

# MED<sup>®</sup>

*Aluminium Composite Panel*



## Introduction

Shanghai Huayuan New Composite Materials Co., Ltd. is a joint venture. The company with a total investment of 16 million US Dollar specializes in producing and manufacturing metal composite materials, included Aluminum Composite Panel, Copper Composite Panel, Stainless Steel Composite Panel, Zinc Composite Panel, GI Composite Panel, Metal / Metal Plate, Film GI and Specialty Solid Aluminum Panel.

Our products are awarded as "China Well-known Trademark", "China Top Brand" and "National Products Exempt From Inspection".

The company was certified with ISO9001 in Quality Management Systems, ISO14001 in Environmental Management Systems, OHSAS18001 for Occupational Health and Safety and BSCI (Business Social Compliance Initiative) certification. The products also passed 3C (Certificate for China Compulsory Product Certification), CTC (China Building Materials Certification) and CE Attestation of European Union.

Only our product obtained the certificate of "Adopting International Standard Product Mark" of SAC in this industry. After tested and certified by SGS, UK INTERTEK and Singapore PSB, the quality has conformed to the standard of ASTM E84, E119, NFPA285, EN13501 and BS-476.

The company is exclusively authorized as "China Aluminum Composite Panel Quality Test & Training Base". The ACP association do training activity here such as Quality Management, Quality Control, QC Training, and also do activity for making and revising the national standard here.

The annual output for HuaYuan composite panels is 8 Million square meter. The company can produce almost all kinds of metal composite panel in the world, which is authorized as "High-tech enterprise of Shanghai City". Our Copper Composite Panel, Zinc Composite Panel, Stainless Steel Composite Panel and Metal / Metal Plate have obtained 53 National Patent, and are listed in the "Shanghai High-Tech Achievements Transformation Projects", "Shanghai Key New Product" and "Shanghai Scientific and Technical Achievement", also authorized First Prize of Technological Innovation Award in China Building Materials Industry, Scientific And Technological Innovation Award and Technology Innovation Award for Technology Demonstration Project in national building decoration industry.

Now, the company is the vice chairman of China Building Materials Industry Association ACP Branch, the vice chairman of Shanghai Building Materials Industry Association and elected as Premium Member of ICA Asian Copper Deco Alliance. (No Chairman Member both)

We have built a sales network in 26 provinces in China and many agencies in 80 countries. We are the great enterprise with the first sales volume and first export of metal composite panel in China, continually leading China metal composite material industry.





## Main Reputation

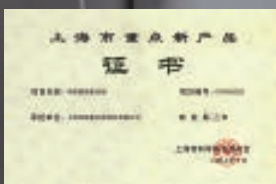
- CHINA WELL-KNOWN TRADEMARK
- CHINA TOP BRAND
- NATIONAL PRODUCTS EXEMPT FROM INSPECTION
- NATIONAL CONSUMER SATISFACTION EXCELLENT MANAGER
- NATIONAL MODERNIZED ENTERPRISE MANAGEMENT INNOVATION 2ND-CLASS AWARD
- ENTERPRISE OF EXCELLENT ECONOMIC AND EXPORT PERFORMANCE COUNTRYWIDE
- CHINA ALUMINUM COMPOSITE PANEL QUALITY TEST & TRAINING BASE
- CHINA MOST POWERFUL ENTERPRISE AND BRAND IN CHINA ACP INDUSTRY
- SU ZHE WAN GAN HU QUALITY WORK ADVANCED UNIT
- TOP 100 OF SHANGHAI FAMOUS BRAND PRODUCT
- SHANGHAI FAMOUS BRAND FOR EXPORTS
- SPECIAL DEVOTION TO BUILD FAMOUS BRAND
- HIGH-TECH ENTERPRISE OF SHANGHAI CITY
- SHANGHAI NEW LONG MARCH SHOCK BRIGADE
- THE FIRST CORPORATE CREDIT RATING IN SHANGHAI BUILDING WALL MATERIAL
- TOP TEN TAXPAYERS ENTERPRISES AND TOP TEN OUTCOME ENTERPRISES IN SHANGHAI
- ZHANGJIANG HIGH TECH ZONE QINGPU BRANCH
- THE VICE CHAIRMAN OF CHINA BUILDING MATERIALS ASSOCIATION ACP BRANCH (NO

### **(CHAIRMAN MEMBER)**

- THE VICE CHAIRMAN OF SHANGHAI BUILDING MATERIALS INDUSTRY ASSOCIATION (NO CHAIRMAN MEMBER)



# Certificate



# Ten Items First in China ACP industry

## Shanghai Huayuan

### Ten Items First in China ACP industry

1. FIRST GAINER OF CHINA WELL-KNOWN TRADEMARK, NATIONAL PRODUCTS EXEMPT FROM INSPECTION AND CHINA TOP BRAND;
2. FIRST SALES VOLUME;
3. FIRST EXPORT VOLUME;
4. FIRST ECONOMIC BENEFIT;
5. FIRST REPUTATION;
6. FIRST CATEGORY AND SPECIFICATION;
7. FIRST ADVANCED FACTORY, MACHINE AND INSPECTING EQUIPMENT;
8. AT PRESENT, THE HIGHEST PROJECT OF ALUCOBEST BRAND ACP APPLICATION IN CHINA IS JILIN GOVERNMENT ADMINISTRATION MANSION;
9. AT PRESENT ,THE MOST QUANTITY IN ONE PROJECT FOR ALUCOBEST BRAND ACP APPLICATION IS FORMULA 1 SHANGHAI INTERNATIONAL CIRCUIT;
10. EXCLUSIVE ACP QUALITY TEST AND TRAINING BASE (Only the enterprise with admittedly most advanced management, technology, inspecting measurements could be denominated.) EXCLUSIVE ADOPTING INTERNATIONAL STANDARD PRODUCT MARK IN ACP INDUSTRY.

