



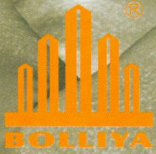
# *Aluminum Composite Panel*

It's your world, you are the designer



Guangdong Bolliya Metal Building Materials Co., Ltd





## *Aluminum Composite Panel*

### **Introduction**

Bolliya aluminium composite panel is introduced by Guangdong Bolliya Metal Building Materials Co., Ltd, who is dedicated to manufacturing, exporting, developing aluminium composite panel and innovative metal composite panel.

Ever since firstly introduced aluminium composite materials to Chinese market 14 years ago, Bolliya panels have significantly influenced the appearance of Chinese buildings and the way architectures see the world, the way people observe the city and the way we appreciate the modern world. The success of Bolliya panel is based on its excellent quality, simple fixing and easy maintenance.

Bolliya will keep bringing innovative product to architectures with economic cost while determined to be the leader supplier of composite materials world widely. Bolliya will be glad to cooperate with friends all over the world and make the earth a better place.



## Product Specification

| Size     | Thickness             | Width                              | Length                 |
|----------|-----------------------|------------------------------------|------------------------|
| Standard | 3mm 4mm 6mm           | 1220mm 1250mm 1500mm               |                        |
| Optional | 2mm 5mm 8mm 10mm 15mm | 1000mm 1300mm 1575mm 1700mm 2000mm | > 2000mm up to 11000mm |

## Dimensional Tolerances

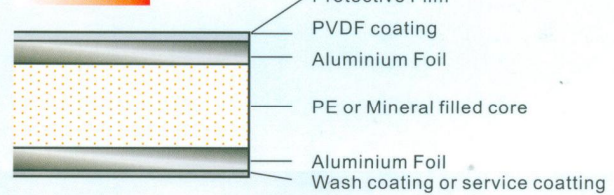
Thickness:  $\pm 0.2\text{mm}$  (mill-finish/stove lacquered/anodized)

Width:  $-0/+4\text{mm}$

Lengths: 1000-4000mm;  $-0/+6\text{mm}$

Lengths: 4001-8000mm;  $-0/+10\text{mm}$

## Structure



## Painting:

PVDF; PE; PUPA;

Aluminium Alloy: A1100 A3003 A3005 A3105 or A5005 Optional

Colors: Solid Colors, Metallic Colors, Gloss Colors. Customer's color available

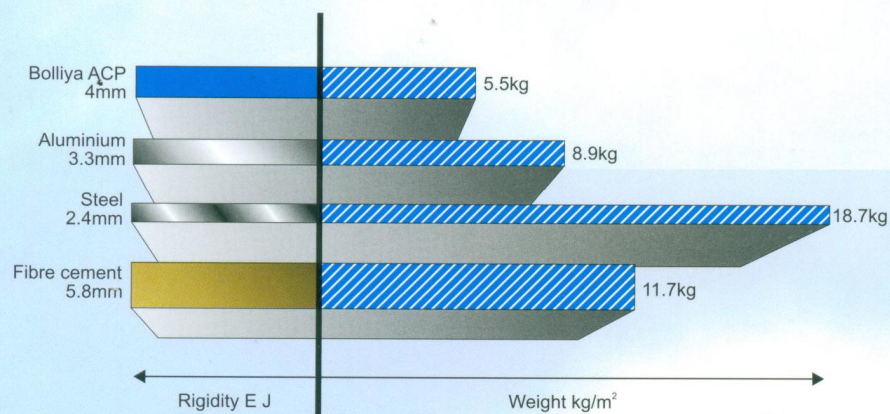
Core Material: Polyethylene; Mineral Core Materials (FRA2)

## Application: Exterior; Interior; Signage; housing; Vehicles; Elevator;

## Bolliya Aluminium Composite Panel Standard Data Sheet

| Panel Thickness             | Standard       | Unit                  | 3mm            | 4mm                    |
|-----------------------------|----------------|-----------------------|----------------|------------------------|
| Aluminium layers            |                | (mm)                  | 0.2            | 0.5                    |
| Weight                      |                | (kgs/m <sup>2</sup> ) | 3.5            | 5.6                    |
| Width                       |                |                       | 1220 1250 1500 | 1220 1250 1500         |
| <b>Technical Properties</b> |                |                       |                |                        |
| Pending Strength            | ASTM D968-2005 | Mpa                   | 60             | 124                    |
| Peeling Strength            | ASTM D903-98   | N/mm                  | 5.67           | 12.7                   |
| Pencil Hardness             | ASTM D3363-05  | HB                    | 2              | 2                      |
| Impact Resistance           | ASTM D 2794-93 | kg.cm                 | 50             | 50                     |
| Heat Distortion             | ASTM D648-06   | °C                    | 114            | 111                    |
| Elastic Modulus             | ASTM D968-2005 | Mpa                   |                | 2.47x10 <sup>(4)</sup> |
| Penetration Resistance      | KN             | KN                    |                | 8.52                   |
| Shearing Strength           | ASTM D732-02   | Mpa                   |                | 27.3                   |
| <b>Core</b>                 |                |                       |                |                        |
| Polyethylene (LDPE)         |                | g/m <sup>3</sup>      | 0.9            | 0.9                    |

## Comparison of thickness and panel weight with equal rigidity



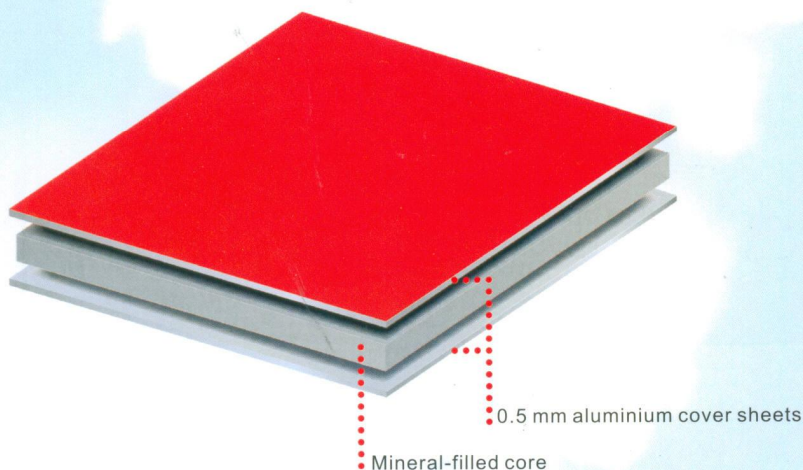




# Aluminum Composite Panel

## FR Aluminum Composite Panel

Working with Chinese National FR Test Lab and world famous FR testing organization -SGS Lab, Bolliya introduce FR Aluminum Composite Panel (B Class) to constructional application. The mineral core in between the aluminum skins improve the inflammability of composite panel while set free designer's option in selecting materials.



