FENIX®

STORAGE, HANDLING AND PROCESSING GUIDELINES.

STORAGE AND TRANSPORTATION

Transportation and handling of the sheet material should only be carried out using suitable equipment. Sheets must always be handled with care to prevent damage to the external surface. FENIX is not an inflammable material; therefore fire prevention and protection measures must be adopted as per wood based products.

STORAGE

The sheets must be stored in a proper environment as for example a dry, clean and frost-free room. Place pallets and sheets on a flat surface that provides full support. Keep sheets in the original packaging whenever possible. Remove straps if sheets are to be stored for a long period of time. Prevent moisture forming between sheets. Do not place moisture-sensitive (paper) layers between sheets.
Partial (on one side only) exposure to moisture or heat can be prevented by:

- stacking the sheets one on the top of the other;
- avoiding gaps between sheets, e.g. when sheets have been machined;
- removing protective films from both sides at the same time;
- removing protective film within 24 hours after packaging removal.

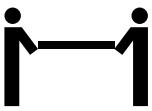
TRANSPORT

FENIX sheets should be handled and transported only by a moving or other professional with proper equipment with great care to avoid breakage and damage. If the sheets should be loaded or unloaded, they should be lifted and not slid during loading and unloading operations, unless they are back to back, in pairs. One sheet rubbing against another can cause surface scratches or abrasions.
Single sheets should be carried with the pigmented part facing the carrier's body. Two people are needed to handle large sheets, and we further recommend bending the sheets lengthwise.
Prevent dust from depositing on and between sheets. Use adhesive, easy to peel off stickers for marking / coding and remove immediately after installation.

Transport of FENIX Thin Sheets

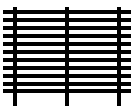
In case of thin sheets (less than 0.9 mm thickness), individual sheets may be rolled up for handling with the pigmented side facing inward, forming a cylinder about 600 mm in diameter or at least large enough not to damage the sheet. When transporting stacks of sheets, use a platform of suitable size and stability, securing the sheets with straps or stretch film in order to avoid dangerous slipping.
If the sheets have to be transported, secure the sheets using straps and place corner protection under the metal straps.

During transportation, the panel pigmented side should be facing face the carrier's body



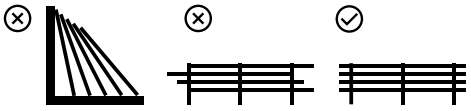
Two persons are always required to handle large sheets.

Fork length >1.5m with load capacity > 2500Kg

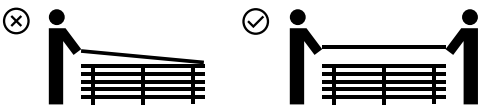


6m max height for stacking pallets

Panel should be stored in sheltered rooms



Correct panel positioning



Panel handling should be carried out by two people

Transport of FENIX Solid Panels

Secure the panels using straps during transportation. Place corner protection under the straps.

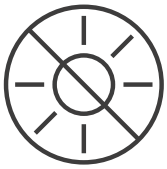
Sheets with adhesive protective film

The protective film is designed to temporarily protect the surface from dust, scratches and marks left by handling equipment; it does not protect from corrosion, dampness or chemical agents.

Sheets covered with protective film should be stored in a clean dry atmosphere at room temperature (ideally 20 °C), avoiding exposure to atmospheric agents and UVA rays.

The protective film should be removed from the sheet surface after application and before the final item. In case of thick sheets with protective film on both sides, the film should always be removed from both sides at the same time. In any case, the removal should take place within 6 months from the date of shipping by Arpa.
Arpa shall not accept liability for improper use of sheets covered with a protective film, nor for any consequences of an incorrect application.

Protective film symbols:



The protective film used is photosensitive; therefore storing sheets under direct sun light is to be avoided.

**The product has a slight directionality, which is only visible under some light conditions.
Direction is indicated on product packaging for extra precaution.**