# Aluminium Composite Panel

Aluminium Composite Panel Structure

Flame-retardant non-toxic plastic core material (Polyethylene core)  
Non-toxic plastic core material (Mineral filled core)  
Adhesive film  
Chromate treatment  
Aluminum skin  
Chromate treatment  
Fluorocarbon resin prime  
Fluorocarbon resin finish  
Fluorocarbon resin varnish  
Protective film

Chromate treatment  
Aluminum skin  
Chromate treatment  
Back coating (optional)

## Standard Specification

1250mm, 1550mm (Width)

3mm, 4mm, 5mm (Thickness)

0.3mm, 0.4mm, 0.5mm (Aluminium Skin Thickness)

## Standard Color

45 kinds

## Special size

(Thickness) : 2mm, 5mm, 6mm

(Width) : 1000mm, 1250mm, 1550mm, 2000mm

(Length) : <6000mm

## Special color

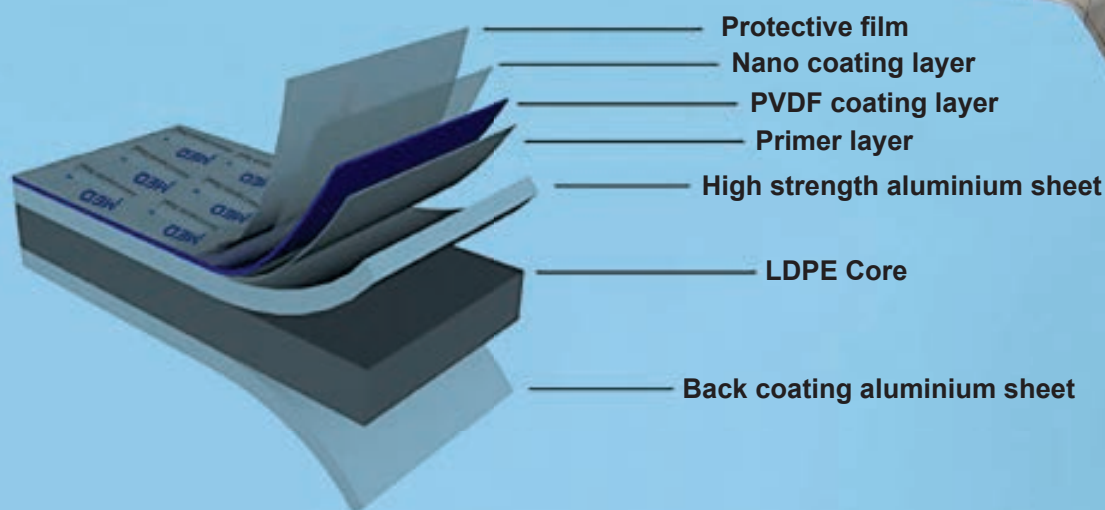
many kinds meet your request

## Application

1. Wall Curtain
2. Repaired Building
3. Advertising plate, signage, show plate form

# Product Classification

Nano Composite Panel



## Specification of Nano self-cleaning aluminium Composite Panel

Panel thickness	3mm,4mm,5mm,6mm
Panel width	1000mm,1220mm,1250mm,1350mm,1500mm,1570mm
Panel length	2440mm-5800mm,or per customer's request
Alu. skin thickness	0.25mm,0.30mm,0.35mm,0.40mm,0.45mm,0.50mm
Standard size	1220(W) ×2440(L)mm
Core	Normal PE core

### 1. Features

As a result of its low coating tension, the dust is difficult to adhere on the surface of the panel. It can be easily washed away by little rain. This could save you a lot of time cost and labor cost for wall panel cleaning.

### 2. Environment protection

Super aging resistance, no coating change, no pollution, anti-acid, anti-alkali, solvent resistance.

### 3. Durable

The Nano aluminium composite panel is more durable, and has advantages like weather resistance, temperature resistance, friction resistance, pollution resistance, and aging resistance comparing with traditional PVDF panel.

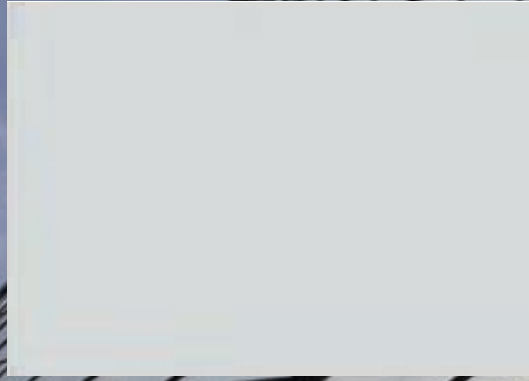
# Product Classification

Nano Composite Panel

## Compare with normal ACP



Normal ACP After 30 seconds cigarette burning (with scald mark)



Nano ACP after 30 seconds cigarette burning (No Scald)

## Nano(PVDF) ACP Parameter

Testing Item	Standard	Result
Unit weight	ASTM D792	T4mm=5.5kg/m <sup>2</sup>
Thermal expansion	ASTM D696	24-28
Thermal deformation temperature	ASTM D648	115°C
Thermal conduction	ASTM 976	0.102kcal/m.hr°C
Flexural rigidity	ASTM C393	14.0*10 <sup>^5</sup>
Impact resistance	ASTM D732	1.640kgf
Adhesive strength	ASTM D903	0.77kg/mm
Flexural elasticity	ASTM D790	4032kg/mm <sup>2</sup>
Shear resistance	ASTM D732	2.7kgf/mm <sup>2</sup>
Fire propagation	ASTM E84	QUALIFIED
Wind-pressure resistance	ASTM E330	PASS
Properties against water	ASTM E331	PASS



# Product Classification

## Excellent torsion strength

With varieties of advanced equipment and strict control, MED brand panel features high strength with excellent torsion strength and bending strength under heavy loads, and also excellent weather resistance



## Excellent impact resistance

It features good impact resistance, toughness, bending rigidity, it will not be damaged when it's suffering from sand blown by wind.



## Easy processing and installation

MED panel is easy to process for its light weight(3.5-5.5kg/sqm). All cutting, milling, planing, slotting, side-folding and curving can be easily fulfilled by simple tools used for processing timber and metal. Both indoor and outdoor decoration can be implemented simultaneously so as to raise working efficiency and short working time.



## Excellent weather resistance

MED panel coated with fluoro-carbon(PVDF) resin, it features good lightness, strong adhesion, and alkali resistance, powdering resistance of ultraviolet light.



## Even coating & various color

Dealing with the surface of aluminum material, and with the application of Henkel technology, it makes the paint and panel stamped with a very strong even force, and various color for your choice.



## Outstanding characteristics of fireproofing

MED brand fireproof aluminum plastic panel fulfils the requirement of fireproof due to the usage of modified polyvinyl plastic inter-layer in between without toxicity and covering of uninfammable aluminum layer at two sides. The ability of fireproof is higher than index requirement of grade B1 It is a safe fireproofing material and fully meets the fireproofing requirement specified in building code.