## Unlimited applications-

### for interiors and exteriors

- Industrial buildings
- Shopping centers
- Public buildings
- Sports-Stadiums
- Hotels
- Event halls
- Hospitals
- Railway and underground stations



## Fire behaviour of Bolliya FR panels

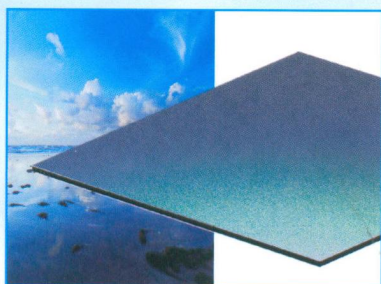
| Country          | Test accord. To...   | Results/Classification        |
|------------------|--|-------------------------------|
| EU               | EN 13501-1   | Class B, s1, d0               |
| Germany          | DIN EN 13501-1<br>DIN 4102 Part 7                                      | Class B, s1, d0<br>passed     |
| Austria          | ONORM EN 13501-1   | Class B, s1, d0               |
| Switzerland      | VKF  | Class 5.3                     |
| Russia           | GOST 30244-94<br>GOST 30402-95<br>GOST 12.1.044-89<br>GOST 12.1.044-89 | G1<br>W1<br>D2<br>T1          |
| British Standard | BS 476, Part 6<br>BS 476, Part 7                                       | Index I < 18 i < 6<br>Class 1 |



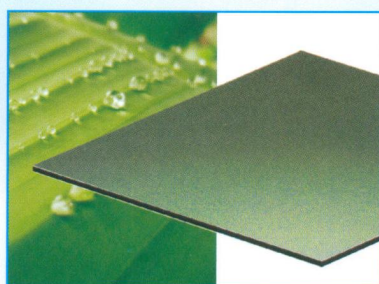
## Spectra Aluminium Composite Panel

### Color Introduction:

By corporation with world leading pigment supplier, Beckers and PPG. Bolliya introduce magical spectra color with shifting color each minute of the day. Bolliya Spectra aluminum composite panel expand the possibility of architectural design and aesthetic innovation, and the dynamic color more or less stands for the future of architectural trend.



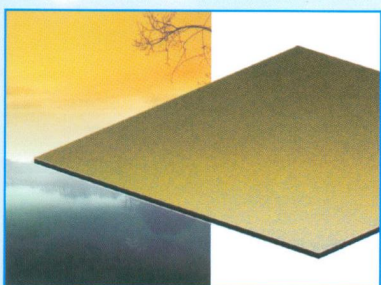
Dream Ocean



Fantasy Amazon



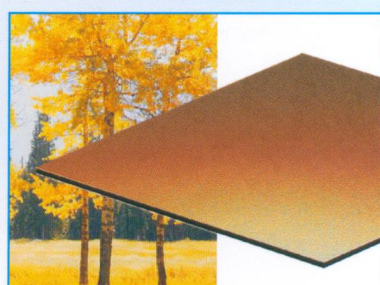
Autumn Illusion



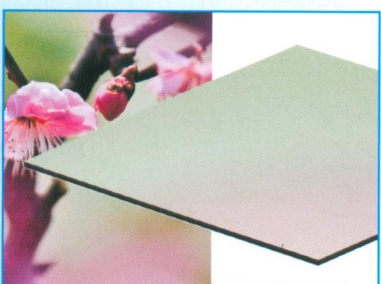
Antique Memory



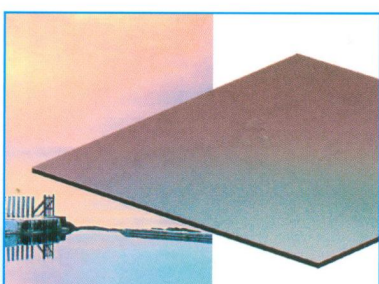
Rusty Red



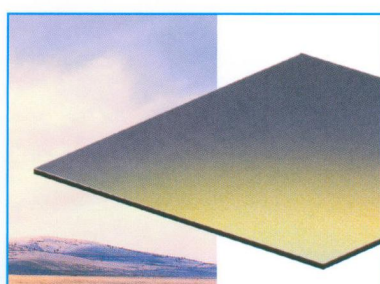
Orange Red



Fancy Sakula



Ruby Spectra



Sunset Illusion

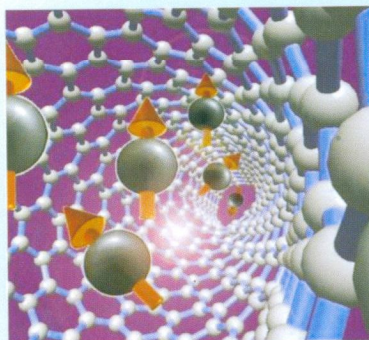




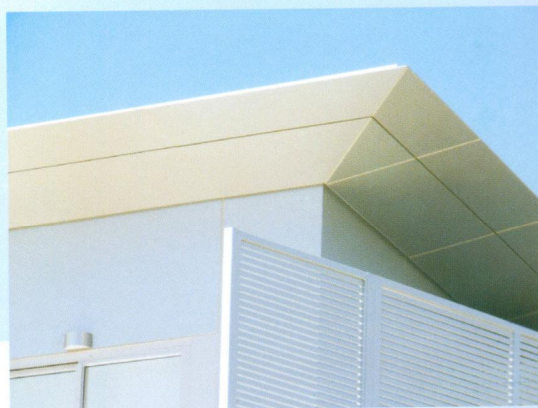
## *Aluminum Composite Panel*

### **Nano Aluminium Composite Panel**

Nanotechnology: It's based on macromolecule technology had merge into daily life, and Bolliya Nano Aluminium Composite Panel creatively combine the edge technology into cladding materials, make the building genuinely self-cleaning, free from maintenance and save the cost labor which is estimate to be great burden in near future. For another thing, this materials is environmental-friendly, excellence sample eco-human harmony.