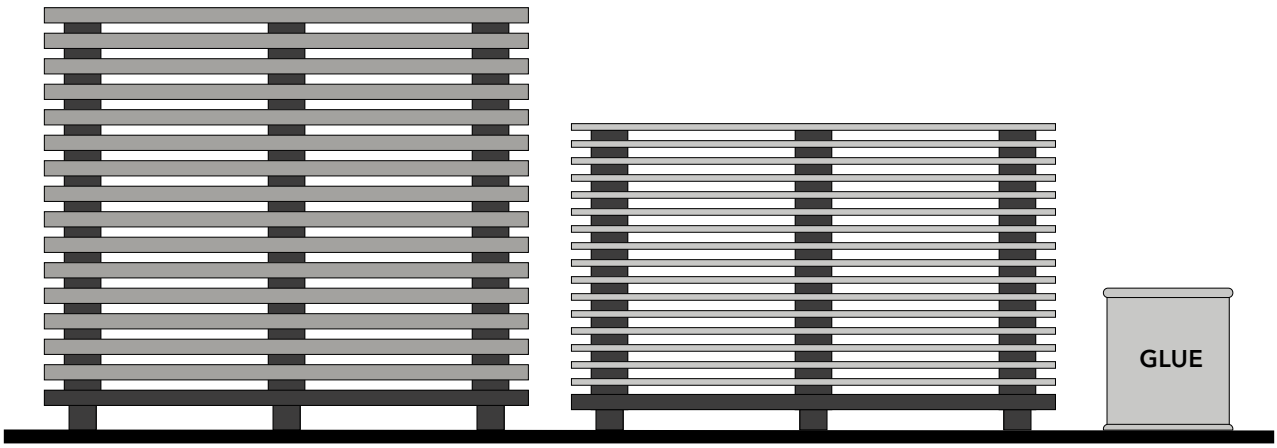
FENIX PROCESSING

FENIX sheets are composed of over 60% cellulose fibre. They are sensitive to temperature variations and, above all, to humidity variations, which can cause dimensional changes.
Dimensional changes of FENIX sheets can be different from those of the support and so cause warping of the finished composite sheet.
This issue can be solved by:
• pre-conditioning of both support and sheet before gluing;
• balancing the composite sheet so that both sides are made of sheets with identical properties;
• ventilation and humidity control of the room where the composite sheet is installed;
• installing the sheet so as to allow for dimensional changes, if any.

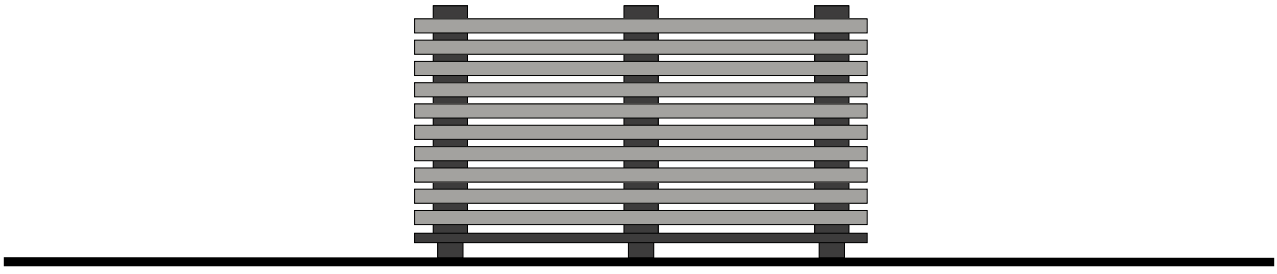
PRE-CONDITIONING
In order for FENIX sheets and its support to reach a balanced and constant level of humidity, both the sheet and support need to be pre-conditioned at the same time before gluing.
This operation makes it possible to reduce any differences in the materials to a minimum, particularly in case of changing environmental conditions that generate tensions.
Solutions include either "cold" or "hot" techniques as described below.

Cold pre-conditioning
Method A
Sheets and supports are stacked together for at least three days in a room where humidity and temperature conditions are similar to those of the place where finished sheets will be installed.
If these sheets are installed in a warm place with constant low humidity, their components should be conditioned in a warm and dry atmosphere to avoid subsequent shrinking.

Method B
Sheets, supports and glue should be placed for about ten days in a room with a temperature ranging between 18 °C and 20 °C, with a humidity percentage of 50% and good air circulation.

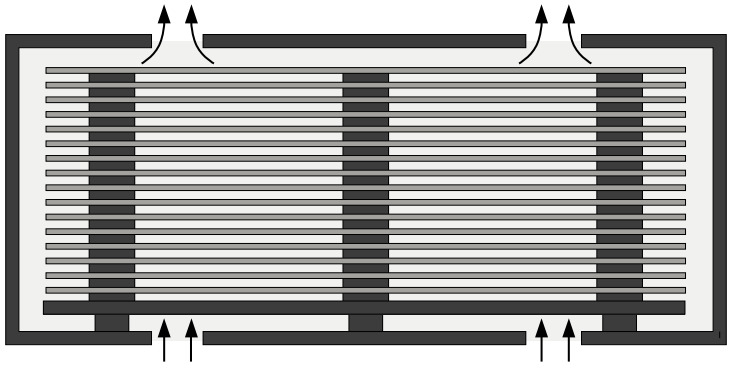


Method C
FENIX sheets that constitute the opposite sides of the same sheet are stacked back to back, in pairs, for at least three days in a dry room, until they reach a similar degree of humidity. After gluing, each movement caused by humidity variations will be similar in size and direction on each side of the sheet, thus reducing the risk of warping. With this method, conditioning of the support in the same location is not required.



