

NEW

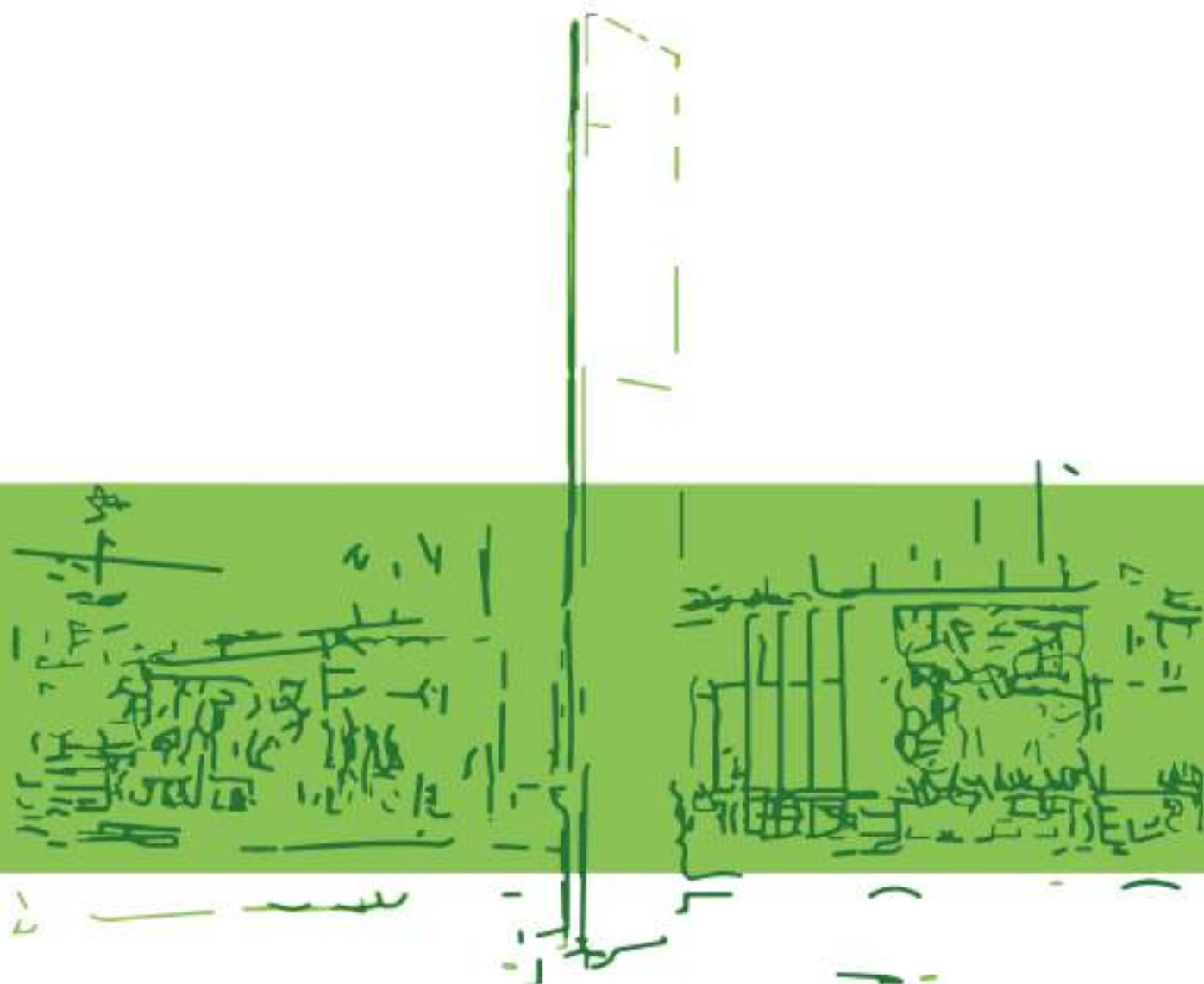


Techno Bond is deservedly the largest Cladding Factory in the middle east & Africa.

Our company has continued to invest in cutting edge technology, offering an outstanding performance, durability and costly wise products over time. Techno Bond adequaety meets with all the official standards and specific criteria, naturally making it one of the most leading competitors in the market today.

