

Solvent based joinery for new generation carpenters |  
Lifetime investment products for 100% hygienic lifestyle |  
Best fit for direct digital printing |  
Fast processing, fast joining, fast assembling, fast installations |  
Surface can be treated with UV coating, PU coating, HPL, Veneer |  
Best fit for wave boards and grill boards |  
No screw furniture and washable furniture |

WPC BOARDS

3 LAYER BOARDS

PVC FOAM BOARDS

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## about lirco

We are a Group Business carrying the versatile businesses into timber processing & trading, Cotton processing, metal forming, agro product preservation, farming, construction and hospitality segment. The group has deep roots spread within multiple provinces across India. More than 8 decades of experience into wood industry has made us thinking about the greener earth and thus we have established Lirco Composites Pvt. Ltd.

As a flagship company of India into WPC sector, we are into manufacturing of wood plastic composite boards. A production facility at the western part of India near Ahmedabad produces 2 million square feet of WPC and PVC foam boards, annually. The company has immediate expansion plans for capacity enhancement up to 12 million square feet per year.

Versatile product range of Lirco incorporates WPC boards, 3 layer boards and PVC foam boards. All these boards can be available in different colours and thicknesses.

Operating with their branches across the nation including Kolkata, Bangalore, Kerala, Mumbai, Chhatisgarh, Ahmedabad and Delhi, company is expanding its business network across USA, Europe, Africa, Australia and Middle east.

Working on the most greener subject into Wood panel industry, we use wood waste and agriculture wastes for our wood polymer composites.

For downstream application production and development Lirco is associated with WPC-Centre.



## Introduction WPC

The term "wood plastic composites" (WPC), also known as PVC Composite Board, globally refers to wood as a proxy for fibrous materials of plant origin. It can be wood flour, sawdust, agricultural plant residues or other types of natural fibre, such as hemp, jute, and kenaf, commonly known as by-product of the respective industrial process as per global terminology.

Wood-plastics composites (WPC) are a new group of materials that are generating interest in both the overseas and in India now. The term 'WPC' covers an extremely wide range of composite materials using plastics ranging from polypropylene to PVC and binders/fillers ranging from wood flour to flax. These new materials extend the current concept of 'wood composites' from the traditional compressed materials such as particle-board and medium density fibreboard (MDF) into new areas and, more importantly, a new generation of high performance products.

### The benefits of WPCs

WPC can achieve the final shape through extrusion processing. This maximizes resource efficiency and gives design flexibility for improved fastening, stiffening, reinforcement, finishing and joining. WPC are composite products that need no further processing. WPC are weather, water and mold resistant for outdoor applications where untreated timber products are unsuitable. WPC are plastic products with exceptional environmental credential and performance. WPC have a wide range of applications. They can cost effectively replace wood products in applications such as furniture, doorframes, decorative profiles, in fact anywhere wood shapes are used. They can cost-effectively replace plastic products in applications such as window frames, cable trenching, roof line products and cladding, in fact anywhere that plastics shapes are used.

- They are true hybrid materials and combine the best properties of both wood and plastics.
- They use low cost and plentiful raw materials.
- Wood waste and recycled plastics become assets instead of liabilities.
- They are competitively priced and are competitive with traditional materials such as timber, MDF and PVC-U.
- They are easily produced and easily fabricated using traditional wood processing techniques.
- They are available in a broad range of finishes and appearances.
- They are easily recycled after use.



## WPC boards

WPC (Wood Plastic Composites) is composed of PVC and agro waste. WPC boards are Lirco's answer to saving forest and producing green product, while staying conscious on providing quality material.

### Application

- Kitchen Cabinets
- Bathroom cabinets, bathroom doors and door frame
- Children room furniture
- Office furniture
- Restaurant furniture
- Decorative thru grilling and wave boards
- Modern interior architecture designs
- Doors, door frames, windows, windows frame
- Cubicles, partitions

### Specifications

- Sizes - 8'x 4' (standard size)
- 6'x4', 5x4', 4'x4' (available on bulk orders)\*
- Thickness - 6mm, 12mm, 15mm and 18mm (Standard sizes)
- 5mm, 8mm, 10mm, 17mm (available on bulk orders)\*
- Color - Beige (standard)
- bulk order = 9 tons or more

### Characteristics

- Water proof, termite proof, fire retardant, moisture proof
- Timber like process functions such as nailing, screwing, cutting, gluing and drilling
- Environmental friendly- no content of formaldehyde
- Maintenance free ( no chipping or rotting)
- Nice finish



## CHILDREN FURNITURE



## OFFICE FURNITURE



## DOORS & DOOR FRAMES



### 3 layer WPC boards

3 Layer WPC boards are premium products in the range of Lirco. 3 layer board is the new generation product replacing the Plywood, MDF and even Acrylic surface for various applications based on Cost and quality parameters.

