

ALCLAD®

1. Product Name:

STEEL COMPOSITE PANEL (SCP)

2. Manufacturer:

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3. Product Description

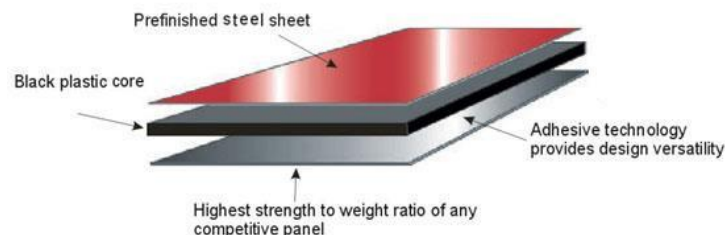
BASIC USE

ALCLAD® SCP is a lightweight, rigid, bendable and durable steel faced composite panel. Generally displays superior workability, durability, anti-impact and weather resistance ability, which is most widely used for curtain wall decoration, vehicle, containers and so on.

COMPOSITION & MATERIALS

ALCLAD® SCP panels consist of a core of thermoplastic material thermally bonded to steel sheets, DuPont Bynel® as bonding layer coextruded on the surface of plastic core, fabricated of prepainted steel sheet or galvanized steel sheet or embossing color steel sheet and so on.

Compositing of SCP



SPECIFICATION

ALCLAD® panels are available in 3, 4 and 6 mm thicknesses.

TYPES

Several types of SCP panels are available including:

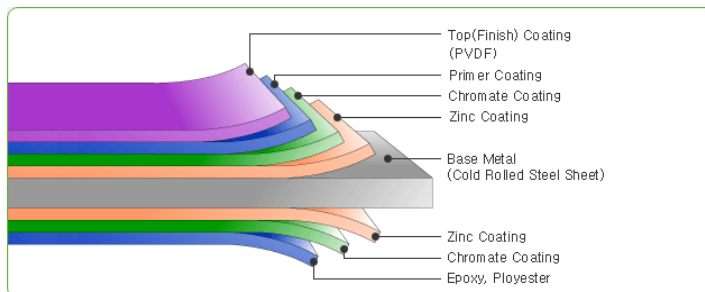
- ✗ ALCLAD® Polyester coated SCP
- ✗ ALCLAD® PVDF coated SCP
- ✗ ALCLAD® Embossing color SCP
- ✗ ALCLAD® Anti-pollution(anti-dirt) SCP
- ✗ ALCLAD® PVC laminated SCP
- ✗ ALCLAD® Anti-static color SCP
- ✗ ALCLAD® Anti-bacterial color SCP
- ✗ ALCLAD® Fire retardant SCP

1. ALCLAD® Polyester coated SCP

SCP's Face side Pre-painted steel sheet is coated and baked with paint containing polyester resin.

Used for a variety of purposes; Polyester offered in a wide array of colors and degrees of polish (High glossy usually).

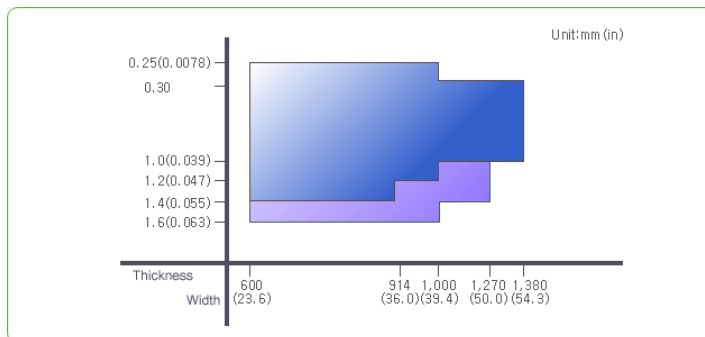
Cross section of painted steel



Note 1) Materials used for prepainted steel sheet: GI, GA, EGI, SGL, AL, BP, TFS, TP, SUS, ALCOT etc.

Note 2) 2COAT, 2BAKING and 1COAT, 1BAKING are available for coating on both the face side and rear side of SCP

Aluminium thickness of Size availability



Our Standard size: 0.3mm steel thickness, 1220mm width.