To merely ensure our ACP performs perfectly, We start by choosing Aluminium Alloy 3003 / 5005 offering a great mechanical property, weathering resistance and ease of proper maintenance.

## What is Techno Bond ?





# المواصفات الفنية لمنتج تكنوبوند حشوة داخلية **LDPE**



**Talents Hand in Hand Build Techno Bond Family  
Friends Heart to Heart to Creat Incomparable Glory**

**مصنع ألواح الخليج تكنوبوند**  
أكبر مصنع لإنتاج ألواح الكلايدينج في الشرق الأوسط وإفريقيا

Aluminium Composite Panels-Techno Bond



Techno Bond  
Technical Data Sheet  
Normal

# Technical Data Sheet

## Techno Bond

### NORMAL



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## INDEX

<b>Product Composition</b>
<b>Standard Composition</b>
<b>Product Performance Physical Properties</b>
<b>Physical Properties</b>
<b>Mechanical Properties</b>
<b>Bending Limit</b>
<b>Thermal Conductivity</b>
<b>Heat Transmission</b>
<b>Coating Finishes</b>
<b>Panel Core</b>
<b>Panel Strength</b>
<b>Joining Holes, I Bolts &amp; Nuts</b>
<b>U Value</b>
<b>Product Warranty</b>



## PRODUCT Composition.

Exterior grade panel must be exact 4 mm thick composed of a Low- density polyethylene core sandwiched between two sheets of Aluminum of 0.40 mm, thickness as seen below:

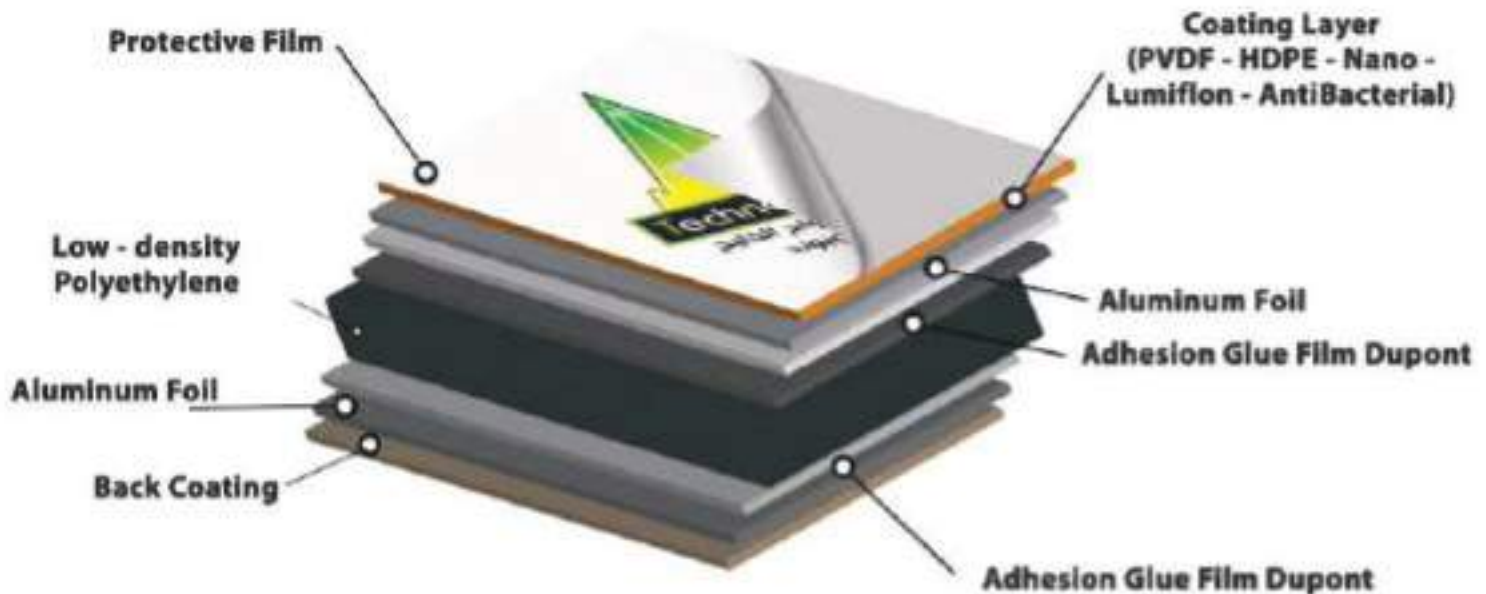
Exterior / Face panel is Aluminum Sheet Coated with PVDF interior / Rear side of panel is coated with .5 to 7- m i c r o n Polyester Coated