### **Nano panel Projects in Australia**



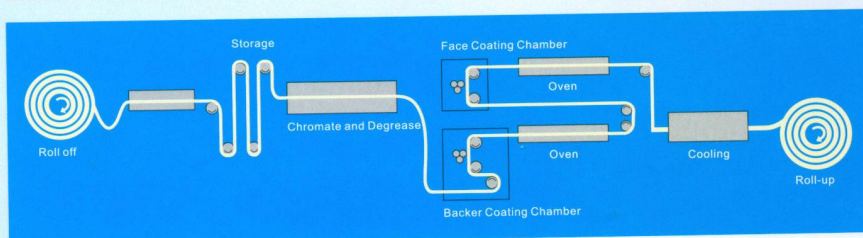


## Guangdong Bolliya Metal Building Materials Co., Ltd

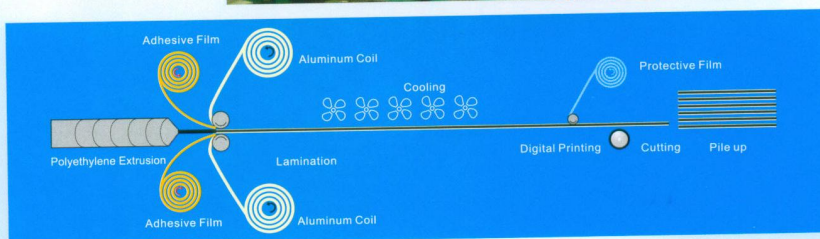
### Production and Technology

Bolliya introduce latest lamination line for aluminium composite panel. The innovative procedure of lamination is more productive, efficient, economic and green. What's more, Bolliya innovative lamination save the procedure of heating, and use the thermal energy preserved during extrusion step, which makes special metal composite panel possible: Stainless Steel Composite Panel, Copper Composite Panel, Zinc Composite Panel (see more on Bollisteel, Bollicopper and Bollizinc)

### Coating



### Lamination







# Aluminum Composite Panel

## DATABASE FOR 4MM 0.5/0.5 PVDF PANELS

### Principle Properties:

| Test Name                     | Standard                | Unit                  | Test Result |
|-------------------------------|-------------------------|-----------------------|-------------|
| Panel Weight                  | ASTM                    | Kg/m <sup>2</sup>     | 5.8         |
| Thermal Expansion             | D969                    | *10 <sup>-7</sup> /°C | 23          |
| Apparent Thermal Conductivity | C 976 REPLACED BY C1363 | Kcal/m.hr.°C          | 0.41        |
| Deflection Temperature        | D648                    | °C                    | 95          |

### Mechanical Properties

| Test Name                     | Standard | Unit                                 | Test Result |
|-------------------------------|----------|--------------------------------------|-------------|
| Tensile Strength              | ASTM E8  | kg/mm <sup>2</sup>                   | 5           |
| Yield Strength                | E8       | kg/mm <sup>2</sup>                   | 4.7         |
| Elongation                    | E8       | %                                    | 12          |
| Flexural rigidity (20cm span) | C393     | x10 <sup>-5</sup> kg.mm <sup>2</sup> | 15          |
| Flexural Elasticity           | C393     | kg/mm <sup>2</sup>                   | 3980        |
| Shear Reissitance             | D732     | kg/mm <sup>2</sup>                   | 2.3         |

### Mechanical Properties of Skin Aluminium: A1100

| Test Name          | Standard | Unit               | Test Result |
|--------------------|----------|--------------------|-------------|
| Yield Strenght     | ASTM E8  | kg/mm <sup>2</sup> | 13.5        |
| Flexual Elasticity | C393     | kg/mm <sup>2</sup> | 6800        |

### Painting Dry Film Properties

| Test Name            | Standard                    | Unit | Test Result   |
|----------------------|-----------------------------|------|---------------|
| 60' gloss            | ASTM D523-89                | %    | 30-95         |
| Formability (T-Bend) | D1737-62 (ASTM D522?)       | T    | 2             |
| Hardness pencil      | ASTM D3363-92a              | H    | 1-2H          |
| Adhesion             | ASTM D3359, Method 8        |      | No change     |
| Abrasion Resistance  | ASTM D968-93 (falling Sand) |      | 25 liters/mil |
| Chemical Resistance  | ASTM D1308-79               |      | No change     |
|                      | ASTM D1308-79               |      | No change     |
|                      | AAMA 2605-05 Section 7.7.2  |      | No change     |
|                      | ASTM D2248-73               |      |               |

### Weatherability

|                     |                          |           |
|---------------------|--------------------------|-----------|
| Color Retention     | ASTM D2244-93            | Qualified |
| Gloss Retention     | ASTM D523-89             | Qualified |
| Chalking            | ASTM D4214-89            | Qualified |
| Salty Spray         | ASTM D-B117-90&NCCA 11-2 | Qualified |
| Humidity Thermal    | ASTM D2246-65            | Qualified |
| Humidity            | ASTM D2247-94            | Qualified |
| Condensing Humidity | ASTM D4585-87            | Qualified |

