

CLT BROCHURE

xilonor 

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XILONOR

COMPANY

Xilonor is a Spanish company and the first CLT plant in Galicia, Northwestern Spain. The objective of our venture is to promote the use of sustainable materials while establishing Xilonor as a leading manufacturer for the timber construction sector.

With a technical office formed by a dynamic and experienced team, Xilonor is ready to meet the needs of customers and share their knowledge and passion for timber construction.

Whether you are an architect, engineer or installer, the Xilonor Team is on hand to provide support. Together we can create the best solution for all project types, using the highest quality materials delivered with a truly personal service.



Xilonor is committed to the advancement of timber construction through innovation and the development of a circular economy.

Xilonor CLT is manufactured using locally sourced Galician Pinaster and Radiata pine, generating value for the surrounding environment with sustainable industrialization of local natural resources. This inspiring advancement of the timber sector in Galicia represents a huge leap towards reaching a circular economy for the region.

XILONOR VALUES

Our business identity is based on two basic principles: Efficiency and Respect.

These values form the foundation and are the hallmark of Xilonor, with commitment to this philosophy guiding our every step.

RESPECT

bringing out the best in every collaboration, valuing reciprocal relationships driven by:



SIMPLICITY,
focusing on essence,
without pretense
to allow consistent
attention to detail.



HONESTY,
sincerity, and
openness, generating
trust.



KINDNESS,
encouragement
of others and
engagement to
reach our goals
while helping others
achieve their own.

EFFICIENCY

fundamental to the sustainable use of resources that promote an organic development of the company we envisage. We must face all obstacles with:



TRANSPARENCY,
regarding conduct
and omissions,
judgment, and
consequences of our
decisions.



INSPIRATION,
with a positive
outlook, motivation
to progress, seeing
every setback as an
opportunity to grow.



TEAMWORK,
being participatory,
respecting all
opinions, developing
a common vision.

XILONOR FACTORY

The manufacturing equipment installed at the Xilonor production facility has been carefully selected from top European manufacturers and optimized to fully exploit the characteristics of Galician pine. Precision and robustness have prevailed in seeking the highest degree of quality for our CLT.

All production is fully automated, from the structural classification of the timber to the hydraulic pressing of the panels and posterior CNC machining of the manufactured components.

OUR TEAM

Xilonor has a highly competent team of experts, the culmination of specialist training and experience in the structural timber sector.

Our technical office is composed of a diverse group of technicians, trained in a variety of fields from architecture to engineering. The team is highly driven and committed to the delivery of effective solutions at the request of project managers, architects, engineers, and installers.



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THE SHIFT TOWARDS MORE SUSTAINABLE ARCHITECTURE

THE CONSTRUCTION SECTOR

The construction sector is one of the largest emitters of CO₂ into the atmosphere.

We are in the midst of a moment of change, and the construction industry must move towards better efficiency and sustainability if it is to continue.

More and more architects are becoming acutely aware of their responsibility, rethinking the way they design, and creating buildings that are more environmentally friendly, prioritizing the use of sustainable building materials with less impact during manufacturing and transport, resources that are renewable and help reduce the emission of greenhouse gases into the atmosphere.



CLT AND THE CIRCULAR ECONOMY

Timber is the most natural and renewable material used in construction, using the latest technologies enables the increasing production of innovative products such as CLT.

At this crucial moment, CLT emerges as a key element on the path towards a circular economy and in reducing the colossal environmental impact generated by the construction industry.