TEST ITEMS OF COATED STEEL

Test item	Test method	Test result	Related specification
Cross cut test	100/100 TAPING TEST	Good	KS D 3520
Pencil Hardness test	45°, 1H and over	Good	KS D 3520
Bending test	180°×3T	Good	KS D 3520
Impact test	500g×12.7mmφ×500mmH	Good	KS D 3520
Salt water spray test	5%NaCl 35°	500hours Good	KS D 9520 JIS Z 2371
Resistance to Chemicals	5%H ₂ SO ₄ ×5Hr 5%NaOH×5Hr	Good Good	DS-B-I-1112
Accelerated weathering test	Weather-O-Meter	750hours Good	JIS Z 0230
Film Hardness test	M.E.K Rubbing	40Times Good	DS-B-I-1112

※ Test standards can be altered according to cutting thickness and color.

STEEL COMPOSITE PANEL (SCP)

IN CONFIRMATY TO QUALITY MANAGEMENT SYSTEM STANDARD GB/T 19001-2000/ISO9001-2000, GB/T24001-2004 IDT ISO14001:2004 STANDARD





Applied specifications

KS D 3520, KS D 6711
JIS G 3312, JIS G 3321
ASTM A 653, ASTM A 792
EN 10142, EN 10147 etc

2, ALCLAD® PVDF coated SCP

SCP's Face side Coated and baked with symmetric structured poly vinylidene fluoride, containing fluoride, which is an inert element

High weather and chemical resistance from the outstanding strength of the molecular bond of poly vinylidene fluoride

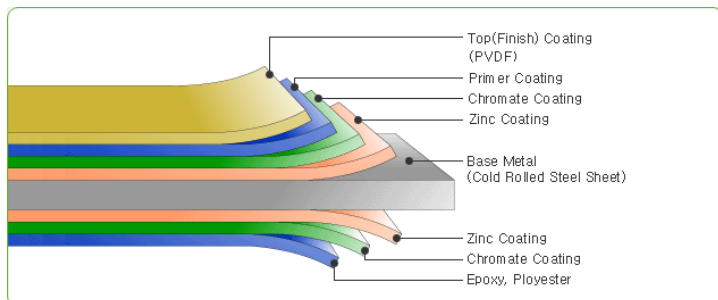
High-quality pre-painted special steel SCP backed by a 20-year weather resistance guarantee

※ PVDF: poly vinylidene fluoride

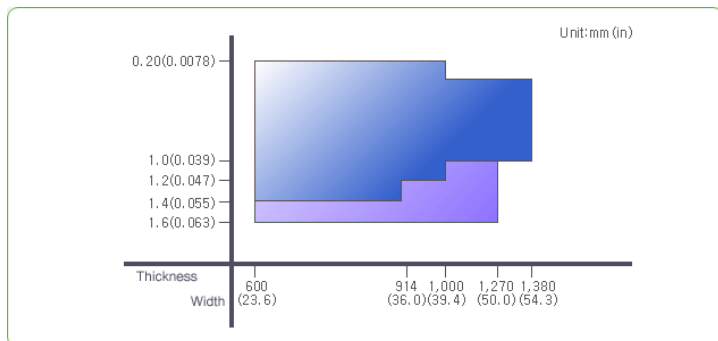
Atomic energy and wavelength of prepainted steel coating (μm)

	Bond Energy (Kcal/Mole)	Wave length based on dissociation(μm)
S-C(Si-P/E)	80.5	370
C-F(PVDF)	116.0	250

Cross section of painted steel



Aluminium thickness of Size availability



Our Standard size: 0.3mm steel thickness, 1220mm width.

TEST ITEMS OF COATED STEEL

Test item	Test method	Test result	Related specification
Specular gloss test	60°	30±7 Good	ASTM D 523
Cross cut test	11×11-mm, 6mm	Good	KS B 0812
Pencil hardness test	45°, F and over	Good	KS D 3520 ASTM D 3323
Bending test	180°×2T No Crack	Good	KS D 3520 JIS K 5400
Impact test	1000g×12.7mm φ×500mmH	Good	KS D 3520
Salt water spray test	5%NaCl	2000hours Good	KS D 3520 ASTM B-177
Resistance to chemicals	5%H ₂ SO ₄ ×72Hr 5%NaOH×72Hr	Good Good	DS-B-I-1112
Accelerated weathering test	Weather-O-Meter	2000hours Good	KS M 5503 ASTM D 822
Resistance to abrasion	CS-17.1kg, 1000Time	50mg and less Good	DS-B-I-1112
Film hardness test	M.E.K Rubbing	80Times Good	DS-B-I-1112

Applied specifications

KS D 3520
JIS G 3312
ASTM A 653

3, ALCLAD® Embossing color SCP

Corrugated steel plates are produced by pressing sheet with an embossing roll before compositing SCP. In addition to being highly weather resistant, the pre-painted steel plates are given class and elegance through a striking cubic effect.

