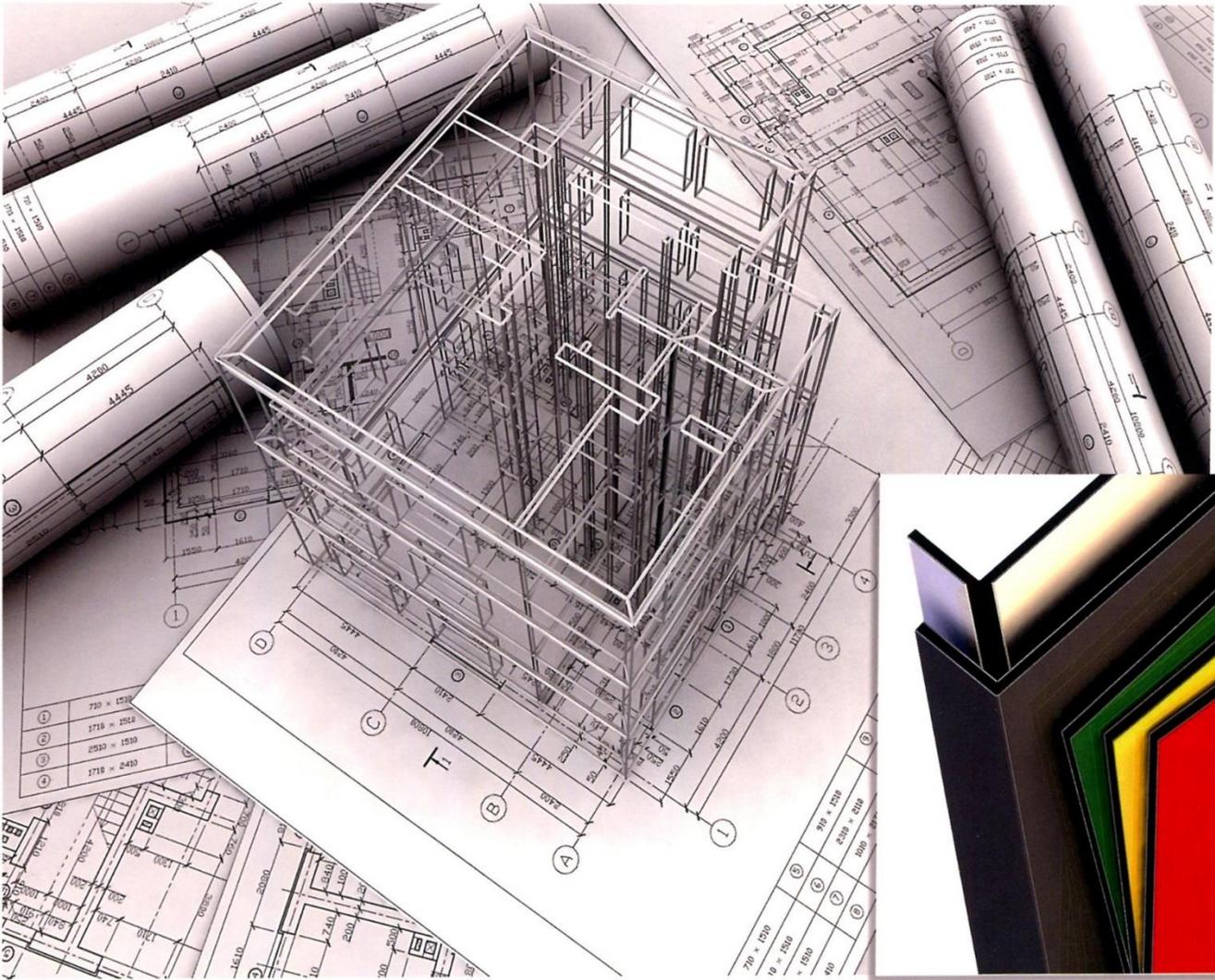




LUCKYBOND

ALUMINUM COMPOSITE PANEL

LEADING MANUFACTURER OF ACP SINCE 1995



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About us

Taizhou Baiyun Jixiang Decorative Materials Co., Ltd., located in Taizhou, a prosperous seaside city, was established in 1983 and is one of municipal key enterprises. Our factory specializes in Aluminum Composite Panel, PVC Wall Panel& Cornice and PVC Foam Board, and it covers 20000 square meters total areas, and 23000 square meters of building areas. With rich production experience, strong technical force, complete production equipment and strict quality-supervising measures, we are now a large-scale joint-stock enterprise and a member of China Building Materials Industry Association, with subsidiary of Luckybond Brand.

Our company has been committing itself to researching, developing and producing of Aluminum Composite Panel, PVC Wall Panel& Cornice and PVC Foam Board since its establishment. Our excellent quality and perfect service have won great appreciation and trust from our customers by fulfilling market demands. Facing the challenges of new century and the great opportunities of WTO entrance, Our company works hard to make more achievements. We have got the ISO9001 International Quality System Certificate issued by China Quality Certification Center, and more than 50 sales offices have been set up in China and our products have been sold to Europe, America, Middle East, Southeast Asia and so on, which enhances our product quality and marketing to a new level.



Insisting on the principle of “people first, market focus”, we have continuously learnt successful management experience from domestic and abroad markets, striving to provide our customers with excellent-quality product. We have invested 100 million on Aluminum Composite Panel project, introducing advanced 6 composite production lines to produce PE Aluminum Composite Panel, fireproof Aluminum Composite Panel, marble Aluminum Composite Panel, PVDF Aluminum Composite Panel. The products are made of high-purity Aluminum foil and good-quality polyethylene by advanced technology and high-precision equipment. The products, which are light-weighted, with high-strength, good sound and heat insulation, easy to be cleaned, curled and cut characteristics, are widely used in interior and exterior walls decoration of huge building and family houses.

We are committed to building the largest production base of Aluminum Composite Panel, PVC Wall Panel& Cornice and PVC Foam Board in China. With our strong technical strength, powerful production ability, advanced testing equipment, scientific management system and fast logistics, we will continuously work hard to make contribution to promoting the global construction and decoration materials industry.

Certificates

VOV CERTIFICATION & TESTING LABORATORY



CERTIFICATE OF CONFORMITY
EU EMC-DIRECTIVE 89/106/EEC
Registration NO.: 11065515

Applicant: TAIZHOU BAIYUN JIXIANG DECORATIVE MATERIAL CO.,LTD
Applicant Address: THE FIRST BRANCH OF JIAOJIANG FARM, TAIZHOU, ZHEJIANG, CHINA
Product Description: ALUMINUM COMPOSITE PANEL
Model / Parameters: 4mm 0.40,4mm PVDF

Complies with the requirements of the European Community Directive 2004/108/EC. The submitted products have been tested by us with the listed standards and found in compliance with the following European Standards:
EN 438-2:2005
EN 485-2:2004

This certificate of conformity is based on an evaluation of a sample of the above mentioned product. Technical Report and documentation are at the Licence applicants disposal. This certificate does not imply assessment of the entire production of the product. The CE markings as shown below can be affixed on the product after preparation of necessary technical documentation.



Authorized by: **Agvont.**
Jun 26, 2011 Chief Assessor



VOV CERTIFICATION & TESTING LABORATORY LIMITED
SUITE525,16-18 CIRCUS ROAD,ST.JOHN'S WOOD,LONDON,NW9 6PG,UK



TEST REPORT

No. : SHIN1701001596PS
Date : Feb 24, 2017
Page: 1 of 26

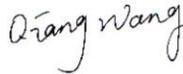
CUSTOMER NAME: TAIZHOU BAIYUN JIXIANG DECORATIVE MATERIAL CO., LTD
ADDRESS: NO. 1 BRANCH, JIAOJIANG FARM, TAIZHOU, ZHEJIANG PROVINCE, CHINA

Sample Name : aluminum composite panel
Manufacturer : Taizhou Baiyun Jixiang Decorative Material Co., Ltd

Above information and sample(s) was/were submitted and confirmed by the client. SGS, however, assumes no responsibility to verify the accuracy, adequacy and completeness of the sample information provided by client.

Date of Receipt : Jan 10, 2017
Testing Start Date : Jan 10, 2017
Testing End Date : Feb 24, 2017
Test result(s) : For further details, please refer to the following page(s)
(Unless otherwise stated the results shown in this test report refer only to the sample(s) tested)

Signed for
SGS-CSTC Standards Technical
Services (Shanghai) Co., Ltd.



