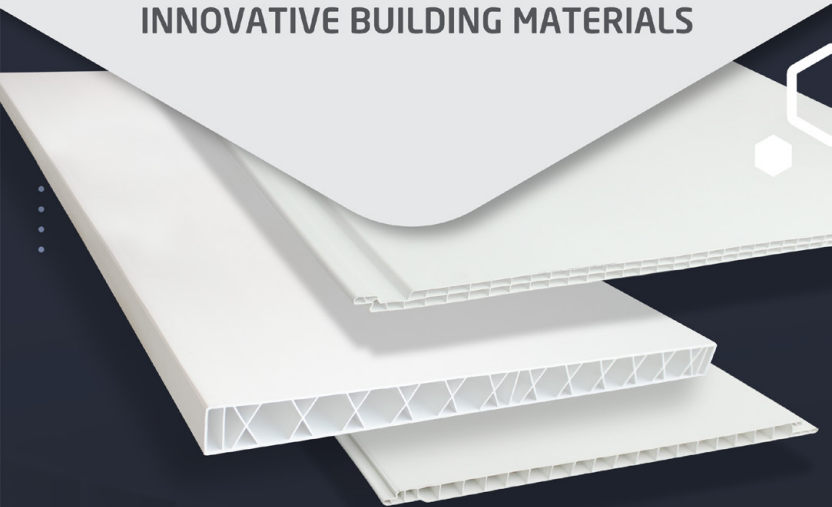




INNOVATIVE BUILDING MATERIALS



## ALDERON FLAT HOLLOW

- Flat Ceiling Panel • Flat Wall Panel •
- Flat Flooring & Barrier •

# Flat Ceiling Panel

## Product Specifications

### Alderon Flat Ceiling Panel (FCP)

Effective Width	250 mm
Weight	0.62 Kg/Lm
Flat Thickness	9 mm

### Example of Alderon FCP uses :

- Clean food and pharmaceutical building ceilings and partitions
- Commercial and Residential ceilings
- Animal farm ceiling and wall cladding
- Waterfront and sea vehicle ceiling and partitions
- Bathroom and other wet areas

Alderon Flat Ceiling Panel (FCP) is another innovative product from PT. Unipack Plasindo. It combines excellent chemical resistant properties, thermal insulation, water tightness, low handling weight; and is easy to install or customized with decorative film laminations. In addition, Alderon FCP provides good fire retardant properties which meets internationally accepted standards.

Alderon FCP is designed from a unique material formulation and processing in making them lightweight yet sturdy, resulting a durable product ideal for long term use in harsh and demanding industrial applications as well as domestic general purpose applications.

## Thermal Properties

	Test Method	Product
		Alderon FCP
Thermal Conductivity	ASTM E1530-11	0.19 W/mK
Thermal Resistance	ASTM E1530-11	5.02E-2m <sup>2</sup> K/w
Service Temperature		-20 to 60 degree Celsius

Alderon FCP's unique hollow construction comes with built-in thermal insulation properties, which will help to reduce heat transfer from the roof to the living space, and vice versa.

The service temperature range of Alderon FCP is -20°C to 60 °C, greater care should be taken when working with UPVC Sheet at lower temperatures; UPVC is less resistant to impact damage at lower temperature below zero Celsius.

## Physical & Mechanical Properties

	Test Method	Product
		Alderon FCP
Tensile Strength at Yield	ASTM D-638	30 Mpa
Elongation at Yield	ASTM D-638	15%
Hardness	ASTM D-2240	79
Modulus of Elasticity in Bending	ASTM D-790	750 Mpa

Above Mechanical Properties data are derived from average of sampled sheets. Installers and applicators should do their own testing when in doubt and in special environment enclosures. When installing Alderon FCP as ceiling, the spacing of steel hollow frame support should not more than 600 mm.



## Flammability

Alderon FCP is self-extinguishing without external flame source and conforms with the highest ratings for plastic and composite roofing material. Under UL94 Flammability Test, Alderon FCP classified as V-0 low flammability.