Pattern

Whole-side embossing



One-side embossing (sticking strength to plastics is better than whole side embossing, we provide different period of quality guarantee for both materials.)

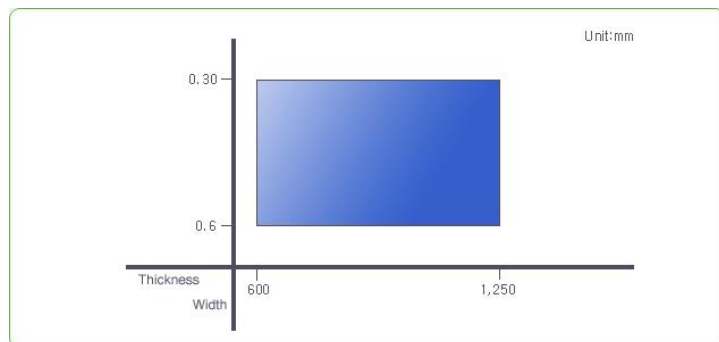


STEEL COMPOSITE PANEL (SCP)

IN CONFIRMATY TO QUALITY MANAGEMENT SYSTEM STANDARD GB/T 19001-2000/ISO9001-2000, GB/T24001-2004 IDT ISO14001:2004 STANDARD



Aluminium thickness of Size availability



Our Standard size: 0.3mm steel thickness, 1220mm width

TEST ITEMS OF COATED STEEL

Weather resistance depends on the type of coating resin.

Applied Specifications

KS D 3520
JIS G 3312
ASTM A 653

4, ALCLAD® Anti-pollution (anti-dirt) SCP

SCP's face side coated by Anti-pollution paint which is aimed at improving resistance against stain, oxidation and pollutants including carbon, the main culprit of air pollution, by highlighting the resin's tight-knit structure on the weather-resistant coating's upper layer.

Product Features

- 1 Compared with old coated SCP, dust or other matters will not stick
- 2 With excellent acid resistance and alkaline properties, this panel is used for skyscraper buildings.
- 3 Compared to old panels, it has excellent surface conditions against pollution matters such as sulfurous acid gas.
- 4 Treatments, such as building cleaning, are made simple because of excellent contamination resistance.
- 5 Excellent atmospheric corrosion resistance

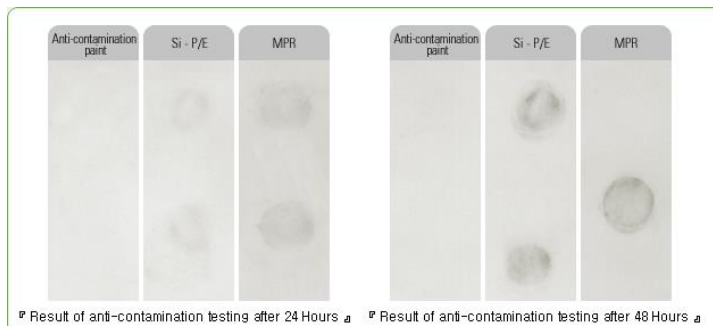
Property Comparison

Carbon black pollution assessment results

Anti-pollution SCP has been proven to possess the greatest anti-pollution properties, showing the least amount of change in color in comparison with conventional steel sheet panels

Drop 0.5% carbon black solution on the surface and heat at 80°C for 24~48 hours. Wash with water and examine the color difference.

An easy method to measure pollution resistance.