### Wind load and permissible Panel Size

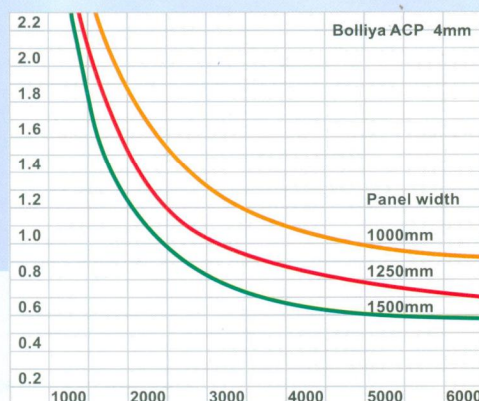
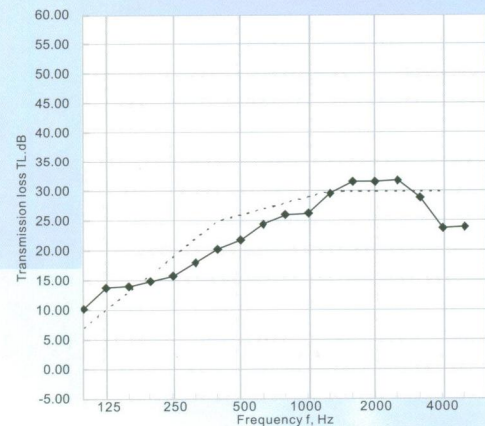


Fig.1 Transmission loss diagram





## SGS Test Report

**SGS**

**TEST REPORT**

No. : GZMR11081800  
Date : Sep 06, 2011  
Page : 1 of 13

GUANGDONG BOLLIYA METAL BUILDING MATERIALS CO., LTD.  
NO.8, XINGYE ROAD, YANYUAN INDUSTRY ZONE, XINGTAN TOWN, SHANDE DISTRICT, FOSHAN CITY GUANGDONG CHINA.

The following sample(s) were submitted and identified on behalf of the client as:

Sample Name: ALUMINUM COMPOSITE PANEL  
Material: COATED ALUMINUM COIL, LOW-DENSITY POLYETHYLENE, MACROMOLECULAR ADHESIVE FILM  
Size: 1250x3440x4MM  
Spec. Manufacturer: GUANGDONG BOLLIYA METAL BUILDING MATERIALS CO., LTD  
SGS Ref No.: GPT11082030, KV-11-078564  
Test Performed: Selected tests as requested by applicant  
Date of Report: Aug 18, 2011  
Test Period: Aug 18, 2011 to Aug 24, 2011

Test result(s): Please refer to the following page(s)  
\*\*\*\*\*To be continued\*\*\*\*\*

Signed for and on behalf of  
SGS CERT Ltd

May Hua  
Engineer

SGS

GZMR 0121763

Member of the SGS Group (SAS SA)

**SGS**

**TEST REPORT**

No. : GZMR11081800  
Date : Sep 06, 2011  
Page : 2 of 13

**Test Information:**  
1. Sample description: See photo

| No. | Test Item           | Test method                 | Test condition   | Result  |
|-----|---------------------|-----------------------------|--|---|
| 1   | Coating thickness   | ASTM D7091-05               | ---  | 27.0µm  |
| 2   | Gloss               | ASTM D523-08                | 60° geometry   | 27  |
| 3   | Pencil hardness     | ASTM D3363-09(2011)         | Pencil: Mitsubishi®  | Scratch hardness: 2H (see note 1)               |
| 4   | Bend resistance     | ASTM D522-08a(2008)         | ---  | No cracking at the minimum measured diameter(s) |
| 5   | Adhesion            | ASTM D3359-09 method B      | Tape: Permaseal 99<br>Space: 1mm   | Classification: 5B (see note 2)                 |
| 6   | Impact resistance   | ASTM D2784-09(2010)         | Diameter of the punch: 12.7mm  | Impact failure and point: 1.3kg/m               |
| 7   | Adhesion resistance | ASTM D665-09(2010) method A | Line of adhesion: 76.8µL<br>Coating thickness: 0.08mm  | Adhesion resistance: 76.8µL/m <sup>2</sup>      |
| 8   | Water resistance    | ASTM D675-09                | Immersion, 90°C, 2h  | Appearance: No visual change                    |
| 9   | Dirty resistance    | ASTM D2084-01(2008)         | Cheesecloth: 40 × 40mm<br>4 intact layers<br>No. 8 rubber stopper<br>Load: 500g<br>condition: 60°C, 1h | Numerical value: 10 (see note 3)                |

\*\*\*\*\*To be continued\*\*\*\*\*

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**SGS**

**TEST REPORT**

No. : GZMR11081800  
Date : Sep 06, 2011  
Page : 3 of 13

| No. | Test Item                                 | Test method                                     | Test condition  | Result  |
|-----|---|---|---|---|
| 10  | Alkali resistance                         | ASTM D1308-03(2007) clause 7.2                  | 10 drops of 10% NaOH<br>Spot test, 16h<br>(see note 4)  | Appearance: No visual change                      |
| 11  | Acid resistance                           | ASTM D1308-03(2007) clause 7.2                  | 10 drops of 10% H <sub>2</sub> SO <sub>4</sub><br>Spot test, 16h<br>(see note 4)  | Appearance: No visual change                      |
| 12  | Oil resistance                            | ---   | Exposure oil  | Appearance: No visual change                      |
| 13  | Solvent resistance                        | ASTM D5402-06(2011) method A                    | Solvent: MEK<br>Rub rate: 10cycles<br>Number of double rubs: 25cycles<br>(see note 5)   | Appearance: No visual change                      |
| 14  | Color retention                           | ASTM D2005-2005 7.1                             | Take a reference point on the sample as color standard  | ΔE <sub>10</sub> < 0.20 (See note 5)              |
| 15  | Adhesion (reverse impact 180° crosshatch) | ASTM D3359-09 method B and client's requirement | Diameter of the punch: 12.7mm<br>Impact model: extrusion<br>Space: 15mm<br>Tape: Permaseal 99   | Classification: 5B (See note 2)                   |
| 16  | Coefficient of linear thermal expansion   | ASTM D698-08                                    | Test temperature range: Ramp 10°C/min from -30°C to 30°C<br>Purge gas: Nitrogen (N <sub>2</sub> ), Purify 99.999%<br>Flow rate: 500ml/min<br>Measurement Direction: Thickness | 103.8 × 10 <sup>-6</sup> / °C (See test specimen) |

