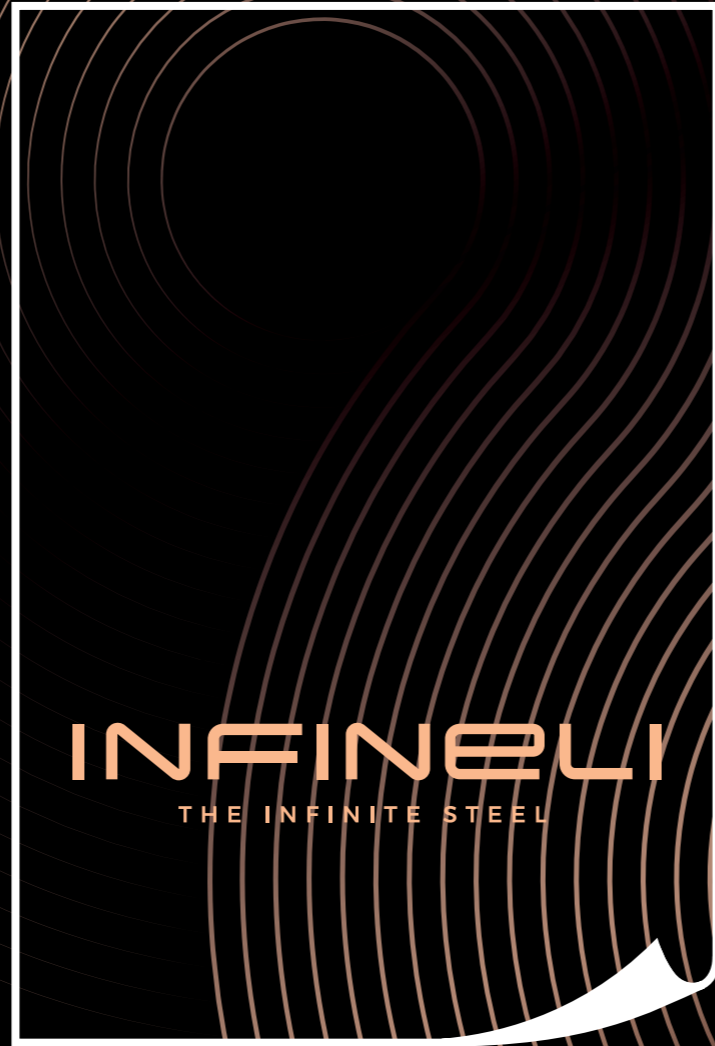


posco
STEELEON

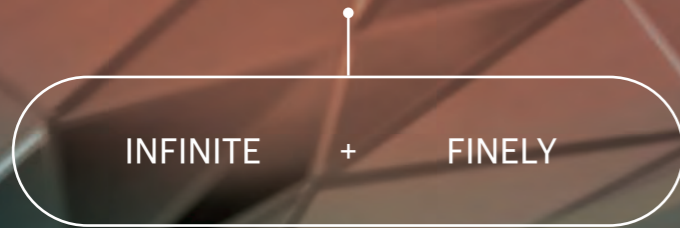


INFINELI
THE INFINITE STEEL



INFINELI

THE INFINITE STEEL



Steel with infinite potential,
beyond the limits of physical properties and applications of steel,
exquisite and steel perfected with POSCO STEELEON's technologies.

INFINELI is not just a color steel sheet brand. It is a brand that leads a new change in the steel products so that everything you touch can be colored beautifully and safely with nature.

INFINELI, which opens the infinite possibilities of steel for customer, adds new emotions and sustainable values to our lives.





MANUFACTURING

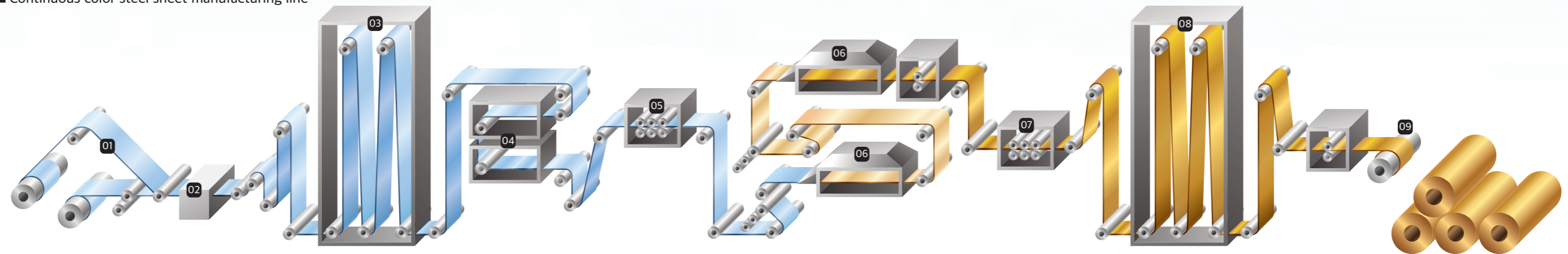
Color steel sheet manufacturing equipment

Cat.	#1CCL	#2CCL	#3CCL	#4CCL
Completion date	1989. 3	1994. 10	1997. 10	2018. 8
Capacity(ton/yr)	160,000	140,000	70,000	60,000
Line Speed	135	120	80	75
Reel (ton)	Inlet	20	20	25
	Outlet	10	10	15
Pre-treatment	Chromate	○	○	○
	Cr-Free	x	○	○
Coater	2C2B	2C2B	2C2B	3C3B+1C1B(UV)
Oven	Heating method	Indirect	Indirect	Indirect
	Type	Catenary(1,2)+Float(3,4)	Catenary	Catenary
PRINTER	x	Four colors	x	Six colors
MULTI COLOR	x	Flow Coater	x	x
LAMINATER (with/without)	x	x	Lami	x
EMBOSS (with/without)	Sol	x	x	x
Material	Thickness(mm)	Carbon steel 0.2~1.6t(AL 0.45~3.0t) Carbon steel (2.0t X 695, Sol/Corrugated steel pipe)	Carbon steel 0.2~1.0t(AL 0.45~1.62t)	Carbon steel 0.2~1.2t(AL 0.45~1.62t) Carbon steel (2.3tX914)
	Width(mm)	1,270	1,270	1,270
	Type	GI, PosMAC, EGI, GL, STS, AL, ALCOSTA, CR		



Color steel sheet manufacturing processing equipment

■ Continuous color steel sheet manufacturing line



01 P.O.R

02 Welder

03 Entry Looper

04 Pretreatment

05 Coater

06 Oven

07 Tension Leveler

08 Delivery Looper

09 Tension Reel

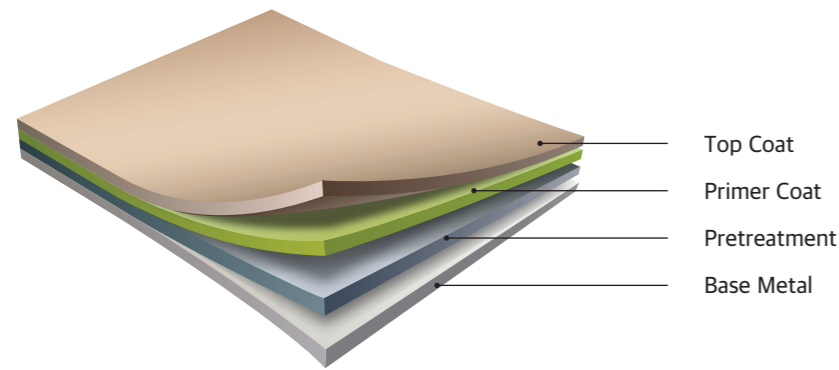


Polyester Color Steel Product (RMP/PGS)

Overview

- A product coated with polyester resin with excellent durability. Widely used for a variety of purposes from interior and exterior materials to home appliances.

Structure



Features

- Excellent processability, weather resistance and durability
- Various colors and luster can be realized
 - With a wide range of colors and luster, it is used for various purposes such as interior and exterior materials for buildings and assembly metal partitions



Applicable materials	GI	PosMAC	EGI	GL	STS	Aluminum
	○	○		○		○

Applications

- Exterior materials for buildings (Industrial, commercial, public facilities, and residential buildings, etc.)
- Interior materials (Walls, ceiling materials, partitions, etc.)
- Others (Boilers, electric appliances, steel furniture, agriculture, etc.)



Applications	Exterior material	Interior material	Roof material	Fire door	Refrigerator	Washing machine	TV
	○	○	○	○			

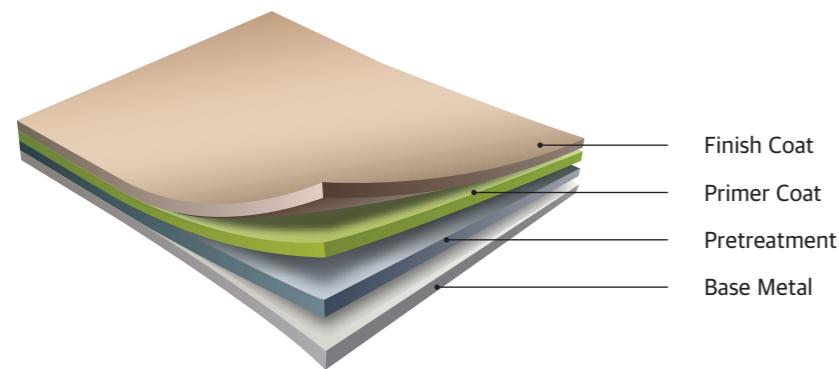


Silicon Color Steel Product (SMP/PSS)

Overview

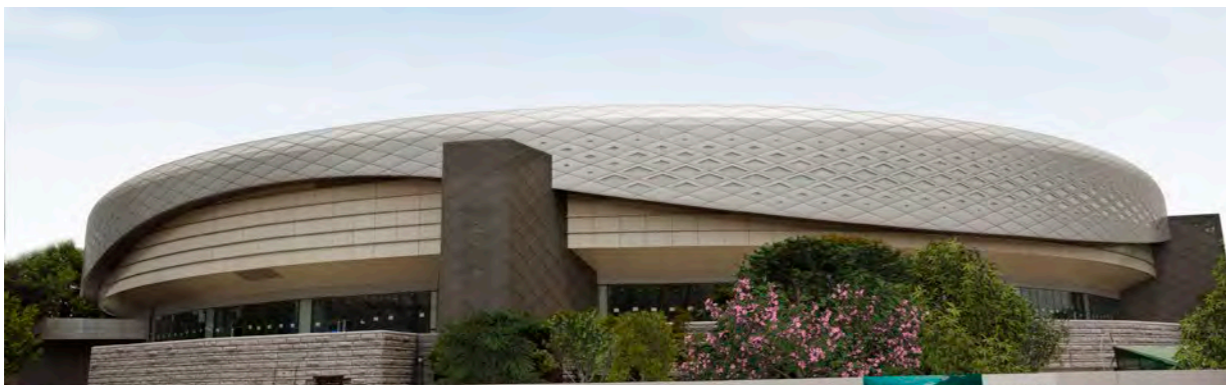
- A thermosetting paint that uses silicone-modified polyester resin and uses melamine resin as a crosslinking agent with particularly excellent weather resistance and corrosion resistance.