Assessment of weather resistance and anti-corrosion properties

	Anti-pollution 304	POLYESTER steel plate	Remarks
Q.U.V	0.5	0.47	
W.O.M	0.42	0.48	
Corrosion	None	None	SALT SPRAY TEST

Test Hours: 1000 hrs

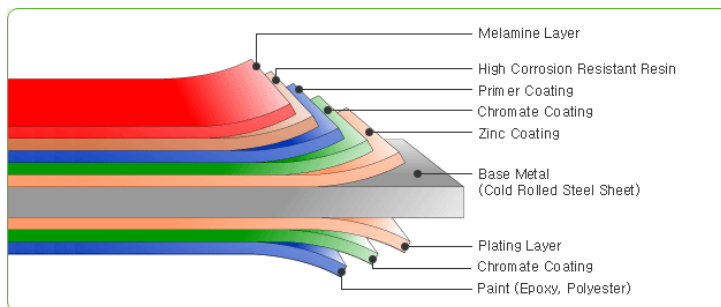
* The value yielded from the color difference through naked eye observation.

* Color differences measured by the naked eye and the comparator are the same.

Basic property assessment

	Anti-pollution Steel Sheet	P/E	Remarks
Workability	2T 4 point	2T 4 point	
Pencil hardness	2H	2H	
MEK	80 trials and more	40 trials and more	

Cross section of painted steel

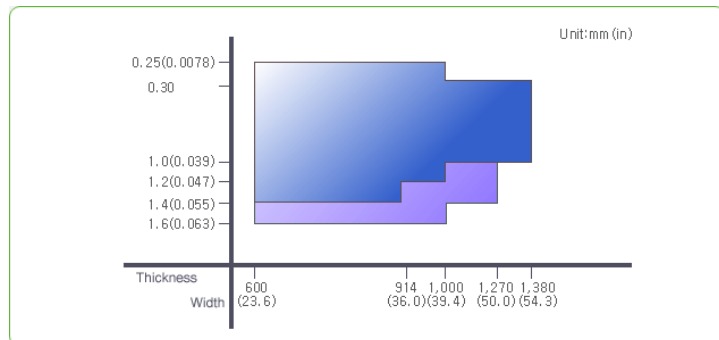


Applied specifications

KS D 3520
JIS G 3312
ASTM A 653



Aluminium thickness of Size availability



Our Standard size: 0.3mm steel thickness, 1220mm width

TEST ITEMS OF COATED STEEL

Test item	Test method	Test result	Related specification
Cross cut test	100/100 TAPING TEST	Good	KS D 3520
Pencil hardness test	45°, 1H and over	Good	KS D 3520
Bending test	180°×3T	Good	KS D 3520
Impact test	500g×12.7mm φ×500mmH	Good	KS D 3520
Salt water spray test	5%NaCl 35°	750hours Good	KS D 9520 JIS Z 2371
Resistance to chemicals	5%H ₂ SO ₄ ×5Hr 5%NaOH×5Hr	Good Good	DS-B-I-1112
Accelerated weathering test	Weather-O-Meter	750hours Good	JIS Z 0230
Film hardness test	M.E.K Rubbing	80Times Good	DS-B-I-1112

5, ALCLAD® PVC laminated SCP

Product Introduction

- Sophisticated colors and attractive patterns**
Laminated steel SCP presents a modern and contemporary image with its sophisticated colors and attractive patterns that erase the conventional image customers have of steel sheet.
- Outstanding workability**
The elasticity of the plastic prevents unwanted changes in the pattern and/or exfoliation during deep drawing.
- Superb durability and chemical resistance**

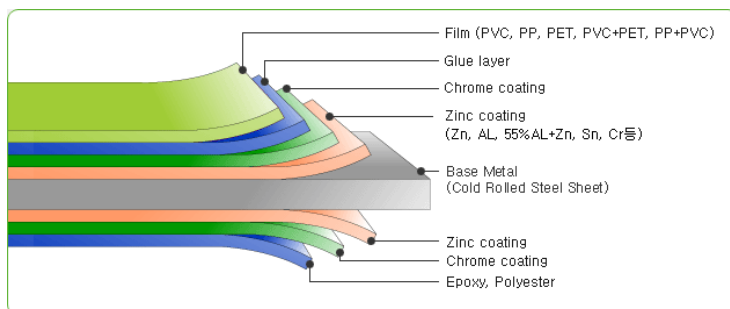
Superb durability, along with chemical resistance against acid and

alkali, in particular, allow the laminated sheet to be used in environments susceptible to corrosion such as factory areas.