Importantly, 3 layer board is the most fit material for various carcass applications, where conventional system for panel making needs to be prepared with Marine ply, HPL, Adhesive and Labour. 3 Layer WPC board can directly be used for carcass making without any HPL lamination. At the same time, 3 layer WPC board can be termed as quite user friendly product, which can be available in various solid colours, as per requirement. A thin coat of UV or clear PU can enhance this surface. Apart from that, 3 Layer WPC board can be used with any traditional or modern carpentry tools and machines, respectively.

#### Applications

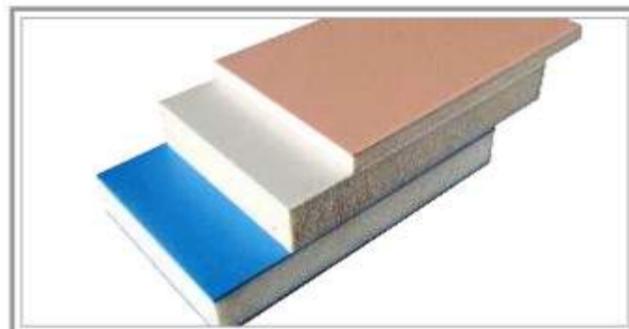
- Modular kitchen
- Modular furniture
- Office furniture, partitions, Cubicles
- Restaurant furniture
- Hotel Furniture
- School Furniture
- Decorative applications

#### Specifications

- Sizes - 8'x 4' (standard size)
- 6'x4', 5x4', 4'x4' (available on bulk orders)\*
- Thickness - 6mm, 12mm, 15mm and 18mm (Standard sizes)
- 5mm, 8mm, 10mm, 17mm (available on bulk orders)\*
- Color - White (standard)
- Other Solid colours can be customized on bulk orders\*
- \* bulk order = 9 tons or more

#### Characteristics

- Can be shaped with thermal bending
- Water proof, termite proof, fire retardant, moisture proof
- No need to laminate as the top layers are rigid and shiny
- Timber like process functions such as nailing, screwing, cutting, gluing and drilling
- Environmental friendly- no content of formaldehyde
- Maintenance free ( no chipping or rotting)
- Nice finish
- Top & bottom surface hard and shiny



MODULAR KITCHEN



DECORATIVE CEILING



SCHOOL FURNITURE



## PVC foam boards

PVC foam board is the commonly known product in the global market for various advertising and furniture applications. PVC foam board is the new generation product replacing the Plywood and MDF. PVC foam boards are available with matt and semi gloss finishes and in colours. A fine surface with different colours - including white, grey and brown - gives PVC board a unique look with each panel. For sandwich construction in higher thickness applications, PVC boards can be pasted with each other with PVC solvent cements for creating thickness formations like 36 mm, 72 mm and etc.

### Applications

- Advertising Boards
- Skinning Door for water proofing
- Digital printing for decorative applications
- Doors, windows
- Cubicles, partitions
- Kitchen Cabinets
- Bathroom cabinets, bathroom doors

### Specifications

- Sizes - 8'x 4' (standard size)
- 6'x4', 5x4', 4'x4' (available on bulk orders)\*
- Thickness - 6mm, 12mm, 15mm and 18mm (Standard sizes)
- 5mm, 8mm, 10mm, 17mm (available on bulk orders)\*
- Color - White (standard)
- Other colors can be customized on bulk orders\*
- \* bulk order = 9 tons or more

### Characteristics

- Can be shaped with thermal bending
- Water proof, termite proof, fire retardant, moisture proof
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- Nice finish



## BATHROOM CABINETS



## CUBICLE FURNITURE



## HOARDINGS



## Architect's Corner

WPC boards is a new generation product for architects, those believe in delivering creatively qualitative portfolios for their clients. WPC by structure is a polymeric chain with natural fiber fillers - can be termed as an absolute green product by means of recyclability, Zero emission, Clean and hygienic product.