Structure



Features

- Excellent workability for high speed painting. It can be applied to materials such as GI, Galvalume, and Al
- A color steel sheet with excellent coating quality mainly used for roof, interior and exterior wall materials.



Applications	Exterior material	Interior material	Roof material	Fire door	Refrigerator	Washing machine	TV
	○		○				

Applicable materials	GI	PosMAC	EGI	GL	STS	Aluminum
	○	○		○	○	○

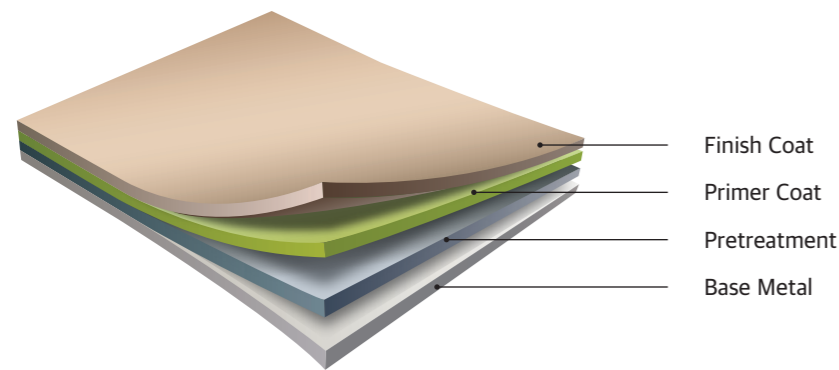


High Weather Resistance Steel Product (HDP/PSP)

Overview

- A product with improved durability of existing polyester-based paints, It is used for interior and exterior materials that require special chemical resistance, corrosion resistance and weather resistance.

Structure



Features

- Long-lasting aesthetics of the building by delaying discoloration and loss of gloss over time after construction
- Reduction of repainting costs due to aging of buildings
- Extended the life of buildings through the improved weather resistance of PCM panels for construction
- Excellent corrosion resistance and weather resistance

Applicable materials	GI	PosMAC	EGI	GL	STS	Aluminum
	○	○		○		○

Warranty

Code	Product Name	Warranty Standard						Warranty Period of competing brands (Company U, Year) 40°↑	Remark
		Warranty period by latitude (years)			Warranty items				
		0~20°	20~40°	40°↑	Fade	Chalk	Peel		
PSP	High weather resistance polyester	3	10	15	7	6	No Crack	15	
PSP2	POS-Super ADP	20	20	20	7	5		20	
PSP3	POS-MVP	10	20	30	8	4		30	
PSP4	POS-SMP40	20	20	40	7	5		40	
PDF	PVDF	10	15	20	5	8		20	

- (PSP2, PSP3, PSP4) : Weather-resistant grade in between normal PSP and PVDF.



Applications	Exterior material	Interior material	Roof material	Fire door	Refrigerator	Washing machine	TV
	○		○				

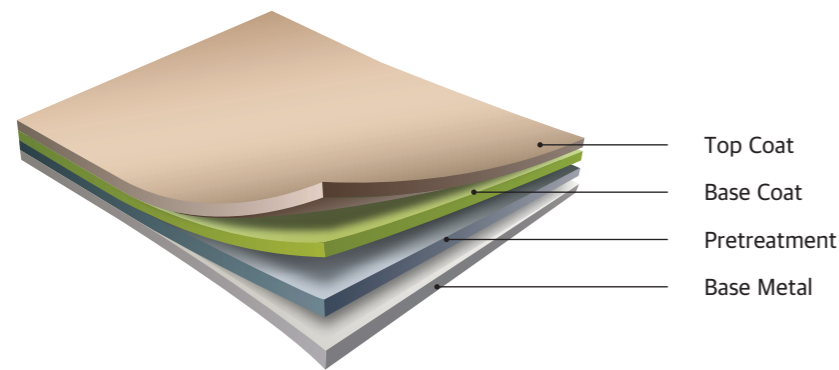


Fluoride Color Steel Product (PVDF)

Overview

- Ultra-high weather-resistance product that uses PVDF (Polyvinylidene fluoride) resin with excellent intermolecular bonding strength.
- Used for interior/exterior materials for buildings that require long-term durability in coastal industrial areas under severe climatic conditions.

Structure



Features

- Features of paint
 - Ultra-weather resistant product suitable under severe climatic conditions
 - Applicable to interior, ceiling, partitions, fire doors, etc.
- PDFK (Thermal insulation fluoride): Paint using infrared reflective pigments of Mixed Metal Oxide (MMO) and Complex Inorganic Colored Pigment (CICP) series
- PDFM (Mica fluoride): Realization of metal texture using natural mica that irregularly reflects light to create a luxurious appearance
- PDFC (Chameleon Fluoride): Different color appearances depending on the viewing angle by combining mica with a certain thickness to regularly reflect light

Applicable materials	GI	PosMAC	EGI	GL	STS	Aluminum
	○	○			○	○



Applications	Exterior material	Interior material	Roof material	Fire door	Refrigerator	Washing machine	TV
	○		○				

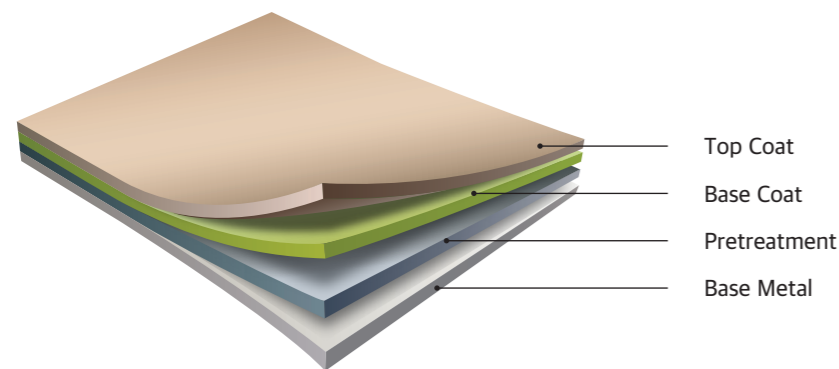


Vinyl Chloride Resin Color Steel Product (PVC-SOL/PVS)

Overview

- PVC (Polyvinyl Chloride) resin coated product upto 200mic paint thickness that requires high durability in severe climatic condition.

Structure



Warranty

Purpose of Use	Maximum warranty period		
	PVC-SOL (120 μ m)	PVC-SOL (200 μ m)	ECO PVC-SOL (200 μ m)
Wall	10 years	30 years	40 years
Roof	10 years	25 years	40 years

※ Warranty based on the area more than 1.6 km away from industrial and coastal areas

Applicable materials	GI	PosMAC	EGI	GL	STS	Aluminum
	○	○		○		

Features

- Excellent long-term physical properties with high weather resistance, high durability and high processability
 - Excellent weather resistance, chemical resistance and corrosion resistance due to the nature of PVC (vinyl chloride) resin itself
 - Excellent processability due to the elongation of the coating layer
- Embossing of leather grain for a luxurious appearance
- Ultra-high weather resistance (Eco Premium Sol)
 - Use of Acetyl Plasticizer instead of Phthalate, increase the content of UV stabilizer, and addition of inorganic pigment with high weather resistance
 - Improved weather resistance and adhesion in comparison to general PVC-Sol products



Applications	Exterior material	Interior material	Roof material	Fire door	Refrigerator	Washing machine	TV
	○		○				

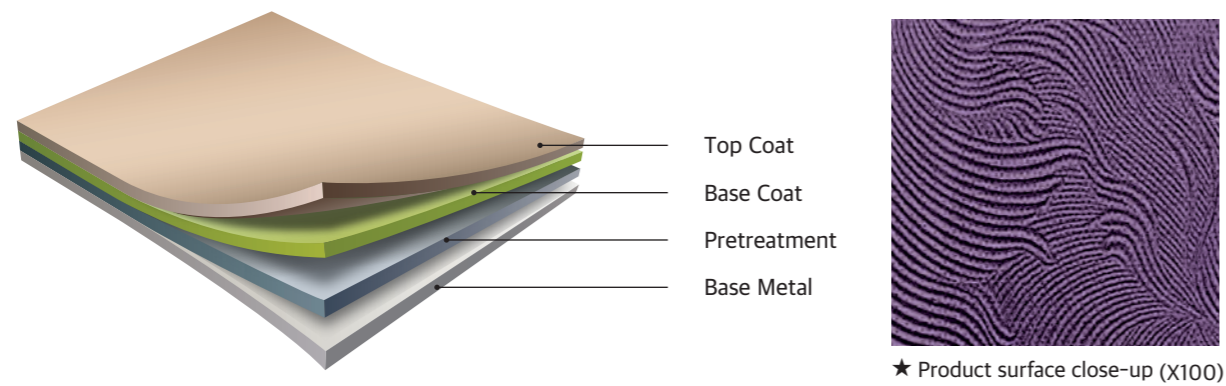


Winkle Color Steel Product (Winkle/PES)

Overview

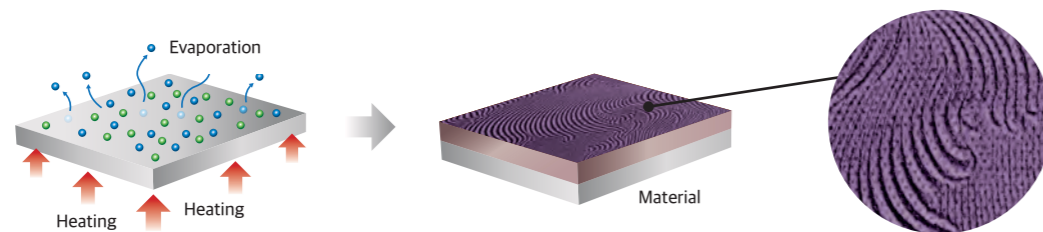
- A building exterior material with a snowflake-shaped wrinkle pattern. The size of the pattern is larger than that of the existing matt products.