## Easy to maintain

MED brand panel, It performs well in its pollute resistance. It is seriously polluted 1- Chma. The panel needs to maintain and clean after several years use. Only neutral cleanser and water needed for its self-clean performance. It looks like before after cleaning.



# Product Classification

Introduction To Process Of Production

## CHROMATING LINE

The chromating line is to clean the lubricating grease and antioxidative grease adhesive to the surface while being rolled, and other impurities such as silicon, magnesium, iron and copper that deposit on the surface of aluminum materials.

The company uses qualified industrial chemicals and advanced technology from German Henkle co., ltd. to have a chromating dealing with the surface of aluminum materials. Through this technology, the aluminum surface is covered with a honeycomb oxidative coating of high density, which becomes an agent to make paint and aluminum firmly adhesive with each other. This agent has very strong adhesive force.

## PRECISION COATING LINE

The precision coating line is to coat the chemisynthesized aluminum roll with various paints according to the needs of the customers.

The company has an advanced three-roller reversal precision coating machine that can operate under sealed, dustless condition so that the thickness of coating and its

outer appearance are under proper control.

The oven is divided into four temperature-controlled areas  $\pm 1^{\circ}\text{C}$  to make the coating reach the best condition in its solvent resistance, hardness, flexibility and good glossiness, strong adhesive force and corrosion resistance.

## CONTINUOUS LAMINATING LINE

This is the key equipment of producing aluminum composite panel. It can make aluminum material.

PE core and adhesive polyolefine film firmly adhesive to one another under high heat and high pressure so that the panel is smooth in its surface.

With imported qualified adhesive Polyolefine film, advanced equipments, perfect technology and strict quality control: we have produced the aluminum composite panel whose peel strength is two times of the national standard and superior to the quality index of imported panels.



# Processing Method

MED panel is very easy to process. All cutting, milling, slotting, side-folding and curving can be easily fulfilled by simple tools used for processing timber and metal. It can be shaped into various shapes, such as curve, reserve curve, curve corner and sharp curve, according to requirements of building design. It is incomparable for other decorating materials.

Normal aluminum product processing machinery and wood product processing machinery can be used for processing of MED panel without special device.

## Saw Cutting



It can be easily processed with wood product processing saw and plate saw. It's recommended to use hard alloy blade.

## Bending with panel bender



When plate folder is used to finish the MED panel, dies shall be placed on with appropriate radius.

## Slotting

It's important to make the V type slotting process with a distance of 0.2-0.4mm from the polyethylene substrate. The recommended slot angle is 110°.

• (1) milling machine and trimmer

Use the modified drill as showed in the left chart.

Running speed: 20000-30000rpm

Feed speed: 3-5m/min

Material: hard alloy

• (2) When processing large quantity of V type slots, it's recommended to use round saw and belt saw. And the following is an example of slotter:

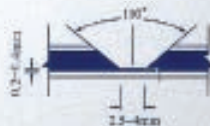
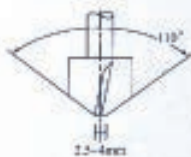
• material: hard alloy flake

• outer diameter: 305mm

• number of teeth: 24

• running speed: 3000-5000rpm

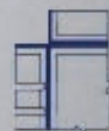
• feed speed: 5m/min



## Bending with 3-roller panel bender



3-roller panel bender is more preferable for bending of large internal diameter to plate folder.



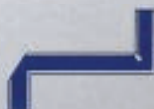
## Riveting



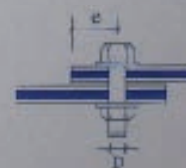
Countersunk rivet can realize easy.

## Bending with panel folder

If operated on the platform, bending part can be made very tidy.



## Bolting



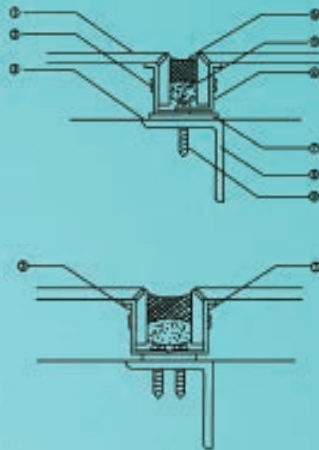
Considering from deformation limit, formul  $e > 2D$  is the best calculation way of aperture  $D$  and distance from hole center to plate end.

# Scheme Of Installation

## Example of panel type and joint design(A)

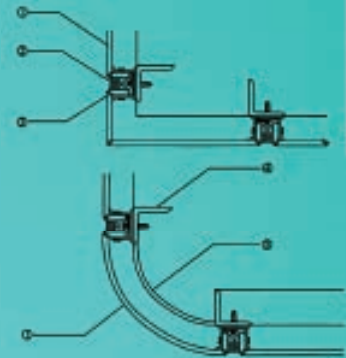
Angle aluminum and seal joint (1)

- 1 MED Panel
- 2 Aluminum rivet
- 3 Angle aluminum
- 4 Angle aluminum
- 5 Back spacer
- 6 Sealing material
- 7 Spacer
- 8 Angle bar
- 9 Bullen screw



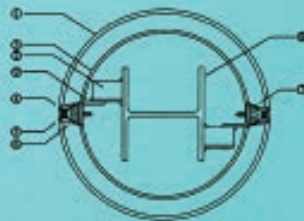
## Installation example of external corner

- 1 MED panel
- 2 Sealing material
- 3 Lining material
- 4 Angle bar
- 5 Steel plate strip



## Example of column covering

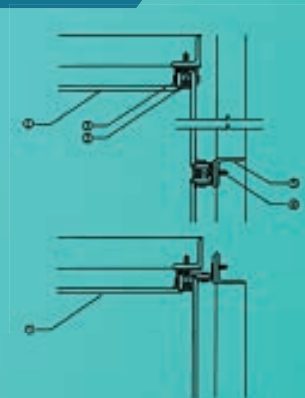
- 1 MED Panel
- 2 Angle support
- 3 Steel plate strip
- 4 Sealing material
- 5 Plastic lining bar
- 6 Accessories
- 7 Bullen screw
- 8 Bearing strut
- 9 Angel bar



Above mentioned accessories are used for low buildings.

