ALUTILE®

Aluminium Composite Panel

CONTENTS

Company **Profile**

- Jiangxi Hongtai Group Co.,Ltd. was established in 1995, specialized in manufacturing ALUTILE brand Aluminium Composite Panel, Metal Aluminium Panel and Fire Resistance Aluminium Composite Panel etc. Hongtai Group is located in State High-tech Industry Development Zone, covering an area of 300,000 square meters. As a leading foreign-invested Hi-tech. enterprise in Jiangxi province, the company has totally invested USD 20,000,000 to import 6 advanced full automatic production lines; annual output reaches 7,200,000 square meters.

- The main products include: Aluminium Composite Panel, Metal Composite Panel and Fire Resistance Aluminium Composite Panel. Numerous specifications are available with thickness varied from 2mm to 6mm, and width from 1000mm to 1600mm. Special coatings on offer include PVDF (Kynar500, Hylar5000) and Polyester.

- As one of the major drafters of China national standard for Aluminium Composite Panel and the stand councilor of China ACP Association, Hongtai Group places much emphasis on science and technology; makes sustained efforts to enhance the innovation ability. It has won many invention patents at home and abroad, the Metal Composite Panel is one of the patent products.

- Hongtai Group has been sticking to the principle of Orientation to Quality and Creation of Famous Brand. In 2001, it was the first enterprise that received ISO9001 & ISO14001 Certificate in this line and later was authorized as Recommendable Construction Product by China Ministry of Construction, Olympic Recommend Building Materials. In 2004, ALUTILE panel has been tested by SGS U.S. Testing Company Inc., which meets the American ASTM Standard. In 2006, ALUTILE won the title of China Top Brand and Product Exemption From Quality Surveillance Inspection. In 2008, ALUTILE Fire Resistance Aluminium Composite Panel has passed the test by intertek as per ASTM and BS standard. ALUTILE brand products enjoy a good reputation in both domestic and overseas markets. The products have exported to Europe, Australia, Middle East, Middle Asia, Southeast Asia, South America, North America, Africa and many other regions.

■ Hongtai Group Overall View

■ Production Workshop

Production Lines

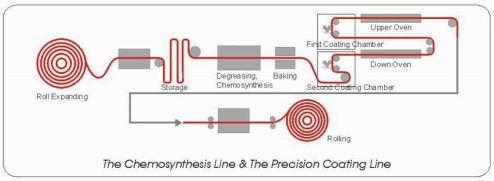
Hongtai Group owns six high-speed digital control punching lines, a core layer production line for aluminium composite panel, a chemosynthesis line, a two-coil coating and double baking line for metal roll material in 1600mm width, a precision coating line in 1350mm, a continuous thermal composite and sawing-cutting production line in 1600mm width and a continuous thermal compound line in 1350mm width.

■ The Chemosynthesis Line

Clean out the lubricating oil and anti-oxidative oil adhered to the surface while being rolled and other impurities such as silicon, magnesium, iron and copper settled on the surface of rolled material. We use qualified chemical and advanced technology from Henkel Co., Germany to do the surface treatment. By means of the technology, a covered film covers the surface with high density, making paint and metal rolls firmly adhere to each other. Therefore, it has very strong adhesive force.

■ The Precision Coating Line

The line is precisely to coat the chemosynthesized rolls under sealed and dustless condition, according to the demands of customer by using an advanced multiple-roller reversal precision coating equipment so that the coating thickness and appearance can be controlled properly. Therefore, the coating reaches the optimized condition in its solvent resistance, hardness, flexibility and possesses even gloss, strong adhesive force and weather resistance.



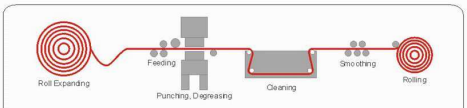
The Chemosynthesis Line & The Precision Coating Line

■ The Core Panel Production Line for Metal Composite Panel

Equipped with the microcomputer temperature control system and speed control system, including frequency changeable and adjustable speed in vector grade, the line provides the best polyethylene or fire-resistant core reaches over 8000 tons.

■ The High-speed, Digital Control Punching Line

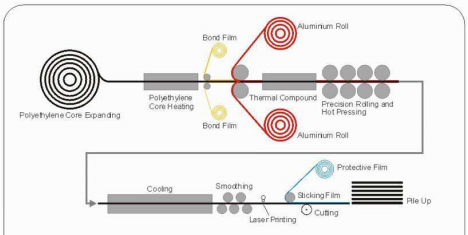
The high-speed punching machine with digital control is unique in China up to now, having the super width. Its precision can reach 0.01mm. The machine is applied for the special structure punching in core layer of the metal composite decorative panel and for processing the metal ceiling in high quality. After punching, all kinds of dusts and impurities settled on the surface of the material are cleaned out, such as lubricating oil, anti-oxidative oil, silicon, magnesium, iron, copper etc. Finally, the composite property can be increased, obtaining the best result.