Structure



Features

- Fine wrinkle by using difference curing speed between amine resin and polyester resin



- Texture of stone power and luxurious matt appearance
- Variety of Wrinkle pattern size/texture depending on the environment and purpose

Applicable materials	GI	PosMAC	EGI	GL	STS	Aluminum
	○	○				

Appearance and Warranty

Cat.	General Type			High weather resistance
	PES (POSMA TT)	PES2 (POSTONE)	PES4 (Great Wrinkle)	PSP6 (POSTERRA)
Appearance				
Warranty Period	5 years			15 years
Wrinkle size	Small	Large	Medium	Very small
Roughness	Mild	Intense	Intense	Mild

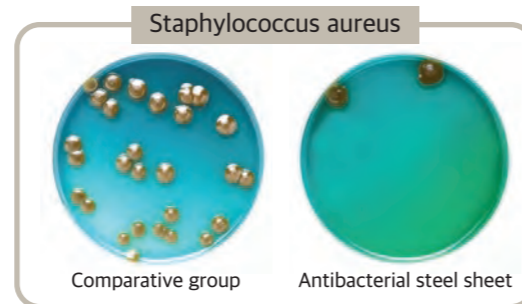
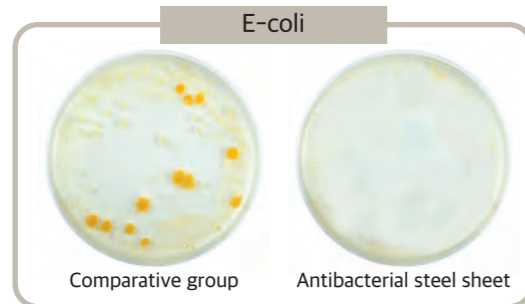


Applications	Exterior material	Interior material	Roof material	Fire door	Refrigerator	Washing machine	TV
	○		○				

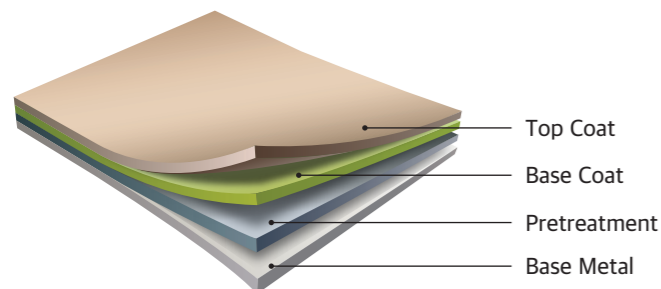
Antibacterial Color Steel Product (PBG/PBK)

Overview

- A color steel product mixed with ceramic antibacterial agent with excellent sterilization effect. It also has excellent antibacterial activity that suppresses the growth of bacteria, viruses and fungi due to its excellent antibacterial effect along with weather resistance and corrosion resistance.
- Antibacterial color steel sheet certificates from overseas institutions
 - Subjects : RMP(PGS) / HDP(PSP)
 - Certification body: Hohenstein (Germany)
 - Germany's best sanitary/biotechnology institute antibacterial certification quality label that can be obtained after passing the conformity test according to the standard
 - Certificates for some products from domestic home appliance companies such as Samsung and LG
 - Test standard: ISO 22196
 - Test bacteria: Staphylococcus aureus, ATCC 6538 Escherichia coli (E. coli) ATCC 8739



Structure



Cat.	Spec	Remark
Hardness	Mitsubishi Uni	Load: 1kg
Workability	customer consultation	T-BENDING
Antibacterial effect	Staphylococcus aureus	Antibacterial activity level: 2.0 or above
	coli	
Chemical resistance	5% HCl	24hrs
	5% NaOH	

Applicable materials	GI	PosMAC	EGI	GL	STS	Aluminum
	○	○				

Features

- Antibacterial activity
 - Sterilization by active oxygen of special metal ceramic antibacterial agent
 - Sterilization by metal ions (Ag, An, Cu)
 - Bacteria, mold, organic matter, ammonia gas adsorption and deodorization by ceramic pores
 - Mixed additives that have been confirmed to be safe for the human body
- Range of products
 - RMP(PGS), HDP(PSP), PosMATT, PVC-Sol, antistatic, PVDF, Non-flammable steel, printed steel



Applications	Exterior material	Interior material	Roof material	Fire door	Refrigerator	Washing machine	TV
	○	○	○	○			



Non-flammable Color Steel Product (NCP2)

Overview

- A color steel product that does not easily ignite at high temperatures and produces less smoke and harmful gases. It meets the performance standards* for non-flammable materials prescribed by Korea Ordinance of the Ministry of Land, Infrastructure and Transport.
 *Non-flammability test (KS F ISO 1182), gas toxicity test (KS F 2271)

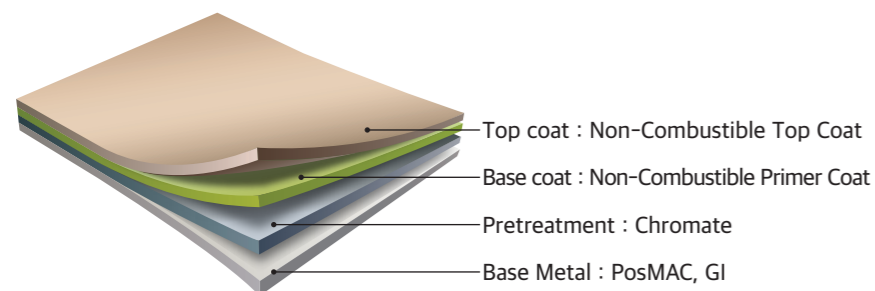
Test Items	Experimental method	Performance standard
Non-flammability test (KS F ISO 1182)	Put the specimen in a 750°C furnace and heat for 20 minutes.	<ul style="list-style-type: none"> • The maximum temperature must not rise more than 20°C above the equilibrium temperature. • The mass reduction rate of the specimen must be less than 30%
Gas toxicity test (KS F 2271)	Verify the effect of the combustion gas generated by burning the test specimen on the experimental rats (8 mice) through the stirring box	<ul style="list-style-type: none"> • The average behavioral pause time of laboratory mice should be more than 9 minute

Features

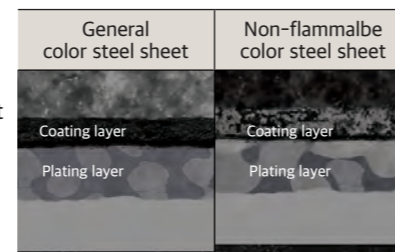
- Use of organic-inorganic composite type resin with excellent heat resistance and processability instead of normal polyester resin → Secured non-flammability
- Use of inorganic pigments instead of organic pigments
- Add inorganic flame retardants to suppress combustion to improve non-flammability → limited color realization

Cat.	White	Beige	Gray	Brown
Available Colors				

Structure



[Product cross-section comparison]



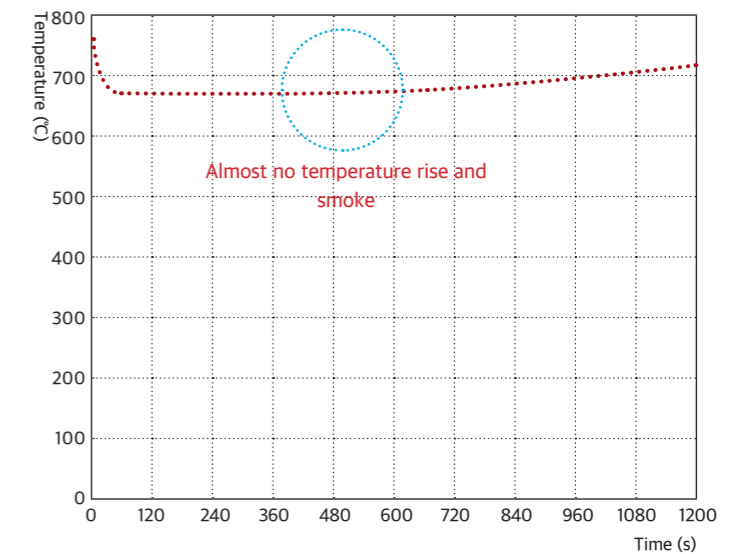
Applicable materials	GI	PosMAC	EGI	GL	STS	Aluminum
	○	○				

Comparison of non-flammable performance

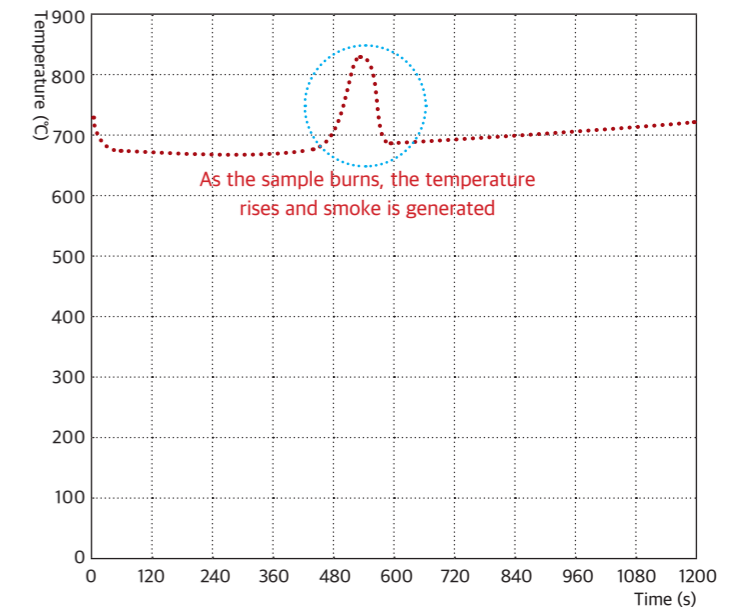
- Non-flammability test (KS F ISO 1182)



Non-combustible color steel product



Normal color steel product



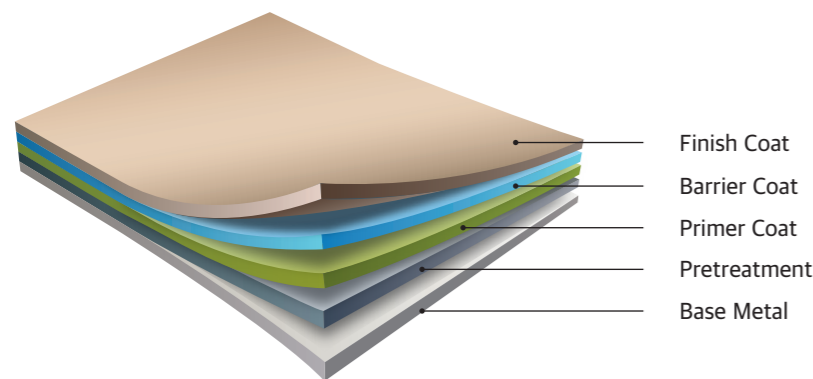


Polyurethane color steel sheet (PUR)

Overview

- Excellent chemical and abrasion resistance by combining various resins (polyol, polyisocyanate) with urethane
- A building exterior material ideal in harsh environments such as Western Europe with a high temperature and high humidity temperate marine climate, Northern Europe with a cold climate, and the Middle East with strong sandy winds and high UV radiation.

