the defects caused by fingerprint.	Home appliance, Office equipment
		A	AFP (1.0-1.5g/m²) Zn (3-50g/m²) Steel	This product is specialized for the uses which required both anti-fingerprint characteristic and conductivity.	Computer, LCD, Duplicating machine

Size Availability



※ For less than 0.3T, please contact our sales team before ordering.

Capacity

Division	Contents
Thickness	0.3 ~ 1.6mm
Width	750 ~ 1,350mm
Unit Coil Weight	Min. 2 ton / Max. 25 ton
Coating Weight	3/3g/m^2 ~ 24/24g/m^2
Coil I.D.	508/610 Sleeve

Limit Values of Toxic Substances Prescribed in RoHS & Product Test Results

Toxic substance	Prescribed limit value(ppm)	Product Test Result		
		Test Method	MDL(ppm)	Results
Cadmium(Cd)	75	USEPA3050B ICP-AES	0.5	N.D
Lead(pb)	1000		5	N.D
Mercury(Hg)	1000	USEPA3052 ICP-AES	2	N.D
Hexavalant Chromium(CrVi)	1000	USEPA3060 UV-Vis	1	N.D
Polybrominated Biphenyls(PBBs)	1000	USEPA3050C GC/MS	5	N.D
Polybrominated Diphenyl Ethers(PBDEs)	1000		5	N.D

Indication of Zinc Coating Weight

KS / JIS Standard

Designation of Zn Coating Weight KS D 3528 / JIS G3313	Minimum Coating Weight of Zn(One Side)(g/m²)		Standard Coating Weight(g/m²)
	Both-side coating	One-side, differential coating	
E8	8.5	8	10
E16	17	16	20
E24	25.5	24	30
E32	34	32	40
E40	42.5	40	50

ASTM Standard (A879)

SI Units, g/m²		
Coating Designation[C]	Minimum	Maximum
00G	no coating	no coating
03G[D]	3	15
06G[E]	6	25
12G[F]	12	30
20G	20	40
24G[G]	24	45

EN Standard

Designation of Zn Coating Weight (EN 10152)	Standard Coating Weight of Zn (per side)		Minimum Coating Weight of Zn (per side)	
	Thickness(μm)	Weight(g/m²)	Thickness(μm)	Weight(g/m²)
ZE25/25	2.5	18	1.7	12
ZE50/50	5.0	36	4.1	29
ZE75/75	7.5	54	6.6	47
ZE100/100	10.0	72	9.1	65

Mechanical Properties

Div.	Pure-Zn (KS/JIS)	Bending Test		Mechanical Properties (Kgf/mm²), (%)			Remarks
		Angle	Radius	YP	TS	EL	
Commercial quality	SECC			-	↗28	↗37(1.0 ~ 1.6t)	For lock forming
Drawing quality	SECD S	180°	Close adhesion	-	↗28	↗39(1.0 ~ 1.6t)	For drawing
Deep drawing quality	SECE(N)			-	↗28	↗40(0.6 ~ 1.0t)	For non-aging deep drawing

Handling Descriptions

During Transportation	Storage & Handling	Precautions for use
• When fixing the product after loading, protect the product edge with a rubber plate or steel angle so that the product's edges are not damaged by chains, steel materials, wires, fasteners, etc. • When the coil product is transported, the surface of the steel sheet may be scratched and abrasion due to the flow. • When transporting, use a cushioning rubber plate on the skid, and refrain from sudden start, sudden braking, and sharp curve driving when driving a vehicle. • When transporting, use a cushioning rubber plate on the skid, and refrain from sudden start, sudden braking, and sharp curve driving when driving a vehicle.	• Since steel products are heavy objects, ensure safety by controlling access of people within the working radius when handling. • When handling the product with a crane or forklift, be careful not to damage the product, such as impact or stamping. • When storing the product, load it in a dry indoor skid, and when it is unavoidable to store it outdoors, cover it to prevent rain. (During the rainy season, outdoors covered products should be ventilated on a clear day to prevent rust.)	• When disassembling the packaging, there is a risk of injury due to bands, so wear safety equipment and take care to distribute it. • Most of the products are coated with anti-rust oil and film, so be careful when handling them as a sheet. • Since the edge of the steel sheet is sharp, wear protective gear when handling to prevent injury. • Use the unpacked product as much as possible, and in case of inevitable storage, be sure to repackage it to prevent rust.