The High-speed Punching Line

■ The Continuous Thermal Compound Line

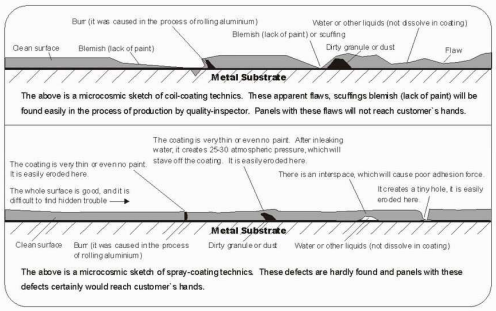
It can make the surface layer, core layer and bottom layer adhere to high molecular film firmly through the continuous hot pressing, so the panel surface is smooth and even. With qualified high molecular film, proper technology and strict quality control, we can produce the composite panel with super peeling strength, which is superior to the quality indexes of imported panels in the same kind.



The Continuous Thermal Compound Line

The Advantages of **Coil Coating**

1、High precision roller of coil-coating is fastidious to materials—the surface of the materials must be very clean and even.



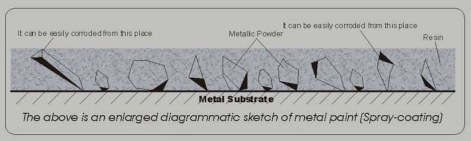
2、Even Coating

As the roller of coil-coating is produced by high precision equipment (precision: ±1μm), the coating is very even when coil coating. The coating thickness tolerance is less than ±1μm. All kinds of stress is always even. In other words, the microcosmic array of coating is uniform that can make the whole panel even in every aspect, such as ultraviolation resistance, absorbing and reflecting all kinds of rays. Though all pigments will be fading after a period, it only appears whdly fading. By spray-coating and other coating methods, it is very difficult to make even coating owing to their restriction of technics and equipment. The tolerance is usually ±5μm, sometimes the tolerance is more than ±10μm. It is not uniform motion when coating and the microcosmic array of coating is in disorder, so ultraviolation resistance, absorbing and reflecting all kinds of rays are not uniform. The color of surface will become uneven while exposing in sunshine.

3、For popular metallic paints, coil-coating enjoys more advantages

The metallic colors are favored by more and more customers and architects. Especially, the Silver Metallic and Bright Silver Metallic are accepted by the majority. Metallic color pigments usually use metallic powder as paint, and the shape of metallic powder is flake, piece and polyhedron. After roller acting on, metallic powder is conveted, and evenly regularly arrays in resin.

Electrostatic spray-coating stand up in resin because of electrostatic and current acting on, the top of metallic powder, where the resin coating is very thin and easily corroded.



The above is an enlarged diagrammatic sketch of metal paint (Spray-coating)

4、Environmental Protection

As the coil-coating technics will not produce paint fog in the process of coating, the efficiency of paint is very high. For spray-coating, it will produce paint fog, which not only contaminates the environment but also wastes the expensive paint.

All ALUTILE Composite Curtain-Wall products adopt coil-coating. Hongtai Group possesses two sets of advanced coil coating production lines.

R&D Center

As the main scientific research and development base of China Ministry of Construction, Hongtai Group places much emphasis on sdence and technology and strict quality control. All the raw materials and finished products are stridly tested by advanced equipments imported from America, Germany and Japan. The tests include: 180° peeling strength and dynamic character of raw materials by electronic universal tester, color difference, salt-spray resistance, boiling water resistance, coating thickness, impact resistance, gloss test and so on which guarantee the first grade quality of ALUTILE products.