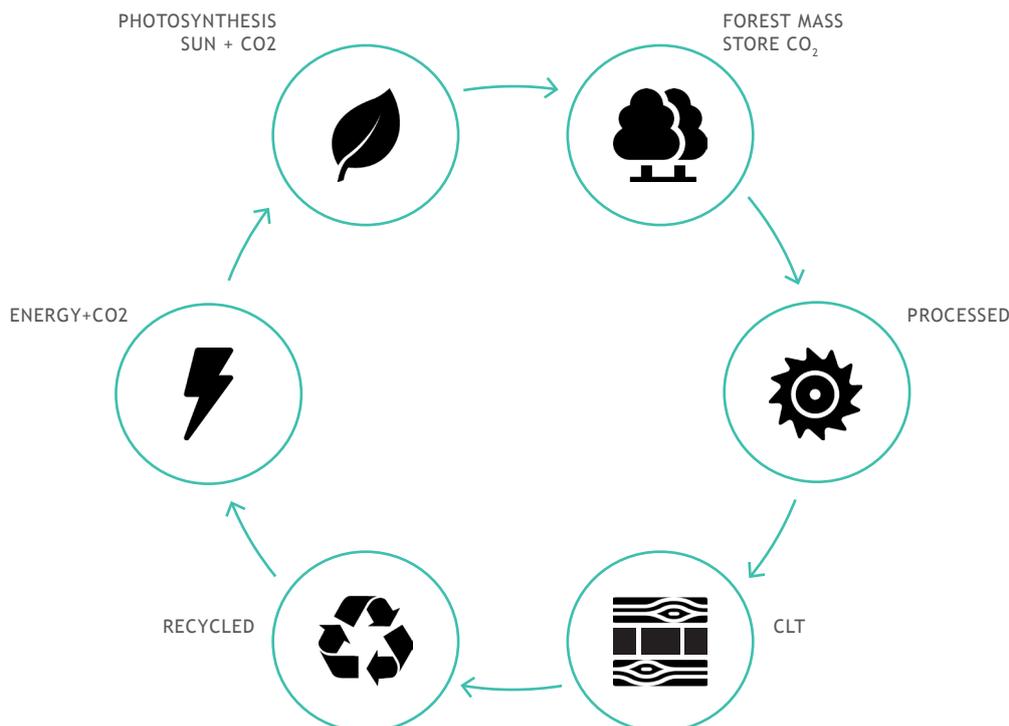
The circular economy is the search for new models of design, production, and consumption as we seek a more sustainable model that implements greater optimization of materials and energy. The gradual move away from the current model, forced through the depletion of natural resources, towards a model that uses renewable materials from the environment, which are also biodegradable, means natural resources are not overexploited, with embodied energy taken into account throughout the life cycle of the product.

The raw material of CLT is timber, which is a natural material of plant origin that grows in

relative abundance and can be managed in a sustainable and controllable way ensuring it does not run out. During the growth phase, trees release oxygen while absorbing CO2 through photosynthesis, making forest masses an ideal store of sequestered CO2.

Once a tree is harvested and processed into the lumber with which a CLT panel will be produced, this CO2 remains encapsulated within the panel itself, continuing to store CO2 throughout its lifetime as a building element.

At the end of its useful life, CLT does not become a waste item of no further use, but rather can be reused for other applications, recycled into alternative wood-based products, or simply transformed into a reliable source of energy, thus closing the circle.



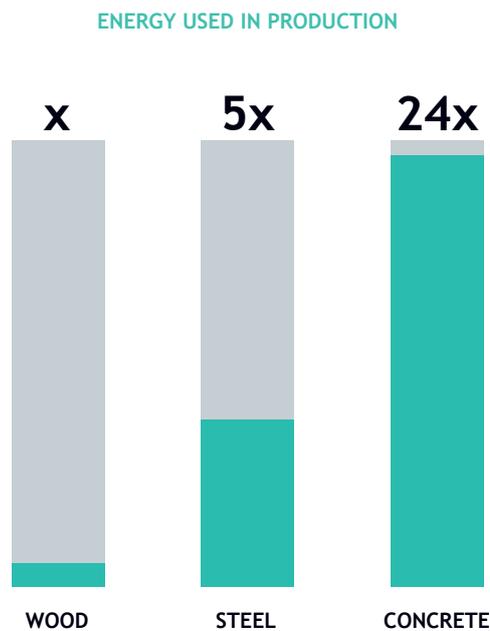
Xilonor CLT is manufactured from Galician pinaster and radiata pine, generating growth from the environment using local resources, the perfect renewable raw material.



Xilonor CLT is manufactured from Galician pinaster and radiata pine, generating growth from the environment using local resources, the perfect renewable raw material.

At the end of its useful life the CLT will not go to waste, it can be reused for other applications, recycled to obtain other wood-based products, or used to generate energy thus closing the circle. Because of this, CLT has a very low carbon footprint, and compensates what little CO₂ is emitted during production through the amount it absorbs from the atmosphere when it is a growing.