Structure



Features

- Wear resistance
 - Coating at 100~175 μ m to maximize the abrasion resistance in comparison to the existing Polyurethane (50 μ m) steel sheet
- Flexibility
 - Improved processability required for panel manufacturing by compensating for the weakness due to the thickening of the coating

Applicable materials	GI	PosMAC	EGI	GL	STS	Aluminum
	○	○		○	○	○



Applications	Exterior material	Interior material	Roof material	Fire door	Refrigerator	Washing machine	TV
	○		○				

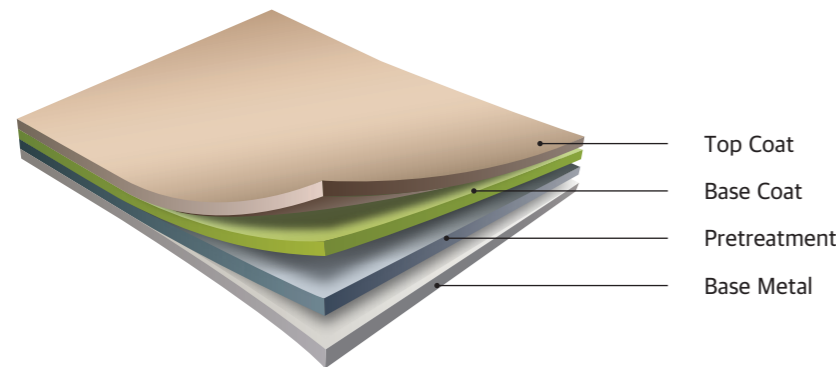


High Processability Color Steel Product (HPP/PCS)

Overview

- A product with high processability by using high molecular weight polyester(Hightpolymer) to suit the purpose of home appliance. Luxurius appearance with high gloss and texture that customer require.

Structure



Category	Test Standard	Remark
Processability	Discussion with customers	T-BENDING
Pencil hardness	Mitsubishi Uni	1kg load
Coating hardening	M.E.K Rubbing Test	
Coating hardening	SALT SPRAY	240hrs



Applicable materials	GI	PosMAC	EGI	GL	STS	Aluminum
	○	○			○	○

Features

- High gloss, high contrast and excellent surface aesthetic quality
- High processability
 - High elongation of the coating and excellent processability by using high-molecular polyester resin
- Antistatic function
 - Applying antistatic paint to prevent static electricity and easily remove airborne dust in the air.



Usage

- Excellent special properties of product that requires processability (Refrigerator, washing machine)
- Excellent metallic texture that requires processability (Refrigerator door, TV case)
- Excellent resistance from scratch or abration (TV Back Cover)
- Excellent corrosion resistance (Air conditioner outdoor unit)

Applications	Exterior material	Interior material	Roof material	Fire door	Refrigerator	Washing machine	TV
				○	○	○	○

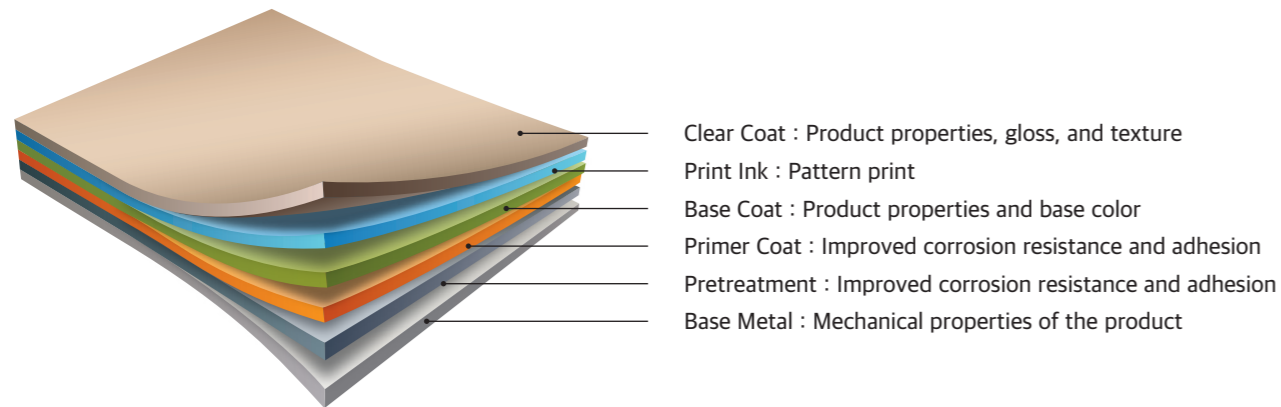


Printed Color Steel Product (Print)

Overview

- A unique product with a wide range of colors and patterns, sophisticated luster and texture through a special printing method. A customized designs for the purpose desired by customers

Structure



Warranty

Installation areas	Category	Warranty period	
		Peel & flake	Chalk
Residential, Commercial, Light industrial	General	5 years	5 years (≥NO. 4)
	High weather resistance	15 years	15 years (≥NO. 4)
	Fluoride	20 years	20 years (≥NO. 8)

※ Warranty based on the area more than 2.0 km away from industrial and coastal areas

Applicable materials	GI	PosMAC	EGI	GL	ALCOSTA	STS	Aluminum
Home appliances	○	○	○			○	○
Building materials	○	○		○			○

Features

- Luxurious and stylish design
- Diversified functions by selecting paints suitable for application characteristics
 - Hi-Polymer / Polyester / High weather resistance, etc.
- Maximized feeling of real metal feeling by using high-gloss metallic ink
- Clear texture to express 3D effect
- Continuous/discontinuous design pattern



Applications	Exterior material	Interior material	Roof material	Fire door	Refrigerator	Washing machine	TV
Home appliances					○	○	○
Building materials	○	○	○	○			

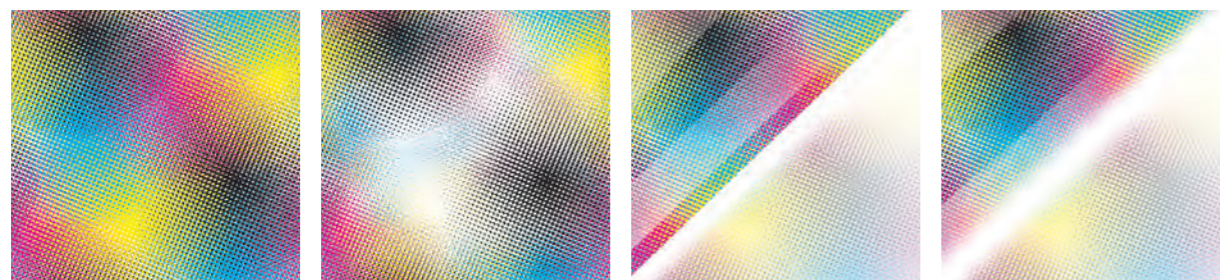
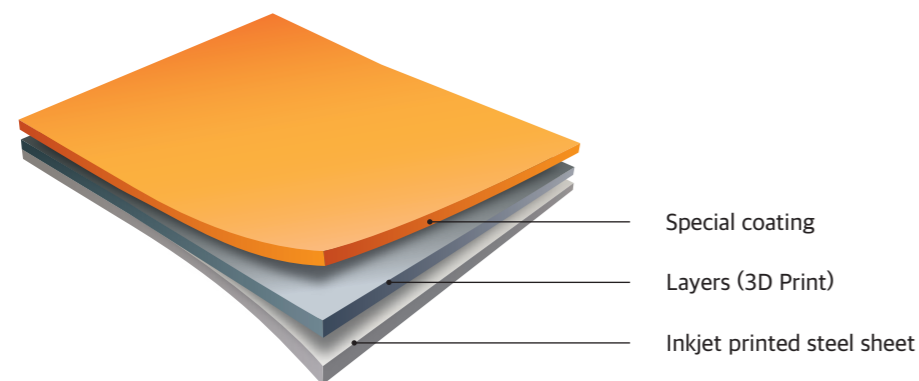


Inkjet color steel sheet (PosART)

Overview

- A premium inkjet-printed steel sheet with vivid colors and delicate texture expression
- A wide range of colors and patterns, and small-batch production/short delivery.

Structure



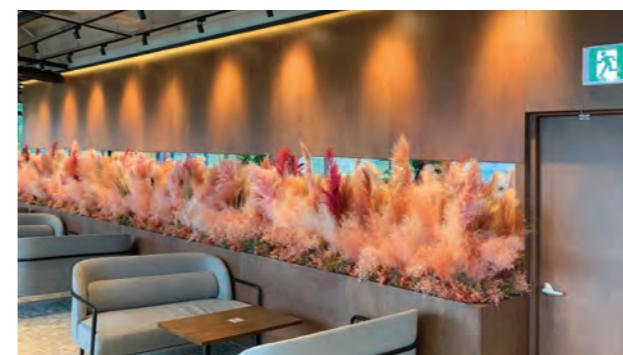
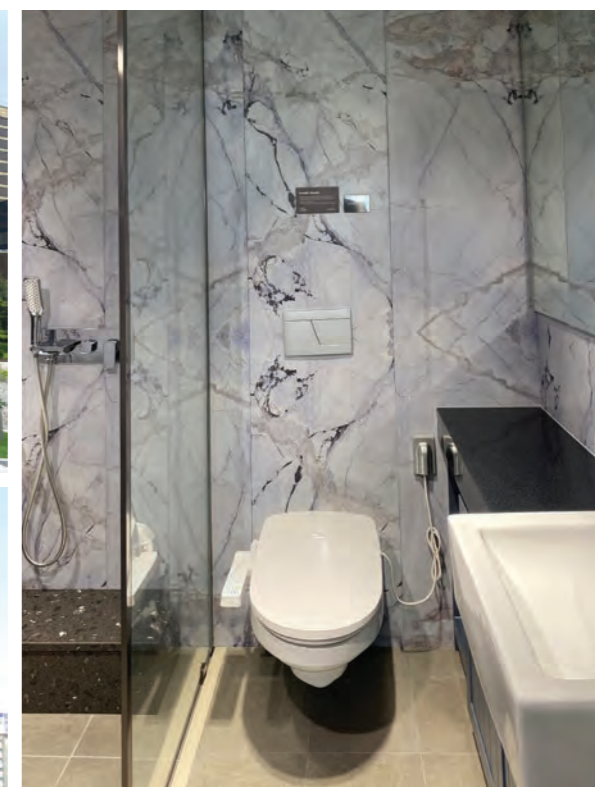
CMYK Ink CMYK Ink + Laminated layers CMYK Ink + Glossy coating CMYK Ink + Matt coating

- 3D Print texture function with high-gloss and luxurious matt surface (Option: Special coating treatment for each function: Glossy / Matt)



Features

- Shortened construction period: Easy installation due to shortened delivery time and dry construction
- Light weight: 40-50% lighter than natural or artificial marble
- Radon-free / recyclable
- Custom design: Easy replacement, Easy color/pattern customizing





Recommended products according to the characteristics required for each purpose of use

