

## Manual & Technical Data Sheet Standard HPL

### Description:

HPL are sheets made of thermosetting resins impregnated cellulose fibrous material (Paper) bonded together under high pressure and heat process. The process, defined as the simultaneous application of heat ( $\geq 120^{\circ}\text{C}$ ) and high specific pressure ( $\geq 5\text{ MPa}$ ) provides flowing and subsequent curing of the thermosetting resins to obtain a homogenous non-porous material ( $\geq 1,35\text{ g/cm}^3$ ), with the required surface finish.

About 60 % of HPL is paper and the remaining is phenol-formaldehyde resin, fully cured for core layers and melamine-formaldehyde resin, fully cured, for décor surface layer. Both resins are thermosetting and irreversibly interreacted cross linked chemical bonds. The result is non-reactive totally stable material.

### Applications:

Home interior.  
Office interior.  
Shops interior.  
Hotel interior.  
Hospital interior.  
Airport interior.  
General furniture.  
Wardrobes and cabinets.

Kitchen Cabinets.  
Kitchen worktops.  
Walls and doors claddings.  
School, universities and all educational facilities interior.





## Fabrication:

**Sawing:** To avoid chipping, it is important that the saw blade teeth cut into the decorative face.

Circular saws are the ideal choice of machinery to cut HPL. To avoid chipping on the decorative face, always cut into the decorative face and to have perfect cutting lines on both sides, circular saws with scoring blade/disc are required.

Provide support material when being cut at the point of cutting to avoid vibration .

Blades with trapezoid tooth configuration ,tungsten carbide and diamond tip blades are the ideal choices for cutting HPL.

When routers are used, 16000 -22000 rpm speed is required . Very high speed routers are required to produce smooth chip-free edges. Sharpness of the router cutters should be maintained.

## On-site Installation:

**Optimum conditions for use:**

Like most products, acclimation is condition for proper final application on site. HPL requires 48hrs as minimum to acclimate to the ambience. Provision should be made for circulation of air around components.

Ideal ambient temperature is 24°C and ideal RH is 45% - 55%.

## Adhesives:

Various woodworking industry adhesives may be used to bond HPL to a substrate. The choice of adhesive must always be compatible with both surfaces and be based on the intended service of the product. Always refer to adhesive manufacturer's instructions for applications and conditions of use.

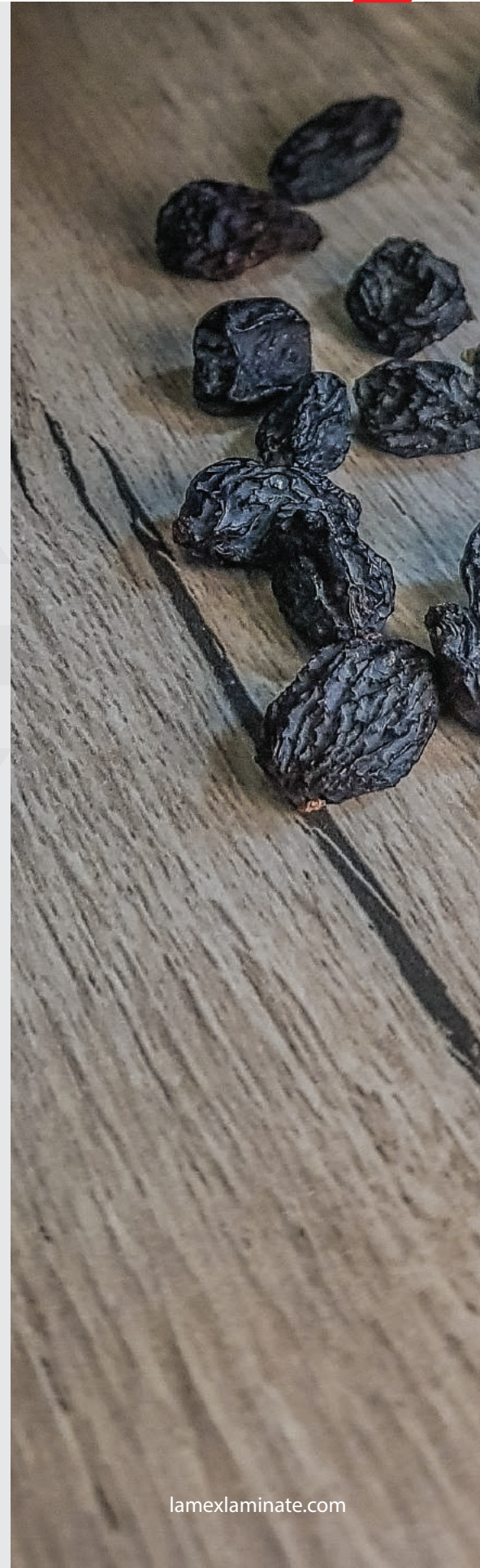
Adhesives types may include but not limited to