When compared with other industries, the energy consumption in timber processing is significantly lower. **To put this into perspective, the energy necessary to produce 1kg of timber:**



If we add to this that an equal weight of timber resists more than concrete or steel, we find it is possible to achieve the same bending resistance using a substantially lighter structure.

A lighter structure means less material, and therefore significant reductions in the energy needed to manufacture it, which in turn means greater energy efficiency.

A summary of the advantages of using CLT as a sustainable building material:

Significantly lower carbon footprint produced during transport of materials from local sources.

CLT building elements continue to store carbon dioxide throughout their entire lifespan.

Manufacturing by-products are used to generate energy. Nothing is wasted.

At the end of the useful life of a building, CLT panels can be used for other buildings and many other uses.

Minimal waste production during construction.

Can be used as a biofuel at the end of its useful life.



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CROSS LAMINATED TIMBER

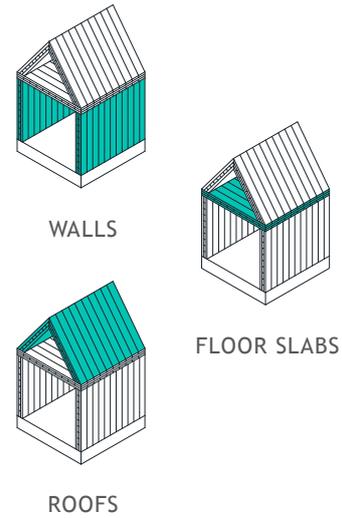
WHAT IS CLT?

Cross Laminated Timber or CLT is a construction material in the form of solid structural panels, consisting of sawn timber strips arranged in a minimum of 3 layers that are bonded together, one perpendicular to the next.

The resulting material has high dimensional stability, excellent structural capacity, is lightweight and enables rapid assembly.

Each panel is produced using timber strips which are selected and classified before being processed.

CLT panels are used primarily as structural elements, forming load bearing walls, floor slabs, and roofs.



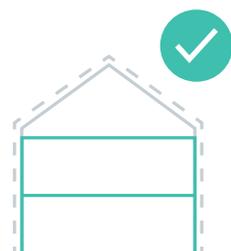
CLT USAGE CLASSES

CLT may be used according to UNE-EN 335:2013 for service classes 1 and 2:

- **Service Class 1** includes unexposed interior spaces, protected from the elements with a low moisture level.
- **Service class 2** includes interior spaces with higher levels of humidity or an exterior sheltered.

CLT should not be used in exterior applications without any protection.

SERVICE CLASS 1



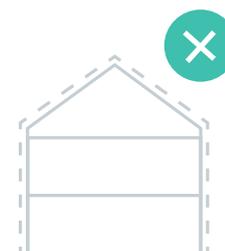
Interior spaces. Not exposed to the elements or significant moisture levels.

SERVICE CLASS 2



Sheltered spaces. Protected from the elements. Occasional moisture exposure.

SERVICE CLASS 3

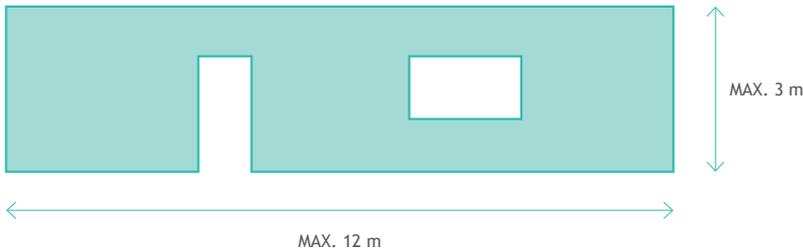


Fully exposed to the elements.

CLT XILONOR

Dimensions

Xilonor CLT panels can be manufactured up to a maximum length of 12m and 3m wide.



When designing with CLT it is essential to carefully consider formats and manufacturing possibilities to design efficiently and avoid incompatibilities.

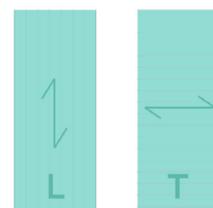
Timber Species

Xilonor CLT panels are composed of timber species: Pinaster and Radiata Pine.