Qiang Wang
Authorized signatory



CFL CERTIFICATION CENTER
CERTIFICATION OF QUALITY MANAGEMENT SYSTEM
Registration No.: 06515022063R3M
Taizhou Baiyun Jixiang Decorative Material Co.,Ltd.
No.1 Branch of Jiaojiang Farm, Taizhou, Zhejiang, China, 318000, P.R.C.
Organization code: 25566018-2
Complies with the requirements of
GB/T19001-2008/ISO 9001: 2008
The scope of certification business covers:
Production and After-sales Service of Aluminum Composite Panel,
PVC Foam Board and Aluminum Vener

the 1st qualified identification	the 2nd qualified identification	the 3rd qualified identification
----------------------------------	----------------------------------	----------------------------------

The certified organization should pass 3 qualified identifications on this certificate in the period of validity.
The validity period: 2015-08-19 to 2018-08-18 The issued date: 2015-08-19





CNAS MANAGEMENT SYSTEM
CNAS C065-Q
AAQ2001 Dantai Lab. No. A34, Xuefu Avenue, Deyangcheng District, Beijing 100064, P.R.C.
Inspection: Tel: 010-67161935
Administration Supervision Committee Official Website (www.cnas.org.cn) Inquiry

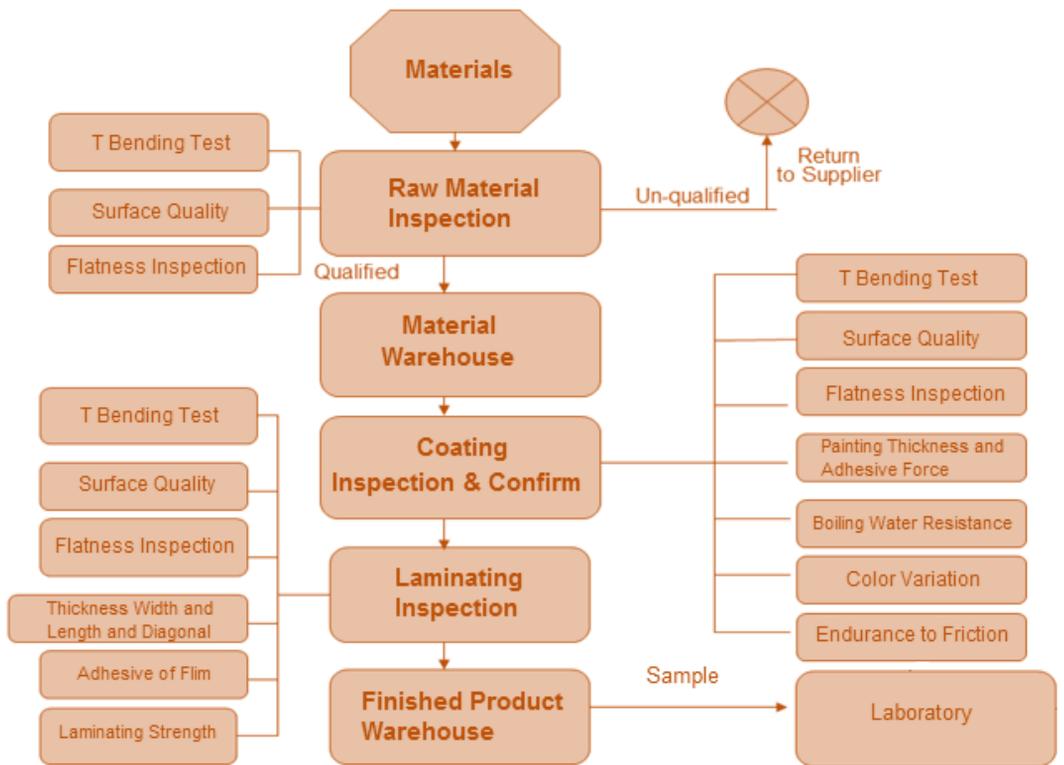
Version 2015 No: 15000559



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中国·上海·浦东康桥东路1159弄60号 邮编: 201319 136-21-6198300 136-21-6198300 www.sgs.com.cn
Member of the SGS Group (SGS SA)

QC System



Signage Grade ACP

The Polyester coating used to coat our Signage/Digital Printing Panels is extra durable, smooth and provides outstanding ink absorption properties required for flat Digital UV printing. We offer these panels in different gloss levels and colors on either or both sides of the panels as per the customers' requirements.

The panels are coated and manufactured using a continuous line process and exhibit strong, durable and anti corrosive properties. The paint used for coating our Signage/Digital Printing Panels are procured from world renowned suppliers such as PPG®, Nippon® which adds to the overall quality of the product and gives our customers the confidence to use Luckybond® Signage/Digital Printing Panels for all their Signage and Digital Printing requirements. Our panels are manufactured under strict quality control and are produced using non-toxic and environmentally friendly production processes. We are proud to add that our Signage/Digital Printing Panels conform to RoHS standards required by EU regulations.



Applications:

They have a wide range of applications for the Signage Industry:

- Flat Digital Printing
- Advertisement Boards
- Light boxes
- Shop Fronts
- Corporate Identities
- Petrol Stations
- Sign Boards
- Trade Fairs Exhibition Booths
- POP/POS
- Interior Cladding & Ceilings
- Splash Backs
- Transport Industries (Marine, Aviation, Buses)



Luckybond Signage aluminum composite panel

Luckybond Signage aluminum composite panel which falls into matt and glossy series according to glossiness. The monomer of the backbone chain is the high molecular polymer of the ester bond, which is added with alkyd resin and ultraviolet absorbent. It is specially fit for interior decoration and advertising board. The structure of the polyester molecule is compact with a brilliant and rich surface which can fully satisfy the high demand for surface flatness in printing.



Raw Material

Aluminium base material: high strength aluminium alloy sheet
PE core material: non-toxic low-density polyethylene
Surface coating: PE coating

Panel Specifications and Dimensioning

Thickness: 3-6mm, Recommended: 3mm
Width: 1000-1520mm, Recommended: 1220mm
Panel length: up to 5800mm, Recommended: 2440mm, 3050mm, 4050mm
Aluminum thickness: 0.2~0.5mm

Paint finish and Example of colors

Luckybond signage panel can be supplied in a wide range of colors options and is the perfect substitute for glass kitchen splash backs, as the high gloss surface owe a excellent performance. All colors are coated by advanced coating line.

For More detail, Please refer to Luckybond Color Chart. Custom colors are also available for all finishes upon request subject to minimum quantity.

Luckybond Digital printing aluminum composite panel

Luckybond digital printing aluminum composite panel is specially for Digital UV flat printing. Which has the outstanding features of smooth glossy surface, high definition printing. Good printing ink absorption, etc. It is a Aluminum composite panel specially for high-end digital printing, and a brand new advertising material.



Raw Material

Aluminum base material: high strength aluminum alloy sheet

PE core material: non-toxic low-density polyethylene

Surface coating: PE coating

Product Specifications

Thickness: 2-6mm, Recommended: 2mm, 3mm, and 4mm

Width: 1000-1520mm, Recommended: 1220mm

Length: Maximum is up to 5800mm for convenient transportation, Recommended: 2440mm, 3050mm and 4050m

Paint finish and Example of colors

We normally choose matt white and high gloss white as base for digital printing. With the good flatness and strong ink absorption, Luckybond digital printing panel will print your idea with a excellent performance. All colors are coated by our advanced coating line

Building Grade ACP

Luckybond® is an Aluminum Composite Panel (ACP) composed of aluminum surface and plastic core. Since 1994, Luckybond® had become known as one of the most suitable materials for external claddings of buildings, because of its lightweight, high rigidity, excellent flatness and long lasting coating qualities.

Some regions of the world restrict the use of ACM for building because of its inflammable plastic core. To fix this problem, we dedicate to improving the core, establishing a production technology called Lukcybond®FR, a fire-resistant ACP. Luckybond®FR meets the fire-safety requirements for external building in most countries. Nowadays Luckybond®FR is the external construction material of choice, ensuring fire safety without losing the original features of Luckybond®ACP.

The Panels are roller coated with 70% Fluorocarbon Knyar 500/Hylar 5000 PVDF resins which are procured from world renowned paint suppliers such as Nippon®, PPG®. The rear sides of all Luckybond® Panels come with a Mill Finish, Polyester Premier coating or a Full Polyester Coating. (Optional)



Luckybond PVDF aluminum composite panel

Luckybond PVDF aluminum composite panels are produced by advanced equipment with German technique. It has two layers of anti-rust aluminum sheets, formed by low density polythene (LDPE) and DUPONT adhesive polyolefin film with continuously high temperature and high press. The surface aluminum sheet has been coated with 70% PVDF (polyvinylidene fluoride). And the backside aluminum sheet has been protected with an anticorrosive primer coat.