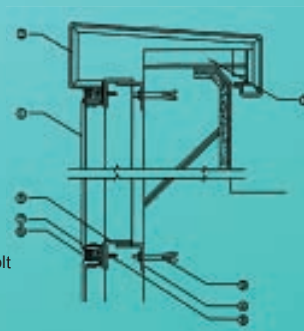
## Installation example of internal corner

- 1 MED Panel
- 2 Sealing material
- 3 Lining material
- 4 Angle bar
- 5 Bullen screw



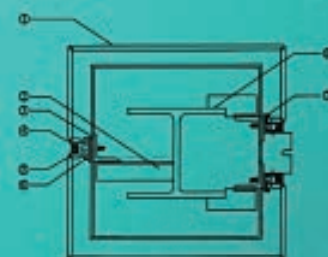
## Installation example of building top

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



## Example of strut covering

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



Above mentioned accessories are used for low buildings

# Example Of Specification

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
A	Bill No.  Element - Wall Cladding System  To design, fabricate, deliver and install 4mm thick "MED", aluminium composite panels with polyethylene Core (PE CORE) in KYNAR 500® PVDF Fluorocarbon of selected colour complete with sub-frame, fasteners, fixing brackets, approved sealant and all necessary fittings and accessories as described.	m <sup>2</sup>			
B	Ditto to sides fascia	m <sup>2</sup>			
C	Curve fascia	m <sup>2</sup>			

**MED Universal Sdn. Bhd.** 1110189-K  
No.7, Jalan Ria 5,  
Kawasan Perindustrian Ria,  
43500 Semenyih, Selangor.



# Example Of Specification

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
A	Bill No.  Element - Wall Cladding System  To design, fabricate, deliver and install 4mm thick "MED", aluminium composite panels with Mineral filled halogen free core (FR CORE) in KYNAR 500® PVDF Fluorocarbon of selected colour complete with sub-frame, fasteners, fixing brackets, approved sealant and all necessary fittings and accessories as described.	m <sup>2</sup>			
B	Ditto to sides fascia	m <sup>2</sup>			
C	Curve fascia	m <sup>2</sup>			

**MED Universal Sdn. Bhd.** 1110189-K  
No.7, Jalan Ria 5,  
Kawasan Perindustrian Ria,  
43500 Semenyih, Selangor.



# PVDF Coating Finish

Testing item	Standard	Result
Finish coat thickness	ISO 2360(CNS 8406)°	27.6μm
Gloss	ASTM D532-89	20~45%
Pencil hardness	ASTM 03363-00	2H
Toughness	ASTM 04145-83	2T no rift
Adhesive force	ASTM 3359-97	4B
Impact resistance	ASTM D2794-93	>100kg.cm
Abrasion resistance	ASTM D968-93	64.6 L/mil
Mortar resistance	ASTM 605.2-90	24 Hrs pat test exceed
Humidity resistance	ASTM D714-97	3000hr No blister
	ASTM 02247-02	
Boiling-water resistance	ASTM 03359-B	Passed
Salt-spray resistance	ASTM D117-03	3000hr No blister
Acid resistance	ASTM D1308-87	No Effect
	AAMA 605.2-91,TEST#7,7.31	
Alkali resistance	ASTM D1308-87	Passed
Solvent resistance	ASTM 02248-73	Passed
	ECCA T5&NCCA NO.11-18	
Color retention	ASTM D2244-93	E=0.34
Chalk resistance	ASTM D4214-98	No Chalking
Gloss retention	ASTM D2244-93	84.2%

# General Properties

Testing item	Standard	Result
Unit weight	ASTM D792	t3mm=4.6kg/m <sup>2</sup> t4mm=5.5kg/m <sup>2</sup>
Outdoor temperature resistance	ASTM D1654	No abnormality
Thermal expansion	ASTM D696	3.0x10 <sup>-5</sup> °C <sup>-1</sup>
Thermal deformation temperature	ASTM D648	115°C
Thermal conduction	ASTM 976	0.102Kcal/m.hr°C
Flexural rigidity	ASTM 0393	14.0x10 <sup>5</sup>
Impact resistance	ASTM D732	1650kgf
Adhesive strength	ASTM D903	0.74kgf/mm
Sound-insulating rate	ASTM E413	29
Flexural Elasticity	ASTM D790	4055kg/mm <sup>2</sup>
Shear resistance	ASTM D732	2.6kgf/mm <sup>2</sup>
Minimum bending radius	ASTM D790	≥300mm
Fire propagation	ASTM E84	Qualified
Smoke developed	ASTM E84	<45
Wind-pressure resistance	ASTM E330	Passed
Properties against water	ASTM E331	Passed
Properties against air	ASTIV1E283	Passed

# Example Of Projects Malaysia

## PLAZA TOL MEX SERI KEMBANGAN





# Example Of Projects Malaysia

LRT STATION 1, 2 & 3 KELANA JAYA - SUBANG



# Example Of Projects Malaysia

ZOUK CLUB, TREC K.L.



# Example Of Projects Malaysia

## YOU CITY CHERAS



# Example Of Projects Malaysia

**IDS MEDICAL SYSTEMS**



# Example Of Projects Malaysia

## MERCEDES BENZ SHOW ROOM



# Example Of Projects Malaysia

## Puteri Hills Condo



# Example Of Projects Malaysia

## SELYANG VOLKSWAGEN



# Example Of Projects Malaysia

## Setia Eco Glades Guard House Phase 1&2 Cyberjaya



# Example Of Projects Malaysia

## GARDEN RESIDENCE CYBER JAYA





# Example Of Projects Malaysia

## SUMMIT USJ MALL



# Example Of Projects Malaysia

## DWIPRUTRA RESIDENCES



# Example Of Projects Malaysia

PLAZA HAJI TAIB K.L.