Overview

Cat.	Purpose of Use	Features of color steel sheet					Features of color steel sheet				Recommended products
		Corrosion resistance	Weather resistance	Processability	Thermal insulation	Chemical resistance	Stain resistance	Aesthetics	Thermal resistance	Antibacterial effect	
Construction	Building interior materials (partitions)			◎		○	○	◎		○	PGS, PBG, Print
	Building exterior materials (single)	◎	◎	◎	◎	○	◎	○			PGS, PSP, Print, PES, PVDF, PVS, etc.
	General panel, Strict panel, Metal panel, Gypsum board panel	◎	◎	◎	◎	○	◎	○			PGS, PSP, Print, PVDF, PVS, etc.
	Fire door, building door	◎	◎	◎	◎	○	◎	○			PGS, PCS, Print, etc.
	Drip tray (Cu)	◎	◎	◎		◎		○		◎	PBG, PGS, PSP, Print, etc.
	Fire door (Rolled hairline)	◎	◎	◎		○	◎	○			PGS2, PCS, Print, etc.
	Signboard	◎	◎	◎				○			PGS, PSP, Print, PVDF, etc.
	AL ceiling material, AL composite panel, Al Container	◎	◎	◎		○	◎	○			PGS, PSP, PVDF, etc.
	Process(FENCE, CHANNEL, Window frame)	◎	◎	◎		○	◎	○			PGS, PSP, Print, PES, PVDF, PVS, etc.
Industries	General container	◎	◎	◎		○	◎	○			PGS, PSP, Print, PVDF, PVS, etc.
	Elevator			◎				◎			Print, PCS, POR
	Handrail	◎	◎	◎							PGS
	Solar power support	◎	◎								PSP5
	Shutter, Deck-sheet	◎	◎	◎							PGS
	Corrugated steel pipe	◎	◎								PVS
	FRE-fab, sheet metal	◎		◎							PCS, Print, PVDF, etc.
Home	Boiler door	◎	○	◎			○	○			PGS, PCS, Print, etc.
	Boiler side plate	◎	○	◎			○	○			PGS, PCS, etc.
	Desk, Cabinet, Show-case	◎						○		○	PGS, PCS
	Fluorescent lamps and lighting equipment	◎				◎			○		PGS, PCS
	Blackboard (white board, green board)	◎				○	◎				PLY3, PDF3, PDF4

○ : Good ◎ : Excellent ★ : Superb

※ Even among the recommended products, there is a difference depending on the color and machining level, so detailed pre-purchase consultation is required.



Color steel sheet features and functions link table

Cat.		Features of color steel sheet			Features of color steel sheet					
		Basic features			Standard additional features					
		Corrosion resistance	Weather resistance	Processability	Thermal insulation	Self-cleaning effect	Aesthetics	Antibacterial effect	Non-flammability	Anti-static effect
Standard	PGS	○	○	○		※	※			
	PSS	○	○	○			※			
High weather resistance	PSP	○	◎	○		※	※			
	PSP2	○	◎	○			※			
	PSP3	○	◎	○			※			
	PSP4	○	★	○			※			
	PSP6	○	◎	○			※			
	PVDF	○	◎	○	※		※			
	PVC-SOL	○	★	◎			※			
	PUR	○	◎	◎			※			
	High aesthetics	PES, PPG, PVDF-PRINT	○	○	○			※		
PDFC (Chameleon)		○	○	○			※			
Special functions	PBG, PBK (Antibacterial effect)	○	○	○				◎		
	NCP2 (Non-flammable)	○	○	○					◎	
	PCS2, PCS12 (Antistatic)			◎						◎

○ : Good ◎ : Excellent ★ : Superb

※ Standard additional features are not guaranteed. Pre-purchase consultation is required on features.



Manufacturing related features of each color steel sheet

※Introduction on only the main steel sheets

Product Group		PGS	PSS	PSP					
Product Name		PGS	PSS	PSP	Super ADP(PSP2)	POS-MVP(PSP3)	POS-SMP40(PSP4)	POS-NADP(PSP5)	POSTERRA(PSP6)
Resin Type		Polyester	Silicone	Polyester	Polyester	Polyester	Polyester	Polyester	Polyester
Raw sheet	Type	POSMAC, AZ, GI, Al, ect.	POSMAC, AZ, GI, Al, ect.	POSMAC, AZ, GI, Al, ect.	POSMAC, AZ, GI, Al, ect.	POSMAC, AZ, GI, Al, ect.	POSMAC, AZ, GI, Al, ect.	POSMAC, AZ, GI, Al, ect.	POSMAC, AZ, GI, Al, ect.
	Thickness (mm)	0.25~2.3	0.25~2.3	0.25~2.3	0.25~2.3	0.25~2.3	0.25~2.3	0.25~2.3	0.25~1.6
Coating	Standard coating thickness (μm)	15~25	20~25	15~25	20~25	20~25	20~25	20~25	20~25
Coating hardness	Pencil hardness	HB~H	HB~H	F~H	F~H	F~H	F~H	F~H	HB~H
Coating adhesion	T-bending	2~3T No Peeling	2~3T No Peeling	2~3T No Peeling	2~3T No Peeling	2~3T No Peeling	2~3T No Peeling	2~3T No Peeling	2~3T No Peeling
Corrosion resistance	5% NaCl	Flat section	500 hrs	500 hrs	1,000 hrs	1,000 hrs	1,000 hrs	1,000 hrs	1,000 hrs
		X Cut section	Blister within 2mm	Blister within 2mm	Blister within 2mm	Blister within 2mm	Blister within 2mm	Blister within 2mm	Blister within 2mm
Chemical resistance	5% HCl	24 hrs	24 hrs	24 hrs	24 hrs, Blister 8 Few	24 hrs, Blister 8 Few	24 hrs, Blister 8 Few hrs	24 hrs, Blister 8 Few	24 hrs
	5% NaOH	24 hrs	24 hrs	24 hrs	24 hrs, Blister 6 Few	24 hrs, Blister 6 Few	24 hrs, Blister 6 Few hrs	24 hrs, Blister 6 Few	24 hrs
Moisture resistance	50°C×95%RH	1,000 hrs	1,000 hrs	1,000 hrs	1,000 hrs	1,000 hrs	1,000 hrs	1,000 hrs	1,000 hrs
Weather resistance	QUV Time	500 hrs	1,000 hrs	2,000 hrs	3,000 hrs	3,000 hrs	3,000 hrs	3,000 hrs	3,000 hrs
	ΔE	White series ΔE < 3 Other than white series ΔE < 7	White series ΔE < 3 Other than white series ΔE < 7	White series ΔE < 3 Other than white series ΔE < 7	White series ΔE < 5 Other than white series ΔE < 7	White series ΔE < 5 Other than white series ΔE < 7	White series ΔE < 5 Other than white series ΔE < 7	White series ΔE < 5 Other than white series ΔE < 7	White series ΔE < 5 Other than white series ΔE < 7
Warranty	Years	10 years	15 years	15 years	20 years	20 years	40 years	20 years	20 years
	Content	Perforation, peeling, discoloration (wall ΔE<8)	Perforation, peeling, discoloration (wall ΔE<8)	Perforation, peeling, discoloration (wall ΔE<8)	Perforation, peeling, discoloration (wall ΔE<8)	Perforation, peeling, discoloration (wall ΔE<8)	Perforation, peeling, discoloration (wall ΔE<8)	Perforation, peeling, discoloration (wall ΔE<8)	Perforation, peeling, discoloration (wall ΔE<8)
Product features		A steel sheet coated with polyester resin. It is most widely used from interior and exterior materials to home appliances.	A thermosetting paint that uses silicone-modified polyester resin and melamine resin as a crosslinking agent. It has excellent weather resistance and corrosion resistance.	A steel sheet with improved durability of existing polyester-based paints. It is used for building interior/exterior materials particularly requiring chemical resistance, corrosion resistance and weather resistance.	A mid-grade weather resistance steel sheet between PSP and PVDF manufactured by mixing high weather resistance polyester (PSP2, PSP3, PSP4) with improved durability and weather resistance compared to the existing PSP. It is used for construction exterior materials.				Realization of the feeling of brick through the formation of ultra-mattness and micro-wrinkle patterns 20-year warranty through application of ultra-high weather resistance (NDP) PE resin.

※It is a target value for physical properties according to domestic environmental standards, and is not a guarantee. Contents vary depending on region/use/color, etc., so detailed pre-purchase consultation is required.

※Depending on the product, it is possible to produce up to a maximum of 1,600mm (requires separate inquiry)



Manufacturing related features of each color steel sheet

※Introduction on only the main steel sheets

Product Group		PVDF, PVDF-PRINT			PVDF, PVDF-PRINT			PVS	
Product Name		PVDF(Solid)	PDFK (Heat shielding fluoride)	PVDF Matt	PVDF Metallic	PVDF Mica	PDFC (Chameleon fluoride)	PVC SOL	ECO SOL
Resin Type		PVDF	PVDF	PVDF	PVDF	PVDF	PVDF	PVC	PVC
Raw sheet	Type	POSMAC, AZ, GI, Al, ect.	POSMAC, AZ, GI, Al, ect.	POSMAC, AZ, GI, ect.	POSMAC, AZ, GI, Al, ect.	POSMAC, AZ, GI, Al, ect.	POSMAC, AZ, GI, Al, ect.	POSMAC, AZ, GI, ect.	POSMAC, AZ, GI, ect.
	Thickness (mm)	0.25~2.3	0.25~2.3	0.25~1.6	0.25~2.3	0.25~2.3	0.25~1.6	0.25~1.6	0.25~1.6
Coating	Standard coating thickness (μm)	20~30	20~30	20~30	20~30	20~30	20~30	120, 200	200
Coating hardness	Pencil hardness	F~H	F~H	F~H	F~H	F~H	HB~F	H(fracture hardness)	H(fracture hardness)
Coating adhesion	T-bending	2~3T No Peeling	2~3T No Peeling	2~3T No Peeling	2~3T No Peeling	2~3T No Peeling	2~3T No Peeling	2~3T No Peeling	2~3T No Peeling
Corrosion resistance	5% NaCl	Flat section	1,000hrs	1,000hrs	1,000hrs	-	1,000 hrs	1,000 hrs	1,000 hrs
		X Cut section	Blister within 2mm	Blister within 2mm	Blister within 2mm	-	Blister within 2mm	Blister within 2mm	Blister within 2mm
Chemical resistance	5% HCl		72 hrs	72 hrs	72 hrs	-	24 hrs	24 hrs	100 hrs
	5% NaOH		72 hrs	72 hrs	72 hrs	-	24 hrs	24 hrs	100 hrs
Moisture resistance	50°C×95%RH		2,000 hrs	2,000 hrs	2,000 hrs	-	1,000 hrs	1,000 hrs	1,500 hrs
Weather resistance	QUV Time		3,000 hrs	3,000 hrs	3,000 hrs	-	3,000 hrs	3,000 hrs	1,000 hrs
	ΔE		White series ΔE < 3 Other than white series ΔE < 7	White series ΔE < 3 Other than white series ΔE < 7	White series ΔE < 3 Other than white series ΔE < 7	-	White series ΔE < 3 Other than white series ΔE < 7	White series ΔE < 3 Other than white series ΔE < 7	Color difference (ΔE) ≤ 5 Gloss retention (%) ≥ 30%
Warranty	Years		20 Years	20 Years	20 Years	-	-	-	30 Years
	Content		Perforation, peeling, discoloration (wall ΔE<5)	Perforation, peeling, discoloration (wall ΔE<5)	Perforation, peeling, discoloration (wall ΔE<5)	-	-	-	Perforation, peeling, discoloration (wall ΔE<8)
Product features		A high weather resistance color steel sheet using fluorine-based PVDF (Polyvinylidene fluoride) resin with excellent intermolecular bonding strength.	A product applied with infrared reflective pigments of Mixed Metal Oxide (MMO) and Complex Inorganic Colored Pigment (CICP) series.	A product with ultra-matte texture by applying fluorine resin and ceramic pigment with excellent durability, and has the same durability and weather resistance as existing PVDF paint.	A product with a metallic feel on the surface of the steel sheet by adding metallic pigments.	Irregular reflection of light to create a luxurious appearance Using natural mica metal texture realization.	Synthesize mica with a certain thickness. Specular reflection of light creates different colors depending on the viewing angle.	It is a product coated with PVC (Polyvinyl Chloride) resin on a steel plate. Color steel sheet with high durability even in harsh environments by coating a 200μm thick film.	Use of acetyl plasticizer instead of phthalate and increased content of UV stabilizer, Weather-resistance and adhesion by adding high-weather-resistant inorganic pigments Improving

※It is a target value for physical properties according to domestic environmental standards, and is not a guarantee.