Raw Material

Aluminum base material: high strength aluminum alloy sheet
PE core material: non-toxic low-density polyethylene
Surface coating: PVDF coating

Panel Specifications and Dimensioning

Thickness: 3-6mm, Recommended: 4mm
Width: 1000-1520mm, Recommended: 1220mm
Panel length: up to 5800mm, Recommended: 2440mm, 3050mm, 4050mm
Aluminum thickness: 0.3~0.5mm

Paint finish and Example of colors

There are Six paint finish, Solid Color, Metallic Colors, Sparkling Colors, Chameleon Colors, Timber and Stone. All colors are coated by our advanced coating line.
For More detail, Please refer to Luckybond Color Chart. Custom colors are also available for all finishes upon request subject to minimum quantity.

Luckybond Fire-resistant aluminum composite panel

Luckybond fire-resistant aluminum composite panels are made with a fire-resistant plastic core, and two layers of aluminum sheets; It is one kind of new decorative material. Because of the addition of fire-resistant elements, its fire-resistant feature can reach Class B1 grade with the test of ASTM E84-08, and EN13501-1, the new European standard norm. resulting in fire-resistant properties. It is green material, as there is no harmful gas during burning.



Raw Material

Aluminum base material: High strength aluminum alloy
sheet PE core material: Fire-resist core
Surface coating: PVDF coating

Panel Specifications and Dimensioning

Thickness: 3-6mm, Recommended: 4mm
Width: 1000-1520mm, Recommended: 1220mm
Panel length: up to 5800mm, Recommended: 2440mm, 3050mm,
4050mm
Aluminum thickness: 0.3~0.5mm

Paint finish and Example of colors

All Luckybond colors can be mounted with Fire-resistance core.
For More detail, Please refer to Luckybond Color Chart. Custom colors are also available for all finishes upon request subject to minimum quantity.

Color Chart



Technical Data Sheet

Luckybond Signage Grade

Panel Thickness	Standard	Units	2mm	3mm	4mm
Thickness of Aluminum Layers		mm		0.21/0.3	
Weight		Kg/m ²	3.1/3.4	4.0/4.3	4.9/5.2
Technical Properties					
Section Modulus W	DIN 53293	cm ³ /m	0.51	0.81	1.11
Rigidity(E.I)	DIN 53293	KNcm ³ /m	345	865	1620
Alloy of Aluminum Layers	EN 573-3				
Modulus of Elasticity E	EN 1999 1-1	N/mm ²			
Tensile Strength of Aluminum	EN 485-2	N/mm ²		Rm: 145-185	
0.2% Proof Stress	EN 485-2	N/mm ²		Rp 0.2: 110-175	
Elongation	EN 485-2	%		A50 > 3%	
Liner Thermal Expansion	EN 1999 1-1			2.0 mm/m(100°C temperature difference)	
Surface					
Lacquering				Coil Coating. Fluorocarbon(e.g.PE)	
Gloss(initial value)	EN 13523-2	%		30-90	
Pencil Hardness	EN 13523-4			2H	
Thermal Properties					
Temperature resistance		°C		-50~ +80	

Luckybond Building Grade

Thickness	Standard	Unit	4mm	6mm
Thickness of Aluminum Layer's Weight		mm	0.50	
Weight		Kg/m ²	7.5	10.5
Fabrication width		mm	1220-1520	
Technological Values				
Section Modulus(W)	DIN 53293	cm ³ /m	1.75	2.0
Rigidity(E-I)	DIN53293	KNcm ² /m	2400	3100
Alloy	EN 573-3		EN AW-3003A	
Temper of Cover Sheets	EN 515		H 18/ H22	
Modulus of elasticity	EN 1999 1-1	N /mm ²	70000	
Tensile Strength of cover sheets	EN 485-2	N /mm ²	R _m ≥ 130	
Proof Stress (0.2%)	EN 485-2	N /mm ²	R _{p0.2} ≥ 90	
Elongation	EN 485-2	%	A ₅₀ ≥ 5	
Liner Thermal Expansion	EN 1999 1-1		2.4 mm/m bei 100°C temperature difference	
Surface				
Lacquering			Coil Coating. Fluorocarbon(e.g. PVDF)	
Gloss(initial value)	EN 13523-2	%	30-45	
Pencil hardness	EN 13523- 4		2H	
Thermal Properties				
Temperature resistance		°C	-50~ +80	

Panel Dimensioning

When dimensioning the panels, the following should be noted.

Dimensional tolerances

Thickness: ±0.2mm

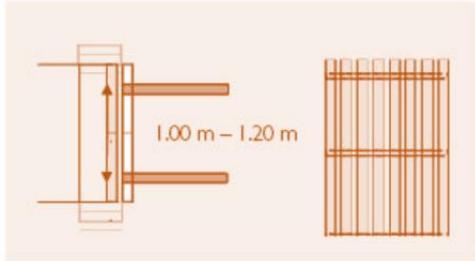
Width: -0/ +4mm

Length: 1000~4000mm(-0/+6mm)

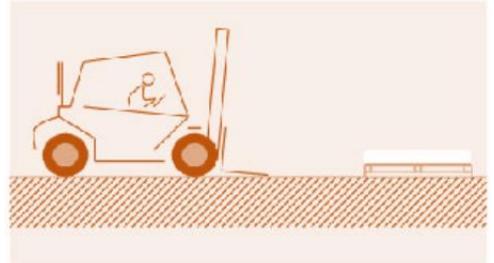
Length: 4001~8000mm(-0/+10mm)

When cutting and routing, the thermal expansion in length of Luckybond ACP must be taken into account to ensure the dimensional accuracy of the components during assembly. We recommend that prior to processing the panels should be stored at room temperature for at least one day.

Information of Care and Handling



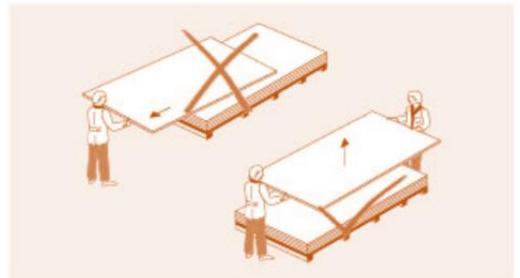
Set maximum fork width



Pick up the pallet



Slightly raise the fork



Pick up the complete pallet, do not draw nor push

Luckybond ACP is a prefabricated panel. The Surface of Luckybond ACP is lacquered, anodized or laminated with a transform film. The surface are protected by a film during transport and storage and processing. The following information must be noted.

a. Unpack and pack

Unpack and pack wooden crates in a clean place

Remove dusts and chips from Luckybond ACP and packing paper. The hard particles, such as sand and cutting chips, caught between panels will cause a dent on the panel.

Do not handle Luckybond ACP on a floor. Handle it on a worktable.

Handle Luckybond ACP carefully by two persons facing the effective surface upward, to avoid possible rubbing on Luckybond ACP surface during picking up and piling down panels.

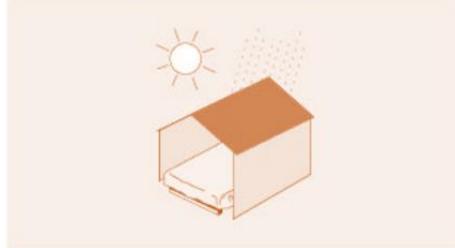
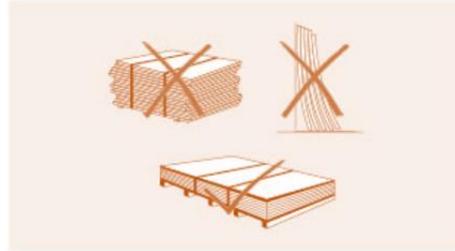
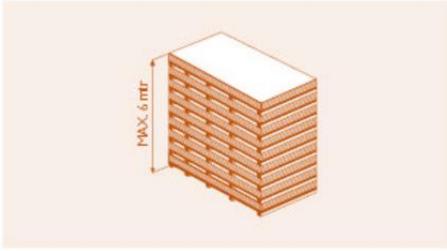
Individual panels must be lifted off the pallet by two people holding all four corners and not drawn over each other. Carry the panels vertically. Wear gloves to avoid staining.

b. Transportation

Lay the packed Luckybond ACP horizontally and do not place heavy goods on it.

Make clearly "Handle with care", "Keep Dry", "No Hooks" and "This Side Up" on the packing.