# Example Of Projects Malaysia

RIMBUNAN KUASA FACTORY SHAH ALAM



# Example Of Projects Malaysia

## BANGI GATEWAY



# Example Of Projects Malaysia

## AMPANG LRT EXTENSION



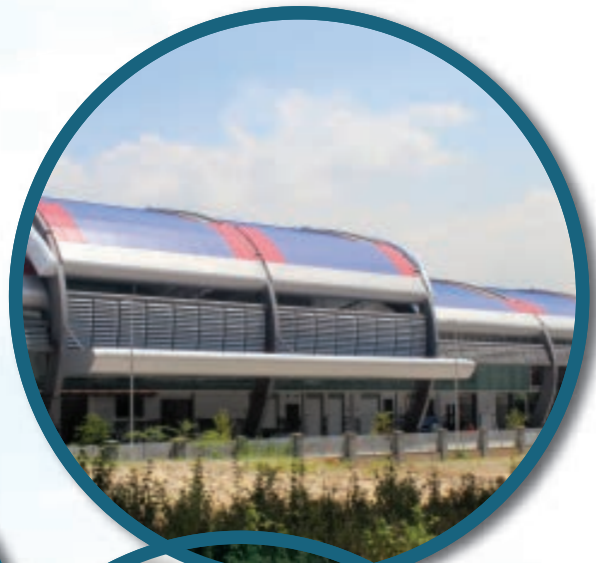
# Example Of Projects Malaysia

**INSTITUT PENYELIDIKAN KESIHATAN (IPKB), SETIA ALAM**



# Example Of Projects Malaysia

## MRT DEPOH BAS SG BULOH



# Example Of Projects Malaysia

**AIR ASIA HEADQUATER OFFICE, SEPANG**





# Example Of Projects Malaysia

## D'LATOUR BANDAR SUNWAY



# Example Of Projects Malaysia

**KDU UNIVERSITY COLLEGE SHAH ALAM**



# Example Of Projects Malaysia

PKNS SHAH ALAM



# Example Of Projects Malaysia

STADIUM BOLA SEPAK CHERAS



# Example Of Projects Malaysia

## AKASA SHOWROOM SERI KEMBANGAN



# Example Of Projects Malaysia

## KOLEJ KEDIAMAN IBNU SINA HOSPITAL KLANG



# Example Of Projects Malaysia

## MELAWATI MALL



# Example Of Projects Malaysia

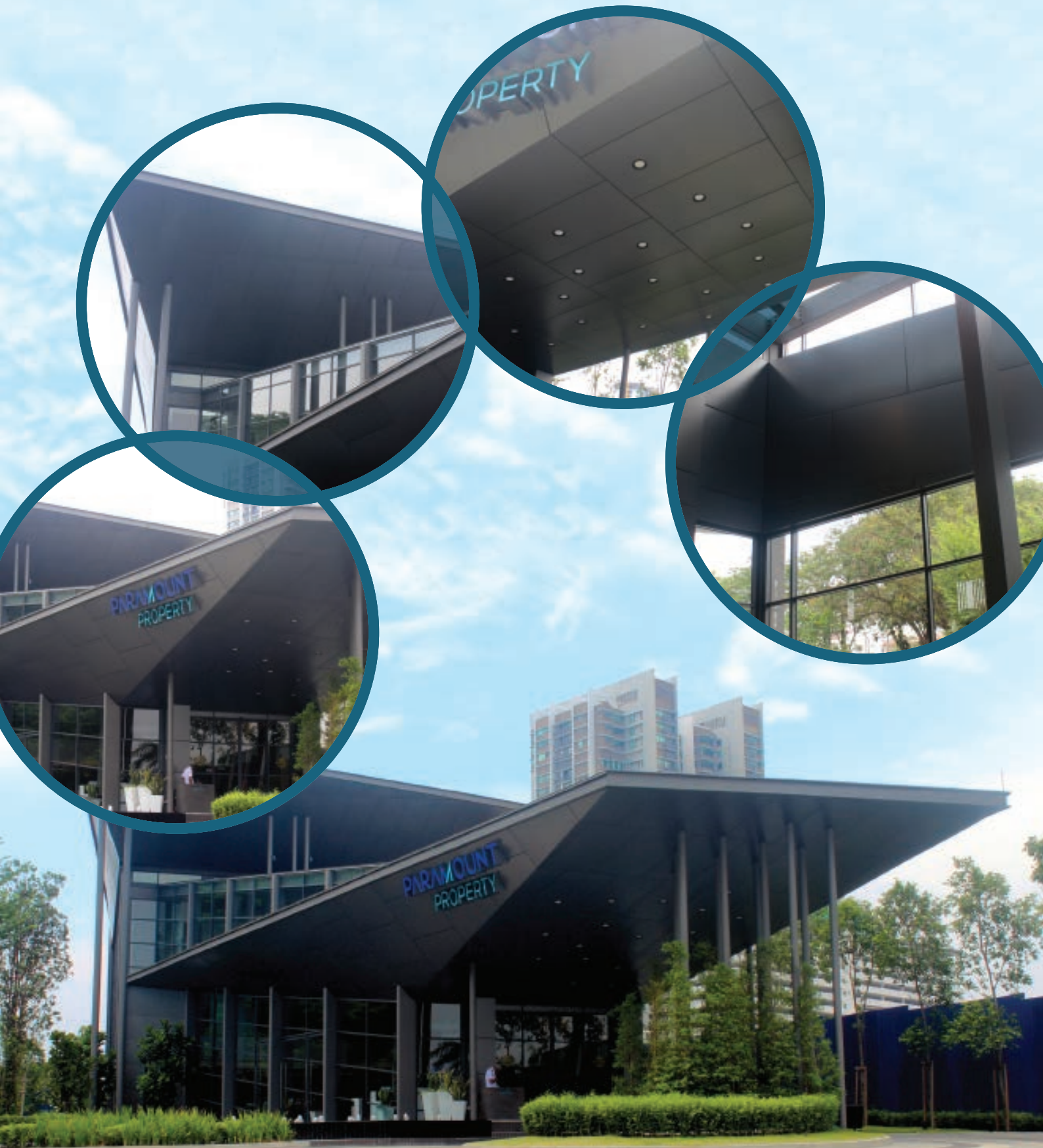
## RAPID KL STORAGE BUILDING





# Example Of Projects Malaysia

## SALES GALLERY PARAMOUNT PROPERTY SEKSYEN 13 PJ



# Example Of Projects Malaysia

## ZIKAY OFFICE KUALA LUMPUR



# Example Of Projects Malaysia

**UTROPOLIS MALL & SUITES, GLENMARIE SHAH ALAM**



# Example Of Projects Malaysia

## SKY RESIDENCE, PUCHONG



# Example Of Projects Malaysia

## STAR SENTRAL CYBERJAYA



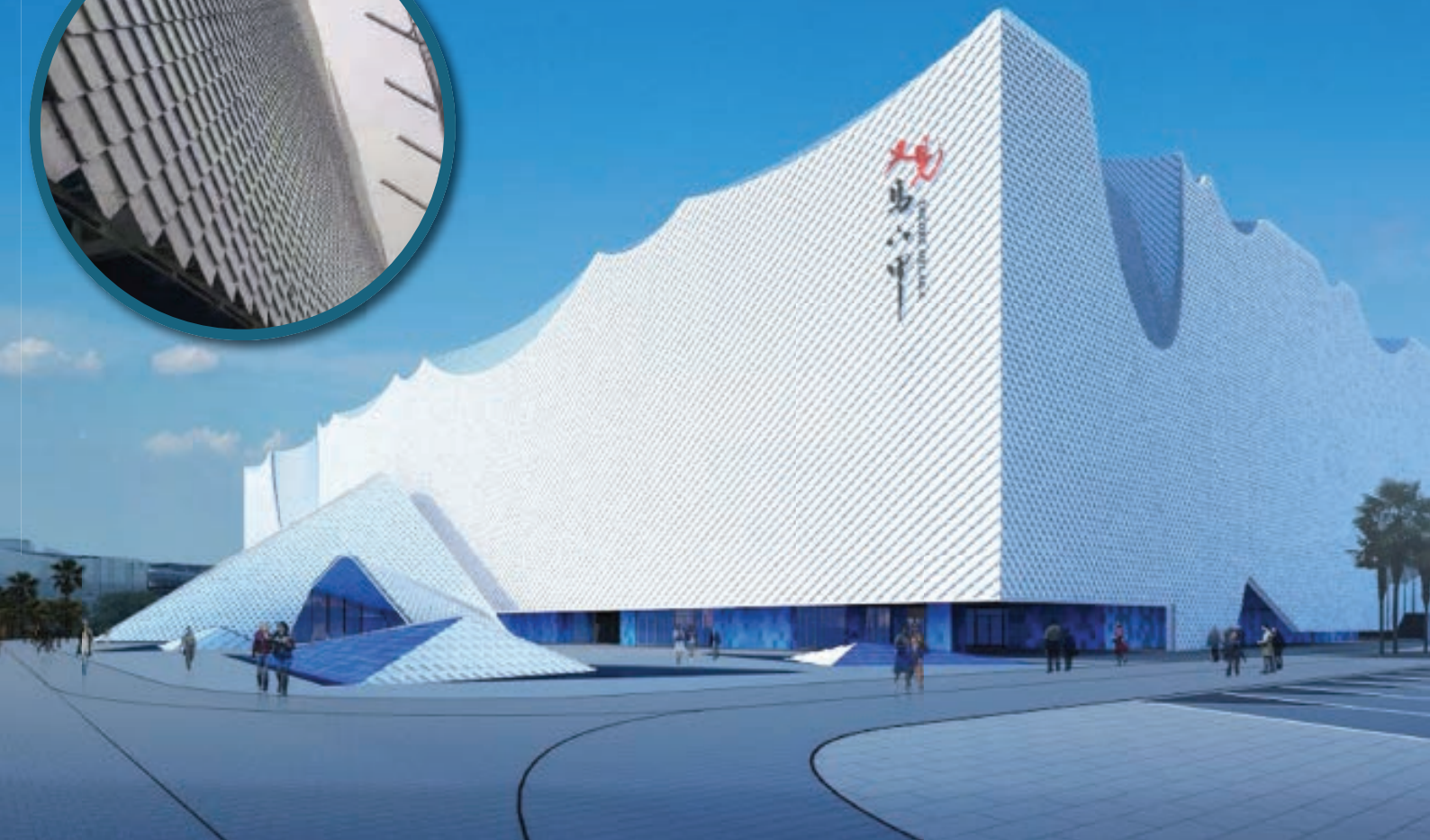
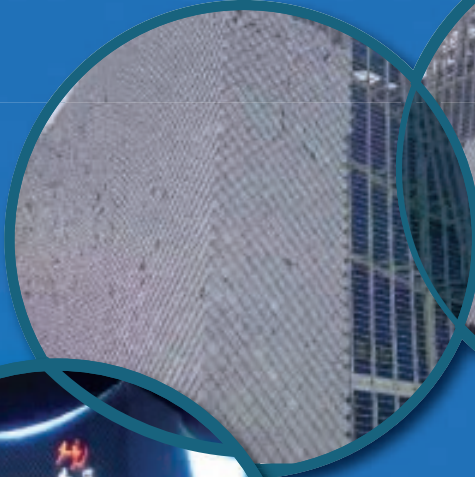
# Example Of Projects Malaysia

## TNB KLANG, KAPAR POWER STATION



# Example Of Projects Malaysia

## MELAKA IMPRESSION THEATER, MELAKA



# Testing Instruments



Metal Spectrum Analyzer

## 1. Metal Content Test

Metal Coil is one of the main raw material. Metal spectrum analyzer imported from Germany is specially used to test chemical composition on various metals (include aluminium coils). Obtain accurate results with the aid of high purity argon and spectrum analysis technology. All purchased aluminium coil will undergo chemical composition test accordingly, judge based on GB/T3190 national standard, to ensure quality of aluminium coil.