### Aluminum Face Sheet:

Total Thick 4mm	Aluminum Thick	Kg/m <sup>2</sup>
LLD	0.4 mm	5.5/ kg
LLD	0.5 mm	6.2/ kg

## TYPICAL COMPOSITION OF ALUMINUM COMPOSITE PANEL (DIAGRAMATIC REPRESENTATION)

### Techno Bond FR Normal



## STANDARD COMPOSITION

Product	Total Panel Thick (mm)	Component Thickness(mm)			Aluminum Grade	Core Material
		Top Alum Skin	Core LDPE	Bottom Alum Skin		
Techno Bond ACP-PE	4/5/6	PVDF Coated 0.40 mm 0.50 mm	3.0 3.20 mm	Polyester Coated 040 mm 050 mm	Alloy 3003/5005 series	Low Density Polyethylene Core

## PRODUCT DIMENSION

Techno Bond is available in various dimensions however our standard panel size is 4 mm X 1250 mm X 5800 mm

Other available sizes are as follows:

Dimension	Unit	Standard	Non Standard
Width	mm	1250	1000/1500/1575mm
Length	mm	5800	2440mm,3660mm and 4200 mm Any length Available
Thickness	mm	4	3, 5 & 6

## TOLERANCES

Dimensional /Standard Size (Rounded)

Thickness: 4mm – 0.20 mm

Length : 0.20 mm

Width: + 2.0 mm

Panel Bow: Maximum 0.8% of any 1828 mm 72Q panel dimension.

Squareness : 3mm

- Maximum deviation from panel flatness shall be 1/8" in 5'0" on panel in any direction for assembled • (units. (Non-accumulative - No Oil Canning.
- Panel Dimensions: Field fabrication shall be allowed where necessary, but shall be kept to an absolute minimum. All fabrication shall be done under controlled shop conditions when possible.
- Panel lines, breaks, and angles shall be sharp, true, and surfaces free from warp and buckle.

## PRODUCT PERFORMANCE (PHYSICAL PROPERTIES)

### Bond Integrity

Bond integrity tested, (simulating resistance to panel de-lamination), there shall be neither adhesive failure of the bond.

- Between the core and the skin nor
- Cohesive failure of the core itself below the following values:

Peel Strength: 145.96 N mm/mm (32.8 in lb/in) as manufactured

## PHYSICAL PROPERTIES

Name	Unit	Thickness		
		3mm	4mm	6mm
Density	g/cm <sup>3</sup>	1.52	1.37	1.22
Weight	kg/m <sup>2</sup>	4.55	5.5	7.34
Thermal expansion (at 100 °C)	10-6/oC	15	25	25
Thermo-conduction (U-Value)	W/mK	0.15 - 0.19		
Deformation temperature	oC	115		
Sound Isolation (100N3200HZ)	dB	24	26	27

## COMPARISON WITH OTHER BUILDING MATERIALS

Physical Properties	Techno Bond	AL	FE	S. Steel	Concrete	Glass	Acrylic Sheet	Gypsum
Specific Gravity	1.2-1.35	2.71	7.9	7.9	0	2.5	1.2	0.86
Linker Thermal Expansion (1m /50°C)	1.2 mm	1.2 mm	0.6mm	0.9mm	0.63 mm	0.50 mm	3.5 mm	0
Thermal Conductivity W/ (m.K)	0.4 - 0.5	210	45	17	1.62	1	0	0.04

## COMPARISON OF WEIGHT & RIGIDITY

Techno Bond Normal Specific Gravity: 1.9			ALUMINUM Specific Gravity: 2.71			Stainless Steel Specific Gravity 7.89		
	Thick (mm)	Weight (Kg/m <sup>2</sup> )	Thick (mm)	Weight (Kg/m <sup>2</sup> )	Weight Ratio %	Thick (mm)	Weight (Kg)	Weight Ratio %
	4mm	5.50	3.30	8.9	62	2.4	18.9	29
Techno Bond	6mm	7.34	4.50	12.2	61	3.2	25.2	29