ALUTILE® Aluminium Composite Panel Property Comparison

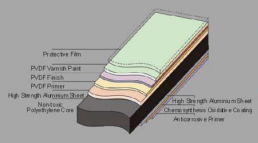
Test Item	Test Standard	China National Standard	ALUTILE® Test Value	
Coating Thickness (㎛)	ISO2360 (CNC 8406)	average≥25㎛	26-28㎛	✓
Gloss Tolerance	ASTM D523-89	≤10 (gloss <70) ≤5 (gloss≥70)	≤10 (gloss <70) ≤5 (gloss≥70)	
Pencil Hardness	ASTM D3363-00	≥H/B	≥2H	✓
Coating Flexibility	ASTM D4145-83	≤2T	≤2T	
Impact Resistance	ASTM D2794-93	≥50Kg · cm	≥50Kg · cm	
Coating Adhesive	ASTM D3359-97	Class 0	Class 0	
Grinding Resistance	ASTM D968-93	≥51/㎛ m	≥51/㎛ m	
Solvent Resistance	ASTM D2248-01a	no aluminum appears, Butanone 100 times	no aluminum appears, Butanone 5000 times	✓
Boiling Water Resistance	ASTM D3359-02	no change immersed in boiling water for 2h	no change immersed in boiling water for 6h	✓
Acid Resistance	ASTM D1308-02	5%HCL 48h no change	5%HCL 48h no change	
Alkaline Resistance	ASTM D1308-02	5%NaOH 48h no change	5%NaOH 48h no change	
Oil Resistance	ASTM D1308-02	20# lubrication oil, 48h, no change	20# lubrication oil, 72h, no change	✓
Scrub Resistance	ASTM D1308-02	≥ 10000 cycles	≥ 15000 cycles	✓
Pollution Resistance	AAMA605.2-92	< 5%	< 3%	✓
Salt Spray Resistance	ASTM B117-03	3000hrs no change	5000hrs no change	✓
Color Resistance	GB/T 16259-1996	ΔE≤2.0	ΔE≤2.0	✓
Degradation of Gloss	GB/T 16259-1996	not infefor to grade 2	not infefor to grade 2	
Chalking Resistance	GB/T 16259-1996	no change	no change	
Face Density	ASTM792-91	5.5Kg/m²	5.5Kg/m²	
Face Density Tolerance	ASTM792-91	± 0.5 Kg/m²	± 0.1 Kg/m²	✓
Bending Strength	ASTM D790-03	≥ 100MPa	≥ 105MPa	✓
Bending Elastic Modulus	ASTM D790-03	≥ 2.0 x 10⁴Mpa	≥ 2.5 x 10⁴ Mpa	✓
180° Peel Strength	ASTM D903-98	≥ 7N/mm	≥ 12N/mm	✓
Penetrating Resistance	ASTM D732-02	≥ 9.0KN	≥ 9.0KN	
Shearing Strength	ASTM D732-02	≥ 28.0MPa	≥ 28.0MPa	
Temperature Cycle Resistance	ASTMD1654-92	20 cycles, no change	40 cycles, no change	✓
Thermal Expansion Coefficient	ASTM D696-03	≤ 4.00 x10⁻⁵/℃	≤ 2.00 x10⁻⁵/℃	✓
Heat Distortion Temperature	ASTM D648-01	≥ 105℃	≥ 105℃	
Color Difference	GB/T 11942	ΔE≤2.0	ΔE<1.0	✓
Nitric Acid Resistance	AAMA620	No requirement	no change, ΔE ≤5.0	✓
Peeling Strength Change	ASTMD1654-92	No requirement	≤ 10%	✓
Elongation for Core Materials	GB/1040	No requirement	≥ 4.5%	✓

The value marked ✓ is superior to China national standard value.

Product Information

■ Aluminium Composite Panel

ALUTILE® Aluminium Composite Panel is compounded with top and bottom layers of aluminium sheet, non-toxic polyethylene core materials. Both surfaces are coil coated with special baking varnish.



- ***Standard:***

According to China National Standard GB/T 17748-2008

- ***Specification:***

Aluminium sheet thickness: 0.50 x 0.50mm 0.40 x 0.40mm
0.30 x 0.30mm 0.21 x 0.21mm
0.15 x 0.15mm
Width: 1220mm, 1570mm (Maximum)
Length: 2440mm, upon customer's request.

- ***Standard Size:***

1220 (Width) x 2440 (Length) x3mm (Thickness)
for interior
1220 (Width) x 2440 (Length) x4mm (Thickness)
for exterior

- ***Normal Color:***

30 kinds
Non-standard sizes and special colors are available according to customers' request.

- ***Application Scope:***

1) Building exterior curtain walls
2) Decoration reformation storey-addition for old buildings
3) Decoration of interior walls, ceilings, bathrooms, kitchens and balconies
4) Shop`s door decoration
5) Advertisement boards, display platforms and signboards
6) Wallboards and ceilings for tunnel
7) Industrial materials, vehicle and boat materials

Characteristics:

High Peeling Strength
ALUTILE panel is cross-linking under high temperature with high-performance and molecular binding materials, which reaches the best level for the important feature high peeling strength.

Superior Weather Resistance
By means of KYNAR500 based PVDF coating resin, ALUTILE panel possesses some superiorities in corrosion resistance, alkali resistance, chalking resistance of ultraviolet light. When exposed to the heat of tropical sunshine or the cold of frigid snowstorm, the panel never loses its colorful appearance.

Light Weight and Easy to Process
ALUTILE panel is easy to process for its light weight (3.5-5.5kg/m²) which can decrease the loss during an earthquake. The processing such as cutting, planning, bending to arc and several configurations in right angle can be done by some simple woodworking tools. Designers can also make the flexibility in the panel. The installation work is going to be easy and fast. For this reason, it can save the cost.

Excellent Fireproof Property
Its core layer is manufactured with Anti-toxic polyethylene core materials, having the combustion resistance property. Two surface layers are made of aluminium, which is difficult to be burnt. Therefore, this is a kind of safe fireproofing materials, complying with the fireproof demand in building code.

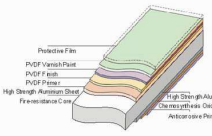
Coating Evenness, Multiple Colors
Since applied the chemosynthesis treatment and Henkel technology, the adhesion between the paint and panel becomes even er, having multiple colors. There is more space for your choice to the color with individuality.

Easy to Maintain
The anti-contaminant property has been obviously improved for ALUTILE aluminium composite panel. Due to good self-cleaning capability, neutral detergent can clean the panel easily even though the pollution is very serious.

Impact Resistance
The impact resistance and toughness are strong. The coating layer can not be crashed when it's bent. The panel can not be damaged when in a strong windy and sandy condition.