Available in different density range - application wide - WPC panels or boards are a life time investment product for Indian houses, offices, schools, restaurants, villas, kindergartens and obviously kitchens. WPC is a moisture resistant, termite free and fungus free product which has better surface decoration properties than any other wood panel.

WPC panels are best in class products for sandwich construction for doors, windows, high thickness construction and other applications. Its unique polymer structure can work well with PVC solvent cement for different joinery items. Rapid construction of furniture modules can be possible with PVC solvent cement over WPC boards. A new era of 'NO Screw' furniture is coming up. Fastest assemblies in couple of minutes are now possible with this product.

WPC panels are available in any different colours, as per your requirement. You can choose Yellow panel for your table top and Red panels for your partitions. No wood panel can give such easy options in working. You can just heat bend the entire 18 mm panel for making U shape for numerous designer applications in your furniture. Taking from smart toys to high end luxurious kitchen - WPC boards can make miracles throughout.

HPL, Veneers, Paper, PVC foils can be well pasted with WPC board surfaces. You can create direct printing modules through digital printing technique on WPC surfaces. This is a glamorous product in itself. Open to sky hotel furniture or ICU furniture with 100% hygiene - WPC boards are there.

Wave boards and grill boards in natural or painted mode can enrich your creations with no match! Taking from your bathroom wall designs to drawing room wall decoration - WPC wave and grill boards can give exotic touch.



## Technical advantages

- A technical, clean and green product for new generation
- Reliable product for lifetime investment
- Excellent water and moisture resistance
- Best for use in humid atmosphere
- Total termite resistant
- Non toxic and borer free
- High screw holding capacity
- Highest bending strength than wood, plywood and MDF
- Corrosion resistance
- Best machinability
- Best for sandwich construction
- 100% recyclable
- Saves tooling life almost 50% than MDF, Plywood and Particle boards
- Better compressive strength
- Fire resistant
- Easy to fabricate for carpenters
- Mouldable structure from 90 deg to 180 deg
- Better surface hardness

### WPC have many benefits:

- They are true hybrid materials and combine the best properties of both wood and plastics.
- They use low cost and plentiful raw materials.
- Wood waste and recycled plastics become assets instead of liabilities.
- They are competitively priced and are competitive with traditional materials such as timber, MDF and PVC-U.
- They are easily produced and easily fabricated using traditional wood processing techniques.
- They are available in a broad range of finishes and appearances.
- They are easily recycled after use.

## Surface decoration

- Can be used without surface protection
- HPL or Prelam
- Direct painting
- Entire sheet can be post formed
- Direct printing without prior preparation
- Roller printing possible
- Digital printing possible
- Direct UV coating with high gloss,
- Gloss and matt finishes
- Can be laminated with HPL
- PVC edge bending – best fit
- PVC foil
- PU coating
- Melamine, Lacquer and other varnish can be applied

## Comparison Chart

LIRCO WPC Board in Comparison with other Panel Materials

Feature	Solid Wood Boards	Plywood Boards	HDF Boards	MDF Boards	Particle Boards	Straw/OSB	Gypsum Boards	Lirco Board
Water Proof	X	X	X	X	X	X	X	✓
Termite Resistance	X	X	X	X	X	X	✓	✓
Decay Proof	X	X	X	X	X	X	✓	✓
Damp Proof	X	X	X	X	X	X	X	✓
Recyclable	X	X	X	X	X	X	X	✓
Sawing	✓	✓	✓	✓	✓	✓	✓	✓
Routing	✓	✓	✓	✓	X	X	X	✓
Screw Holding	✓	✓	✓	X	X	X	X	✓
Painting	✓	✓	✓	✓	✓	✓	✓	✓
Glueing	✓	✓	✓	✓	✓	✓	X	✓
Drilling	✓	✓	✓	✓	✓	✓	✓	✓
Sanding	✓	✓	✓	✓	X	X	X	✓
Fabricating	✓	✓	✓	✓	✓	X	X	✓
Veneering	✓	✓	✓	✓	✓	X	X	✓
Varnishing	✓	✓	✓	✓	✓	X	X	✓
Corrosion Resistant	X	X	X	X	X	X	X	✓
Chemical Resistant	X	X	X	X	X	X	✓	✓