Hot pre-conditioning
FENIX sheets are arranged in pairs, spaced apart, in order to allow hot air to circulate.
Duration and temperatures will vary depending on the type of glue used (e.g. for about 10 hours at 40 °C or 6 hours at 50 °C). If the operation needs to be speeded up, the sheets can undergo an accelerated partial drying process by placing them, separated by battens, in a small heated room (e.g. for about 3 hours at a temperature of 40 °C or for 2 hours at a temperature of 50 °C). To speed up the operation even further, a heat press can be used, whereby sheets are processed two at a time (face to face) (e.g. for about ten minutes). Gluing should be carried out a few hours later. The above guidelines can be applied when weather conditions at the sheet's intended location are temperate.

If the composite sheet's final destination is one with low relative humidity, it is advisable to pre-condition both the support and the sheet at a similar relative humidity and at room temperature, or at a higher temperature for a shorter period (e.g. 20 hours at 40 °C or 10 hours at 50 °C). It is never advisable to exceed 50 °C. Gluing should be carried out immediately after pre-conditioning, strictly in accordance with the manufacturers' recommendations.



Please note that the mentioned durations and temperatures are a general guide to good practice only and constitute no form of warranty or representation as to fitness for purpose in respect of the process. The user is required to verify and test for specific suitability.

FENIX SHEET BALANCING
For correct sheet balancing, the same type of FENIX sheet should be used on both sides (thickness 0.7, 0.9 mm or 1.2 mm and if possible from the same production batch). Stresses may occur between two different materials bonded together. To avoid subsequent distortion in the resulting sheet, it is therefore desirable to use materials with identical properties on both sides, subject to the same dimensional changes in relation to environmental variations. This is an essential strategy, especially if the sheet is self-supporting or not directly supported by a rigid structure.

The larger the area to be clad, the more essential it is to consider the following factors: choice of the most appropriate sheets for balancing the composite sheet, density, symmetry, and rigidity of the support. Ideally the sheets to be used for both sides of the finished composite sheet should be taken from the same sheet or from sheets from the same manufacturer and of the same type, thickness, colour, and production batch. It is important that the two sheet sides are cut in the same direction, i.e. in the direction of the paper, which is the same as the direction of sanding. Any dimensional changes to the sheet will then be minimal compared with what would occur if the sides were cut in the opposite direction.

Although not recommended as the risk of warping can then not be totally ruled out, it is possible, in standard and non-critical applications, to use materials other than FENIX on one side of a composite sheet provided, subject to correct balancing (e.g. HPL Arpa in 1.0 mm thickness for FENIX NTM in 0.9 mm, HPL Arpa > 1.2 mm thickness for FENIX NTM 1.2 mm, and a "dedicated" HPL Arpa in 1.0 mm for FENIX NTA in 0.7 mm).

Of course, it is important to choose materials with physical properties similar to those of FENIX, as the more these differ from those of FENIX, the more likely it is that stresses will be created due to the lack of symmetry.

VENTILATION AND HUMIDITY CONTROL
Both FENIX Thin and Solid sheets supplied by Arpa are always covered with protective film. In the case of Solid sheets, both sides are covered with protective film. To store them properly, the protective film should never be removed from just one side. It is also important to remember that FENIX sheets and wood fibre support are materials that are sensitive to humidity variations in the air. FENIX for example, expands by about 1.5 mm per linear metre in both length and width directions. Adequate space for expansion should therefore be allowed for between one sheet and the next.

FENIX THIN SHEETS: PROCESSING

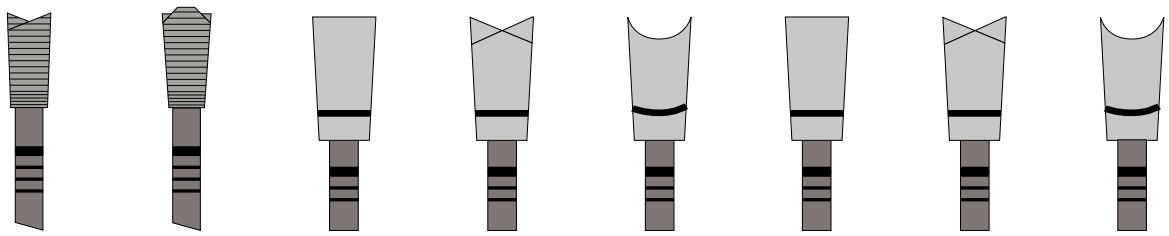
Processing FENIX Thin sheets should be done by a professional using proper equipment. The entire process is explained in more detail in the following chapters on cutting, milling, drilling, edging and gluing.

