

some fabrication guidelines

Preparatory stage

Transport and storage

- When handling, avoid dragging the decorative faces against one another. Lift the sheets either by hand or with the aid of suction pads. During all handling, ensure that the sheets do not rub against one another, and avoid impact, scratches, dirt, foreign bodies and contact with water or other liquids.
- Transport the sheets on pallets of sufficient size and rigidity.
- To avoid excessive distortion and facilitate subsequent conditioning, the sheets must be stored in dry premises, under cover. The climatic conditions must be 10 to 30°C, with 40 to 60% relative humidity.
- Avoid storing in proximity to a source of heat for extended periods.
- The sheets should preferably be stored flat, in piles or racks.
- The sheets should lie on a flat, clean, dry surface

and should not be subjected to any localised impact, in particular on the corners or edges.

- The last sheet should be turned over and covered by a rigid board. The protective covering used on each face of the pallet (board, cardboard...) should be retained for extra protection.
- All other methods of storage should be avoided, as they could cause distortion.

Conditioning

- Before fabricating, our products should be stored in the following ambient conditions for approximately 10 days:
 - Temperature: 18 to 22°C.
 - Relative humidity: 40 to 60%.
- It is strongly recommended that a stabilising period of approximately 10 days be observed before proceeding to any fabrication.
- Do not store filmed sheets beyond 6 months. After usage, it is essential to remove the film within a maximum of 2 months.

Fabrication of sheets (Polyrey HPL, Placage, Pur Métal)

For more information, please refer to the AFNOR or BLFA fabrication guidelines.

Balancing HPL sheets

- The larger the surface to be covered, the greater the need to balance the board correctly. The best results are obtained by using decorative laminate of similar origin and colour, laid in the same direction (see sanding on rear of sheet), and bonded simultaneously with the same technique on both supporting faces.
- Good results are also achieved using Polyrey balancers.

Cutting

- The best tools are those featuring tungsten-carbide inserts, sharpened with care to avoid chipping and incipient cracking or crazing. At all times, protect the decorative face of the HPL sheets against possible abrasive friction (a sheet of clean paper is sufficient).
 - Manual cutting with a scoring tool e.g. Zinc

worker's claw - follow the trace using a straight edge.

- Cutting with fixed machines: HPL sheets can be cut individually or in batches. Circular saws are most often used industrially.
 - To avoid stress-cracking, internal corners and notched incisions should always be smoothly rounded with a minimum radius of 5mm.
- Internal openings may be cut directly with a side and face cutter, or roughed-out with a drill bit to the required radius before making the opening by sawing down from one corner to the other. When drilling, the use of a hardwood wedge will prevent splintering when the tool is removed.
- Internal corners can lead to the formation of cracks. If internal corners are necessary for design reasons, the decorative laminates should be butt-jointed at each corner.
- When using laminates near a source of heat, the maximum temperature must not exceed 60°C.

Bonding (guide AFNOR T 54327)

- Work only on flat, clean surfaces at an ambient temperature of approximately 20°C and 50 to 60% relative humidity.
- When cutting HPL, dimensions should be over-sized by a few millimetres in relation to the core board.
- Use as little adhesive as possible, and apply evenly and symmetrically in the case of bonding two faces. (Please refer to the adhesive manufacturers' guidelines).
- Adhesives must be selected according to materials and application.
- A pre-test is always recommended before starting a major job.
- When bonding gloss laminates on a press, use moderate temperatures and pressures ($t < 60^{\circ}\text{C}$ and p between 1 and 1.5 bars).
- When hot bonding filmed sheets, avoid exceeding 70°C for 6 minutes at a pressure of 2 bars.

Postforming (AFNOR guideline T 54321)

- Postforming grade laminates can be formed under the effect of heat (165° to 170°C) and mechanical pressure along convex or concave generator lines. We guarantee a minimum radius of 8mm for our 0.8mm thick laminates.
- The postforming process requires specialist equipment.

- Postforming of a piece on a heated tube, then bonding separately onto a previously machined substrate.
- Postforming of a piece under infrared radiant elements, then bonding separately onto a previously machined substrate.
- Simultaneous postforming and bonding of a piece after heating under infrared radiant elements.
- Simultaneous postforming and bonding of a piece by contact with a heated bar.
- Continuous, simultaneous postforming and bonding using heat from infrared radiant elements.

Bonding

- The process consists of obtaining a curved surface from a flat decorative laminate by cold bending under mechanical pressure.
- The bending aptitude for a 0.8mm thick HPL depends on the grade of the product used. The minimum bending radii for our products are as follows:

Polyrey standard grade	20 cm
Polyrey postforming grade	10 cm
Polyrey Class 1 fire retardant grade	30 cm
Polyrey Placage	MAT, VEINÉ 20 cm SATINÉ, BRIHG 20 cm BRUT 40 cm
Polyrey Pur Métal	20 cm
Placage edging	30 mm

Fabrication of Compact, bonded boards and melamine faced chipboard

It is important to regulate the overbite of the blades so that the entry and exit cuts are of optimal quality. In practice, an overbite is used which corresponds to the full height of a tooth, and this height is then decreased if the exit cut is of a lower quality than the entry cut. If the opposite is the case, the height is increased.