\*\*\*\*\*To be continued\*\*\*\*\*

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**SGS**

**TEST REPORT**

No. : GZMR11081800  
Date : Sep 06, 2011  
Page : 4 of 13

| No. | Test Item                   | Test method  | Test condition  | Result                 |
|-----|-----------------------------|--|---|------------------------|
| 17  | Density                     | ASTM D792-04 Method B  | Absolute alcohol, 23±0.5°C  | 1.440g/cm <sup>3</sup> |
| 18  | Tensile strength            | ASTM D638-10   | Specimen: Type I<br>Specimen thickness: 3.95mm<br>Testing speed: 5mm/min                              | 81.68MPa               |
| 19  | Flexural strength           | ASTM D790-10   | Specimen: 128-T3 17F3 96mm<br>Testing speed: 1.7mm/min<br>Span: 64mm                                  | 1286MPa                |
| 20  | Flexural modulus            | Procedure A and client's requirement                             | Specimen thickness: 3.95mm<br>Punch diameter: 25.0mm<br>Separation speed: 1.3mm/min                   | 11728MPa               |
| 21  | Shear strength              | ASTM D732-10   | Specimen width: 25mm<br>Testing speed: 152.4 mm/min   | 34.24MPa               |
| 22  | Shear resistance            | ---  | Specimen width: 25mm<br>Testing speed: 152.4 mm/min   | 10554N                 |
| 23  | 180° Peel strength          | ASTM D695-08(2010)   | Specimen width: 25mm<br>Testing speed: 152.4 mm/min<br>Condition: Dip in 100°C boiling water, 20min - | 0.95kg/cm              |
| 24  | Peel torque                 | With reference to ASTM D1781-96(2004) and client's requirement   | Specimen width: 25.0mm<br>Testing speed: 25mm/min   | 14.8mm kg/cm           |
| 25  | Heat deflection temperature | With reference to ASTM D648-07 Method B and client's requirement | Specimen width: 13.50mm<br>Specimen depth: 4.05mm<br>Rate of temperature: 120°C/h<br>Load: 1.63MPa    | 97.3°C (see note 6)    |

\*\*\*\*\*To be continued\*\*\*\*\*

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**SGS**

**TEST REPORT**

No. : GZMR11081800  
Date : Sep 06, 2011  
Page : 5 of 13

**26. Sound Transmission loss**

**I. Test reference**

- ASTM E914-09 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
- ASTM E413-10 Classification for Rating Sound Insulation

**II. Sample Details**

| Sample Details                  | Thickness: 4.0mm, surface density 5.0kg/m <sup>2</sup>   |
|---------------------------------|--|
| Relative humidity               | 66.1%  |
| Volume reverberation room       | 125m <sup>3</sup>  |
| Description of test arrangement | The sample has not disassembled, and the gas was filled by dense Elasticomeric Silicone Rubber Gaskets |

**IV. Test result**

Sound transmission class (STC): STC > 45dB

\*\*\*\*\*To be continued\*\*\*\*\*

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**SGS**

**TEST REPORT**

No. : GZMR11081800  
Date : Sep 06, 2011  
Page : 7 of 13

**Notes:**

- In ASTM D2242, 9H is the hardest and 6B is the softest.
- In ASTM D3359 method B, 5B is the best and 0B is the worst.
- In ASTM D2084, 10 is the best and 0 is the worst.
- NATURAL, ALKALI, ACID, MEK, OIL.
- ΔE<sub>10</sub> values were measured by sphere spectrophotometer, and under D50 standard light source with 2° observer.
- The result was for reference only due to the testing equipment.
- Sample 1 was used for test item 1-5 and 8-16, sample 2 was used for test item 4.
- The test item 10 was conducted in SGS Taiwan Ltd. And the test item 20 has been subcontracted to the accredited laboratory.
- The predicted flow of test item 17-25 were ripped off before test.
- Test specimen of test item 17 and 18 were cut from the sample.

\*\*\*\*\*To be continued\*\*\*\*\*

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GZMR 0121763

Member of the SGS Group (SAS SA)



SGS

TEST REPORT

No. : 02NMI10018100

Date : Sep 06, 2011

Page: 8 of 13

Test Results

Sample ID: 14.02048

Date: 11/02/2006

TMA

Client: C/O. Schaeffler AG, 28101-28001-11, 67050-001

Operator: Mike Hain

Plot Date: 19/04/2011 11:22

Instrument: TMA G200 V7 A Build 00

Dimensional Change (µm)

Temperature (°C)

30.0015  
Extrapolated Sample °C

Extrapolate to 13.5 for instrument

\*\*\*\*\* To be continued \*\*\*\*\*

Method: Dimensional Change by TMA using G200 V7 A Build 00  
 10/06/2011 11:22:22