CUTTING

FENIX NTM thin should preferably be cut with saws using blades with tungsten carbide inserts or diamond ones in case of FENIX NTA.
The tungsten carbide ones are in fact long-lasting but must be handled with care as they can easily be damaged if they come into contact with metal surfaces.
During the cutting process, the material can produce inert powder. Staff performing the cutting process have to be adequately trained, and equipment used to cut the materials to size has to be adequate for the purpose and well maintained and calibrated.
Every fabrication company working with the panels needs to make sure that proper risk assessments have been performed.

Cutting by hand

If on-site work is required, hand-held circular saws are used. The tool must be well sharpened so that great pressure is not required, thus reducing the risk of chipping and/or cracking the material. The operation should always be carried out in compliance with codes of practice and safety regulations.



Profile of tungsten or diamond inserts fitted to the saw discs currently available

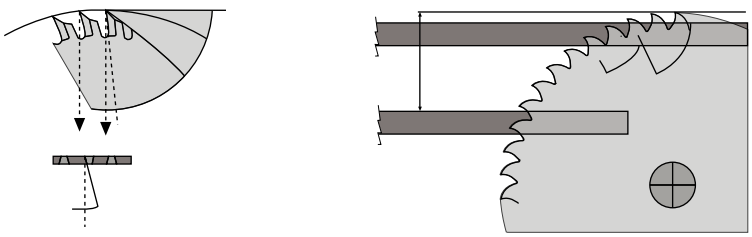
Cutting with bench machinery

This paragraph deals with circular saws. To get good results with bench circular saws it is essential to do the following.
- Place the FENIX sheet with the pigmented side in the opposite direction to the rotation of the blade. In addition, the sheet must be well supported and secured with an adjustable height pressure tool to prevent movement and vibration.
- Use an accurate guide.
- Make sure that the saw blade is aligned with the worktop and has the right protrusion. It is also possible to cut several sheets together. In the case of sheets with pigment on one side only, all sheets should be placed with their pigmented sides facing upwards. Alternatively, the stack of sheets should be placed on a “sacrificial sheet” that has the same or superior hardness and texture as those being cut to shape.

Recommended specification for circular saws:
- tooth pitch: 10 to 15 mm;
- cutting speed: 3,000 to 4,000 rpm;
- tip speed: 60 to 100 m/s;
- forward speed: 15 to 30 m/min.

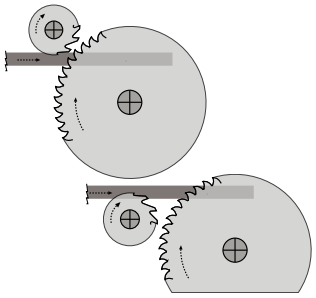
The blades should not be too thin. If they are less than 2 mm thick, they lose rigidity and vibrate, making the cut less precise.

Blade forward outlined



Cutting composite sheets
Everything mentioned so far also applies to the cutting of composite sheets with the pigmented part glued onto one or both sides of the support. In this case too, band saws are not recommended. Best results are achieved using fixed circular saws fitted with scribes and by carefully adjusting the blade height. The quality of the cut also depends on the profile and the number of teeth, the tip speed, the forward speed, and the blade's angle of entry and exit.
For cutting composite sheets, we recommend:
- choosing the most suitable blade;
- using a low forward speed and not "attacking" the material;
- operating a dust suction unit during processing.

Operations should be carried out in compliance with codes of practice and safety regulations.