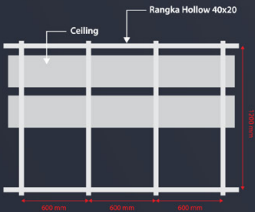
## Corrosion and Chemical Resistance

Alderon FCP has good chemical resistance to a wide range of chemicals, acids and bases, especially rubber processing chemicals, paper making chemicals, animal and waste farms methane & ammonia gas/vapour, fertilizer chemicals, galvanizing fumes etc.

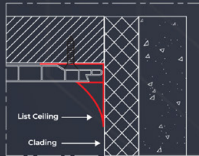
	Test Method	Product Alderon FCP
Sulphuric Acid 40% 60 degree Celcius 168 hours	ASTM D543-06	No Change
Nitric Acid 40% 60 degree Celcius 168 hours	ASTM D543-06	No Change
Ammonia Gas room temperature 168 hours	ASTM D543-06	No Change



## Installation Process



Plan 1200mm cross tees (40x20mm) perpendicular to the main tees (40x20mm) at 600mm centers, to form a 1200mm x 600mm module.



Set the list ceiling a long the top the edges of the room.



- Set up the ceiling on the list ceiling.
- Screw the ceiling onto the hollow frame.
- Repeat III and IV for each ceiling until the module is covered.



# 2

## Flat Wall Panel

ALDERON Flat Wall Panel (FWP) is another innovative product from PT. Unipack Plasindo. It combines excellent chemical resistant properties, thermal insulation ,water tightness, low handling weight; and is easy to install or customized with decorative film laminations. In addition, Alderon FWP provides good fire retardant properties which meets internationally accepted standards.

Properties being self extinguishing without external flame source.



## Product Specifications

### Alderon Flat Wall Panel (FWP)

Effective Width	1000 mm
Weight	5.7 Kg/Lm
Flat Thickness	20 mm

### Some examples of Alderon FWP use :

- Industrial & Commercial building wall panels.
- Portable partitions panels for temporary rooms.
- Clean Food&Pharmaceutical factories panels.
- Emergency housing/building panels.
- Animal farms insulating & chemical resistant (animal waste) wall claddings.



## Thermal Properties

	Test Method	Product
		Alderon FWP
Thermal Conductivity	ASTM E1530-11	0.27 W/mK
Thermal Resistance	ASTM E1530-11	7.13E-2 m <sup>2</sup> K/w
Service Temperature		-20 to 60 degree Celcius

Alderon FWP being of hollow and triple walled construction is of good thermal (and sound) insulating properties. Above are tested sample data of insulating and conducting properties for comparison with other walls and panels.

The service temperature range of Alderon FWP is -20°C to 60 °C, greater care should be taken when working with UPVC Sheet at lower temperatures; UPVC is less resistant to impact damage at temperatures below zero Celsius.



## Physical & Mechanical Properties

	Test Method	Product
		Alderon FWP
Tensile Strength at Yield	ASTM D-638	30 Mpa
Elongation at Yield	ASTM D-638	15%
Hardness	ASTM D-2240	79
Modulus of Elasticity in Bending	ASTM D-790	750 Mpa

When installing Alderon FWP, horizontal supporting beams should be applied for every 1500 mm – 1800 mm of height and vertical beam for approximately 2000 mm span width.

Please take note that mechanical strength would reduce over time if exposed to sunlight and chemicals, and it is recommended after some years (depending on the location environment) that inspections be carried out re the structural integrity of the panels.



## Flammability

Alderon FWP is self-extinguishing without external flame source and conforms with the highest ratings for plastic and composite materials. Under UL94 Flammability Test, Alderon FWP classified as V-0 low flammability.



## Corrosion and Chemical Resistance

Alderon FWP has good chemical resistance to a wide range of chemicals , acids and bases, especially rubber processing chemicals, paper making chemicals, animal and waste farms methane & ammonia gas/vapour, fertilizer chemicals, galvanizing fumes etc.