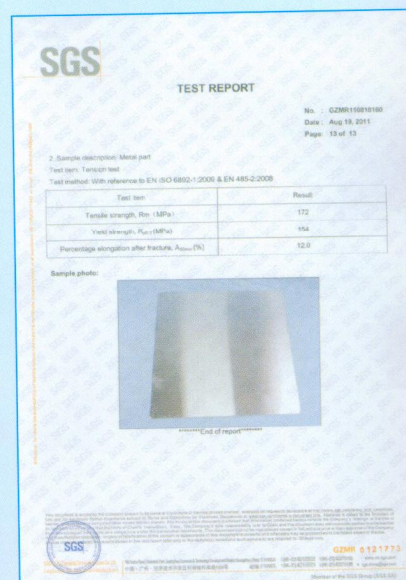
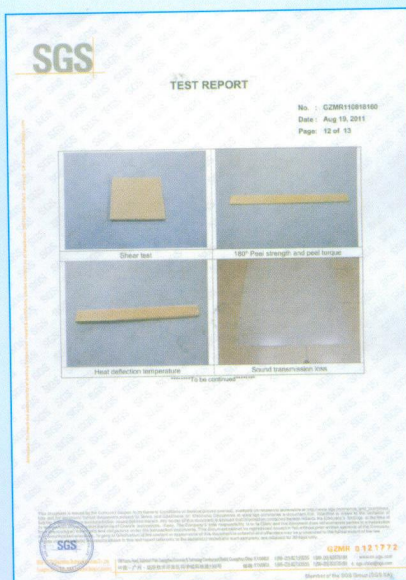
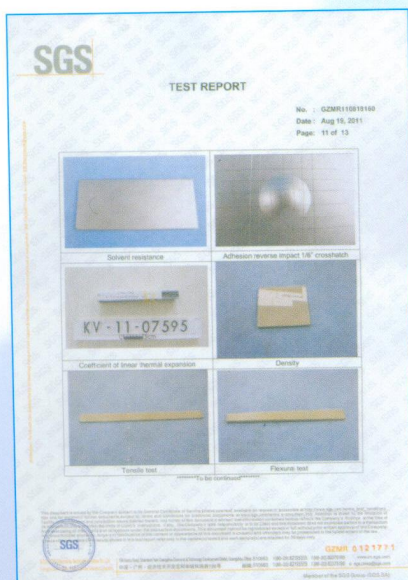
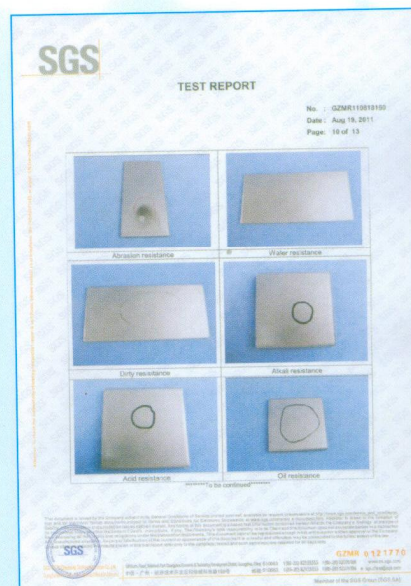
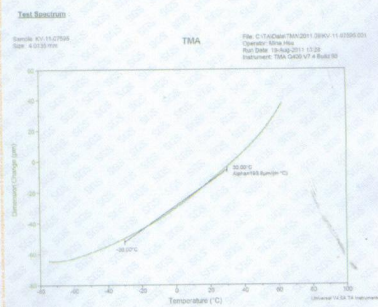
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Method of the SGS Group (SGS, SCS, SLS)





## Processing at a glance

### Cutting to shape



#### Sawing

- with vertical panel saw, circular or jig saw



#### Cutting

- (slight drawing of the panel cover sheet), cushion clamp

### Shaping



#### Bending

- with folding machine or bending press, min. inner radius

### Punching/Decorative work



#### Punching

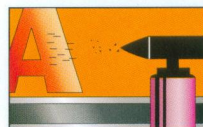
- with conventional sheet punching machines. For clean cuts please use evenly ground tools. Drawing of the panel cover sheet



#### Contour cutting

- with water torches, CNC machining centres and jig saws

### Surface treatment



#### Lacquering

- overlacquering of Bolliya panels surfaces possible with suitable lacquer qualities

### Joining



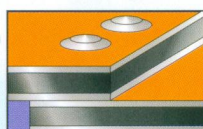
#### Drilling holes for joining

- with drill bits for aluminium sheet and plastic panels



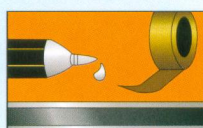
#### Welding

- the PE core material with hot-air welding devices and PE welding rod



#### Riveting

- with normal tools and rivets or blind rivets



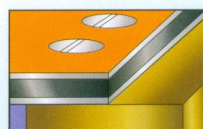
#### Glueing

##### Outdoor use

- adhesive sealing compound

##### Indoor use

- metal adhesives for aluminium
- double-sided adhesive tape



#### Screwing

- with normal stainless steel screws or bolts for wood, sheet or metal

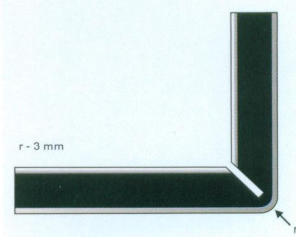
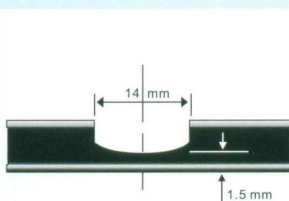
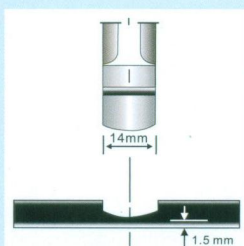
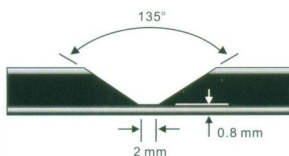
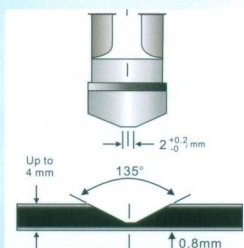
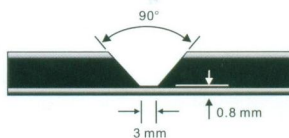
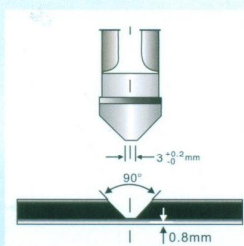


#### Clamp connections

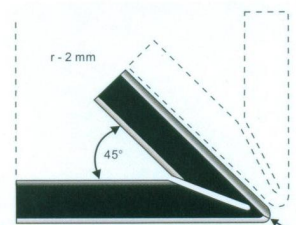
- with toothed butt joint and corner sections for 3, 4 and 6 mm

## Processing

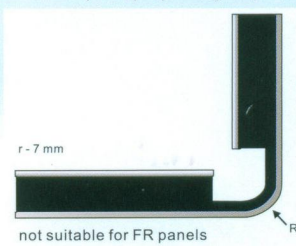
### Grooving details



Groove(V-shaped) for edges up to 90°



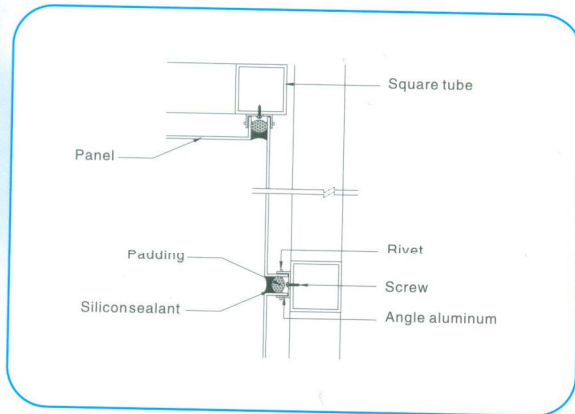
Groove 135° (V-shaped) for edges up to 135°