Treat pallets carefully during transport and moisture damages must be reported immediately and confirmed by the forwarder.



c. Protective film

It is possible that the protective film of Luckybond ACP will be invalid with direct sunlight and moisture. Store the panels in dry atmosphere, also not exceeding 6 month. Remove the film immediately after the installation is completed.

Especially in Reversible Series in which protective film are applied on both sides of the panel make sure that each film is peeled off from front and back, although the film is translucent (half-transparent) and it may be slightly hard to notice it.

Dirt deposits may build up in the course of time where the protective film partly delaminated from the surface during handling.

Storage exceeding 6 months should be avoided. Severe temperature fluctuations and exposure to direct sunlight reduce the long –term durability. In this case the protective film may become very difficult to remove.

Do not mark the protective film partially come off during processing or after assembly, dirtied edges can occur in the course of time, which may be difficult to remove.

Remove the protective as soon as possible after assembly.

Protective film that remains on the panels for an extended period of exterior exposure may be very difficult to remove.

d. Storing

Store panel in a dry, clean, frost-free room.

Place pallet and panels on a level surface which provides full support.

Keep panels in a original, closed packaging where possible.

Remove steel straps of the panels are to be stored for a long time.

Prevent a film of moisture from forming between the panels.

Do not place any moisture-sensitive(paper) layer between the panels.

e. Fabrication

Prior to fabrication, clean out the worktable, temporary stand and both sides of Luckybond ACP. Take notice to the cutting chips generated from saw, routers and drills, as well as those hips and particles caught between Luckybond ACP and tools.

Processing Method

Luckybond ACP is very easy to process. All cutting, milling, punching, slotting, side folding and curving can be easily fulfilled by simple tools sued for processing timber and metal. It can be shaped into various shapes, such as curved, reserved curves, corner and sharp curves, according to requirements of building design, which is incomparable to other decorating materials.

Tools

Cutting



Table Saw



Square Shear



Jig Saw



Hand router



Punching



Turret Puncher



Water Jet Cutting Machine

Bending



Press Brake



3-roll Bender



Folding Machine

Routing and Folding



CNC Router



Grooving Machine



Hand Router



Panel Saw

Cutting

1. Saw Cutting

Luckybond ACP can be cut and processed with various types of saws including vertical panels saw, circular saw or jig saw. Suitable saw blade is carbide-tipped blades for aluminum or plastic use.



Example of suitable saw blade

Blade Diameter	225m
Number of Teeth	80 to 100
Cut Width	2.0 to 2.6mm
Rake Angle	10°
Tip	Carbide

Operating Conditions

Rotation of Saw Blade	2000-4000rpm
Feed Speed	10-30m/min

Notes on Saw Cutting

Do the cutting operation with facing the effective side upward to prevent the panel from scratch and the protective film peeling off.

Remove cutting chips from Luckybond ACP carefully after cut, to avoid dent during storing or assembling.

Sharpen or replace the saw blade, when it becomes dull, which will result in large burr or distortion at cut edge.

2. Shear cutting

Luckybond can be sheared with a conventional guillotine. A shearing angle of $\leq 1.5^\circ$ and aluminum clearance(paper test) are the prerequisite for the best possible quality of the cut.

To prevent damage to the cover sheet, it is appropriate to provide the down-holders of the guillotine with protective rubber pads.

Important:

Cutting or shearing Luckybond ACP for application where cut edges are visible(e.g. riveted facades) is not suitable for decorative requirements.

3. Trimming

In saw cutting, burr appears on both sides of edges. In shear cutting, either droop or burr appears on each edge. If we install the panel with exposed cut edge, we have to take notice of the edge conditions.

Namely, in saw cutting we should keep the saw blade sharp to have a sharp cut. In shear cutting we should adjust the clearance of the die properly.

Generally, the condition of edge is more important in interior than exterior. Sometimes we have to trim the edge after cutting. For trimming, we use trimmer, plane or sandpaper.

In Solid and Metallic Colors, deep trimming like chamfering has a visual effect by using a trimmer with a ball bearing chamfering bit or a plane for woodworks. When working with plane, a guide ruler will help to ensure a uniformed edge.

In solid and timber finishes, on the other hand, deep trimming is not suitable, because deep trimming harms the appearance of stone and timber. If it is possible to hurt a finger with cut edges in stone and timber finishes, make the edge dull with fine sandpaper. Normally, droop edge by shear cutting is mild enough to ensure the safety of edges.

4. Curving cut



Hand router and trimmer can cut Luckybond ACP in curving lines. Guide template will help you to stabilize this work. Jigsaw is also useful for cutting complex shapes.

Notes on the use of guide plate

- a. *Put an appropriate guide plate(template) on the effective side of Luckybond ACP to do the routing work through the guide plate.*
- b. *Particles caught between the template and the effective surface of Luckybond may cause dent or scratch.*



5 Punching

Luckybond ACP of any thickness can be punched using conventional sheet metal punching machines. For clean cuts use sharp tools and dies with minimal cutting clearance (0.1mm). This cutting process will cause a slight deflection of the cover sheet.

6. Perforating (for interior applications only)

Luckybond ACP can be perforated using CNC punching machines. This is often used for interior and ceiling design. Holes of a minimum diameter of 4 mm can be punched. The minimum width of web between hole edges is also 4mm. The best results will be obtained using a punch die for single punching. Multi-station machines are more economical. After punching, the flatness will possibly require further processing.



Turret puncher

Turret puncher, also computer-controlled, can be used for perforation of Luckybond ACP. The suitable clearance between punch and die is 0.1mm or smaller (material thickness x about 0.2%). Small droop will appear at punched edge.

7. Water jet cutting

Water-jet cutting: Plunge cut (piercing at the starting point) in water-jet cutting may cause a certain extent of de-lamination between aluminum skin and core material. Therefore, we have to plunge at disposable area or start at panel edge. After penetrating through the panel, water jet can cut Luckybond ACP.



According to our test. We so far conclude that Luckybond ACP is not suitable for laser cutting, because the fume generated from Luckybond ACP might harm the sophisticated optical instrument of laser system.

Bending

1. Bending with press brake

Luckybond ACP, like sheet metal, is easily formed with a brake press. The air-bending process is used when forming with a brake press.



The minimum bendable radius with press brake is as follows:

Bending Direction	Minimum Bendable radius
Traverse	50mm
Parallel	80mm

Notes on press brake bending

- a. "Traverse" and "Parallel" show the bending direction toward the rolling (coating) direction, printed on the protection film.
- a. The minimum bendable radius means the limit with which visible wrinkles appear on the aluminum surface of Luckybond ACP.
- a. Use the top die (punch) with the similar radius to the desired radius. If the radius of the top die is too small, it is possible the bending radius becomes partially smaller than the above limit.
- a. Use a urethane pad for the bottom die, or place a rubber mat between Luckybond ACP and the bottom die.
- a. Use a scratch-free top die. Polish and wipe the top die. Do the bending work without peeling off the protective film.

2. Bending with 3-roll bender

We can use manual or electric-drive 3-roll bender for bending Luckybond ACP. The minimum bendable limit is normally 250mm in radius, but it depends on the length of the bender and the type of the machine. The following is an example of relationship between the length of bender and the minimum bendable limit.



Roll length(mm)	Minimum radius(mm R)
500	120
1000	150
2000	180
2500	200

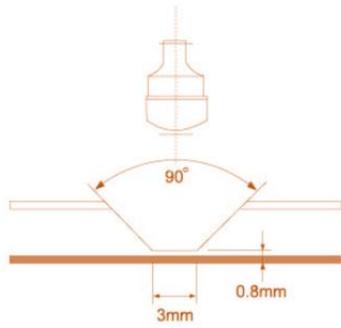
Notes on 3-roll bending

- Prior to bending operation, wipe the roll surface carefully.
- Remove the burr at Luckybond edge that may cause dent with rolling.
- Remove the cut particles suck on Luckybond and rectify the wrinkles of protective film, which may cause dent.
- Do not tighten Luckybond with rolls. If the roll clearance rigid in the machine, adjust the clearance to panel thickness plus approx. 0.5mm.
- If notch is required in a curving panel, make the notch before(top) and after edge bending after bending. Making the notch before bending will result in a distorted curving.
- When bending to small radius, gradual bending is necessary by adjusting the elevation of bending roll.
- We can reduce the straight portion near edge means of a subsidiary sheet material, but it remains to some extent. If a consistent curving line is needed near the edge, we have to do additional edge bending after the regular bending.

3. Bending with a folding machine

When working with folding machines, the panel to be bent is clamped between two cheeks. The projecting edge is bent around the upper clamping cheek or former using the movable swivel bar. The bending radius is determined by interchangeable formers attached to the upper clamping cheek.