## Technical specification

Sr. No.	Test	Test Method	Value
1	Density, Kg/m <sup>3</sup>	IS:1734	500-700
2	Water Absorption, 2 hours,%	IS:2380	<0.2
3	Water Absorption, 24 hours,%	IS:2380	<1
4	Hardness, Shore D	ASTM D 2240	>55
5	Tensile Strength, N/mm <sup>2</sup>	IS:1734	>20
6	Elongation at Break,%	IS:1734	>10
7	Modulus of Rupture, N/mm <sup>2</sup>	IS:1734	>20
8	Modulus of Elasticity, N/mm <sup>2</sup>	IS:1734	>1500
9	Screw Withdrawal Strength, N	IS:1734	>1500
10	Nail Withdrawal Strength, N	IS:1734	>150
11	Charpy impact Strength, KJ/mm <sup>2</sup>	ASTM D 6110	>5
12	Izad Impact Strength, J/m	ASTM D 256	>30

All information, mentioned above, are based on typical sample, is accurate to the best of our knowledge, and is provided without liability or commitment. As Lirco Composites Private Ltd has no control, over which other use this material, it does not give guarantee that the same results are obtained, as mentioned here. Each user of material should make their own test in their own local condition to confirm the suitability of our product for their particular use. Technical Specifications are subject to change.

## Processing of WPC boards



### Screwing

Screwing can be done well with WPC panels, similar to the other wood based panels available in the market like MDF, Plywood and Particle boards. Advantage of WPC panel is with its varied density range for different applications. Density range from 550 to 750 can be screwed very well for modular assemblies.



### Gluing

WPC is an important product composite made with Poly vinyl chloride. PVC is the material which has good and positive tendency towards surface enhancement. Thus, WPC boards can be painted, colored, coated, varnished and laminated with different surface materials.

There are different adhesives available for WPC surfaces from different companies including Pidilite Industries. High pressure laminates, Veneers and other decorative surfaces can be laminated by Fevicol SR Heatex, Fevicol SP5 and SP6 type of adhesives. This adhesives can be used for manual pressing and Cold pressing applications of boards and surfaces.

For joining applications PVC solvent cements are also available and which can be used for rapid jointing. There are some other adhesives like Dendrite supreme from Chandra chemicals, Kolkata are also being used.

For Spddy & Clean Application 'Lohmann' Adhesive tape can be used.



### Cutting

Wood plastic composite boards can be cut and trim on any of the following panel processing machinery used for modular furniture making.

#### Sliding table panel saw :

It is an upgraded version of a conventional bench saw incorporated with the features essential for panel sizing as described above. The accuracy of the relative movement between the fixed and the sliding parts of the table is very high. A scoring saw is integrated in the machine for cutting boards without chipping. The operation is still manual in the sense that the person has to push the board against the cutter block manually. The sizes what Hallmark offers for table are 3200 mm, 2800 mm, 1500 mm & 3000 mm. At the same time machines with tilting, pneumatic clamping, motorised saw up & down, fully PLC controlled options are available in the range.

#### Trimming :

Trimming machine is used to trim the additional edges left after manual Edgeband operation. It's a very simple and low cost machine. Trimming can be available with scrapping or buffing operations also.

#### Traditional carpentry on WPC :

Apart from regular panel processing machineries, WPC board can be chiseled with conventional carpentry tools like Chisel, Planer and shaper.



### Routing

#### Manual Routing :

Routing is a process of engraving the WPC board surface for various design purpose. This is a simple and low cost machine for smaller production and used by artisans specially.

#### CNC Routing :

Routing done with computerised numerical programmed machine is called CNC routing. This is the advance and high throughput machine which can give precise design results with automatic spindle movements on the machine. This machine is available in standard sizes like 8 ft x 4 ft, 6 ft x 3 ft, 2 ft x 2 ft and other working table sizes. This machine is fed with design programmes for doors, engraving, and special designing in 2D & 3D formats.



### Molding

#### Spindles moulder :

WPC boards can be easily processed on Spindle moulder machine. The sliding panel saws and beam saws can only process straight lines and are meant for linear edges only. When the product design demands curvilinear edges, a spindle moulder need to be used.

Normally after sizing, the square / rectangular panels are put onto the routers and the required operation is carried out. For small level production, a traditional spindle moulders or pin router is available whereas for large scale productions, CNC routers are required.