	Test Method	Product
Sulphuric Acid 40% 60 degree Celcius 168 hours	ASTM D543-06	No Change
Nitric Acid 40% 60 degree Celcius 168 hours	ASTM D543-06	No Change
Ammonia Gas room temperature 168 hours	ASTM D543-06	No Change



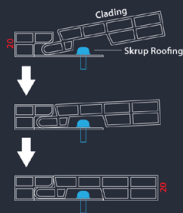
## Installation Process



Install the cladding module to the structure using roofing screws

Attach the second cladding module from male to female with the tongue & groove system

Repeat the step to install the next module



## 3

## Flat Flooring & Barrier

Alderon Flat Flooring and Barrier (FFB) is another innovative product from PT. Unipack Plasindo. It combines excellent chemical resistant properties, thermal insulation, water tightness, low handling weight; ease of installation and offers superior load bearing strength. In addition, Alderon FFB provides good fire retardant properties which meets internationally accepted standards.

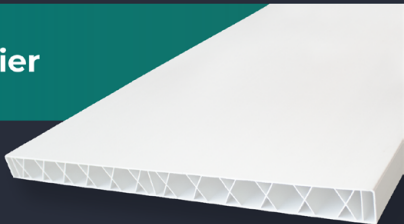
Alderon FFB is designed from a unique material formulation and processing in making them lightweight yet sturdy, resulting a durable product ideal for long term use in harsh and demanding industrial applications as well as domestic general purpose applications.



## Product Specifications

### Alderon FFB

Effective Width	500 mm
Weight	5.37 Kg/Lm
Flat Thickness	35 mm
Structure	Hexagonal



## Thermal Properties

Temperature Difference
60 °C outer side, 33 °C on inner side

Alderon FFB's unique hollow construction comes with built-in thermal insulation properties, which will help to reduce heat transfer to the living space, and vice versa.

The service temperature range of Alderon FFB is -20°C to 60 °C, greater care should be taken when working with Vinyl Sheet at lower temperatures; UPVC is less resistant to impact damage at lower temperature.

## Physical & Mechanical Properties

	Test Method	Product Alderon FFB
Tensile Strength at Yield	ASTM D-638	30 Mpa
Elongation at Yield	ASTM D-638	15%
Hardness	ASTM D-2240	79
Modulus of Elasticity in Bending	ASTM D-790	750
Crush Test (F Max)	Crushed with metal diameter 50 mm	3281 N
3-Point Bending Test (F max/ 15 cm width)	panel size 350 mm x 150 mm	1205 N

When delivered new Alderon FFB uPVC Floor can be stepped on when installing with supporting steel beam span of around 500 mm. However for safety concern, the installer must evaluate based on above mechanical properties calculation versus weight of workers per area. Please kindly note that mechanical strength would reduce over time and it is not recommended after some years (depending on the location environment) that workers walk beyond beam supports when inspecting or working on Alderon FFB.

### Some examples of Alderon FFB uses :

- Decking panels for Mezzanine flooring.
- Racking System planks.
- Portable floor Panel for temporary structures
- Poultry barns and broiler units flooring.
- Animal husbandry barrier/wall panels.

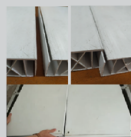
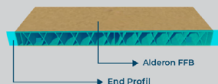
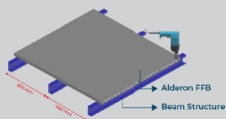
## Flammability

Alderon FFB is self-extinguishing without external flame source and conforms with the highest ratings for plastic and composite roofing material. Under UL94 Flammability Test, Alderon FFB classified as V-0 low flammability.

## Corrosion and Chemical Resistance

	Test Method	Product Alderon FFB
Sulphuric Acid 40% 60 degree Celcius 168 hours	ASTM D543-06	No Change
Nitric Acid 40% 60 degree Celcius 168 hours	ASTM D543-06	No Change
Ammonia Gas room temperature 168 hours	ASTM D543-06	No Change

## Installation Process



Prepare the structure beam with a space of 500 mm between each of them.

• Cut the FFB according to the span between the structure beam  
• Close the hollow side of the FFB by applying the adhesive along the hollow side of the FFB and set the end profile. Wait until the adhesive dries.

• Use trimmer to make vertical click system

• Install FFB