■ Fire Resistance Aluminium Composite Panel

ALUTILE® Fire Resistance Panel is compounded with top and bottom layers of aluminium sheet, inorganic compound flame retardant and nanometer fire-resistant core materials, both surfaces are coil coated with special baking varnish.



- ***Standard:***

China National Standard GB/T 17748-2008

- ***Fire Class:*** Class A as per ASTM standard
Class 0 as per BS476 standard

- ***Specification:***

Aluminium sheet thickness: 0.50 x 0.50mm 0.40 x 0.40mm
0.30 x 0.30mm 0.21 x 0.21mm
0.15 x 0.15mm
Width: 1220mm, 1570mm (Maximum)
Length: 2440mm, upon customers' request.

- ***Standard Size:***

1220 (Width) x 2440 (Length) x3mm (Thickness)
for interior
1220 (Width) x 2440 (Length) x4mm (Thickness)
for exterior

- ***Normal Color:***

30 kinds
Non-standard sizes and special colors are available according to customers' request.

- ***Application Scope:***

1) Building exterior curtain walls
2) Decoration reformation storey-addition for old buildings
3) Decoration of interior walls, ceilings, bathrooms, kitchens and balconies
4) Shop`s door decoration
5) Advertisement boards, display platforms and signboards
6) Wallboards and ceilings for tunnel
7) Industrial materials, vehicle and boat materials

Characteristics:

Outstanding Fire Resistance Property
ALUTILE fire resistance panel has outstanding fire resistance property, the oxygen index of core materials reach more than 44. It has been tested by Intertek, which meet the class A requirement as per ASTM standard and class 0 requirement as per BS standard.

Perfect Cold Temperature Resistance
The core layer in normal aluminium plastic panel is made from polyethylene, which starts to be brittle at -80℃. After the brittleness, it looks like a glass. Then the brittle point of the core material in fire resistance panel reaches -100℃. So the panel can be used in the frigid area.

Superior Fabrication
ALUTILE fire resistance panel is superior fabrication, which can be processed the same as normal aluminium composite panel or remain 2-3mm in core material thickness. The processing such as cutting, planning, bending to arc and several configurations in right angle can be done by some simple woodworking tools. Designers can also make the flexibility in the panel. The installation work is going to be easy and fast.

High Peeling Strength
The core layer is made from nanometer high efficient flame retardant, melted with high molecular binding materials, so it has super peeling strength. According to GB/T 2790, the test result is 35kg/25.4mm that is superior to normal aluminium plastic composite panel by 10%. The peeling strength doesn't have any change when the fire resistance panel is put in such conditions i.e. Temperature from -50℃ to 80℃ and circling 20 times.

Coating Evenness, Multiple Colors
Since applied the chemosynthesis treatment and Henkel film technology, the adhesion between the paint and panel becomes more evenness, having multiple colors. There is more space for your choice to the color with individuality.

Impact Resistance
The impact resistance and toughness are strong. The coating layer can not be crashed when it's bent. The panel can not be damaged when in a strong windy and sandy condition.

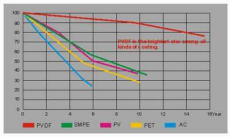
Product Materials

1、The Decorative Layer of Surface

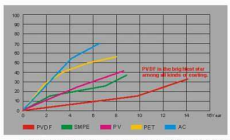
Nowadays the decorative layer for metal substrate mainly includes all kinds of coating, film, surface transformation etc.

1) Paint Coating

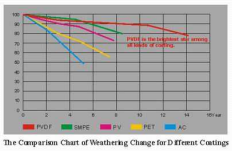
Types: Acrylayl (AC) Silicon Modified Polyester (SMPE) Polyester (PET) Polyester Amide (PA)
SDPE Epoxide Urethane (PV) PVDF



The Comparison Chart of Gloss Preservating Radio for Different Coatings



The Comparison Chart of Color Change for Different Coatings



The Comparison Chart of Weathering Change for D ifferent Coatings

Why PVDF coating possesses so excellent performances?

The structure combined fluorin-carbon short bond with hydrogen bond is steadiest and firmest structure among all kinds of chemical structure at present. As the criterion of judging stability and fasten of structure, the electronegativeatom index reaches 105 kilojoule/mole. For normal coating, it is just 83.2 kilojoule/mole for energy of normal carbon and carbon combination.

There is an inorganic material whose constituent is SiO_2. It is created by chemical method and composed of pure inorganic resin. As the energy of composing Silicon and Oxides is 101 kilojoule/mole, this kind of unite cannot be destroyed by ultraviolation in sunshine.

Moreover, performances of this coating, such as contamination resistance, incombustibility, and environmental protection are very excellent.

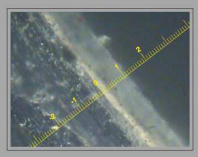
The Coating of ALUTILE Exterior Composite Curtain-Wall Panel

Generally speaking, the higher content of PVDF and better weather resistance, the poorer adhesive force. ALUTILE panel selects a scientific arrange in pairs or groups for PVDF coating. The percent of PVDF in prime paint is low, but the adhesive force is good so that the prime paint can adhere to the base material very well. Stridly speaking, it creates a layer thermoplastic PVDF coating, which possesses very excellent performance of Mek resistance.