Hardness Test

## 2. Hardness Test

Hardness is one of the important mechanical properties for metal coil. Vickers hardness tester imported from Germany mainly use in measuring Vickers hardness of metal coil to control quality of raw material besides ensuring the mechanical properties of composite products meets the requirements.



Plastic Melted Test

## 3. Plastic Melted Test

PE is also an important raw material to produce aluminium panel. Melt flow rate mainly used to measure melt flow index of PE in order to control quality of PE raw material.

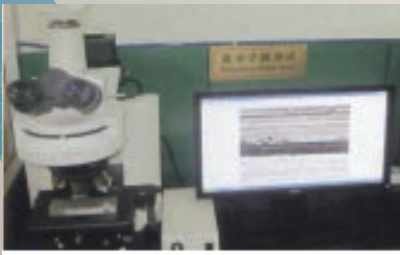




Infrared Moisture Test

#### 4. Infrared Moisture Test

This is to measure moisture content of PE material, PE material with moisture content above 0.5% are not allowed to be produced.



Thickness Gauge

#### 5. Polymer Film Glue Content Test

Polymer film bonding material is the most important adhesive materials. This instrument is imported from Japan, computer-controlled precision instrument for measuring rubber content of the polymer film, in order to ensure the quality of the adhesive material.



Polyolefin Test

#### 6. Polyolefin Test

Polyolefin is one of the main raw material in production of aluminium plate. This specially made testing machine mainly used to examine adhesive strength of polyolefin. After making samples on this testing machine, the samples will undergo peel-off test on universal testing machine.



Protective Film Testing Machine

#### 7. Protective Film Test

Adhesive strength is an important properties for protective film. Aluminium plate with different coating uses protective film with different adhesiveness. We use our testing machine to examine adhesiveness of protective film.