Contents vary depending on region/use/color, etc., so you need to discuss in detail before ordering.

※Depending on the product, it is possible to produce up to a maximum of 1,600mm (requires separate inquiry)



Manufacturing related features of each color steel sheet

※Introduction on only the main steel sheets

Product Group		PES (Wrinkle Polyester)				PBG (Anti-bacteria)		NCP2 (Non-flammable)	PUR	PCS
Product Name		PES	POSTONE(PES2)	SNOW MATT(PES3)	Great Wrinkle(PES4)	PGS Anti-bacteria (PBG)	PSP Anti-bacteria (PBK)	NCP2	PUR	PCS2(Antistatic steel sheet)
Resin Type		Polyester	Polyester	Polyester	Polyester	Polyester	Polyester	Ceramic	Polyurethane	Polyester
Raw sheet	Type	POSMAC, AZ, GI, ect.	POSMAC, AZ, GI, ect.	POSMAC, AZ, GI, ect.	POSMAC, AZ, GI, ect.	POSMAC, AZ, GI, Al, ect.	POSMAC, AZ, GI, Al, ect.	POSMAC, GI, ect.	POSMAC, AZ, GI, ect.	POSMAC, AZ, GI, Al, ect.
	Thickness (mm)	0.25~2.3	0.25~1.6	0.25~1.6	0.25~1.6	0.25~2.3	0.25~2.3	0.4~1.6	0.25~1.6	0.25~1.6
Coating	Standard coating thickness (μm)	20~25	20~25	20~25	20~25	15~20	15~20	15~20	25~50	15~20
Coating hardness	Pencil hardness	HB~F	F~H	F~H	F~H	F~H	F~H	H	HB~F	F~H
Coating adhesion	T-bending	2~3T No Peeling	2~3T No Peeling	2~3T No Peeling	2~3T No Peeling	2~3T No Peeling	2~3T No Peeling	2~3T No Peeling	2~3T No Peeling	3~5T No Crack
Corrosion resistance	5% NaCl	- High processing 240 hrs - Normal 500 hrs	- High processing 240 hrs - Normal 500 hrs	- High processing 240 hrs - Normal 500 hrs	- High processing 240 hrs - Normal 500 hrs	500 hrs	1,000 hrs	500 hrs	Exterior 2,000hrs	250 hrs
	X Cut section	Blister within 2mm	Blister within 2mm	Blister within 2mm	Blister within 2mm	Blister within 2mm	Blister within 2mm	Blister within 2mm	Blister within 2mm	Blister within 2mm
Chemical resistance	5% HCl	24 hrs	24 hrs	24 hrs	24 hrs	24 hrs	24 hrs	5% CH ₃ COOH 24 hrs	24 hrs	8 hrs
	5% NaOH	72 hrs	72 hrs	72 hrs	-	24 hrs	24 hrs	100 hrs	100 hrs	8 hrs
Moisture resistance	50°C×95%RH	2,000 hrs	2,000 hrs	2,000 hrs	-	1,000 hrs	1,000 hrs	1,500 hrs	1,500 hrs	500 hrs
Weather resistance	QUV Time	3,000 hrs	3,000 hrs	3,000 hrs	-	3,000 hrs	3,000 hrs	1,000 hrs	-	1,000 hrs
	ΔE	White series ΔE < 3 Other than white series ΔE < 7	White series ΔE < 3 Other than white series ΔE < 7	White series ΔE < 3 Other than white series ΔE < 7	-	White series ΔE < 3 Other than white series ΔE < 7	White series ΔE < 3 Other than white series ΔE < 7	White series ΔE < 3 Other than white series ΔE < 7	-	White series ΔE < 3 Other than white series ΔE < 7
Warranty	Years	20Years	20Years	20Years	-	-	-	30Years	-	40Years
	Content	Perforation, peeling, discoloration (wall ΔE<5)	Perforation, peeling, discoloration (wall ΔE<5)	Perforation, peeling, discoloration (wall ΔE<5)	-	-	-	Perforation, peeling, discoloration (wall ΔE<8)	-	erforation, peeling, discoloration (wall ΔE<8)
Product features		A high weather resistance color steel sheet using fluorine-based PVDF (Polyvinylidene fluoride) resin with excellent intermolecular bonding strength.	A product manufactured by using Mixed Metal Oxide (MMO) and Complex Inorganic Colored Pigment (CICP) series.	A product with the same durability and weather resistance as the existing PVDF paints by adding ultra-mattness by using durable fluorine resin and ceramic pigment.	A product with a metallic feel on the surface of the steel sheet by adding metallic pigments.	Irregular reflection of light to create a luxurious appearance Use of natural mica to create metallic texture.	Realization of different colors depending on the viewing angle by synthesizing the mica with certain thickness to regularly reflect light.	A product coated with PVC (Polyvinyl Chloride) resin on a steel sheet. A color steel sheet with high durability even in harsh environments by coating a 200μm thick film.	Use of acetyl-based plasticizer instead of phthalate and increase the content of UV stabilizer, Improved weather-resistance and adhesion by adding high-weather-resistant inorganic pigments.	A color steel sheet with excellent antistatic function by mixing melamine resin for hardening and adding conductive filler to high molecular polyester with excellent processability.

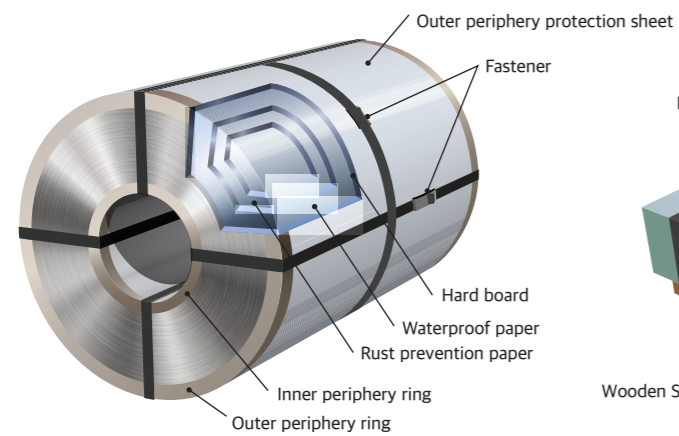
※It is a target value for physical properties according to domestic environmental standards, and is not a guarantee.

Contents vary depending on region/use/color, etc., so you need to discuss in detail before ordering.

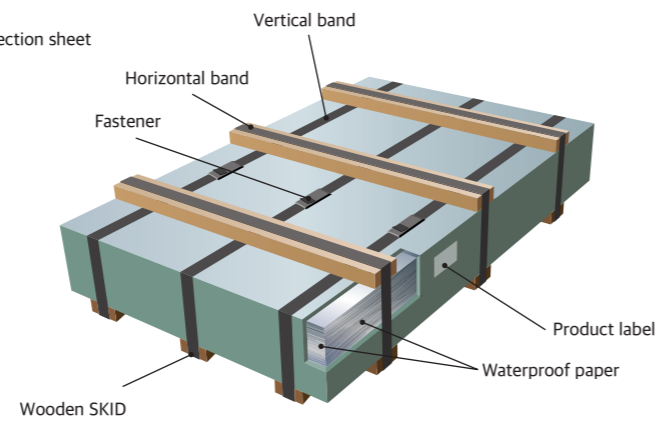
※Depending on the product, it is possible to produce up to a maximum of 1,600mm (requires separate inquiry)

User Guide

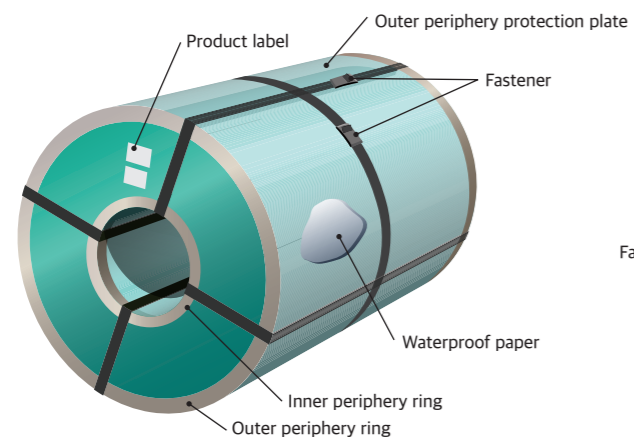
Coil Packing



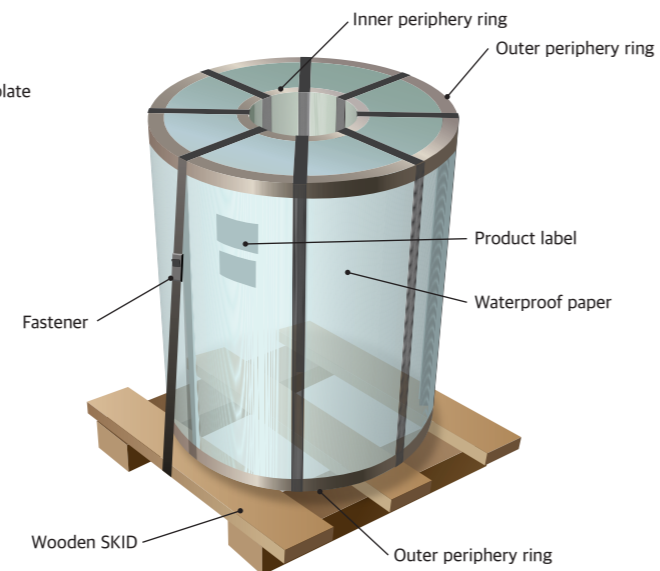
Sheet Packing



Horizontal Packing



Vertical Packing



We conduct coil, sheet, vertical and horizontal packing to meet the diverse packaging needs of customers.