Machining

- **Precision Cutting** This involves cutting pieces of an exact size from the original sheet, without chipping the edges of the decorative surface. Depending on the case, precision cutting includes: Cutting before the precision cutting, followed by adjustment. Precision cutting (or finishing) directly with a saw.
- **General Cutting** This process uses an electric circular saw:
 - a vertical or horizontal table
 - one or many cutting heads: fixed or mobile, situated on or below the table. Even in the case of rough cutting, it is always preferable to achieve edges with minimal dimensional variance, so as to limit the loss.

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Even in the case of rough cutting, it is always preferable to achieve edges with minimal dimensional variance, so as to limit the loss of material in adjustments.

■ **Angle of entry and angle of exit** Whatever the type of teeth chosen, the essential characteristic is the angle of entry which should be between 6 and 12°. Angle > 12°: risk of crazing of surface
Angle > 6°: badly cut core board
-The angle of clearance will be 10 to 15°
-The spiral lead angle: often neglected, it assures a progressive penetration, therefore requiring less power from the machine above and below.

■ **Routing** This process generally involves the use of a router.

■ **Cut-outs** Cut-outs should be made using a fixed or hand-held cutter with tungstene carbide bits, at a high rpm (18,000 - 24,000rpm) with a minimum radius of 6mm on the internal corners. With Compact, routing and calibrating processes should be carried out on fixed machines equipped with carbon tools. The use of portable cutters and routers is advised.

■ **Drilling** Generally, for diameters up to 30mm, tungstene carbide spiral drillbits are used, which include a centre pin, two tracing teeth and two scouring teeth. High speed spiral drills with a point of angle of 60 to 80° are suitable for boards faced with HPL. With Compact laminate, it is preferable to use drills with a point of angle of 50 to 60°. Wherever possible, use a piece of wood as a back-up to produce a clean hole.

Relative Humidity

- Once the boards have been fabricated, the two faces should be ventilated and stored in the same ambient temperature and relative humidity conditions. This principle must be adhered to in the case of wall panelling in particular.
- Never leave a composite board or sheet of Compact with protective film on only one face.

Care and Maintenance

- Slight stains can be easily removed with a damp cloth and warm soapy water or non-abrasive, non-alkaline cleaning products. Stubborn stains can be removed with an organic solvent such as methylated spirits or acetone. Never use cleaning wax or polishing products. Vinyl adhesives should be removed with hot water, and neoprene adhesives with the appropriate solvent.

Finishing

Edging treatments

■ **Finishing** The rough edges of high pressure laminates are very sharp. They can be easily removed with a soft file, always working from the surface to the core board. A scraper, a small metal hand-plane at an angle of 15°, an electric plane or fine sandpaper may also be used.

The edges of Compact laminate boards can be finished by routing, followed by fine sanding and oiling depending on the desired finished look required. As a general rule, special edging is not necessary.

■ **Edging** The edges of core boards should be solid and even. Gaps can be corrected by using a filler. Edgings are generally applied using thermosetting adhesives, with or without primer, on an edging machine. Edgings can also be applied cold with contact adhesives, or hot with white adhesives using frame presses with clamps or heated bars.

Pre-glued edgings are available and are applied using heat and contact pressure. In the case of use in a humid environment, moisture resistant framing can be used (phenolic plywood), with profiles jointed by waterproof putty or epoxy or polyurethane primers, etc.

■ **Jointing** The jointing of boards on a wood-based core can be carried out in a number of ways, of which only a few are mentioned below:

– By screwing. Take care to pierce the holes so that the diameter is the same as the body of the screw and only use countersunk screws. The diameter of the screw hole in the HPL should be at least 0.5mm larger than the diameter of the screw.

– With stay bolts, glued pinions (Lamello system etc.)

When jointing Compact, it is necessary to take into account the dimensional variations and the direction of the board at the planning stage. Any piercing should be oversized and any ironmongery should be tightened with plastic washers in-between to allow sliding.

For more information

The information above constitutes a general basis for the fabrication of our products. For more in-depth instructions or specific fabrication guidelines, please refer to the guidelines available at www.polyrey.com or to the BLFA Code of Practice which can be ordered from the website www.blfa.co.uk:

1. Code of practice
2. British Standard for the production of high pressure decorative laminates based on thermosetting resins EN 438 1991
3. Worktops with HPL surfaces
4. UK fire regulations and BS 4765.
5. The processing of postforming grades of HPL (high pressure laminates)
6. General working recommendations for edging materials made from thermosetting resins
7. High pressure laminates in Bathrooms
8. Fabrication and fixing of HPL veneered mineral based core materials
9. Bonding and processing of HPL on metal substrates
10. The processing and use of HPL compact sheets
11. Formed compact elements
12. Chemical resistance of HPL
13. Product data sheet for HPL
14. Product data sheet for HPL elements
15. Electrical properties of HPL electrostatic and antistatic behaviour
16. Fabricating with wood veneer laminates
17. Quality specification for high pressure laminate fabrication