Circular saws with a scoring blade

MILLING

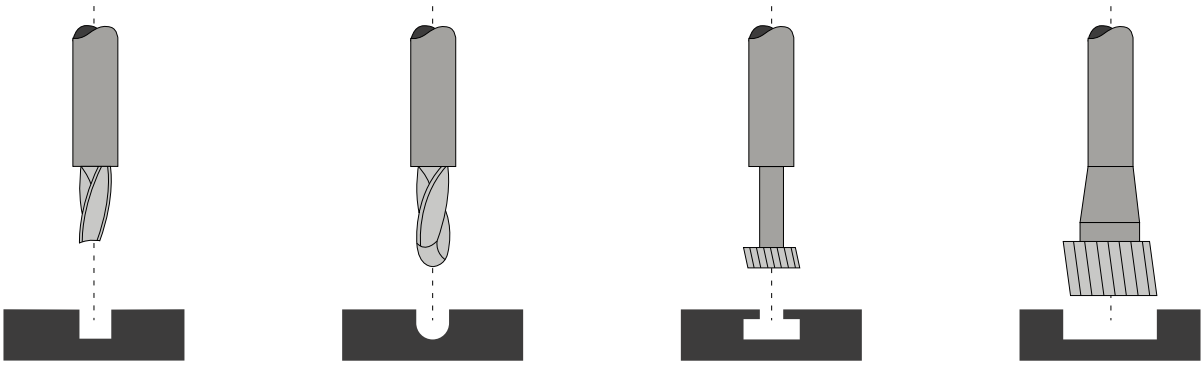
Depending on the circumstances, milling can be carried out in various ways using hand-held tools or fixed equipment.

Milling with hand-held tools
For an accurate job, it is always essential to use machining centres. Hand-held cutters as well as belt sanders or grinding wheels are used especially to trim the projecting edges of sheets already glued onto a support.

In such cases, the base of the cutter must be covered with felt to protect the pigmented side during the work. The laminate surface should be cleaned of any dust and grit. It is also essential to remove the chips by suction during the operation.
A rotation speed of at least 20,000 rpm is required for the machined part to be properly finished.
Cutters with two blades, one straight and one tilted, are suitable both for a square cut and for chamfering.
To avoid damaging the tools, the section of sheet to be milled should not project beyond the support by more than 2 to 3 mm. For continuous operations or for major jobs, the use of power tools with parallel blades is recommended.

Milling with fixed equipment
Milling machines or wood machining centres with spindles with interchangeable blades can be used.

The recommended tool attachments are cutters, discs or bits in solid tungsten carbide or in steel with tungsten carbide or diamond inserts, and with one or more vertical or angled teeth.
In the case of curved edges, it is better to cut out the rough shape required first, leaving a 1 mm surplus. The next step is then milling to the finished shape required.



Smoothing by hand
Various tools such as files or sandpaper can be used to finish the edges or chamfer the corners by hand.
Square (rather than milled) files are used to trim the edges or chamfer the sharp corners, making sure to use the files in a direction away from the pigmented side towards the core. It is also possible to use fine files or abrasive

paper and dual speed scrapers. To avoid scratching the surface, it is important to proceed gently and possibly in two stages: first with a coarser and then with a finer sandpaper.

DRILLING

The techniques shown apply both for drilling individual FENIX sheets and for drilling sheets that are already glued to a support. These operations should also be carried out in compliance with codes of practice and safety regulations.

For best results and to avoid the risk of future splits or cracks, it is important to bear in mind the following:

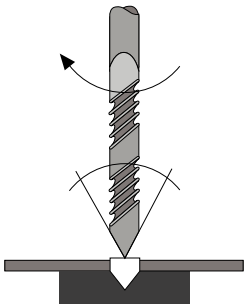
- Holes for screws should have a diameter at least 0.5 mm greater than the diameter of the screw itself. This is because the screw must have some clearance in all directions without touching the edges of the hole, to allow for slight dimensional movements in the sheet caused by changes in environmental conditions and to avoid cracks appearing around the hole itself.
- The drill speed should never be such as to overheat the surface of the pigmented sheet and damage it.
- To avoid splintering the material around the drill bit exit hole, we recommend placing the sheet on a hardwood board.
- To prevent roundhead screws from "gripping" too tightly, plastic or rubber washers can be used.
- After drilling, it is advisable to check that the edge of the hole is clean and smooth. If this is not the case, carefully rectify it as any micro-spalling can lead to cracking in the future.

Drilling tools

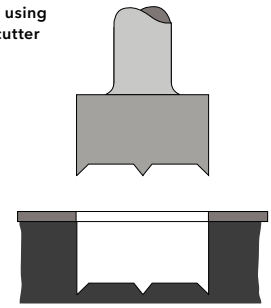
The choice of tools depends on the size of the hole that has to be made. Basically it involves hand tools, pillar tools, or a machining centre that can mill as well as drill.

- Twist drill bits: the most suitable bits for drilling FENIX sheets are special steel twist drills bits for plastics, with a tip angle of 60° to 80° (rather than the 120° of normal metal bits), a sharp helix angle, and a wide flute for rapid chip removal. The recommended rake angle is 7° with an 8° angle of attack.
- Hole cutters are recommended for larger holes.