Precautions for transportation



▲ Transport when it rains



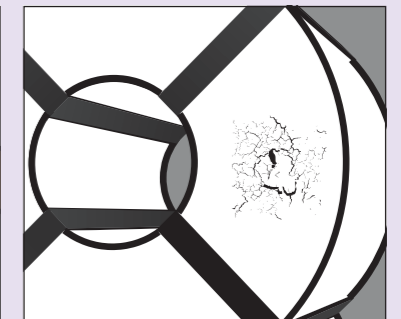
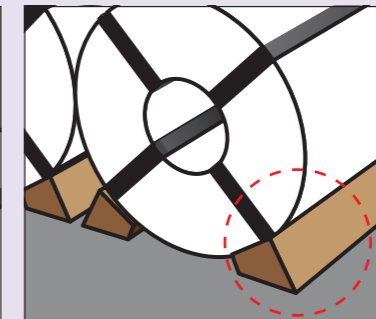
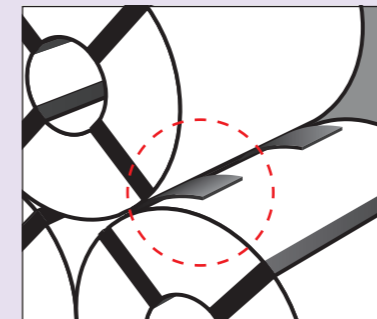
▲ Transportation of panel type product



▲ Prevention of dents

- Avoid loading and unloading when it rains, and use a cover to prevent white rust due to rainwater intrusion during transportation.
- Be careful of surface defects (scratch, press mark, etc.) of the coating when transporting the panel.
- Drive appropriately according to road conditions, and avoid speeding and sudden .
- Prevent defects due to shaking by using pentagonal SKID, and make sure that the position of the fastener for banding does not come into contact with the product.

Precautions for handling



- When stacking products on two tiers, insert the rubber PAD on the coil stacked on the 1st tier use the rubber PAD & pentagonal SKID on the floor to prevent dents caused by foreign substances.
- If urethane coating is applied to the part in direct contact with the product, damage to the inner diameter can be prevented.
- Be careful not to get the product damaged by impact caused by product handling equipment.



User Guide

Handling precautions

Prohibited Installation Areas

In regions that promote corrosion such as coastal areas, heavy industrial zones, or livestock facilities it is best to refrain from using color coated steel. If use is unavoidable, additional measures like packing or sealing should be applied to prevent corrosion.

Roof Pitch

When installing roofs, an appropriate pitch must be ensured so that rainwater drains properly, as water accumulation can lead to corrosion.

Uniform Direction Forming/Installation

When forming or installing in the same direction, differences in surface color may occur due to light reflection depending on the width and length directions, and there may also be color variations between lots; therefore, it is recommended to install using the same orientation and the same lot.

Drainage Gap

A drainage gap of approximately 10 mm should be secured at the junction of walls and structural members to prevent water accumulation, which can cause corrosion on cut edges.

Caulking Material

It is advisable to select high quality caulking products that match the durability of the color coated steel, such as silicone or modified silicone based sealants.

Surface Discoloration

In areas near metal processing factories or scrap yards, metal powders such as iron can be carried by the wind and adhere to the product surface, leading to discoloration as the iron corrodes before the coating does. To prevent this, contact with metal powders should be avoided by using protective packaging, and care must be taken during onsite cutting to prevent metal chips from embedding in the surface.

Chemical / Electrolytic Action

The strong alkalinity of concrete, the preservatives used in wood, and the contact between dissimilar metals can create an environment that rapidly accelerates electrochemical corrosion in the presence of moisture, so caution is necessary.

Wood Joints

Wood and plywood are typically treated with preservatives containing copper to prevent decay and improve durability; however, this copper can promote galvanic corrosion when in contact with steel, so insulating anti corrosion treatment is recommended at contact points.

Cleaning Areas Not Exposed to Rain

Areas that are not washed by rain may accumulate dust containing salts and acidic substances, which can adhere and fix to the surface, leading to rapid corrosion; therefore, periodic cleaning with water is recommended.

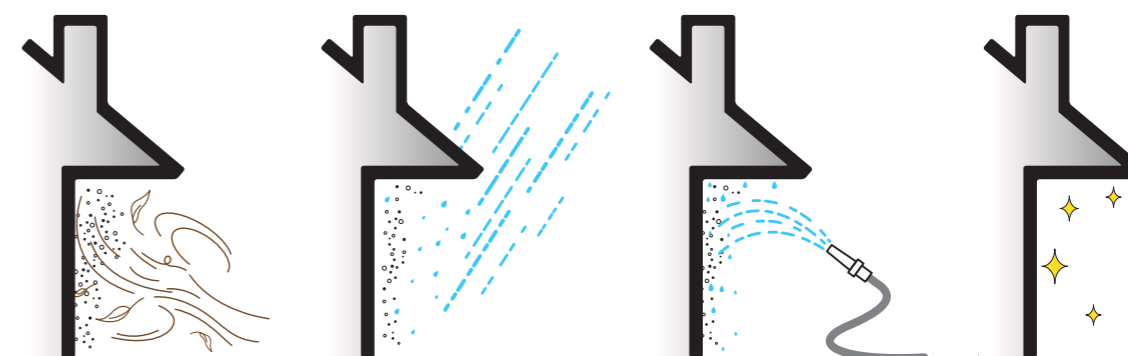
Separation of Anti-Corrosion Post-Treatment Components

In moisture exposed environments, the anti corrosion post treatment components applied to both the upper and lower surfaces of the coated steel may separate, reducing their effectiveness. It is important to ensure that neither side is excessively exposed to moisture.

Customer Precautions

Please take extra care with areas not exposed to rain, as these regions can experience premature corrosion.

Areas where rain does not easily reach, salts or acidic corrosive substances may not be washed away but instead become concentrated, thereby accelerating corrosion. It is advisable to regularly spray water on areas such as under eaves, overhangs, and balconies to wash away corrosive substances (take care indoors to prevent water leakage).



Dust carried by the wind is also a source of corrosion.

While areas exposed to rain are naturally washed clean, those shielded from rain tend to accumulate dust.

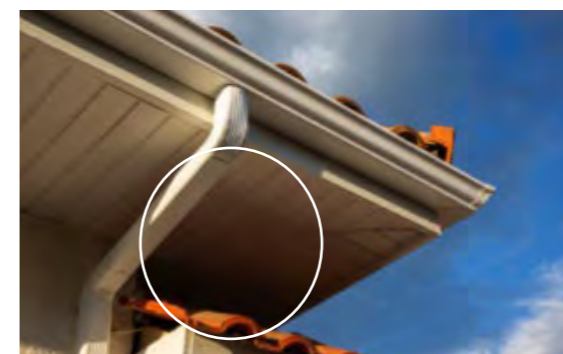
Spray water and remove the dust that causes corrosion.

The benefits of such cleaning are undeniable even if performed only a few times a year.

※ Cleaning Precautions

- If using a detergent, it is recommended to use a neutral detergent.
- To avoid damaging the surface, use a soft sponge or cloth.

※ Example: Areas that are not exposed to rain.



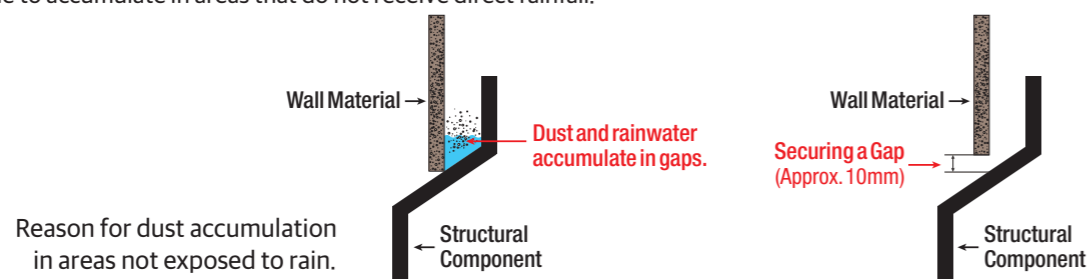


User Guide

Design, Processing, and Construction Contractor Precautions

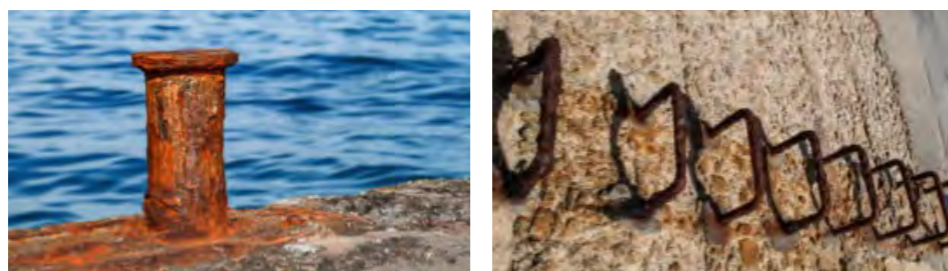
Ensure that there is an adequate gap between the wall material and drainage components to allow for proper water drainage.

Without a sufficient gap approximately 10mm water may accumulate along the edges of the steel, making these areas highly susceptible to corrosion. This gap prevents the build-up of dust and runoff, which are particularly prone to accumulate in areas that do not receive direct rainfall.



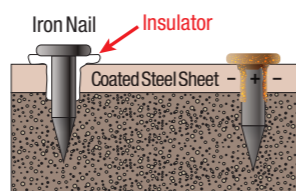
Avoiding Contact with Concrete

Avoid direct contact with concrete. When concrete becomes wet, its alkaline components can leach out and dissolve the plating on the steel surface. In addition to insulating the steel from concrete, make sure to design a structure that prevents rainwater and condensation from infiltrating.



Precautions for Direct Contact with Other Metals

Be cautious about direct contact with other metals. Different metals exhibit varying tendencies to ionize; when a metal with a higher ionization tendency contacts one with a lower tendency, the higher tendency metal will preferentially corrode due to the potential difference. For instance, if zinc (Zn) or iron (Fe) comes into contact with copper (Cu), the metal with the higher ionization tendency (Zn or Fe) will corrode before the copper does. This phenomenon is known as "dissimilar metal contact corrosion." If contact between different metals is unavoidable, insert an insulating material such as a rubber sheet at the contact point to prevent direct contact.



Exercise caution regarding contact corrosion when using preservative-treated wood.

Recently, wood treated with preservatives and ant termiticides is widely used to enhance durability. However, most preservatives contain copper, which can, upon moisture ingress, come into contact with the color coated steel and rapidly induce corrosion. Therefore, areas where wood contacts the steel such as roofing should be insulated, and the design should ensure that rainwater or condensation does not infiltrate.