Universal Testing Machine

#### 8. Peel-off Test

Peel-off strengthness is the most important properties for an aluminium panel. This universal testing machine focus on curtain wall-used aluminium panel and decorative-used aluminium panel. Can undergo roller peel-off test and 180° peel-off test. We use computer-controlled universal testing machine to test for peel-off strength, and each batch of samples tests are a lot higher than national standards. (national standard: curtain wall-used panel roller peel-off strength  $>130\text{N}\cdot\text{mm}/\text{mm}$ , decorative-used panel 180° peel-off strength  $\geq 4\text{M}/\text{mm}$ ).



Flexural Strength and Flexural Modulus Tester

## 9. Flexural Strength and Flexural Modulus Test

Curvature degree, flexural modulus, through resistance and shear strength are basic mechanical properties and parameter for an aluminium panel. These properties are important basic for customer in structural designs. We examine on properties listed above using this computerized universal testing machine. Sophisticated special fixture is designed in each experiment, and the test results always has a high accuracy.



Finish Film Thickness Testing Machine

## 10. Finish Film Thickness Test

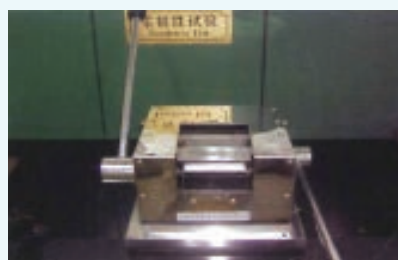
Finish film thickness directly affects lifespan and performance of coating layer and aluminium panel. National standard: Fluorocarbon double coating thickness  $\geq 32\mu$ ; Fluorocarbon triple coating thickness  $\geq 16\mu$ . We conduct detection using Germany sophisticated thickness gauge. Our company possess various models of thickness gauge IV.



Gloss Meter

## 11. Gloss Test

Gloss is reflect capability of coated surface on light in same direction. National standard based on error limit values of gloss measurement, index: error limit  $\leq 10$ .



T-Bending Machine

## 12. Toughness Test

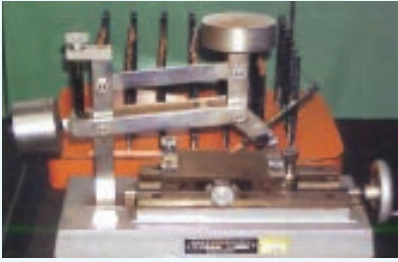
T-bending test is used to examine toughness of coating. Counterparts normally undergo test by hand bend method, but our company use T-bending machine to exclude human factor. The coating should not cracked or peeled when the colour coated aluminium coil is  $180^\circ$  bent. National standard: polyester coating  $\leq 3T$ , fluorocarbon coating  $\leq 2T$ . Our products always in range of 0-1T. Besides, we made our creation by bring in test on elongation and brittleness of aluminium coil into toughness test.



Adhesion Tester

## 13. Adhesive Strength test

Adhesion refers to adhesion between coating and aluminium coil or between coatings. Counterparts applicate simple crosshatch method cross cut test, but we use a strict circle method to test on adhesiveness which also used for arbitration inspection. The test result classified into 7 classes (class 1-7), and must below class 1 in national standard.



Pencil Hardness Tester

## 14. Pencil Hardness Test

Coating hardness reflects solidify capability and scratch resistance of coating. National standard: coating hardness  $\geq$ HB. Many factories of counterparts only test manually, but we use both manual and mechanical way on testing to get a more reliable and accurate results.



Drop Hammer Impact Test Machine

## 15. Impact Resistance Test

Impact resistance reflects impact resistancy of coating, aluminium plate and core. Aluminium plate should not strip and crack under 50km • cm impact.



Cupping Machine

## 16. Cupping Test

Cupping test is one way to examine toughness of machine. This test can determine whether the opposite side of coil has crack, or whether the coating side has crack or shed. Our colour coated aluminium coil do not crack (coil and coating) when the punch (cup) is pushed to 4mm depth.



Thermostatic Water Bath

## 17. Boiling Water Resistance Test

Boiling water resistance test can quickly examine a number of comprehensive performance of product. This test can detect adhesiveness of coating and drying level, also can analyse adhesiveness of aluminium plate and quality of core. A specimen is immersed into  $98\pm 2^{\circ}\text{C}$  water bath for two hours. If there is no changes in specimen, the specimen will undergo adhesive strength test.



Spectroradiometer (colour meter)

## 18. Colour Difference Test

Colour difference is the difference between two or more colour coated aluminium panel. Colour difference varies on different person if only determine visually, so a colour meter is needed to aid on determining. We equipped with America Aseli colour meter V which can detect colour difference accurately.



Super Daylight

## 19. Eyeball Aberration Test

Eyeball Aberration is one simple way to examine colour difference of aluminium plate coating. We use daylight in standardizing illumination when comparing colour, to eliminate disturbance of external light source on colour compare of specimen.



Acid, Alkali Resistance Test

## 20. Acid, Alkali Resistance Test

This test is to examine corrosion resistance of coating. Our company applicate stamped dipping method.

National standard: Polyester coating : 2% hydrochloric acid, calcium hydroxide and cement, add water, dip 24 hours. And Fluorocarbon coating: 5% hydrochloric acid, sodium hydroxide solution dip 24 hours. The coating should be unchanged.



Solvent Testing Machine

## 21. Solvent Test

This test is to determine whether the coating is fully solidify.

National standard: use gauze dipped with butanone, wipe back and forth 200 times with 1kgf forces on same coating surface, no grinning effect allowed. We use both manual and machine test to get an accurate and dependable results.



Oil resistance Tester

## 22. Oil Resistance Test

This test also test on corrosion resistance. Dip the aluminium panel into 20# engine oil for 24 hours. The coating should be unchanged.



Abrasive Testing Machine

## 23. Abrasive test

Abrasive mainly reflect abrasion resistance of coating.

National standard- Falling Sand Abrasive Test: plot amount of standard sand used for a thickness unit of coating milled.

International- Rotating abrasive rubber wheel method : plot the total weight loss every fix cycle. We possess both testing method.



HDT & Vicat Testing Machine

## 24. HDT & Vicat Test

Heat deflection temperature is an important indicator to reflect temperature resistance of core and adhesion layer. The aluminium panel with low heat resistance will break under high temperature due to pressure.

National standard: aluminium panel heat resistancy  $\geq 95^{\circ}\text{C}$ . Besides, our PE Vicat temperature always controlled above  $105^{\circ}\text{C}$ .