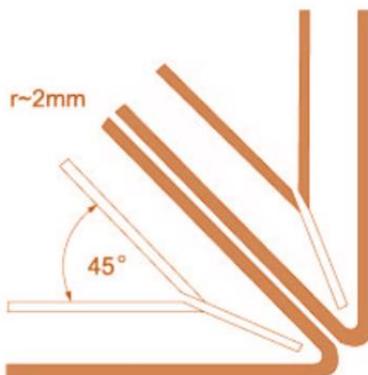
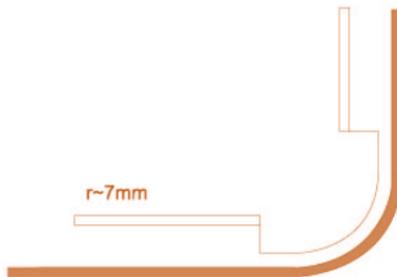
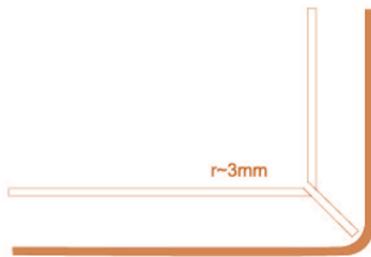




Groove 90°(V-shape) for folding up to 90°



Not suitable for Luckybond rectangular groove for panel dig up to 150°depends on the panel thickness



Routing and Folding

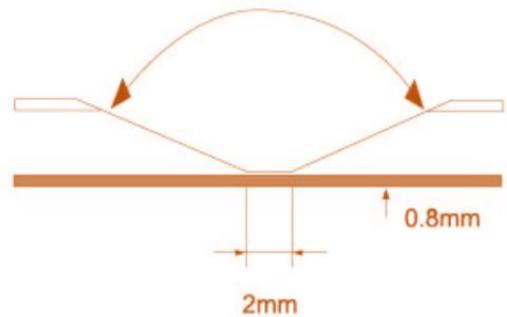
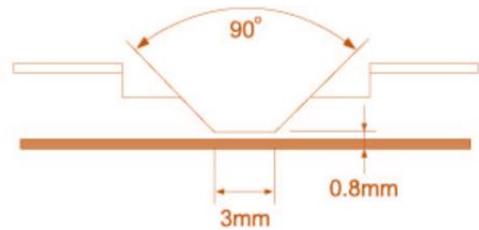
Luckybond ACP can be routed and fold using a flat bed CNC routing machine, a Vertical Panel Sawing Machine or a handheld router “V-Grooving” tool. The panel can be bent and formed into cassette trays and be integrated onto exterior facade or curtain wall systems.

A “V” shaped or “Rectangular” shaped groove should be routed on the reverse side of the panel along the proposed folding edge. When routing, the groove should not be made all the way to bottom, a thin layer of core(0.8mm) must be retained at the base allowing enough room for easy folding. This is to prevent the paint on coated surface and the aluminum from cracking or crazing during the folding process.

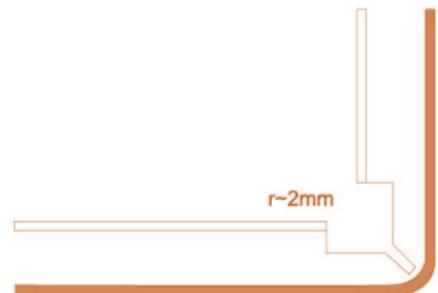
Important

General information regarding the routing and folding technique.

Processing temperature: During folding, the ambient and material temperature should not be below 16 °C.



Groove 135° (V-shape) for folding up to 135°



CNC router

CNC router can cut and groove Luckybond ACP. As a series of processing is controlled by a computer program. CNC router is suitable for repetition of the same processing. The suitable bit and operating conditions are the same as hand routers.



Handy grooving machine

Hand grooving machine can groove Luckybond ACP. An example of the suitable cutter blades and operating conditions are as follows.

Cutter blade

Outside diameter	110-120mm
Number of teeth	4-8
Material	Carbide tip

Operating Conditions

Rotation	5,000-9,000 rpm
Feeding speed	5-20 m/min



Handy router

Hand router can groove straight lines and curving lines. Use a custom router bit having the groove shape shown in the above drawing. The suitable bit and operating conditions are as follows:

Router bit

Number of teeth	2-4
Material	Carbide tip

Operation Conditions

Rotation	20,000-30,000 rpm
Feeding speed	3-5 m/min



Panel saw

Efficient grooving work is possible with panel saw.

Typical conditions are as follows:

Cutter blade

Outside diameter	220mm
Material	Carbide tip

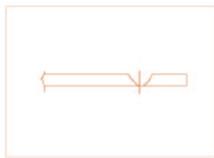
Operating Condition

Rotation	2
Feeding speed	30 m/min

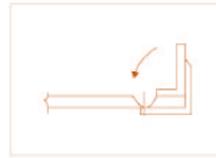


Folding

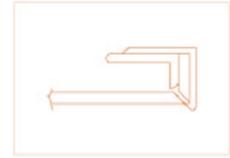
After V-groove, we can fold Luckybond ACP with folding jig. The typical folding procedures are as follows.



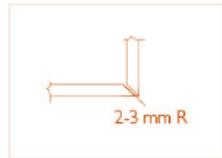
1. V-groove
Leave 0.2-0.4mm core.



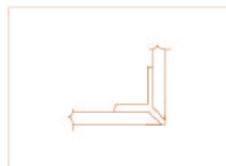
2. Folding jig
Folding jig is made of aluminum or steel angle.



3. Fold
Use a little longer jig than folding length.



4. Roundness
Suitable roundness is 2-3mm R.



5. Support
Support with aluminum angle, if necessary.

Notes on folding

a. Folding Luckybond on a flat and steady worktable. If we fold the fold the panel with warping, the folded line will not be straight.

b. The folded corner should have a suitable roundness of 2-3mm in radius. If the roundness is too small the coating may have a crack on the folded corner. This tendency becomes apparent when we carry out the folding work at low temperature. Have a folding work at 10°C or higher.

c. Folding after U-grooving entails slight elongation. The elongation is 0.5-1.0mm depending on the roundness of the folding corner. Therefore, the position of grooving lines must be pre-adjusted when the fabrication drawings are prepared

Joining Method

(1) Rivets

We often use rivets, bolt/nut and tapping screws for junction between Luckybond ACP and Aluminum extrusion. Use aluminum blind rivet We can do riveting work from one direction. Use bolt/nut and tapping screw made of aluminum or stainless steel.

(2) Adhesive

We can use commercial adhesives for joining and assembling of Luckybond ACP. We can use wide variety of adhesives for Luckybond ACP, except for some types of adhesives that may corrode aluminum metal. For example, vinyl acetate type, widely used for timber and styrene foam, corrodes aluminum metal. Main adhesives applicable to an adhesion between Luckybond ACP and other materials are as follows.

Adhesives applicable to Luckybond ACP

Adhesive type		Epoxy	Chloroprene	Silicone RTV	Cyanoacrylate
Suitable material to be adhered	Meta	OK	OK	OK	OK
	Timber	OK	OK	OK	OK
	Gypsum board	OK	OK	OK	OK
	Styrene foam	OK	OK	OK	OK

Notes on adhesives

- Prior to adhesion work, remove all the foreign matters such as dust, particle, grease, water, etc. from the area to be adhered.
- Select the most appropriate adhesive that ensures the necessary adhesion power in the atmospheric conditions. The adhesion power depends on the surface conditions of the substrate. Follow the adhesive manufacturer's instructions.
- When Luckybond is adhered to different material, it is possible that Luckybond shows a deflection due to the thermal expansion different or dimension change of the material. Pre-test the adhesive before fabrication and installation.
- Some adhesives may cause a distortion after hardening due to shrinkage of the adhesive, as shown in the diagram. Therefore, pre-testing is necessary for some types of adhesives. Generally, some of epoxy adhesives, polyurethane adhesives and silicone adhesives may show this kind of distortion. This distortion is usually very slight and sometimes it is not visible in low gloss and matte finished.

(3) Welding of core

One end of Luckybond ACP can be adhered to another end of Luckybond ACP by welding the core with hot melt adhesive(glue). Prior to heating a glue stick, we have to pre-heat the core surface for good adhesion. Normally, mechanical reinforcement is necessary after welding.

(4) Double-sided tape

Double-sided tape like 3M's VHB tape is effective in joining Luckybond ACP to other materials. VHB tape simplifies the joining work and the sticker ones allow a movement of the adhered two materials to some extent.