Roof Pitch and Water Puddling

Be mindful of water puddles formed due to shallow roof pitches. In the installation of folded metal roofs, a pitch of less than 3/100 can cause water to accumulate in sticky areas of the roof. During construction, ensure that the roof has a sufficient pitch to prevent water from collecting.

Avoid Mixing Different Lots on the Same Surface

Do not adhere different production lots to the same surface if possible. Although efforts are made to minimize appearance and tonal differences between lots, bonding different lots on the same surface may result in visible color variations. If layering is unavoidable, consider applying different lots to separate components or in areas that are not prominently visible.

Maintain Uniform Direction in Forming and Installation

There may be differences in the coated surface color due to light reflection depending on the width and length directions, and color variations may also occur between lots. Therefore, it is recommended to use the same direction and the same lot during installation.

Prevent Slipping During Construction

Take care to prevent slipping during construction. The drainage-considerate pitch used in roof installations can lead to slippery conditions, especially during rain or snowfall. Prior to beginning work, implement appropriate safety measures to prevent slipping.

Avoid Scratches During Construction

During construction, be careful not to cause scratches on the plated steel. Working on the surface with shoes contaminated by dirt or sand can result in scratches or blemishes, which may damage the anti-corrosion treatment and the plating layer, thereby reducing the product's corrosion resistance. Extra care must be taken to maintain the surface integrity.

Post-Construction Cleaning

After construction, clean the surface of the steel. Leftover chips, screws, wires (e.g., copper), and other residues can come into contact with the plated steel and cause dissimilar metal contact corrosion, accelerating the deterioration of the plating. Ensure that all metallic residues are completely removed after construction.



User Guide

Handling Precautions



Use safe handling equipment



Do not load excessively



Avoid excessive shock



Do not touch with dirty glove

- When handling sheets and molded products, use safe handling equipment.
- When transporting sheet products, use a forklift to lift the center of the pallet, and use two fastening bars when using heavy equipment (crane).
*Please avoid transporting products that exceed the equipment specifications.
- Do not step on or walk on the product with shoes or soiled shoes.
- Do not handle the product with oily or dirty gloves.
- Do not unpack or remove the surface protection film prior to use.
- More than two workers are required when moving a sheet product to prevent the product from being dragged on the ground, and be careful not to scratch the product when lifting it one by one.
- To prevent defects such as processing defects and equipment problems, use the product in consideration of the intended use. *Please avoid low-temperature processing and processing beyond product performance.
- If the product is stored for a long period of time, the coating may be damaged during processing and the coating may swell due to dew condensation. It is therefore recommended to use the product within 3 months of receipt.

Precautions for storage



▲ Use a cover and conduct ventilation to prevent dew condensation



▲ An example of incorrect outdoor storage (A cover is not used)

- The product must be stored indoors, and in case of unavoidable storage outdoors, a cover (vinyl) must be used to avoid rain, and after the rain has stopped, make sure to ventilate well to avoid moisture.
- When dew condensation occurs, remove moisture immediately and be careful of swelling of the coating film due to moisture penetration.
- Make sure to keep the product away from rainwater. If rainwater enters, please use it immediately.

Precautions for transportation



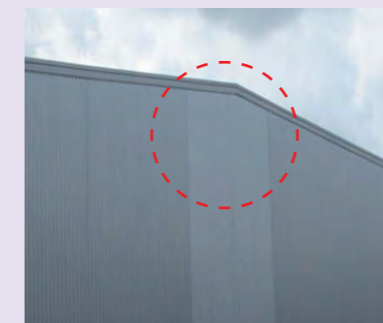
▲ Temporary measures when there is moisture inside the product



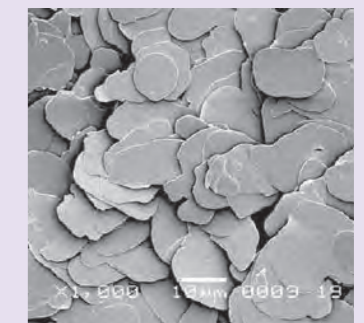
▲ An example of non-use of a cover and poor drainage

- If rainwater enters the sheet or molded product, use a support to tilt it to remove the moisture.
- Make it sure to use a cover and waterproof paper for the remaining product to prevent moisture penetration.

Precautions for color difference

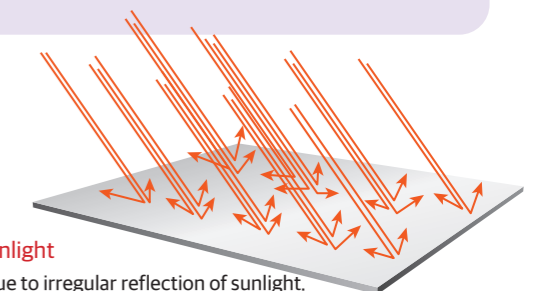


▲ Mixed color in the lot of metallic and matt products



▲ Structure of particles in the metallic products

- Metallic and matt products are prone to color difference due to surface particles due to the quality of the product. Therefore, to prevent color difference, make it sure use the same lot when manufacturing and constructing panels.
- Product features: When the surface of the product is reflected by light, it is diffusely reflected in each direction, showing a ripping effect, and it is subject to special color difference management.
※ Ripping effect: The particles in the metallic products are aligned on the surface of the product and look like silver foil



Irregular reflection of sunlight

Ripping effect may occur due to irregular reflection of sunlight.

User Guide

Precautions for handling



▲ Debris and inappropriate finishing

▲ Cautions for repair painting

(It is highly recommended to use the paints recommended by our company)

- Debris (iron powder) generated during product cutting and holing are attached to the product surface, causing red rust. Please be sure to remove it after installation.
- Anti-rust hook bolts and handling tools must be used.
- For repair painting, use only the paint specified by our company.

Precautions for products with protective film



▲ A method of stacking products with a protective film (Avoid two-tier stacking)

▲ Storage and precautions for products with a protective film

▲ Avoid direct sunlight when storing

- The products with a protective film are prone to buckling. Make it sure to SKID and do not stack more than two tiers. Also, be careful that when products (COIL, SHEET) are stacked in multiple tiers, the load may increase, which may damage the products.
- When storing the product, avoid direct sunlight and remove it immediately after construction (processing). Also, it is recommended to use the products within 60 days of receipt. Otherwise, the adhesion will increase and it may be difficult or impossible to peel off.
- When removing foreign substances (e.g. remnants of protective film, etc.) from the product surface, there is a risk of damage to the coating, so please use the solvents below.
(Use Kerosene and Methanol. Do not use M.E.K Trichlorethylene Benzene, Toluene, Thinner)

Product storage/Handling/Warranty period for construction

Product Group		Warranty Period			
		No warranty	10 days	3 months	6 months
Outdoor storage	Outdoor storage conditions (Cover the product when it rains , remove the cover after rain stops)			◎	
	Period of use after moisture penetration (ventilation, removal of internal moisture)		◎		
	Defects due to careless storage (swelling of coating, white/red rust, etc.)	◎			
Products with a protective film	Period of use after receiving the product (adhesion increase)			◎	
	Use of prohibited solvents (when removing the remnants of protective film)	◎			
Method of loading	Products with a protective film	◎			
	General products, Sol, etc.	◎			
Precautions for construction	Stacking in more than 2 tiers	◎			
	Stacking in more than 3 tiers	◎			
	Red rust caused by debris (iron powder)	◎			
Storage period	Careless construction (contact with chemicals, drilling, etc.)	◎			
	Discretionary repair	◎			
Precautions for color difference	Long-term storage of products (film deterioration, material aging, etc.)				◎
Precautions for transportation	Warranty for lot-to-lot color difference	◎			
	Defects in the coating due to careless transportation (Processed products: sheets, panels, etc.)	◎			
Others	Defects due to careless handling	◎			

- For other products, please contact our customer call center

BlockBlocking

- Defects caused by mutual transfer between the top and the back of painted layer due to local friction between the coils due to impact during distribution and loading during product transportation. Peeling of the painted layer occurs at regular intervals.

White and red rust

- Surface blister : A shape in which the paint layer swollen to the size of a millet on the surface of the product.
- White rust : White powder or swelling of the painted layer occurs as the top and back paint layer on the surface of the product falls off.
- Red rust : Dark red rust occurs on the paint layer on the surface of the product. It is caused by the adhesion of the debris from metal processing or the rust generated during product processing or by contact with moisture in the severely damaged area from the outside.

Dent

- When transporting and handling the product, partial dents may occur in the product due to the use of defective SKID or non-use of SKID or rubber PAD.

Handling Mark

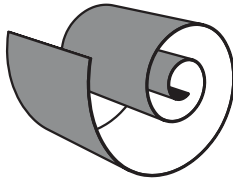
- Severe defects in product shape and damage due to dents caused by impact by colliding with transportation equipment or other external equipment or buildings during product transportation and handling.

Dew Condensation

- It occurs when temperature of the moisture in the air on the surface of the product goes down due to temperature fluctuations during the day and night or between seasons. It causes white rust when the products are stored for a long period of time under this condition.



User Guide



This guide deals with information on storage, handling and usage precautions of coated steel sheets, and is prepared to prevent issues caused by improper storage or handling. Not complying with the following may result in product loss, so please use extreme

Other Precautions for Use

- When processing, please ensure that the coating film on the processed area is not peeled off by applying a gentle R-processing. Also, it is advisable to avoid processing in cold weather. In the case of roll forming, the coating film may be scratched depending on the roll condition. Before forming, check and manage the dust, foreign matter attachment, and scratches on the roll.
- When installing on a roof, please pay attention to the slope to prevent puddle-like areas from forming.
- Leaving protruding iron chips, chips, nails, etc., can cause red rust to form on the coating film of the steel sheet, accelerating corrosion. Wash with water as soon as possible. Similarly, the accumulation of bird droppings, sand, mud, organic matter, etc., is harmful to the coating film, so please manage it.
- In environments where a lot of metal powder such as iron powder is generated, such as metal handling plants, scrap plants, and storage locations, surface discoloration may occur, and stains may not be removed even after cleaning. Please be cautious when using products in environments where a lot of metal powder is flying around.
- Avoid construction that comes into contact with chemicals, wet concrete, damp wood, copper, lead, and other metals.
- The back side of the steel sheet is a non-guaranteed service coating and is designed to be usable, but please pay sufficient attention to insulation, condensation prevention, and waterproofing.
- During construction, avoid exposing the cut surface of the color steel sheet to the outside. It can cause edge corrosion. If exposure is unavoidable, please paint over the exposed area.
- Please manage to prevent areas where rainwater, pollutants, etc., can accumulate. Corrosion becomes more likely to occur.
- Be careful of scratches during construction. Defective areas caused by walking on the steel sheet or rough handling of molded products can be a cause of corrosion.
- Please clean the surface of the steel sheet after construction. Clean to ensure no residues remain.
- We strive to reduce the appearance and color differences between lots, but please refrain from mixing lots as much