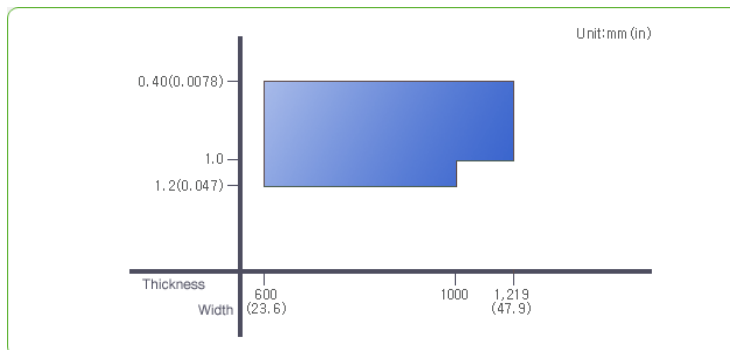
Cost reduction and efficiency

The elimination of the coating process reduces cost and simplifies the production process.

Cross section of painted product



Aluminium thickness of Size availability



Our Standard size: 0.3mm steel thickness, 1200mm width

TEST ITEMS OF COATED STEEL

Test item	Test method	Test result	Related specification
Cross-cut test	100 × 100, TAPING	Good	-
Impact test	500g×12.7mm ×500mmH	Good	-
Erichsen test	6mm	Good	Factory Standard
Resistance to chemicals	13%H ₂ SO ₄ ×5Hr 13%NaOH×5Hr	Good Good	-
Salt water spray test	1000HR	Good	-
Accelerated weathering test	Weather-O-Meter ×250Hr	Good	-

STEEL COMPOSITE PANEL (SCP)

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6, ALCLAD® Anti-static color SCP

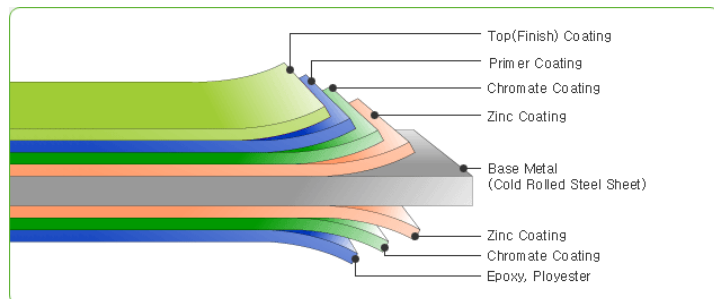
Product Introduction

SCP's face Steel sheet is painted and baked using a mixture of highpolymer resin and metal oxide. The surface electric resistance of $10^5 \sim 8 \Omega/\text{sq}$ lends to dust resistance and anti-static qualities, making this an ideal product for clean rooms

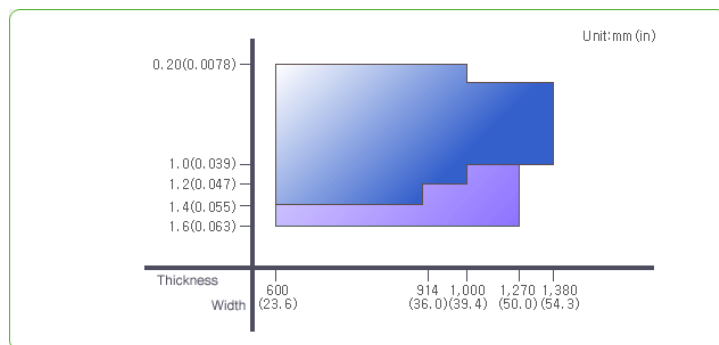
Apply area:

- Semi-conductor factory
- Precision instrument factory
- Computer room
- Hospital interiors
- Pharmaceutical factory
- Chemical factory, GAS, SOLVENT for factories having dangerous stuff
- Photoengraving room
- Food factory
- Paint factory

Cross section of painted product



Aluminium thickness of Size availability



Our Standard size: 0.3mm steel thickness, 1220mm width

Applied Specifications

KS D 3520
JIS G 3312
ASTM A 653

TEST ITEMS OF COATED STEEL

Test item	Test method	Test result	Related specification
Cross cut test	11×11-mm	Good	KS D 3520
Pencil hardness test	45°, 1H and over	Good	KS D 3520
Bending test	180°×3T	Good	KS D 3520
Impact test	500g×12.7mmφ×500mmH	Good	KS D 3520
Salt water spray test	5%Nacl 35°	500hours Good	KS D 9520 JIS Z 2371
Resistance to chemicals	5%H ₂ SO ₄ ×5Hr 5%NaOH×5Hr	Good Good	DS-B-I-1112
Accelerated weathering test	Weather-O-Meter	750hours Good	JIS Z 0230
Film hardness test	M.E.K Rubbing	40Times Good	DS-B-I-1112

※ Test standards for cutting thickness and color can be changed.