- Contact adhesives.
- Thermosetting adhesives.

PVA ( PolyVinyl Acetate) white glue: PVA is widely used bonding HPL to wood substrates where resistance to moisture and heat is not required e.g. Cabinets and wardrobes, general furniture items. Catalyzed PVA offers improved moisture and heat resistance. Thermosetting Resorcinol and phenol-resorcinol adhesives are recommended when moisture and heat resistance is required.

Thermosetting Urea-formaldehyde is satisfactory for most applications. Epoxy adhesives are primarily used for bonding laminates to impervious cores such as steel.

Hot melts can be used for edge banding when exposure to heat is not possible. Urethane adhesives may be used for bonding laminates to impervious cores such as metal, glass etc.





## Protective film:

When HPL is supplied with protective film, The protective film must be removed as soon as the fabrication is complete as prolonged exposure to strong light may cause pale residue.

### Boding guidelines & recommendations:

Make sure the surface where adhesive is to be applied is free of contaminants , clean and dry. For proper adhesion ,adhesive must be spread adequately on the entire surface.

Adhesive manufacturer's instructions must be followed for adhesive application method, quantity , pressure to be applied...etc, and for all aspects of safety prior to, during and after the application of adhesive.

Unless otherwise indicated by the chosen adhesive type and manufacturer, the temperature of the adhesive application area and materials to be bonded should be maintained around 21°C (70°F) or above.

When 2 HPL sheets abut on the same substrate, a gap of 2mm or above is recommended especially is fluctuating ambient temperature and RH.

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## Care, Handling, Storage & Maintenance :

HPL sheets must be stored horizontally on pallets with the top sheet facing down and with protective thick board to top. It is recommended that sheets in the bottom of a pallet are used first.

HPL sheets are recommended to be stored in dry storage and must not be stored directly on the floor or in direct contact with an external wall.

Always carry the sheets vertically.

HPL must be lifted, not slid, for moving. It is always recommended that HPL sheets are carried from 2 adjacent sides.

HPL generally is resistant to Group 1 and Group 2 stains but reagents of Group 3 and 4 reagents must not be spilled on it. In the event of such occurrence, spillage must be wiped immediately.

## Cleaning:

General dirt or grime is easy to clean off the surface of HPL using damp cloth | sponge with soft detergent or soap.

Group 2 stains can be removed using mild household detergents. Tougher stains can be removed by light scrubbing (ave 15 strokes) using regular household baking soda. Extra care must be paid when scrubbing high gloss laminates, scrubbing must be as light as possible.

Stubborn persisting stains belonging to Group 3 and 4 may require the use of undiluted household bleach or nail polish remover. Apply the product, let it set for no longer than two minutes and then rinse thoroughly with warm water and wipe dry. Repeat as necessary if the surface remains intact.

## WARNING:

Avoid Prolonged exposure to bleaches avoid discoloration.