(5) Hook/loop fastener

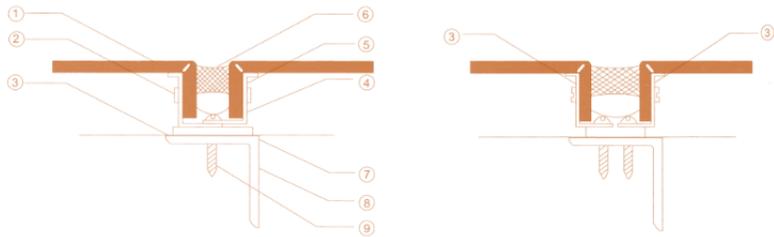
Hook/loop fasteners like Velcro tape is useful for guide signs and displays. This type of fastener is removable and restorable.

(6) Sealant

In order to ensure waterproofing of joints between panels, normally a sealing material is used. The sealing material shall meet the performance required for the atmospheric conditions. Silicone, modified silicone, poly sulfide and polyurethane sealant are used. General performance of these sealing materials is as follows. Regarding the joint design such as joint width and thickness, please follow the sealant manufacturer's specifications.

Scheme of Installation

Example of Panel Type and Joint Design (A)



1. Luckybond Panel
2. Aluminum rivet
3. Angle aluminum
4. Angle aluminum
5. Sealing material

6. Back spacer
7. Spacer
8. Angle bar
9. Bullet screw

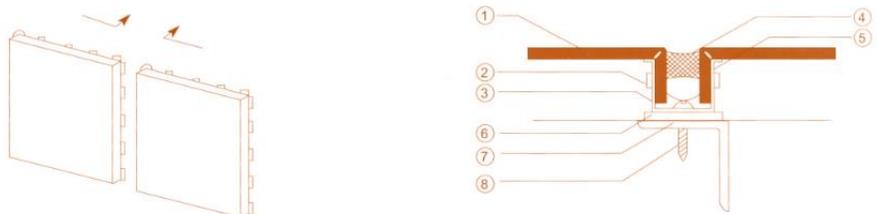
Example of Panel Type and Joint Design (B)



1. Luckybond Panel
2. Sealing material
3. Plastic lining bar
4. Accessories

5. Spacer
6. Angle bar
7. Bullet screw

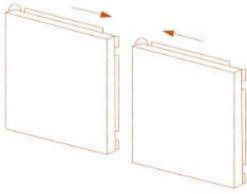
Example of Panel Type and Joint Design (C)



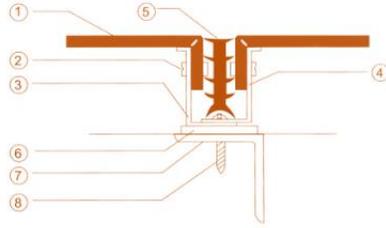
1. Luckybond Panel
2. Aluminum rivet
3. Angle aluminum
4. Sealing material

5. Back spacer
6. Spacer
7. Angle bar
8. Bullen screw

Example of Panel Type and Joint Design (D)

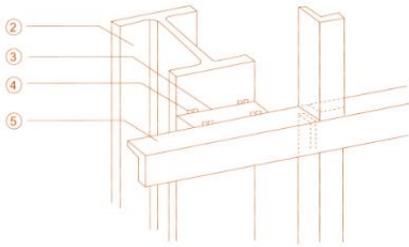


- 1. Luckybond Panel
- 2. Aluminum rivert
- 3. Angle aluminum
- 4. Angle aluminum

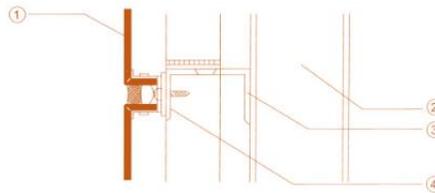


- 5. Gasket
- 6. Spacer
- 7. Angle bar
- 8. Bullet screw

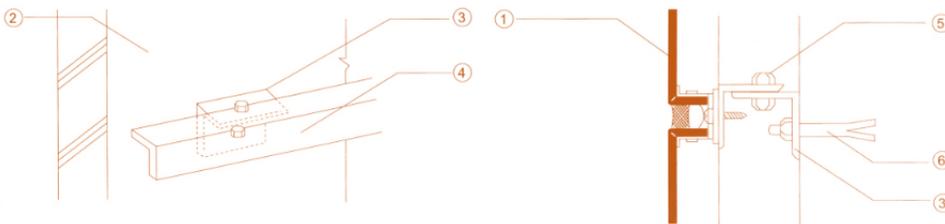
Example of Keel Structure



- 1. Luckybond Panel
- 2. Bearing strut
- 3. Angle support



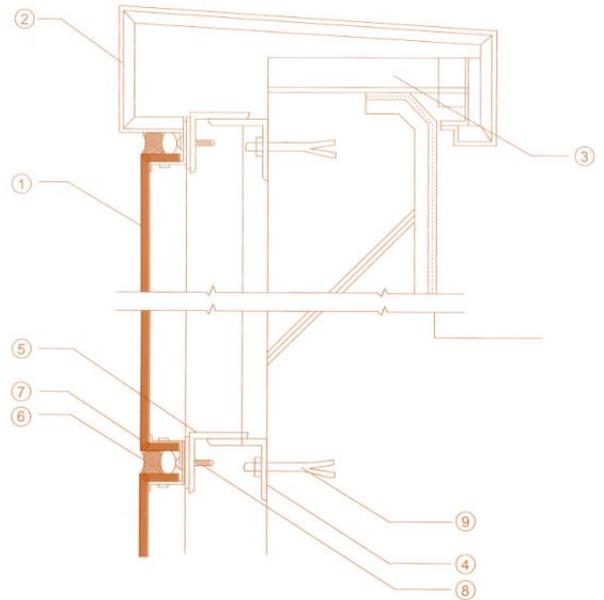
- 4. Welding
- 5. Angle bar



- 1. Luckybond Panel
- 2. Bearing strut(wall)
- 3. Angle support
- 4. Angle aluminum
- 5. Tapping screw
- 6. Embedded part

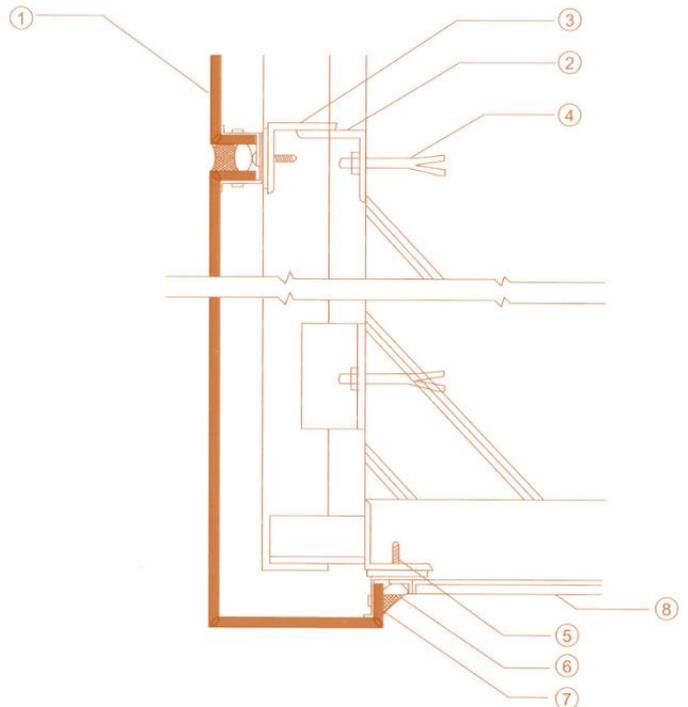
Example of Building Top

1. Luckybond Panel
2. Building top
3. Angle support
4. Angle support
5. Angle bar
6. Sealing material
7. Lining material
8. Bullet screw
9. Built-in anchoring or expanding bolt

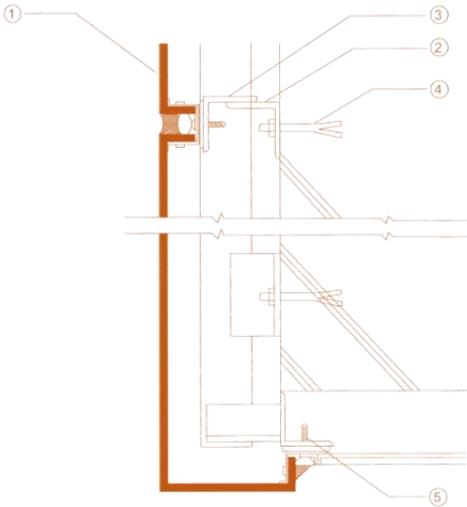


Example of Eaves

1. Luckybond Panel
2. Angle support
3. Angle bar
4. Built-in anchoring or expanding bolt
5. Sealing material
6. Lining material
7. Bullet screw
8. Ceiling