Drilling using a twist drill bit



Drilling using a hole cutter



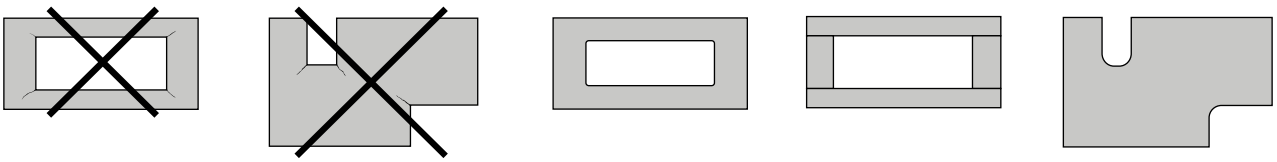
How to make internal cuts

The following refers both to FENIX sheets and to composite sheets with FENIX sheets applied to one or both sides. When carrying out internal fretwork, it is important to know that rightangled cuts may cause breakage or cracking of the material. In order to prevent this, all the corners of the internal cut-outs should be evenly rounded, polished, and brushed to remove any chips.

The inner radius of the rounded corner must be as large as possible. For internal cut-outs with side dimensions of up to 250 mm, the rounding of the corners should create a radius of at least 5 mm. If the length of the cut is greater, the radius of the corners should be greater too.

Before cutting the side of the opening, it is better to form the interior angles directly with the milling machine or drill, rounded to the required radius. If the design requires interior right angles, this should be achieved by assembling FENIX sheets together at each corner with butt joints.

Right angle cut-outs can cause breaking or cracking in the panel. Interior trim corners should be rounded.



EDGING

FENIX sheets in the thin version can be edge-banded using the same colour with 1.2 mm thickness (matched colour core) or using ABS or PP edge-banding strip developed in partnership with manufacturers of edge-banding material (e.g. Ostermann, Rehau and Döllken, BVR, GIPLAST, etc).
For FENIX NTM, a polyurethane glue should be used for edge-banding 1.2 mm thick FENIX NTM sheets. ABS or polymer edge-banding strips can be glued using hot-melt glues, with new laser systems or with air systems.
For FENIX NTA, we recommend using ABS edge-banding directly on FENIX NTA sheet in 1 mm thickness and exclusively hot melt glue.
FENIX NTM and FENIX NTA edge banding examples are available for download from our website fenixforinteriors.com

BENDING

0.9 mm FENIX NTM can be cold bent with external radius not below 15 cm using "form-counter form"/"mould counter mould" systems.
0.7 mm FENIX NTA can be cold bent with external radius not below 20 cm using "form-counter form"/"mould counter mould" systems.
We do not recommend hot bending, using dynamic post forming machinery, as the acrylic surface of FENIX sheets processed in this way can be subject to superficial micro-cracking on the pigmented part.

PRODUCTION OF COMPOSITE SHEETS

FENIX Thin is a semi-finished product that requires gluing onto a support in almost all its applications.

Supports

The support upholds the sheet and must resist distortion. The support should therefore be selected according to the characteristics of the application, the intended use of the composite sheet, and the installation environment, according to the following characteristics:

- stability
- planarity
- rigidity
- mechanical properties
- uniformity of thickness
- resistance to water and humidity
- fire performance properties

For the surface of FENIX sheets to appear perfectly smooth and uniform, the surface of the support should also be of similar characteristics. Imperfections on the support, in fact, tend to be transferred to the sheet surface, especially if the sheet is very thin. Plywood, chipboard and MDF sheets are generally excellent supports because they experience dimensional changes similar to FENIX sheets as they are themselves also made of cellulose. Metal or mineral-based, kraft paper, and foam plastic supports are also sometimes used.

Adaptability of supports

The table below contains a list of support materials that can be combined with FENIX sheets and their degree of adaptability.