7, ALCLAD® Anti-bacterial color SCP

Product Introduction

Many places throughout society where cleanliness is key, such as hospitals, senior welfare facilities, public health facilities, restaurants, and public places, have recently fallen prey to environmental pollution. Unfortunately, the elderly, children, and the sick are becoming increasingly ill due to the emergence of staphylococcus aureus - a form of bacteria not affected by antibiotics. our high quality SCP is coated with paint containing an inorganic anti-bacterial agent. This specially treated paint bonds the ions of crystallized aminosilicate (an alkaline earth metal) and acts as a deodorant to polar substances, non-saturated carbons, and ion exchanges. It also has heat resistant and anti-decolorization properties. As long as this special paint remains on the steel sheet, it will always keep its anti-bacterial, deodorant, and fungus resistance properties.

Apply area:

- Inside panel of a food factory
- Aseptic room in a hospital
- Children's play room

Anti-bacterial properties

●Staphylococcus aureus

This bacterium exists within human beings and animals living in a natural environment. This bacterium is categorized as either pathogenic or non-pathogenic. Forms of this coccus include otitis, mucous disease, and meningitis.

●Colon bacillus

Sterilization against colon bacillus takes place at a boiling temperature of 60°C for 15-20 minutes. Most forms of this bacterium are non-pathogenic and live inside the human body and organs of animals. Colon bacillus



causes infections and diarrhea among newborn infants.

●Pseudomonas aeruginosa

Pseudomonas aeruginosa is commonly found inside the intestine. This bacterium oxidizes and dissolves sugar, causing otitis, meningitis, and pneumonia among children. This bacterium widely exists in contaminated water and is highly resistant to antibiotics.

●Bacillus subtilis

This bacterium generally does not grow in a normal environment, but will germinate rapidly as circumstances become more conducive to its growth.

●Anti-bacteria Properties test result

Test bacteria count	Sample name	unit	initial Bacteria Count	After 24 hours	Inhibition Rate (%)
Staphylococcus aureus	Anti-bacterial coating steel sheet	CFU/ml	1.0×10 ³	<2	99.8
	Conventional coating steel sheet	CFU/ml	1.0×10 ³	9.5×10 ²	5.0
Colon bacillus	Anti-bacterial coating steel sheet	CFU/ml	1.0×10 ³	<1	99.9
	Conventional coating steel sheet	CFU/ml	1.0×10 ³	1.0×10 ³	9.1
Pseudomonas aeruginosa	Anti-bacterial coating steel sheet	CFU/ml	1.0×10 ³	5	99.5
	Conventional coating steel sheet	CFU/ml	1.0×10 ³	9.6×10 ²	4.0
Bacillus subtilis	Anti-bacterial coating steel sheet	CFU/ml	1.0×10 ³	9	99.1
	Conventional coating steel sheet	CFU/ml	1.0×10 ³	9.5×10 ²	5.0

CFU : Colony-Forming Unit

While conventional steel sheets have an inhibition rate of 10% or less, pre-painted anti-bacterial steel sheet has a 99% or higher inhibition rate, effectively preventing the growth of bacterium such as staphylococcus aureus, colon bacillus, pseudomonas aeruginosa and bacillus subtilis.

Absorption

●Gas absorption

Pre-painted anti-bacterial steel composite panel has exceptional deodorant properties due to the reaction of positive ions inside the crystallized structure. This reaction is created by selective absorption of the non-saturated oxides of hydrogen (Acetylene, ethylene, propylene) and polar substances (water, hydrocarbon, sulfurous acid gas etc.)

●Molecular vibration effect

The silver-zeolite, which is used as an anti-bacterial agent, has a consistent size and holds uniform levels of bacterial properties. It also selectively filters and absorbs smaller molecules.