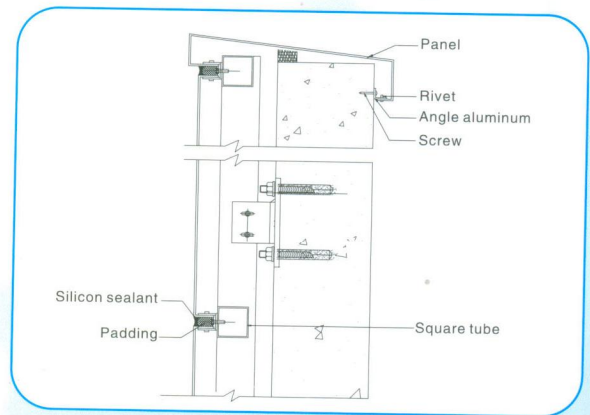
Rectangular groove for edges up to 180° depending on panel thickness



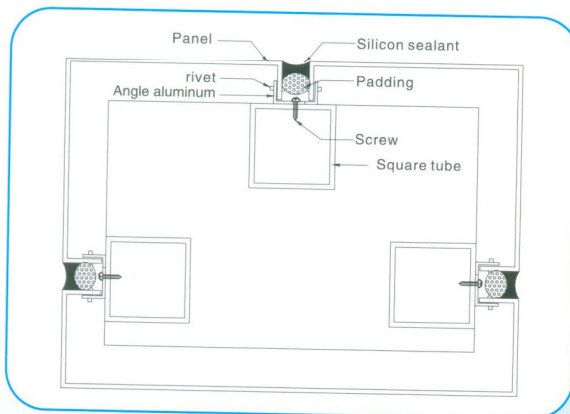
## Installation Instruction (Seal-up System)