Standard range Xilonor CLT

When specifying Xilonor CLT Panels, the following factors must be considered:

- Number of layers: options include 3, 5, 7 and 8 layers.
- Thickness: from 60mm up to a maximum of 320mm.
- Grain orientation of the outer layers, Longitudinal or Transversal:
 - Where the exterior layer is orientated in the same direction as the length of the panel, this shall be indicated with the letter L.
 - Where the exterior layer is orientated perpendicular to the length of the panel, this shall be indicated with the letter T.



T PanelsThe grain of the outer layers runs in parallel to the **width** of the panel

Thickness (mm)	Type of panel	Layers	Panel structure [mm]							
			T	L	T	L	T	L	T	
60	T3s	3	20	20	20					
80	T3s	3	20	40	20					
90	T3s	3	30	30	30					
100	T3s	3	30	40	30					
120	T3s	3	40	40	40					
100	T5s	5	20	20	20	20	20			
120	T5s	5	30	20	20	20	30			
140	T5s	5	40	20	20	20	40			
160	T5s	5	40	20	40	20	40			

L PanelsThe grain of the outer layers runs in parallel to the **length** of the panel

Thickness (mm)	Type of panel	Layers	Panel structure [mm]							
			T	L	T	L	T	L	T	
60	L3s	3	20	20	20					
80	L3s	3	30	20	30					
90	L3s	3	30	30	30					
100	L3s	3	40	20	40					
120	L3s	3	40	40	40					
100	L5s	5	20	20	20	20	20			
120	L5s	5	20	30	20	30	20			
140	L5s	5	40	20	20	20	40			
160	L5s-2*	5	60		40		60			
180	L5s	5	40	30	40	30	40			
200	L5s	5	40	40	40	40	40			
180	L7s	7	40	20	20	20	20	20	20	40
220	L7s-2*	7	80		20	20	20			80
240	L7s	7	20	40	40	40	40	40	40	20
240	L7s-2*	7	80		20	40	20			80
260	L7s-2*	7	80		30	40	30			80
280	L7s-7*	7	80		40	40	40			80
300	L8s-2**	8	80	30	80	30	80			
320	L8s-2**	8	80	40	80	40	80			

* Twin outer layers each formed by two bonded longitudinal layers.

** Twin outer and double inner layers formed by two longitudinal layers.

Visual qualities

The structural resistance of Xilonor CLT is extremely consistent, the visual appearance of its faces however may vary. When a project requires a highly visual CLT finish, the timber for the exposed face is carefully selected to provide higher aesthetic quality.

Xilonor CLT panels are available in three grades of visual qualities:

N

Non-visible quality

is suitable where the panel will be concealed behind other materials.

I

Intermediate Quality

is appropriate where the panel will be visible with a tolerance for natural imperfections, this may include commercial or industrial buildings.

V

Visible Quality

is used where the panel will be exposed and a highly aesthetic finish is priority, often the case in residential buildings, schools, and offices.

Depending on the combination of exterior layers for each face of the panel, the following configurations are possible:

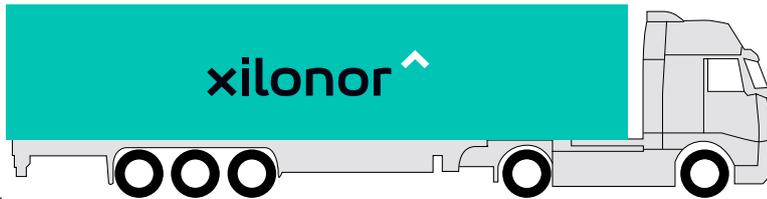
CLT grades available

Panel quality is based on the combination of the three available surface qualities

Designation	NN	VN	VV	IN	II	VI
Outer Layer	N	V	V	I	I	V
Central Layer	N	N	N	N	N	N
Outer Layer	N	N	V	N	I	I

Logistics

Logistics and project planning are key to maximizing the economic benefits and time saving advantages that CLT can generate.



CLT panels are produced and fully processed to specification at the factory. Once complete, they match the required dimensions and are packed for shipment. Each project will be delivered via trailer to the address specified by the customer.