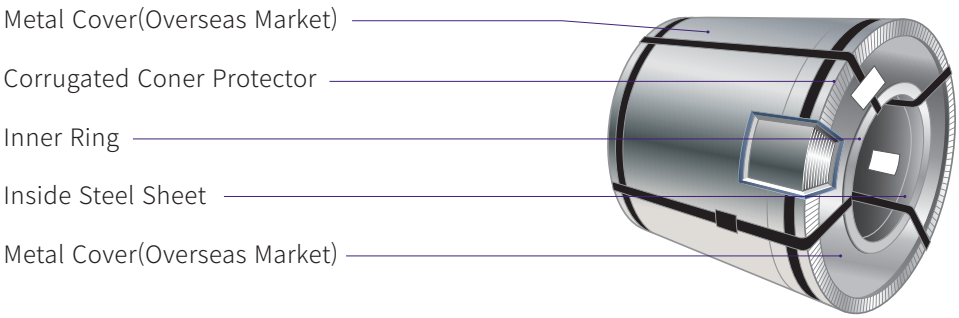
Warranty Issue

Storage Term	Application	Moisture
• When the product is stored for a long time (more than 6 months), the material may be hardened by age hardening and peeling may occur in the case of metallic coated steel.	• Please note that damage such as molding defects, mold damage, etc. may occur due to different use from the initial ordering purpose. • Please note that damage to the product due to improper handling and storage is beyond the scope of our warranty. • We do not guarantee against the occurrence of rust due to corrosive environments, so please be careful when using it in special environments.	• When storing the product, white rust, red rust, etc. may occur due to moisture and moisture penetration.

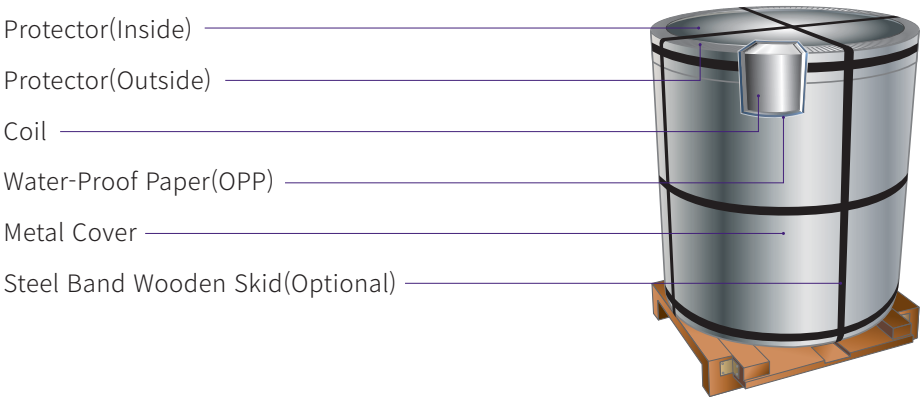
Standard Packing

KG Dongbu Steel's Cold rolled/Metallic Coated sheets and coils are properly packed to avoid possible damages while handling, transportation, and long-distance shipping. Special care is taken to prevent abrasion, rusting and scratching; Please kindly refer to the below illustration of our packing procedure. The unit weight per package is usually between 2 and 5 metric tons for sheets, and between 3 and 25 metric tons for coils.

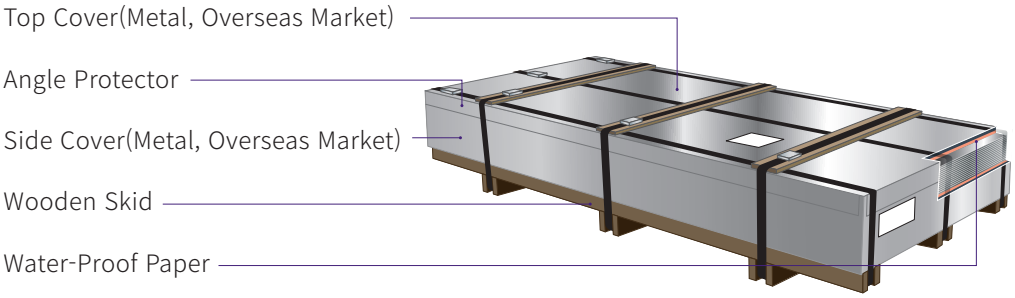
Coil (Horizental Type)