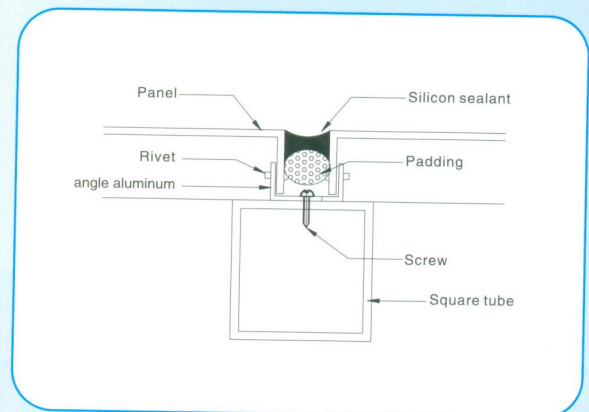
Internal Turning



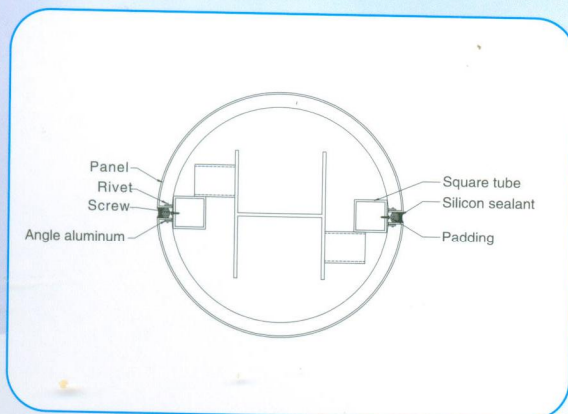
Roof Pressing



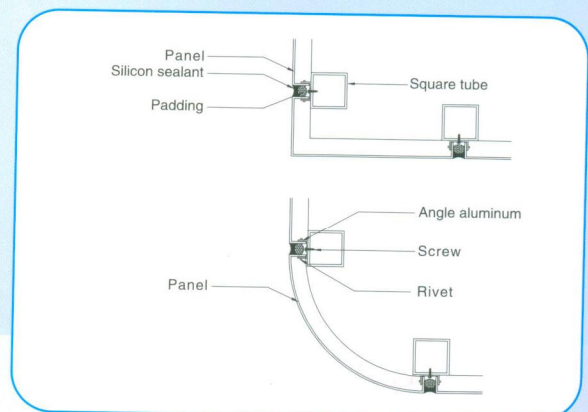
Square Column



Regular



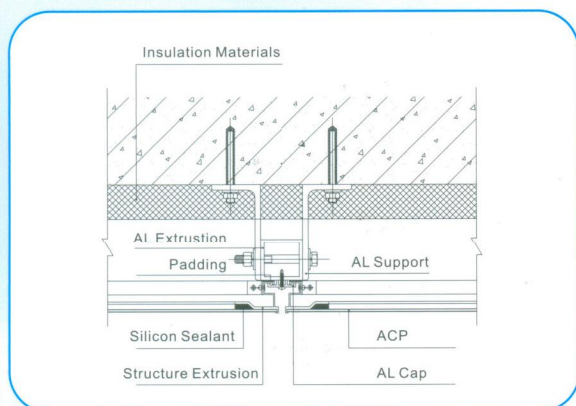
Column



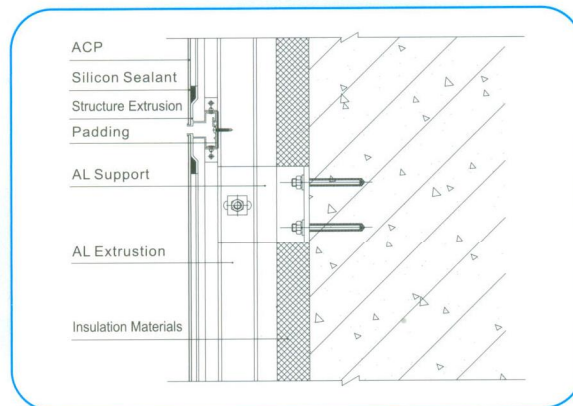
External Turning



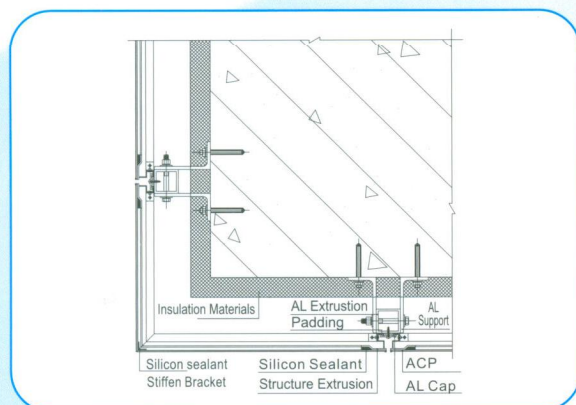
## Installation Instruction (Open-up System)



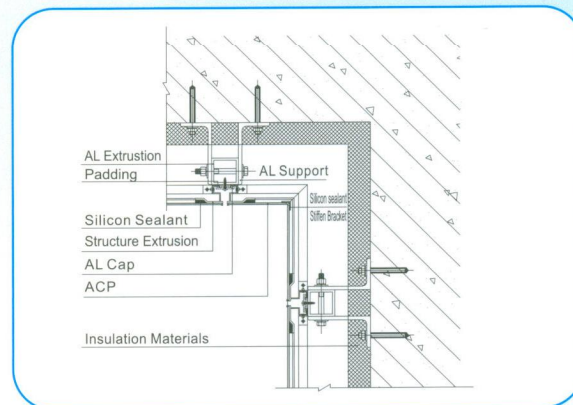
Regular



Vertical

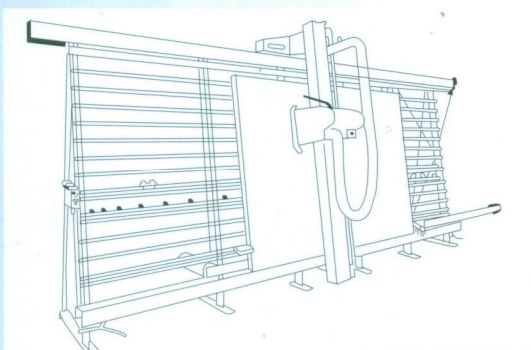


External Turning

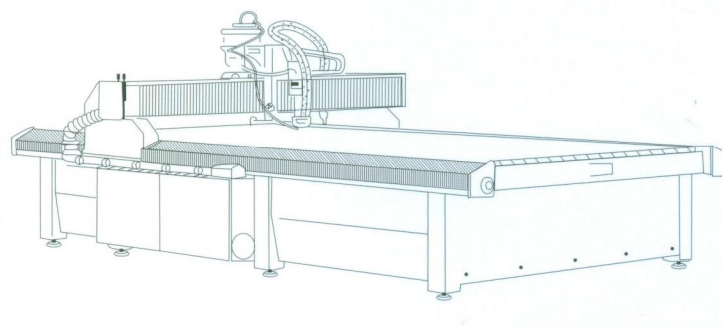


Internal Turning

## Grooving machineries



Vertical Saw



Horizontal Saw





# Aluminum Composite Panel

## Necessary Advice Information

### Environment, Safety and Health

For Bolliya ACP, effective, continuous environmental protection is a main priority. It is of utmost importance to preserve natural resources in order to ensure a livable tomorrow for future Generations.

It commits itself to continuous self-improvement programmes for environmental protection, many of which go above and beyond countries' regulations. It is also in this area that Bolliya ACP strives to be a leader in its field.

We are ISO 9001 and 14001 company.

### Storage / Handling

- Protect Bolliya ACP pallets during storage against rain, seeping in of moisture and condensation.
- Only pallets of identical size should be stacked, with a maximum of 7 pallets stacked on top of each other.
- Avoid storing the product for more than 6 months, as it may become hard to remove the protective film.
- When stacking the panels, nothing should be placed in between them, as this could produce dents on the panels.

### Recycling

Bolliya ACP can be fully recycled, i.e. both the core material and the aluminium cover sheets can be recycled and used for the production of new material.

### Warranty

Bolliya ACP stands for high quality and longevity. Warranties according to the product specification and approved field of application can be obtained upon request.

### Installation

To avoid possible reflection differences (for metallic, and spectra colours), it is recommended to install the panels in the same direction as marked on the protective peel-off-film. Colour variations may occur between panels originating from different production batches. To ensure colour consistency, the total requirement for a project should be placed in one order.

### Protective Film

- To avoid glue residuals on the surface of the panels due to UV radiation, it is recommended to remove the protective film as soon as possible after the installation.
- The protective film and the panel surfaces must not be marked using ink (marker), adhesive tapes or stickers, as the lacquered surfaces could be damaged by solvents or plasticizers.
- Make sure to remove the protective film as soon as possible after installation as prolonged exposure to the elements could make the film difficult to remove.







Honda Guangzhou  
PF809 White 12000sq.m



Shenzhen Gulf Stadium  
PF809 White 40000sq.m



Jiji center Shenzhen  
20000sq.m PF811 Silver



Triumph Hotel Huibei  
8000sq.m PF811 Flash Silver

Asia Steel Center Guangzhou  
8000sq.m PF811 Flash Silver



Mutsunichi Shenzhen Plaza  
6000sq.m Ti-Zinc Composite Panel Blue Grey



malaysia mayfair hotel  
PF Series 20,000sq.m



Huamao Center  
Ti-zinc Composite Panel Blue Grey 6000sq.m



Pearl Palace Hainan  
PF809 White 8000 sq.m





[www.bolliya.com](http://www.bolliya.com)

*Bolliya, makes your architectural dream come true...*



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TEL: +86-0757-22890830/22890832 FAX: +86-0757-22890820

<http://www.bolliya.com> Email: [sales@bolliya.com](mailto:sales@bolliya.com)