Avoid exposure to temperatures greater than 135°C as it may cause damage to HPL. Do not place hot objects with heat exceeding 135°C directly on HPL surface. Use protective insulation pad between the hot surface and HPL.

Avoid cutting with knives directly on HPL surface, sharp knives and blades will cut and cause deep cutting lines and scratches in HPL beyond the possibility to repair. Always use cutting/chopping boards.

Avoid exposure to excessive impact as it may cause dents, cracks or chipping in HPL beyond the possibility to repair. Do not use hammers or drop heavy hard objects on HPL.

Avoid the use of acids, Harsh chemicals, scouring powder and acid based cleaner, i.e. toilet and drainer cleaners on HPL surface as they may cause permanent damage.

In the event of exposure to any of the above, wipe and rinse immediately.



Property	Test method (EN 438-2 Clause no. Unless otherwise stated )	Property or attribute	Unit ( minor max)	Laminate Grade			
				HGP as per EN-438-3	LAMEX Typical Value	VGPasper EN-438-3	LAMEX Typical Value
Resistance to surface wear	Wear Resistance	10	Revolutions (min) wear value	350	>400	150	>200
Resistance to scratching	Force	25	Rating (see Annex A)	3	>3	2	>2
Resistance to impact by large diameter ball (optional)	Drop height Indent diameter	21	mm (min)	800	>800	600	>600
			mm(max)	10	>10	10	>10
Resistance to impact by small diameter ball	Spring force	20	N(min)	20	>22	15	>15
Dimensional stability at elevated temperature	Cumulative dimensional change	17	% (max)La	<0.55	<0.35	<0.75	<0.65
			T'	<1.05	<0.90	<1.25	<1.0
Resistance to immersion in boiling water	Appearance	12	Rating (min)				
			Gloss finish	3	4	3	4
			Other finishes	4	5	4	5
Resistance to dry heat (180°C)	Appearance	16	Rating (min)				
			Gloss finish	3	4	3	4
			Other finishes	4	5	4	5
Resistance to staining	Appearance	26	Rating (min)				
			Groups 1&2	5	5	5	5
			Group 3	4	4	4	4
Resistance to wet water (100°C)	Appearance	EN 12721:1997	Rating (min)				
			Gloss finish	3	3	3	3
			Other finishes	4	5	4	5
Light fastness (xenon arc)	Contrast	27	Grey scale rating	4to5	5	4to5	5
Resistance to water vapour	Appearance	14	Rating (min)				
			Gloss finish	3	3	3	3
			Other finishes	4	5	4	5
Density	Density	EN ISO1183:1987	g/cm³ (min)	135	>1.38	135	>1.38
Resistance to cracking under stress (optional)	Appearance	23	Rating (min)	4	5	4	5
Resistance to cigarette burns	Appearance	30	Rating (min)	3	3	3	3

## Reagent Groups

### Group 1:

Acetone.  
trichloromethane.  
toothpaste.  
hand cream.  
urea.  
alcoholic beverage,  
natural fruit.  
fruit drink.  
meat.  
vegetable oil.  
water.  
NaCl.  
mustard.  
soap solution.  
paint remover (kerosene).  
phenol and citric acid.

### Group 2:

Coffee,  
black tea.  
milk  
(condensed and evaporated).  
cola beverages.  
vinegar.  
hydrogen peroxide  
(3% solution).  
ammonia  
(10% solution of commercial concentrate).  
nail polish remover.  
lipsticks.  
water colour.  
laundry marking ink.  
ball point ink.

### Group 3:

Sodium hydroxide  
(25% solution).  
hydrogen peroxide  
(30% solution).  
concentrated vinegar  
(30% acetic acid).  
acid based metal cleaners.  
shoe polish, hair colouring.  
iodine.  
boric acid.  
lacquers.

### Group 4:

Citric acid  
(10% solution).  
Acetic acid  
(5% solution).

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