Technical Data of ALUTILE PVDF Coating

1) General Properties

Dry Film Property	Test Method	Criteria
60° Gloss	ASTM D523-89	20% to 75%
Formability (T-bend)	ECCA 11-19 ASTM D1737-82	2T, no cracking
Reverse Impact-Crosshatch	ECCA 11-5	No pick-off
Pencil Hardness	ASTM D3363-92a	3H
Adhesion: Dry Wet Boiling Water	ASTM D3359, Method B 37.8℃, 24hrs. 100℃, 120min.	No change No change No change
Abrasion Resistance	ASTM D968-93 (Falling sand)	20 liters/mil as the criterion of AAMA, 70 liters/mil as the actual value
Chemical Resistance: HCl H_2SO_4 Mortar Detergent	ASTM D1308-79 ASTM D1308-79 AAMA 605.2-92 ASTM D2248-73	No change No change No change No change



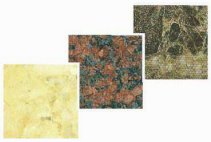
The PVDF coating thickness can be measured by the enlarged cross-section diagram, the left drawing is a magnified 4000 times photograph. It can be calculated the coating thickness from the measuring tape. PVDF Prime 5~7 microns, PVDF varnish paints 20~23 microns. Such PVDF Coating arrangement is very reasonable, but in order to reduce the cost, some inferior panels are made by means of increasing the prime thickness and reducing the thickness of PVDF varnish paint.

2) Weatherability

Dry Film Property	Test Method	Criteria
Color Retention	ASTM D2244-93	Max 5 units after 4000 hrs.
Gloss Retention	ASTM D523-89	70% after 4000 hrs.
Chalking	ASTM D4214-89	Max 8 units after 4000 hrs.
Salt Spray	ASTM-D-B117-90 ECCA 11-2	Blisters-10 Scribe-8 3000 hrs. aluminum, 35℃
Humidity-Thermal	ASTM D2246-85	No blister No cracking 10 cycles 24hrs. x 100% RH, 37.8℃, 2hrs. x 18℃ 4hrs. x 24℃
Humidity	ASTM D2247-94	No change 3000 hrs. aluminum 35℃

2) Sticking Film

A layer of decorative film (such as PVC, PE film) is sticked to the surface of base material. Some kinds of films are fallen into disuse because of poor weathering resistance. PET film, a kind of high performance polyester film, is a very thin layer of polyester coating on the surface of base material, then adheres to the polyester coating through continuous thermal plying method. There are many kinds of styles, and it can imitate all kinds of material, such as marble and nature lumber etc. PET is more and more popular due to its excellent weathering resistance, compared with normal organic coating transform of surface.



3) Transform Coating

A kind of anti-corrosion transform coating is created on the surface of metal by chemical method. Its performance is more and more excellent along with technology improving. Especially for a kind of porcelain oxidation, there is a compact oxidation layer A1203 on the surface of aluminium.

The hardness of surface is very strong with excellent scuff resistance and abrasion resistance, and it can be used for decorating floor and possesses the excellent weathering resistance performance. The potential market is very big.

Hongtai Group can supply the above curtain-wall materials with the several decoration coatings.

2、Protective Film

The protective film protects panel from mechanic damage and contamination when cutting, transiting, grooving and folding After finishing installation, protective film will be peeled off.

ALUTILE panels adopt the first-grade quality protective film supplied by France and Germany.

Basic film material: Double PE

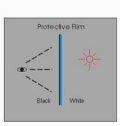
The retardation performance is good; weathering resistance is better than PVC.

Structure type: Inner in black, outer in white

High cost, with excellent weathering resistance and stable bond performance. The glue rarely remains on the panel surface.

Glue type: Rubber

White outer, black inner, Black prevents ultraviolation and white reflects ultraviolation, the retardation performance and protection of glue film is excellent.



Distinguish protective film quality:

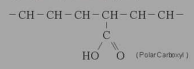
Film thickness > 0.08mm, black inner and milky white outer

According to the graph, the transparency degree of protective film should be very low.
The voice generally is low when tearing off the film with rubber layer, string is long and white, the gloss of rubber layer is low.
The voice generally is high when tearing off the film with acrylayl layer, string is very short and the gloss of rubber layer is high.
The above-mentioned is only for reference. It can not be the final judgment, as it must be tested by advanced instrument.

■ 3、High Molecular Adhesive Film

Molecular structure of high molecular adhesive film

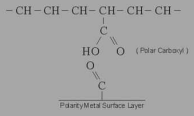
EAA* (ethylene-crylic acid copolymer)



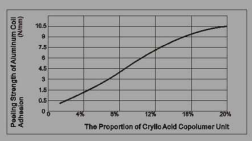
Adhesion's principle of high molecular adhesive film

(Crylic acid polar branch can combine with polar metal surface to create hydrogen bond)

EAA* (ethylene-crylic acid copolymer)



According to the test, the adhesive force reflects the proportion of crylic acid copolymer unit in high molecular adhesive film for Aluminium sheet thickness 0.5mm as the following chart.