Recommended supports

Support	Degree of adaptability
Panel of particle Board (Chipboard)	Fixing methods depend on the thickness of the composite panel. The structure of chipboard (chip shape, resin content, density etc.) greatly influences its surface quality and characteristics. The most appropriate chipboards for bonding to decorative laminates are multilayer chipboards. P3 EN 312-3 type chipboards are an ideal backing for FENIX in dry climate areas and can be produced also with fire-repellent properties. P5 EN 312-5 type panels are more resistant to moisture and can be installed in areas of greater humidity. To avoid damage due to shrinkage and distortion, the panels should be sanded evenly on both sides. Panels must meet the minimum requirements of the standards. The nominal density should be no less than 650kg/m3.
Medium or high density fibre board (MDF – HD)	They should be sanded before bonding (usually carried out by the manufacturer). They are made using a dry process and use synthetic resins for bonding the wood fibres together; they have a uniform structure and a fine texture that enables well-shaped finishes to be achieved with smooth edges. They can be treated to increase fire and moisture resistance. Their nominal density should be no less than 800kg/m3.
Plywood panels	Thin panels are not self-supporting. Fixing techniques depend on the thickness of the composite panel. Low density plywoods in hardwood such as poplar are particularly suitable for bonding to FENIX sheets.
Laminboard panels	Laminboard panels are suitable only if formed of narrow enough strips. Otherwise, surface undulations may appear in low humidity conditions.
Honeycomb Structure supports	These can be used as internal components of a support or combined with a frame. They can be made of wood, metal, impregnated paper, cardboard (recycled or otherwise), polycarbonate or polypropylene. In aluminum, they are ideal for creating panels that are both rigid and lightweight, with FENIX panel coating on both sides. They come in different thicknesses and various cell sizes and are bonded with epoxy resin-based adhesives. In non-impregnated Kraft paper, they are generally used as a core in plywood sandwich panels or panel doors; they are also used with direct lamination in applications where weight restrictions or impact resistance are more important. Impregnated Kraft paper resists moisture better when impregnated and is normally used in small cell formats. Plastics such as polycarbonate and polypropylene are durable, light and not sensitive to moisture.
Tempered Glass	A likely support onto which FENIX can be applied is tempered glass; to obtain uniform colors, also on the edge of the glass panel, it is suggested to use specific polyurethane glues in combination with the paint on the balancing side of the support.

Non-recommended supports

Support	Degree of adaptability
Mineral-based supports	Concrete, calcium silicate or vermiculite panels. There are several non-combustible supports, mostly calcium silicate-based. FENIX sheets must only be used on supports made of a unique block because these are more resistant to delamination.
Metal supports	Metals have different dimensional movement compared with FENIX sheets. Aluminum and steel are suitable supports if their surface is prepared carefully before bonding the FENIX sheets onto (with PUR or epoxy glue).
Foam plastics (polystyrene, PVC, polyurethane, Phenol based, etc)	Rigid foams are self-supporting substrates with good thermal insulation; they are suitable supports for direct lamination. Phenolic foams have good fire resisting properties. They can also be found as the “core” in timber frames.
Plaster or concrete Surface	The uneven surfaces of these supports do not normally lend themselves to the direct application of panels. In addition, the dimensional movements of the materials are mostly incompatible.
Simple plaster or wallpaper surfaces	The dimensional movement of the panel on the paper could result in breakage.
Solid Wood	This is unsuitable. The irregular dimensional movements cause surface undulations. As a support for panels, it can only be used in small areas.

How to bond FENIX sheets to supports

Firstly, prior to bonding, the sheet surface and support should be thoroughly cleaned of any dust, grease or other particles that could cause defects or stains.

Bonding temperature

Normally, bonding is best carried out at room temperature but never below 15 °C. At higher temperatures the setting time of the glue is reduced.
It is advisable to carry out tests to check how the glue reacts and to follow the glue manufacturer’s guidelines, which can differ for different glue types or environmental conditions.

Adhesives

The choice of glue, from among the many types available, should be determined by the type of support and the purpose of the finished product.

Classification of adhesives

1. **Based on their reaction to heat:**
   - Thermoplastic adhesives soften with heat. This group includes chloroprene and neoprene-based glues and those based on PVAc (polyvinyl acetate), silicones, acrylics, thermo-melting (hot melt), and special glues.
   - Thermosetting adhesives harden when heated, after initially softening. These include glues based on urea and formaldehyde, melamine and formaldehyde, resorcinol and formaldehyde, phenolic and polyurethane (one or two-component PUR) glues, and polyester and epoxy resins.

2. **Based on method of application:**
   - High-pressure adhesives:
     - High pressure and long duration. Pressure is exerted at a set temperature by a mechanical or hydraulic press on the sheet and support, which are in full contact. This group includes PVAc, acrylic, urea and phenolic-based glues, and resorcinol and formaldehyde-based glues.
     - High pressure and short duration. Pressure is exerted for a short time (static pressure contact adhesive) and distributed evenly by hammering or using a rubber roller, in other words placing a load on the sheet being built. This group includes neoprene, chloroprene, and PVAc B2-B2.
   - Low-pressure adhesives:
     - Low pressure and long duration. Polyester-based glues, PUR polyurethane glues, and epoxy glues.
     - Low pressure and short duration. Thermo-melting (hot melt) glues, to be applied with special equipment.