## DEFLECTION TEMPERATURE

Techno Bond is having an approximate Deflection Temperature of 110°C. This characteristic proves the property of panel to resist boiling water. The Techno Bond PE has a temperature stability of -40°C to Heating less than 30 Minutes Max Temperature 90°C and recommended heating temperature and duration for heating the Panels as follows :

- Heating less than 30 Minutes Max Temperature 90°C •
- Heating more than 30 Minutes Max Temperature 70°C •



## VIBRATION DAMPING

Bond has best vibration damping effect that absorbs mechanical energy arises out of vibration to convert it into thermal energy.

## MECHANICAL PROPERTIES

Mechanical Properties of Aluminum Skin We are using Alloy Series 3003/5005 and temper H18 /24

MECHANICAL PROPERTY	UNIT	ALUMINUM AA3003-H18
0.2% Proof stress	MPa	152
Flexural Elasticity	GPa	70

## Mechanical Properties of Techno Bond PE

Techno Bond PE having the below mechanical properties as average:

Mechanical Property	Unit	Techno Bond FR B1 Plus	
		4mm	6mm
Tensile Strength	MPa	44	34
0.2% Proof Stress	MPa	38	30
Elongation	%	14	17
Flexural Elasticity, E	GPa	40.1	29
Flexural Rigidity, E x I	kNm <sup>2</sup> /mm	138	348
Punching Shear Strength	N/mm <sup>2</sup>	25	22

## BENDING LIMIT

We can bend the Techno Bond PE in a Press Break or 3roll Bending machines. Normally the smallest radius which we can apply to bend the panel without wrinkles at the radial surface of panel is termed as the bend radius. In 3roll machine, the bending diameter depends on the roll diameter, length and type of machine.

### Smallest bending radius (Parallel in Press Break Machine)

Thickness	Techno Bond PE
4mm	90mm

## THERMAL CONDUCTIVITY

Compared to solid materials Techno Bond has a lower thermal conductivity the table below show the thermal conductivity comparison of different materials.

MATERIAL	Thermal Conductivity (W/m K)
4mm Techno Bond FR B1 Plus	0.40-0.50
6mm Techno Bond FR B1 Plus	0.40-0.45
Solid Aluminum	205
Steel	50.2
Polyurethane	0.02
Glass Wool	0.04
Brick	0.28
Concrete	0.80
Gypsum Board	0.13



### **HEAT TRANSMISSION**

The Heat transfer from the outer air to the inner air. The air gap between the Panel and the wall increases the thermal insulation. The heat transmission coefficient (U Value) 4mm AC P fixed wall system is given below

Type of panel Cladding	100 mm Air Gap 115mm Brick wall	75 mm Air Gap 25mm Rock wool 115mm brick wall
Techno Bond PE	1.46W/m <sup>2</sup> K	0.85 W/m <sup>2</sup> K

### **COATING FINISHES**

Aluminum Coil Alloy (3003 Series) coated with KYNARI 500 based Polyvinylidene Fluoride PVDF utilizing with minimum 70% resin). Cooperate with (Becker's French Coating) PVDF Coating system offers two or three layer coating depending on color selection such as Metallic colors and Normal RAL Colors, Metallic Colors are normally Three (3) coat system consisting Primer, Color and Clear Top coat. Normal RAL colors usually have Two (2) coat system composed of inhibitive Primer and Color Coat in conformance with the following general requirements of AAMA 620.

### **Nano-PVDF Aluminium Composite Panel**

TECHNO BOND Nano-PVDF aluminium composite panel is anti-graffiti and self-cleaning. It is composed of a core sandwiched between two 0.5mm aluminium skins. Coming with hydrophobic and lyophobic surface, the Nano-PVDF ACP features good water and dirt resistance. The protected object stays clean much longer and can be easily cleaned with pure water.

Techno Bond ACP has high water repellence and the dirt on its surface can be easily cleaned away by a heavy rain.