The production methods of high molecular adhesive film: glue spraying, glue spreading, radioactive combination, blow mold and two-layer coextrusion etc.

ALUTILE Nano Rubber Fire-Resistance Aluminium Composite Panel and Aluminium Composite Panel adopt two-layer high molecular adhesive film, one side is dull and another side is slick, crylic acid polar branch of dull face is affinity with metal and slick face has affinity with core material.

Peeling Strength of ALUTILE Products (GB/T2790)

	Test Result	ALUTILE Standard	China National Standard
0.21mmAluminium coil	6.8	≥4.0	≥3.0
0.50mmAluminium coil	12	≥4.0	≥7.0

■ 4、Core Materials

There are mainly two kinds of core materials for ALUTILE Composite Panel: Polyethylene core for Aluminium Composite Panel, un-flammable Nano rubber-plastic core for Fire-Resistance Aluminium Composite Panel .

1) Core Materials of ALUTILE Aluminium Composite Panel

ALUTILE Aluminium Composite Panel adopts polyethylene core materials that mix high quality extrusion-grade, LDPE and L-LDPE. It possesses excellent properties, such as easy processing, chemical resistance and mechanic performance and avoids the weakness (contraction ratio too soft and too high longitudinal). So ALUTILE Panels keep even when exposed to the heat of tropical or the cold of frigid snowstorm.

2) Core Material of ALUTILE Fire-Resistance Aluminium Composite Panel

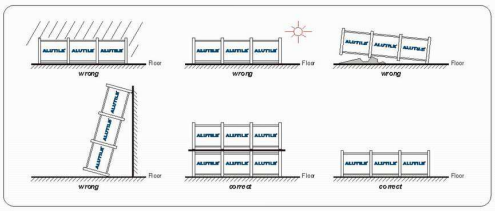
It is a new-type core material, which is independent developed by our company. It is alloy outcome of inorganic nano material and many kindly of high molecular material; the oxygen index is very high. It possesses excellent weathering resistance and mechanic performance. It not only break through the technical problem that normal Aluminium Composite Panel is not fireproof, but also greatly improves the dynamics performance of folding position, which is the weakness of normal Aluminium Composite Panel. It can be applied in more fields and made possible to use in higher building due to improved dynamics strength, fatigue property and corrosion-resistance of folding position.

Advice

■ 1、Transportation, Loading & Unloading, Storage

After aluminium composite panel leaves the factory, it usually passes through the subsequent procedures: Transportation, Loading & unloading, storage, package removing, manual handling and temporary storage etc.

1) Try your best to avoid the panel to be impacted because it is a decorative product. Perhaps the impact will not affect its strength, but the appearance will be not good.
2) Pay attention to the position of loading & unloading and the center of gravity. The main equipments are forklift and hoister.
3) Do not store the panels in humid environment or exposure to the sunshine; keep away from the chemical corrosive substance such as acid, alkali and salt etc. Laying on the floor horizontally, not more than two layers and put backup plate (2cm thickness board) between layers, as the following drawings.
4) While removing package, snip the steel belt firstly and take apart steel stripe for angle connecting, then take apart board of flank side and lift the covering board, finally open the inner package.
5) During manual handling, the panel is in the position of 10° inner leaning degree and should be handled up and down by two persons. Never convey in the horizontal direction and put heavy goods on the panel in case being warped and depressed.
6) During processing, lay horizontally on the plywood, panels are put in pairs (top surface to top surface, top surface inward and backside outward).



■ 2、Processing Environment

1) Clean the operating platform to prevent the panel surface from scratching or ripping.
2) Please pay attention to the temperature when bending because most materials have the character of cold-fragile and hot-soft. It's not easy to detect the character by touching. We can make an experiment to fold an aluminium sheet with 0.5mm thickness polyester paint under 0℃. Then you will find cracks on the surface of aluminium and paint in the position of folding seam. However the same panel over 35℃, the surface will be intact after folding. So the best temperature for folding the curtain-wall panel is 20-50℃. (Refer to the temperature of material and environment)

■ 3、Removal of Protective Film

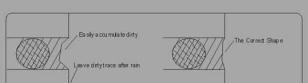
1) It is recommended to peel off the protective film as soon as possible after the installation.
2) Please remove the film within 60 days after the installation.
3) Please pay attention to the instructions printed on the protective film.

■ 4、Cleaning and Maintenance

1) Please use neutral cleaning agents with water, avoid aggressive acid, alkali, petrol or ethyl alcohol, which would cause damage to the coated surface.
2) Never use strong organic solvent such as MEK (Methyl Ethyl Ketone), MIBK (Methyl Iso-butyl Ketone), Triclene (Trichloroethylene) or thinner.
3) Please use soft wiping tools, such as soft cloth or sponge etc., avoid the abrasive cleaners.
4) Please clean the coated surface at a moderate temperature and avoid extreme temperature.