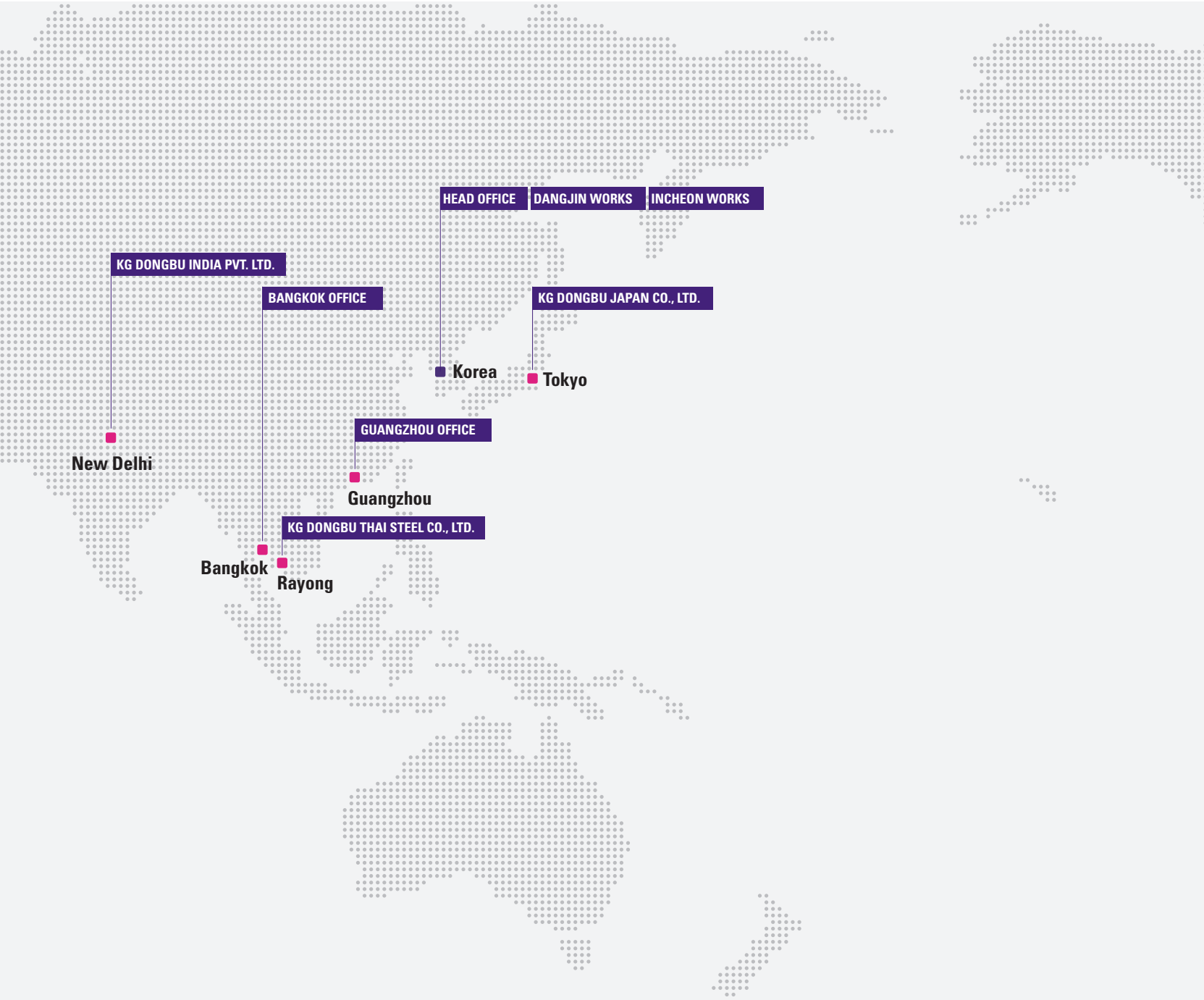
Coil (Vertical Type)