Benefits of TECHNO BOND Nano PVDF composite panel

TECHNO BOND nano-PVDF panel has the following advantages.

- Excellent easy-cleaning.
- Anti Bacterial surface
- Pollution Resistance
- Oil resistance
- Good Friction Resistance
- Strong Acid & Alkali Resistance
- Outstanding weather resistance

## **Color**

Generally, we are manufacturing ACP with various options of color coating, basically we have (Four different types of colors such as: Solid / Metallic Colors, Natural Finishes (Stone & Timber. and Sparkling Colors. Standard color as selected by the owner /architect /engineer and Custom colors as per customer requirement.

## **PANEL CORE**

The core of Techno Bond PE is one-time recycled Low-Density Poly Ethylene offers better melt flow characteristics and good flexibility than recycled HOPE. This gives more flatness and fabrication easiness to the panel.

We also add Calcium Carbonate  $CaCO_3$  to give extra-ordinary flexibility to the core material and it makes core material UN-BREAKABLE.

## **PANEL STRENGTH**

Techno Bond PE used for the external cladding must stand the wind load. This wind load will cause deflection of the panels and if the deflection is small, the panel will not deform. The permanent deformation of the panel is calculated by 0.2% yield stress divided by the safety factor. In the calculation, we are assuming that the total strength of the panel is the strength of the Aluminum skins. If the calculated 2% proof stress is greater than the permissible, normally the panel is strength ened by giving additional stiffeners. The other factors affecting the strength of the panel are:

1. Panel thickness, width and length
2. Supporting conditions.
3. Wind load

We are using the Aluminum Alloy 3003/5005 series for our Tech no Bond PE, Aluminum. Skins 2% proof stress is 152MPa and suitable where the wind speed is 50m/sec.

## **JOINING HOLES/ BOLTS & NUTS**

In the installation work, other important factors are the strength of the joining holes and the rivets. Normally the distance from the Hole center to the panel edge should be 2 times larger than hole diameter and to prevent the galvanic corrosion of the panels use only Aluminum or stainless-steel rivets, bolts nuts etc. if we are using dissimilar metals lay a coating to prevent the galvanic corrosion

## **STRENGTH OF SUBSTRUCTURE**

The sub structure where we are installing the panels should take the wind load and the panels. The strength of the substructure depends on the material and section of the



## RESISTANCE TO NATURAL FORCES

### Lightning

If a lightning strikes, Techno Bond the electricity will be discharged to the earth through the substructure. Since the panel is connected to the earth through the sub structure.

## PRODUCT WARRANTY

Techno Bond PE brand Aluminum Composite Panels supplied by Alwah Al Khaleej Co will be warranted for a period of 20 Years from the date of supply, as per our standard warranty Policy from Alwah Al Khaleej Co. Formal Warranty

Documentation will be issued in the name of Client and will be endorsed by the regional agents or the company itself.

## U Value

### Thermal Properties of Techno Bond® U Value

Panel Thickness	Thermal Resistance $1/L \cdot R$ m <sup>2</sup> K/W	Heat Transmittance Coefficient U value (W/m <sup>2</sup> K)
3mm	0.0069	5.65
4mm	0.0103	5.54
6mm	0.0172	5.34

Thermal Conductivity ( for Techno Bond ) The Core is the determining Component

Core Material  $\lambda_{PE} = 0.29W/mK$

Aluminium  $\lambda_{AL} = 200W/mK$







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**Thank you for being part of  
Techno Bond Team**



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KSA, Riyadh 🏠  
☎️ +966 5000 143 00  
✉️ info@techno-bond.com  
🌐 www.techno-bond.com



🏠 Egypt, Cairo  
☎️ +2011 000 57 000  
✉️ info@techno-bond.com  
🌐 www.techno-bond.com

NEW



Techno Bond is the most widespread in the Arab and African world. And the largest factory for producing cladding panels in the Middle East and African. In addition to advanced production lines with a production capacity of 14.000.000 square meters annually, a product approved by all Governmental Authorities in the Kingdom of Saudi Arabia and other countries, and the most widespread in the Kingdom of Saudi Arabia .

The factory works around the clock to provide customers request in the fastest time . You are guaranteed for 20 years against manufacturing defects.