■ 5、Glue Injection

The glue should be supplied by good factory. Inject the glue strictly according to the instruction. During the cure period of glue, the request for environment should also be kept as that of processing. Avoid exposure otherwise the glue will over crosslinking consolidate or some substances in glue volatilized in excess, which will result in losing elasticity. The capacity of accepting displacement will be poor and it will lead to crack or destroy the decorative layer. Please pay attention to the shape of glue.



Please pay attention to not only the shape of injecting glue but also the structure of curtain-wall design, otherwise the curtain wall will need cleaning frequently.

■ 6、Evenness and Direction

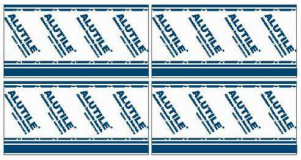
The whole curtain-wall should be even enough otherwise the light reflection will be not uniform. If gloss is different, it would look like having color difference, especially for the panel with metallic color coating.

As shown in the following drawing:

Width of glue seam (comparison with the value of design)	±1.5mm
Vertical of glue seam	Height ≤20m allowed tolerance 3.0mm Height >20m allowed tolerance 5.0mm
Horizontal of glue seam	L (width) ≤ 20m allowed tolerance 2.5mm L (width) >20m allowed tolerance 4.0mm
Evenness of surface	H (L) ≤20m allowed tolerance 4.0mm H (L) >20m allowed tolerance 6.0mm

During the installation, please pay attention to the direction, which is shown on the protective film of each panel surface. The direction should be the same at one surface for each panel, especially for the panel with the metallic color paints. Otherwise it'll result in different direction of light reflection, so it should be taken into consideration when designing.

Except for the special purpose, our company can supply the aluminium composite panel in width no more than 1600mm, length no limited (But it is necessary to consider convenience of transportation)

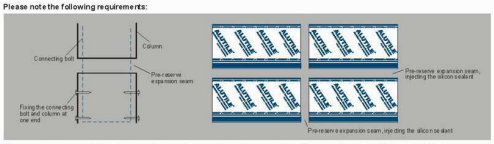


※ As the above shown, every panel should be kept in the same direction.

■ 7、Materials Expansion and Shrinkage

The force of expansion and shrinkage of raw materials is very big, it will destroy all things, which prevent expansion and shrinkage including materials themselves, so this case should be taken into consideration and leave expansion seam while designing and installing.

Please note the following requirements:



The expansion seam of exterior panel should be wider because the outside temperature difference is bigger. For interior panel,it can be narrower.

■ 8、Others

Please avoid different metals touched directly when selecting the materials for curtain-wall, because electric potential of different metals are different. Otherwise the badly electrdytical corrosion appearance will happen under damp circumstance. Please plug into insulating spacer between different metals, such as nylon spacer or pdyamine ester spacer etc. Please avoid the metal without protective layer exposed to outside directly when installation design.