●Ion Exchange Properties

Anti-bacterial steel panel contains exchangeable positive ions within its crystallized structure. Such free exchange activities among positive ions effectively eliminates heavy metals.

The anti-bacterial agent silver-zeolite features gas absorption, a molecular vibration effect, and ion exchange properties. These features allow our specially coated steel sheet to act as a deodorant and resist fungal and bacterial growth.

Principle of Antibiosis & Applications

Principle of Antibiosis

When coccus bacterium is absorbed on the surface of our specially coated steel sheet, the negative ion of the bacterium's cell membrane is absorbed by the positive ion of the anti-bacterial agent. As illustrated in the picture, the bacterial structure gradually weakens and then breaks, effectively eliminating it.

Durability and Tolerance Level

A test of Staphylococcus aureus and Pseudomonas aeruginosa was conducted to examine tolerance levels. Live bacteria was collected and re-measured in order to identify the tolerance of anti-bacteria in terms of MIC. Tolerance was not detected, indicating that the anti-bacterial properties of anti-bacterial steel sheet are semi-permanent.

Test Frequency	MRSA	Pseudomonas aeruginosa
1	500	200
2	500	200
3	250	100
4	250	200
5	250	100
6	250	100
7	250	100
8	250	200
9	250	100
10	250	200

* Tolerance test result (concentration level unit: ppm), Source: Ceramics



Non-toxicity

Zeolite, which is used in anti-bacterial agents, is closely linked to our everyday lives, as it is used as an additive for animal feed and drying materials. Silver, which is added during the ion bonding process, has also been widely used since ancient times; it was used as a material for kitchenware, dental materials, ornaments, and disinfectants. In an experiment where radioactive silver was directly injected into the stomach, 99% of bacterium was discharged. No report has been made regarding safety concerns over the use of silver- zeolite (a composite of silver and zeolite).

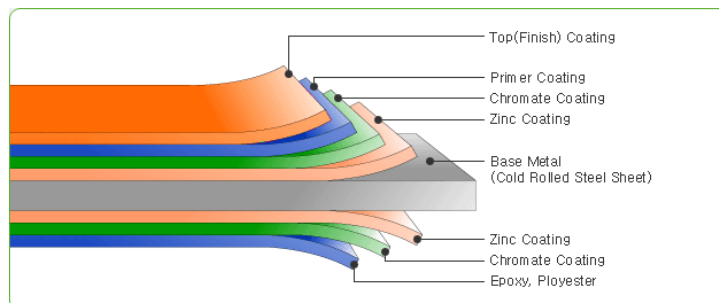
Specifications

Product : Anti-bacteria Property Color Coating Steel compsite panel
Type : P/E, Si-P/E, Weather Resistance P/E, PVDF coating available

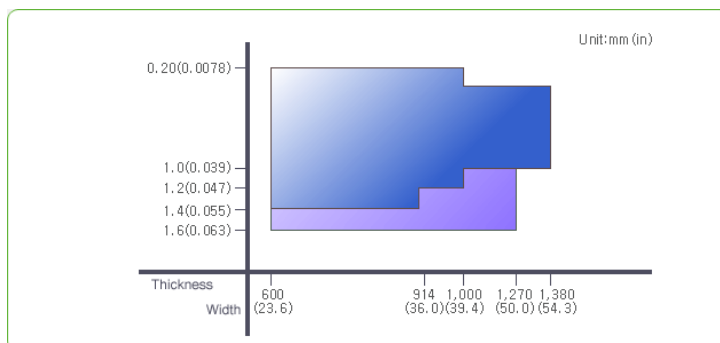
Property (P/E standard)

Item	Anti-bacterial property Color Coating Steel Sheet	Remarks
Color difference	$\Delta E0.8$ or lower	
Polish	Basic Plate Comparison ± 7	
Coating thickness	Ordered Dry Film Thickness $\pm 2\mu$	
Bend test	3 points or higher	2 T
Impact test	3 points or higher	1.5kg,50cm
MEK test	40 trials or more	
Pencil hardness test	2H or higher	