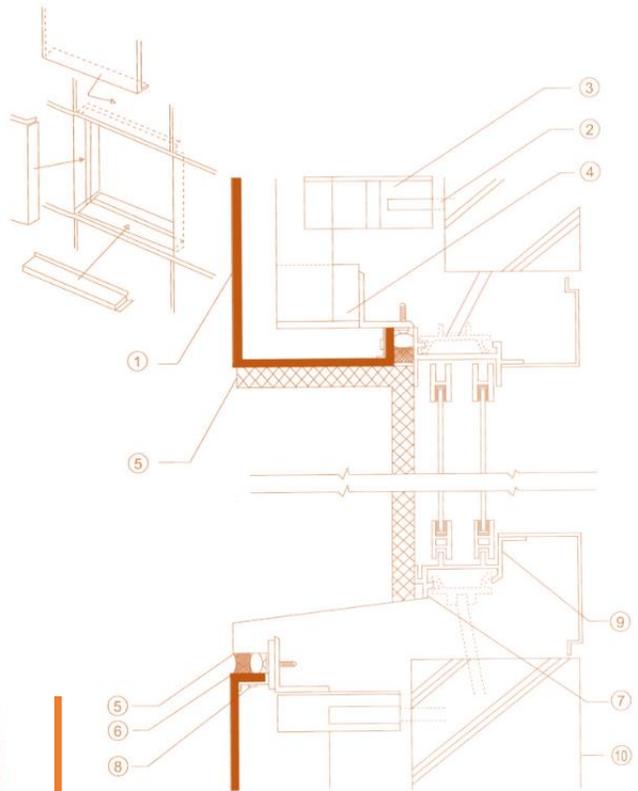


Example of Foundation



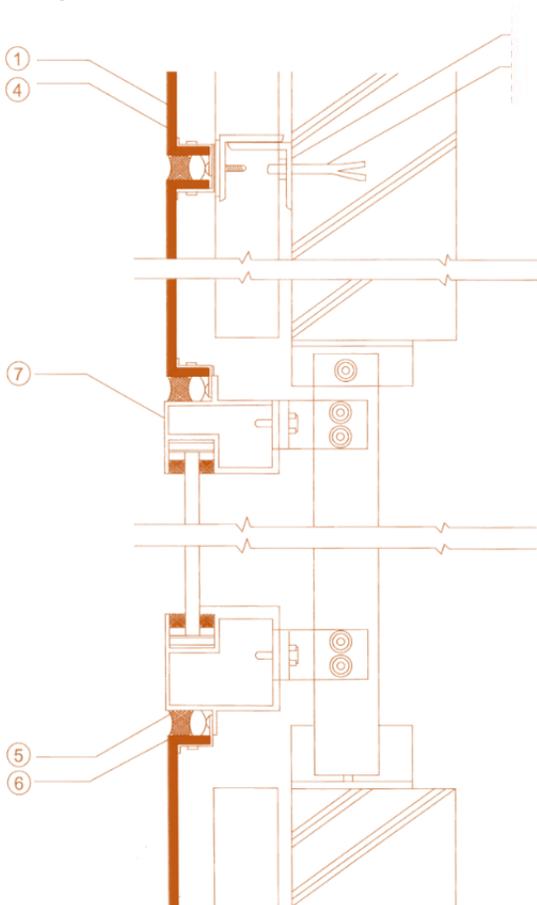
- 1. Luckybond Panel
- 2. Angle bar
- 3. Angle support
- 4. Sealing material
- 5. Lining material

Example of Repaired Building Window Frames



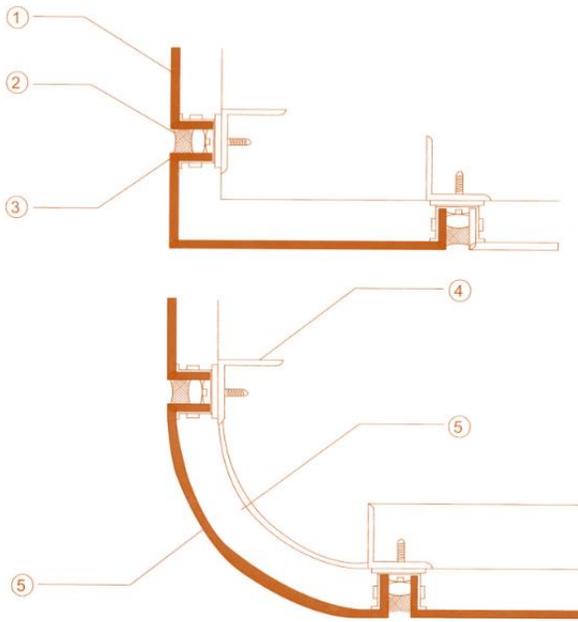
- 1. Luckybond Panel
- 2. Built-in anchoring or expanding bolt
- 3. Angle support
- 4. Angle bar
- 5. Sealing material
- 6. Lining material
- 7. Damper
- 8. Bullen screw
- 9. Window frame
- 10. The former bearing wall

Example of Window Frame



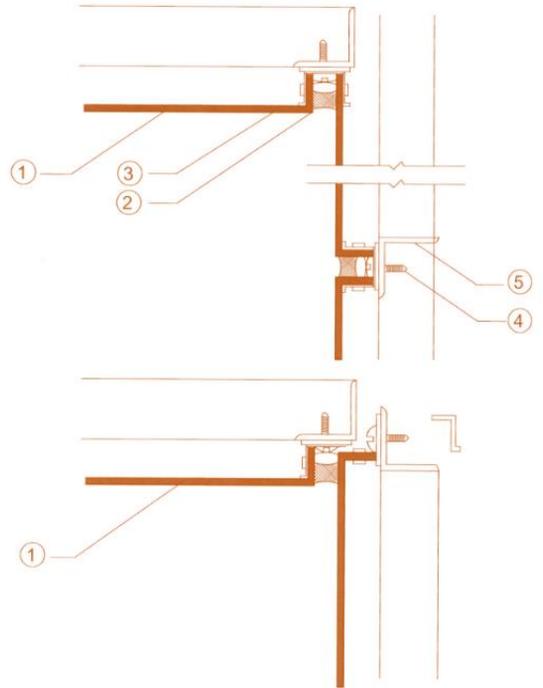
- 1. Luckybond Panel
- 2. Built-in anchoring or expanding bolt
- 3. Angle support
- 4. Angle bar
- 5. Sealing material
- 6. Lining material
- 7. External window frame

Example of external corner



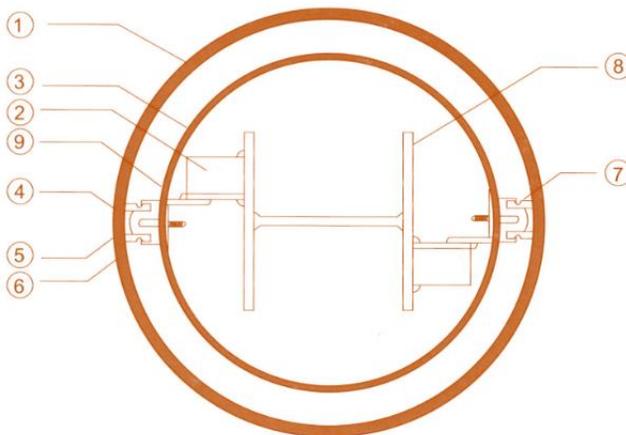
- 1. Luckybond Panel
- 2. Sealing material
- 3. Lining material
- 4. Angle bar
- 5. Bullet screw