ALUTILE® Projects

U.A.E Mezar Tower, Abu Dhabi

U.A.E Pearl Plaza, Abu Dhabi

Kuwait Down Town Hotel

Kuwait Down Town Tower

ALUTILE® Projects

Kuwait Sheikh Saad Airport

Kuwait Arbash Salmiya

Kuwait Agar

Kuwait Residential Complex

Kuwait Al-Ghanim Mosque

ALUTILE® Projects

Kuwait AL-Badree Complex

Kuwait Amwaj

Kuwait Ali Arbash

Kuwait Daboos complex

ALUTILE® CE ISO 9001 Intertek BSI FIWA QUALICOAT QUALANOD

ALUTILE® Projects

Kuwait Project

Kuwait Ali-Al-Ghanim

Kuwait Attorny

Kuwait Salmiya Commercial Complex

Kuwait Salwa Co-operative

Kuwait Kuwait Agriculture Company

Kuwait STARBUCKS

Kuwait KFC

ALUTILE® Projects

Kuwait Shamiya Co-operative

Kuwait Al-Arfaj Complex

Saudi Arabia Slama Center

Saudi Arabia Trans

Saudi Arabia Saudi Investment Authority

Saudi Arabia Alesayi For Metal Fabrication & Decor Project

Saudi Arabia Al Qarni Building, Jeddah

Saudi Arabia Centerpoint

ALUTILE® CE ISO 9001 Intertek BSI FIWA QUALICOAT QUALANOD

ALUTILE® Projects

Saudi Arabia Queen Building

Saudi Arabia Red Sea Mall

Saudi Arabia Hail University Project

Saudi Arabia Doni Medical Center, Abha

Saudi Arabia AL Othaim Mall, Buraidah

Saudi Arabia Al Olayan, Khamis Mushait

ALUTILE® Projects

Saudi Arabia Yanbu Airport

Saudi Arabia Al Masirrah Mall, Jeddah

Saudi Arabia Al Zahrani Building,Jeddah

Saudi Arabia Bin Jarallah ,Khamis Mushait

ALUTILE® Projects

Saudi Arabia Al Obeikan Project

Saudi Arabia Abdul Aziz Tower 1st Street Damman

Saudi Arabia General Care Hospital Dammam

Saudi Arabia Al Jabbari

Saudi Arabia Al Khanbashi Building, Jeddah

Saudi Arabia Elena Center,Jeddah

Saudi Arabia Al Basatein

Saudi Arabia National Commerical Bank

ALUTILE® Projects

Saudi Arabia Commercail & Residential Building, Rabigh

Saudi Arabia AL Othaim Mall, Riydah

Saudi Arabia Alharam plaza Dammam

Saudi Arabia CITY MAX Dammam

Iran Beijis Commercial Center,Mashad

Iran Rose Abi Commercial Center,Ghods City

Iran Arkeh Iranian Commercial Center, Tehran

ALUTILE® Projects

Iran Afsoon Tower, Babolsar

Iran Rojan BLD., Tehran

Iran Huge LCD , Tehran

Iran Mellat Bank-7 tir sq., Tehran

Iran Gas Statoion,Rash

ALUTILE® Projects

Iran Pars Especial Zone Airport Tower

Iran Arkeh Iranian Commercial Center,Tehran

Iran Kermanshah Airport,Kermanshah

Iran Mihan Ice Cream Factory,Tehran

Iran Farhang Commercial Center,Mashad

ALUTILE® Projects

Iran Mellat Bank-Bazar Branch, Tehran

Iran Mahroo Hotel,Mashad

Qatar Project

Lebanon Metropolitan Hotel

Lebanon Pointure Shop

ALUTILE® Projects

Lebanon Beirut Tower, Beirut

Lebanon Sea View Tower, Beirut

Lebanon Arab Finance House, Beirut

Lebanon Le Royal Hotel

Lebanon Lina Residence

ALUTILE® Projects

Australia Sydney International Airport

Australia Atlantis Hotel in Melbourne

Australia Project

Australia Project

Australia Westfield Shopping Mall

Australia Project

Australia Discount Glass Bridge

ALUTILE® Projects

Brazil Eburbom Shopping

Brazil Rio de Janeiro

Brazil Brasilia Capital

Brazil Fiocruz RJ

Brazil Copia

Brazil LAMBORGHINI Show Room

Brazil Riachuelo

ALUTILE® Projects

Brazil Pousada

Brazil BR Lotus

Brazil Arena Jaragua

Brazil Londrina

Brazil Instituto Tecnologico De Barueri

Brazil Mitsubishi Motor Showroom

Brazil TEXACO

ALUTILE® Projects

Brazil Belo Horizonte

Brazil Centro comercial, Itajai SC

Brazil Porto Alegre City

Brazil Porto Alegre City

ALUTILE® Projects

Russia Shula Shopping Mall, Moscow

Poland CuprumArena

Romania Polsea Company

Romania Ghencea Business Center

ALUTILE® Projects

Colombia Project

Colombia Project

Turkey Project

Nigeria PPPRA Abuja

Nigeria Governmental Nursary

Nigeria Central Bank

Nigeria Afri Bank Estates

ALUTILE® Projects

Indonesia Metl Sunter

Indonesia Hilton Hotel Bandung

Indonesia Graha Santika Semarang

Indonesia Plaza Asia project, Tasikmalaya

Indonesia TV Education Station in Jakarta

Mauritius Kross Bottler Trust Services Limited office building

Ghana Ramona Complex Building

Bangladesh Impress Group Corporate office

ALUTILE® Projects

Pakistan Rehman Center Lahore

Pakistan Al Hafeez Shopping Mall Lahore

Thailand Ficus Lane Project

Vietnam Vincom city towers in Hanoi

Vietnam National convention center

Thailand Central Ramintra

Vietnam Sumitomo Heavy Industries

ALUTILE® Projects

India Cyber Green

ALUTILE® CE SGS Intertek BSI FIWA PPG KCC

Certificates

ISO9001 Certificate

ISO14001 Certificate

PPG Approved Applicator Certificate

Beckers Applicator Certificate

KYNAR500 Licensee Certificate

Global Technology Cooperation Partners

PPG
Beckers
DUPONT
CHINALCO
Novacel
POLI-FILM
Henkel
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CE Certificate

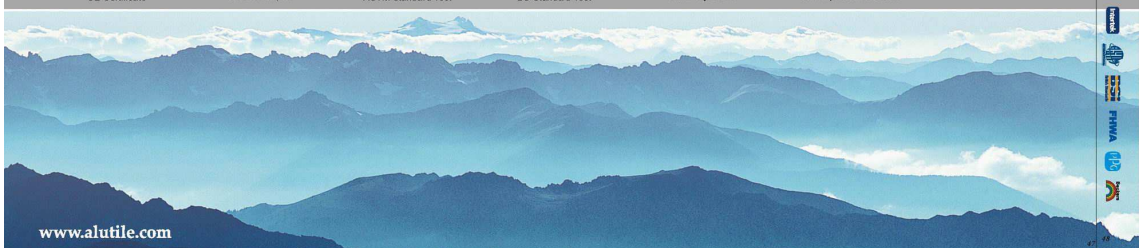
SGS Test Report

ASTM Standard Test

BS Standard Test

China Top Brand

Germany Patent Certificate



ALUTILE® CE SGS Intertek BSI FIWA PPG KCC


European Technology