Hardeners

Neoprene-based adhesives are used with a hardening agent, which increases the heat resistance of the glue. Thermosetting adhesives are used with accelerators and catalysts, which ensure a good hold thus reducing the temperature and the period of application.

Bonding method

There are different types of bonding methods:
- Thermo-melting (hot melt) glues (to be applied with special equipment);
- Bonding using presses:
  - Cold presses. These can be used with steel sheets and limited pressure;
  - Hot presses. These can be used with stainless steel sheets, by placing a sheet in every empty compartment.

Types of Adhesives

Thermoplastic adhesives	
Neoprene/ Chloroprene	Polychloroprene based, available in solvent or in aqueous solution; with or without hardener.
PVAc	Polyvinyl acetate-based emulsion. Available as one or two-component glue: the latter shows greater resistance to heat and humidity. If the support is compact and uniform, this ensures a good bond, being easy to use and fast setting. Being liquid, it should be distributed carefully over the surface to prevent fibers or chips from lifting at a later stage.
Acrylic Compounds	
Silicone	
Hot melt (Thermo-melting)	Almost exclusively used for bonding edges and assembling pieces. They must not to be used near a hot surface.
Thermosetting adhesives	
Urea Glues (UF)	Urea and formaldehyde-based. Durable and resistant to high temperatures but with poor water resistance. Applied with a press at high temperature.
Melammine glues	Synthetic resins obtained by polycondensation of formaldehyde with melamine. Water, abrasion and heat resistant with considerable transparency to light radiation.
Resorcinol and formaldehyde-based glues	Use with hot or cold pressure for bonding the panel to moisture-resistant and some fire-resistant supports. Good weathering resistance.
Phenolic glues	Resistant to water, weathering and high temperatures. They reduce considerably in volume while setting.
Polyurethane glues	These are strong and flexible and adhere well to smooth or porous surfaces; they withstand low temperatures better than other glues, while not tolerating high temperatures well. They have good cavity-filling properties. One or two-component, they are excellent for bonding panels to difficult supports such as polystyrene, metal, plastics, etc.
Polyester	This type is more sensitive to heat than other adhesives.
Epoxy resins	They bond well to many materials and require only a light pressure. The wide range of hardeners available for epoxy glues allows setting times that range from a few seconds (if the temperature is high) to many minutes or hours (at room temperature). They are resistant and durable, have good cavity-filling properties, and shrink very little in volume after drying.

Gluing

The following precautions can help achieve optimum results and reduce the risk of undulations, surface distortions (or blisters) and cracking.

- Pre-condition the sheet in temperature and humidity conditions similar to those where it will be installed.
- Avoid the use of contact adhesives, in particular when applied by hand, if the sheet is to be installed in rather damp areas.
- Use contact adhesives only if the sheet is no more than 60 cm wide, applying the adhesive evenly to both surfaces in not too thick a layer.
- Cut the longer side of the composite sheet lengthwise, parallel to the direction of sanding. FENIX dimensional changes are in fact smaller lengthwise than crosswise.

Glues and supports

	Thermoplastic Adhesives				
Supports	Neoprene Chloroprene	PVAc	Silicone Acrylic compounds	Hot melt Acrylic compounds	Special Glues
Wood Based	• Treatment cold	• Treatment hot		•	
Paper Based with honeycomb structure	• Treatment cold	• Treatment hot			
Plastic foam based or honeycomb Materials Polystyrene			•		
PVC	•		•		
Phenol-Formaldehyde	•	•			
Polyurethane	•				
Metal based sheet or honeycomb structure	•			•	
Mineral supports in sheets or plaster based foams		•			
Concrete	•	•			
Concrete foam	•	•			
Glass foam	•	•			

Glues that can be used depending on the type of support

	Thermosetting adhesives						
Supports	Urea Glues UF	Melammine Glues	Resorcinol and formaldehyde based glues	Phenolic Glues	Polyurethane Glues	Polyester	Epoxies
Wood	•	•	•	•	•	•	•
Paper with honeycomb structure	•	•	•	•	•	•	•
Plastic foam or honeycomb materials Polystyrene					•		•
PVC					•		•
Phenol Formaldehyde	•	•	•	•	•	•	•
Polyurethane					•	•	•
Metal in sheet or honeycomb structure			•		•	•	•
Mineral supports in sheets or plaster-based	•						
Concrete					•	•	•
Concrete foam					•	•	•
Glass foam					•	•	•