Installation Example of Installation Corner



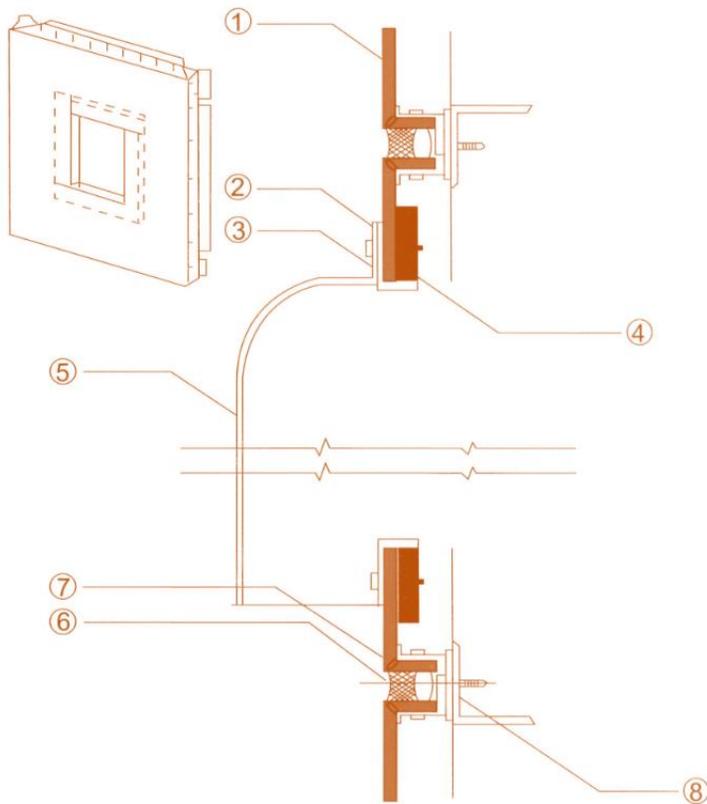
- 1. Luckybond Panel
- 2. Sealing material
- 3. Lining material
- 4. Angle bar
- 5. Steel plate strip

Example of Column Coreing



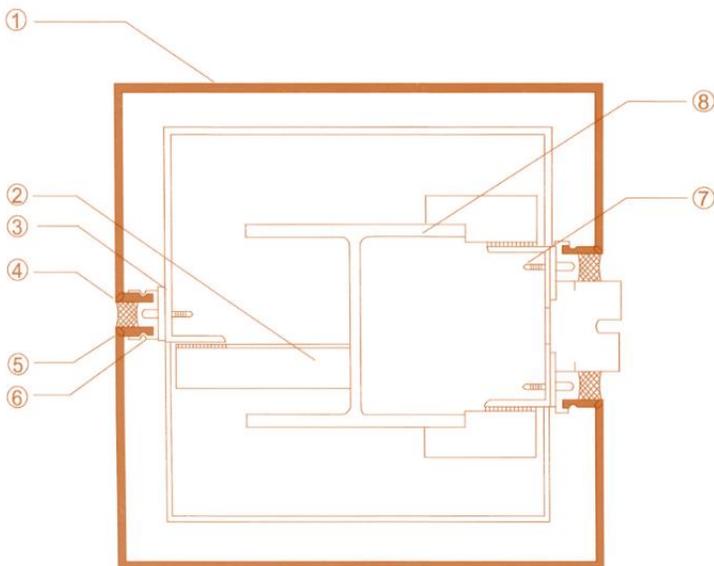
- 1. Luckybond Panel
- 2. Angle support
- 3. Steel plate strip
- 4. Sealing material
- 5. Plastic lining bar
- 6. Accessories
- 7. Bullen screw
- 8. Bearing strut

Installation Example of Equipment and Opening



- 1.Luckybond Panel
- 2.Sealing around
- 3.Tape
- 4.Veneer
- 5.Weather tight covering material
- 6.Sealing material
- 7.Lining material
- 8.Bullen screw

Example of Strut Covering



1. Luckybond Panel
- 2.Angle support
- 3.Angle bar
- 4.Sealing material
- 5.Plastic lining bar
- 6.Accessories
- 7.Bullen screw
- 8.Bearing strut

Surface Treatment



Direct-to-substrate digital printing

As the polyester lacquered Luckybond surface is very flat and homogeneously smooth it provides outstanding ink adhesion and is printable on all standard flat bed printers. All standard ACP colors as well as most of the decorative Luckybond surfaces, e.g. ACP silver finish, ACP mirror or ACP decor; are ideal printing substrates and have proven excellent printing result during the past decade.

Since Luckybond is resistant to temperatures from +80°C to -50°C, resistant to water and UV, yellow or distortion through UV lamps does not occur. Hence, digitally printed signs can be used long term and keep their color quality even outside.

Regarding the pre-treatment we recommend the same process as mentioned for screen printing. To avoid fingerprints on the surface gloves are the easiest solution. Various processing techniques such as routing, folding or bending are possible with Luckybond even after printing with solvent based inks.

Screen printing

Stove-lacquered Luckybond surface are well suited for screen printing. It is important to remove the protective film and to clean the surface using ethyl alcohol or isopropyl alcohol and a fluff-free cloth prior to printing. The alcohol must not be applied directly to the panel. Between cleaning and printing the alcohol needs approx. 10-15 minutes to evaporate. A lamination of the prints can be useful in order to achieve special surface effects or to improve mechanical or chemical properties.

New idea with new dimensions

The creative potential of ACP becomes obvious when processing the material. Small sizes, large formats and even 2000mm widths- ACP offers many possibilities and even after printing with adapted inks each format can be cut to size, shaped, formed, bent or folded.

Especially for flat applications Luckybond printing panel

High quality imaging and very efficient at the same time: Luckybond comes with an optimized lacquer system for direct-to-substrate digital printing showing excellent ink adhesion which allows advanced printing speed. The higher performance means higher output and lower costs !

Applicable for flat application such as:

Indoor and Outdoor signage

Hoardings

Photo mounting and laminating

Screen printing

Overview of direct digital print advantages

- Temperature resistant up to 80°C
- No distortion caused by UV lamps
- Low weight combined with high rigidity
- Allows wide effective spans
- Weather resistant for exterior use
- Water retardant and UV resistant
- Smooth surface optimized for digital printing
- Excellent print quality - even with very fine detail
- Thickness tolerance +/- 0.2mm
- Allows limited clearance of print heads
- Extremely flat, strong and rigid
- No distortion at fixing points
- Lacquer system optimized for direct to substrate digital printing
- excellent ink adhesion
- Cuts easily
- Clean edges, no deburring necessary

Touch-up Coating Method

Commercial or custom acrylic paints are suitable for repair coating of all finishes of Luckybond ACP. Typical procedures are as follows.

- a. Clean the surface and remove dirt, if any.
- b. Stir the paint well. Apply paint with brush or pencil-type container.
- c. Dry and cure at room temperature, as in the instructions from the manufacture.

Normally acrylic paints show good adhesion after cured, however the touched-up portion may show a slightly different appearance. As appearance of coating depends on coating method, even an exactly matched paint may show a slightly different appearance to some extent.

In Stone and Timber Finishes, use an intermediate solid color diluted with clear paint for touch-up. The suitable dilution rate is, depending on the color, 10-90% of clear content. Munsell Number attached to each color may become a guide to find the intermediate color.

Cleaning Method

(1) General cleaning

First, try water rinse using soft sponge with modest pressure to remove the stain. If the stain remains after dry, then use neutral detergents or household cleaners diluted with water. Typical cleaning procedures are as follows.

a. Dilute a detergent or a cleaner to 1-5% with water.



b. Apply the solution and spread on Luckybond ACP surface with soft rags or sponges. Wait for 1 minute, then the foam will blacken.



c. Dry the solution with a squeegee and wipe the remaining solution with wet cloth containing clean water.



According to our test, dilute Magiclean is suitable for all finishes of Luckybond ACP. Magiclean is a household detergent with pH8 from Kao Corp. If you use other detergent, pre-test it in a small area.

(2) Stubborn stain

According to our test, alkali cleaners such as Sharpshooter and Windex are applicable to strong stain, however Metallic Colors of Luckybond ACP requires good rinsing with water afterward. It is because in Metallic Colors, non-rinsing may cause a color change due to remaining alkali. In Solid Colors, Stone and Timber Finishes, rinsing with water is unnecessary.

a. Apply sharpshooter or windex with sprayer, soft cloth or sponge



b. Rinse with wet doth containing clean water



Note

Sharpshooter is a versatile cleaner from 3M(alkali,pH1 2,and Windex is a glass cleaner from Johnson(alkali,pH11).As these are alkali solutions, prevent eye and skin contact. Follow manufacturer's safety instructions.

If you use other strong cleaners or stain removers, pre-test in a small area. Generally, strong acid and alkali may cause a gloss change, color change, or swelling of coating film. Do not use cleaners containing abrasives. Do not use strong solvents and paint thinners.



LUCKYBOND



allen@luckybond.cn



+86 13867684758



CE Certificate



SGS Test Report



INTERNATIONAL
Standards Worldwide



ISO9001:2000
Certificate



ISO14001:2004
Certificate