Test Chamber

## 25. High Temperature, Low Temperature Test

Delivery test is done on aluminium panel: undergo high temperature ( $80^{\circ}\text{C}$ ) for 2 hours, and low temperature ( $40^{\circ}\text{C}$ ) for 2 hours, both as 1 cycle, circulate 20-50 cycles. After confirm no breakage and changes occur, the specimen will undergo adhesive strength test.



UV Aging Chamber

## 26. Aging Test

UV aging chamber is one of the lifespan test on aluminium panel. We examine our product sample in UV aging chamber. The UV light irradiate specimen for 4000 hours under specified conditions in chamber. This test is equivalent to or greater than the effect of usage under atmosphere for 15 years.



Salty Spray Resistance Testing Machine

## 27. Salty Spray Resistance test

Salty Spray Resistance Test is one of the lifespan test on aluminium panel. We use a standard salty spray chamber to test our specimen: regularly spray specified concentration of sodium chloride salt fog under temperature of  $35 \pm 2^{\circ}\text{C}$ .



Normal Weather Test

## 28. Normal Weather Test

This mainly test on the durability of specimen under natural environment condition. Exposure field of our country is built on South China East Island. Our company send samples to CTC and request to conduct test. At the same time, we also conduct natural exposure experiment on factory roof.



pH meter

### 29. Chromate Liquid pH Value Test

We use America pH meter to constantly measure chromate liquid pH value. This is to ensure the chemical in best condition and to ensure quality of aluminium coil.



Conductivity Meter

### 30. Conductance Test

Our company use chemical made by pure water to clean aluminium coil to ensure quality of aluminium before coiled. We use conductivity meter imported from America to examine pure water, the conductivity is controlled under  $50\mu\text{s}/\text{cm}$  to ensure purity of pure water.



Titration Analytical instruments

### 31. Chromate Liquid Test

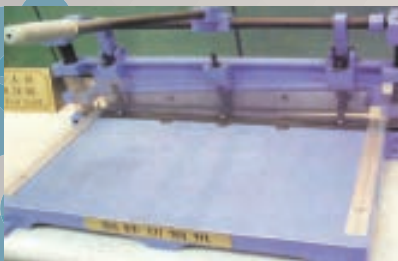
Chromate liquid test include test on degreasing liquid, neutralizer and chromate liquid. Not only determine the pH value of solution, we also use titration method to examine drug content in solution following cycles to promptly add and control concentration of solution.



Thickness Gauge

### 32. Thickness Test

This is a highly accurate thickness gauge, use to accurately measure thickness of aluminium coil and panel.



Cutting Machine

### 33. Cutting

This is cutting machine imported from England that can cut panel accurately.



Analytical Balance

### 34. Analytical Balance

Put 0.0001g of drug accurately on balance to prepare high standard drug solution accurately.



Microscope

### 35. T-turns Inspector

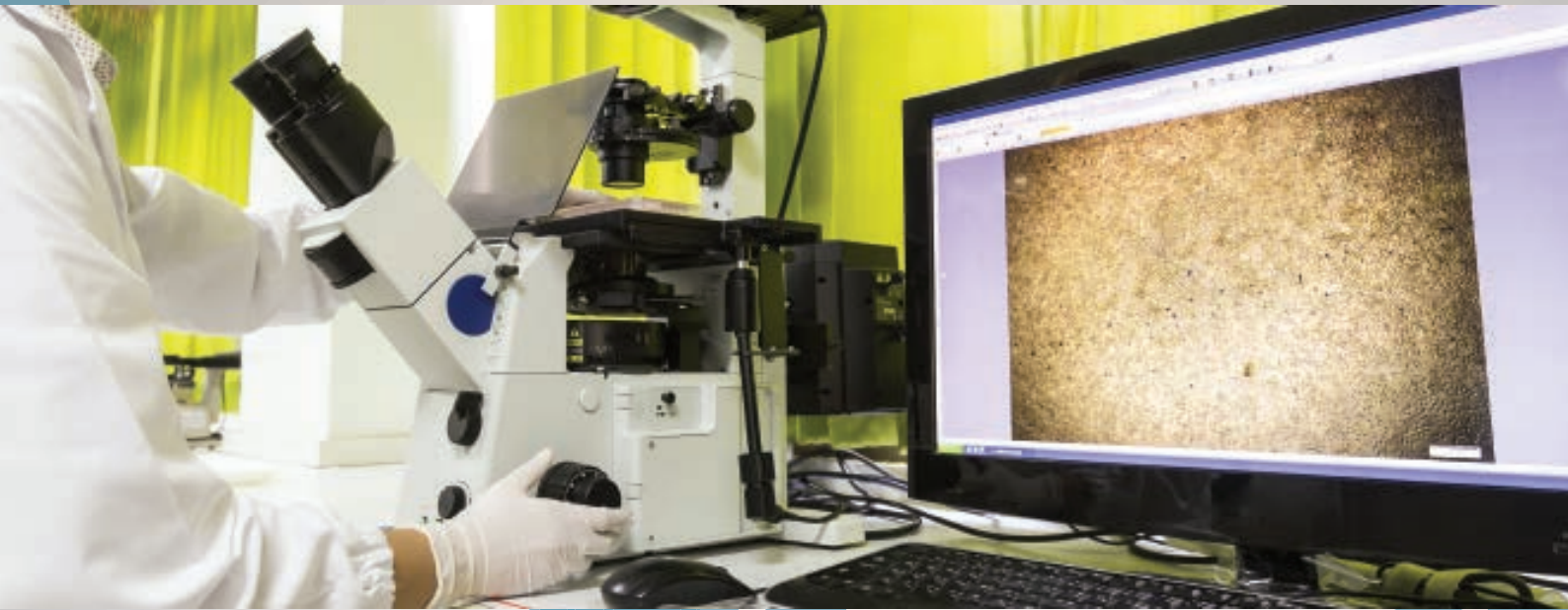
This is a practical microscope, use to check minor crack and defect on aluminium coil and coating after t-turned.



Thermo-hygrograph

### 36. Thermo-hygrograph test

Thermo-hygrograph aid in making accurate temperature and humidity record. Every test result will check and compare with this record.





**MED**®

**UNIVERSAL SDN. BHD.** 1110189-K

No.7, Jalan Ria 5,  
Kawasan Perindustrian Ria,  
43500 Semenyih, Selangor.

Tel : 03 - 8741 8193

Fax : 03 - 8741 0051

Email : med2628@hotmail.com