Cross section of painted product



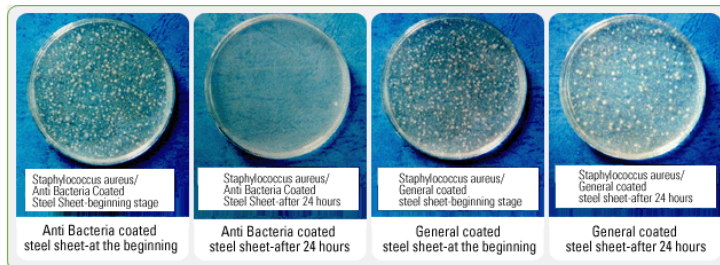
Aluminium thickness of Size availability



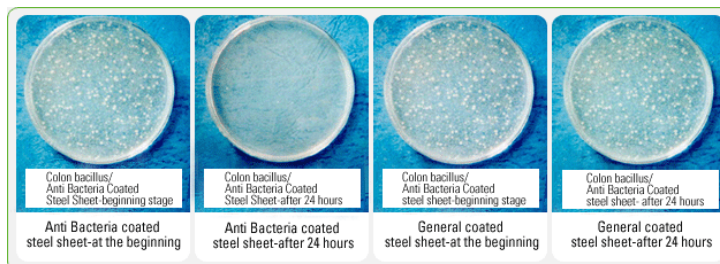
Our Standard size: 0.3mm steel thickness, 1220mm width

Antibiotic Experiment

Staphylococcus aureus



Colon bacillus



8,ALCLAD® Fire-retardant SCP

Fire-retardant SCP consisting of a core of mineral filled fire resistive thermoplastic material, DuPont Bynel® as bonding layer coextruded on the surface of plastic core, fabricated of prepainted steel sheet or galvanized steel sheet or embossing color steel sheet.

Available on both 3,4 and 6mm thickness and all the coatings above.

German DIN4102-1998 Class B1:

- Minimum residual length -Pass
- Average residual length -Pass
- Average effluent temperature -Pass
- Flame height -Pass

Tested by SGS world wide.





SHAPES & FABRICATION

ALCLAD® panels can be cut, routed and formed with carbon tipped tools. Angle bends are formed by routing the back of the panel prior to shaping. The common pan shape is formed by routing the back edges, trimming the corners and bending and reinforcing the edges.

Details please refer to our Material Processing Manual.

Technical Data

APPLICABLE STANDARDS

- > ASTM: American Society for Testing and Materials.
- > DIN: German Industrial Standard.
- > NFTC: National Center For Quality Supervision and Testing of Fire Building Materials
- > CBMTC: National Research Centre of Testing Techniques for Building Materials

Details please refer to our Mechanical and Physical property.

Installation

PREPARATORY WORK

The manufacturer recommends field measurement prior to fabrication. Verify alignment of surfaces to receive panels.

APPLICATION

ALCLAD® surfaces can be attached to one another or to other materials by conventional methods of attachment - rivets, bolts or screws.

Pricelist:

Contact our sales department for price, or through our agents.

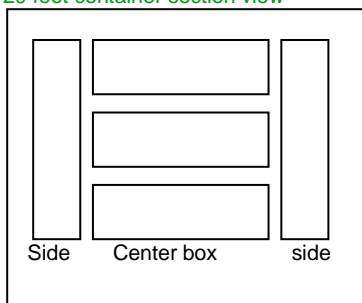
Packing Terms.

Fully loading packing in one 20' container:

800 pcs of 4mm SCP, size of 1220mm by 2440mm, total 2381.44sqm.

(100pcs/case x6cases, 50pcs/casex4cases)

20 feet container section view



Otherwise please contact sales department for more details.

9. Delivery Time:

The date of the delivery is depend on your order quantity, please contact our sales department for details.

10. Warranty

We guarantee when correctly mounted and properly operated and maintained, shall give satisfactory performance for a period of at least 10 years counting from the date on which the commodity delivered from the company, and the period of time is depend on the coating type.

Details please refer to our Certificate of Quality Warranty.

Maintenance

It depends on the variety of coatings, please contact us for details.

Technical Services

Contact ALCLAD® for technical assistance with design and specification or for the name of a nearby representative.



Baima Mansion



THE PRODUCT IS IN CONFORMITY WITH FHBB 013-2003 TECHNICAL REQUIREMENT, AUTHORIZED BY NFTC AND CBMTC, USING UNDER FIRE AND ECO-BUILDING MATERIALS PRODUCTS LOGO.

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