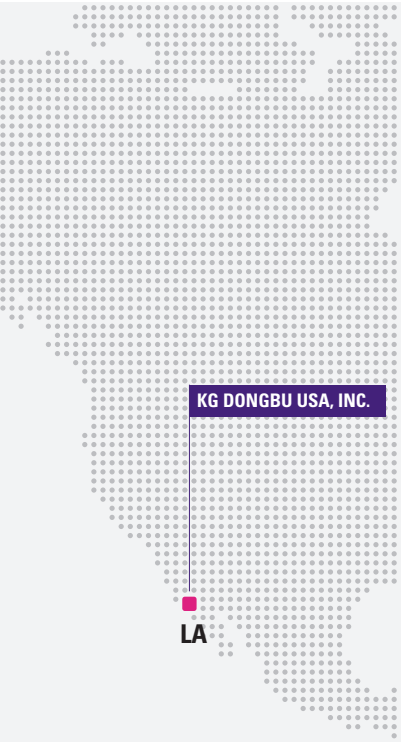


Sheets Packing



World Wide Network





KG DONGBU USA, INC.

19191 South Vermont Ave, Suite 800 Torrance, CA 90502 USA
TEL : +1-310-516-9977
FAX : +1-310-516-2141

KG DONGBU JAPAN CO., LTD.

Daiichitamuracho Bldg. 9F Shimbashi 2-1-10, Minato-ku, Tokyo, 105-0004, Japan
TEL : +81-3-3508-2070
FAX : +81-3-3501-6643

KG DONGBU THAI STEEL CO., LTD.

300/110 Moo 1 Tambol Tasit, Amphur Pluakdaeng, Rayong, 21140 Thailand
TEL : +66-38-950-494~9
FAX : +66-38-950-493

BANGKOK OFFICE

Unit 1504, One Pacific Place Bldg. 140 Sukhumvit road, Klong Toey, Bangkok, 10110, Thailand
TEL : +66-2-653-2182/2183
FAX : +66-2-653-2186

KG DONGBU INDIA PVT. LTD.

906, Tower-B, Global Business Park, Gurgaon, Haryana, 122 001, India
TEL : +91-12-4494-0950
FAX : +91-12-4494-0953

GUANGZHOU OFFICE

Room 2005, China Mayors Plaza, No.189, Tian He Bei Road, Guangzhou, 510610, China
TEL : +86-20-8755-1800
FAX : +86-20-8755-2576

HEAD OFFICE

7F Seoulsquare, 416, Hangang-daero, Jung-gu, Seoul, Republic of Korea, 04637
TEL : +82-2-3450-8114
FAX : +82-2-3450-8378

DANGJIN WORKS

1228, Bukbusaneop-ro, Songak-eup, Dangjin-si, Chungcheongnam-do, Republic of Korea, 31719
TEL : +82-41-351-8114
FAX : +82-41-351-8115

INCHEON WORKS

789 BaekBeom-ro, Seo-Gu, Incheon, Republic of Korea, 22841
TEL : +82-32-570-4114
FAX : +82-32-577-0158

Customer Satisfaction

Tel : +82-80-5600-114 **Fax :** +82-2-3450-8378
steelcs@kggroup.co.kr

KG Dongbu Steel

www.kgdongbusteel.co.kr

HEAD OFFICE 7F Seoulsquare, 416, Hangang-daero, Jung-gu, Seoul, Republic of Korea, 04637 | TEL : +82-2-3450-8114 FAX : +82-2-3450-8378

DANGJIN WORKS 1228, Bukbusaneop-ro, Songak-eup, Dangjin-si, Chungcheongnam-do, Republic of Korea, 31719 | TEL : +82-41-351-8114 FAX : +82-41-351-8115

INCHEON WORKS 789 BaekBeom-ro, Seo-Gu, Incheon, Republic of Korea, 22841 | TEL : +82-32-570-4114 FAX : +82-32-577-0158

GI-00-01-EN-CA-PG-2020.11