When designing with CLT, the available formats and manufacturing possibilities should be considered to ensure efficiency of design and to avoid incompatibilities. As an industrialized material, transport complexities play a critical role in the design of the structure.

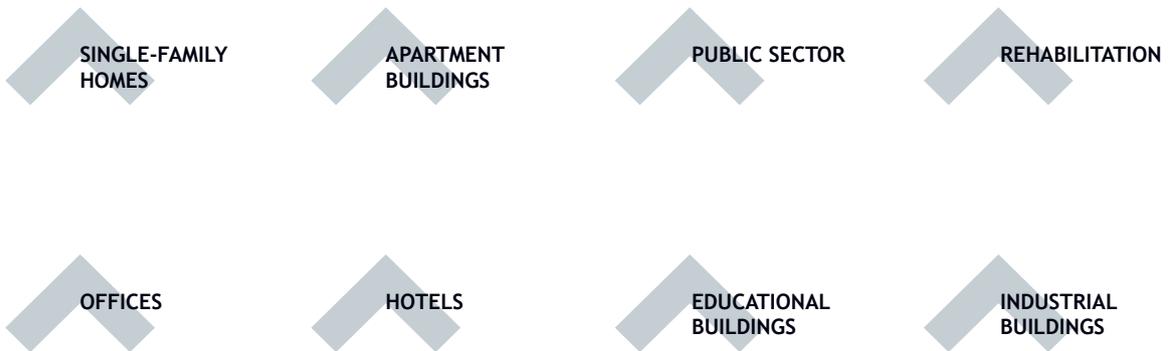
Xilonor CLT panels have a maximum panel size of 12m in length and 3 meters in width.

Xilonor has a highly knowledgeable technical team with extensive experience to support customers taking on any CLT project.

ARCHITECTURAL APPLICATIONS AND CONSTRUCTION

The technical characteristics and robustness of CLT mean it is not limited to small-scale construction and is a formidable alternative to traditional construction of medium and tall structures.

Cross laminated timber is suitable for use in any type of building, with appropriate design it is possible to create:



The natural but highly engineered appearance of CLT allows to integrate seamlessly in both rural and urban settings.

The light weight of CLT creates further opportunities in the form of additional structures on top of existing buildings, enabling dense areas to expand without altering the existing footprint.

CLT has the potential to take the current model of construction to the next level, reducing timescales and bringing an end to inefficient processing. An engineered material that offers maximum performance for industrialized architecture.

Hybrid construction is a further possibility, CLT can interface with other materials, from reinforced concrete to glass and steel.

Every material has specific characteristics and benefits; intelligent design maximizes the strengths of each material highlighting performance where it is most suitable.

CLT based architecture seemingly has its own language that offers designers great opportunities for creative expression, it is a very flexible and versatile system of construction.

ADVANTAGES OF USING CLT



High strength and lightness. CLT has an exceptional balance between structural capacity and weight when compared with other structural materials. From the very foundations, the weight savings of a CLT building mean substantially less groundwork is required. This lightness also facilitates handling on site, translating to multiple advantages when compared with other construction systems.

This becomes a great advantage when intervening with existing buildings, since it is often necessitating reinforcement of existing foundations and structures.



CLT assembly means significant reduction of wet trades and is quickly assembled on site with no need for liquid compounds for completion. This results in faster assembly, less variability, cleaner work sites, and generates substantially less waste with less need for resources such as water.

On-site waiting times are reduced further as CLT does not require any period for setting or curing, while there is less downtime loading. From the very beginning of the installation, the structure is stabilized and depending on the construction method will have full load capacity allowing other trades to commence their work. Assembly on site is quick and easy. The reduced working time translates to significant cost savings.



Low energy consumption. The use of CLT means the structural elements also form part of the enclosure of the building and given the low thermal conductivity of timber this makes the elimination of thermal bridges very simple.

Timber provides a much higher level of insulation than other materials, meaning the thicknesses of components can be reduced, achieving a greater useful surface area on the same footprint.



High degree of industrialization and precision. CLT is manufactured entirely at the factory, specifically for each project through a process that allows the panels to be machined exactly to specification, this includes window and door apertures. This is possible using CNC, or numerical control, which cuts the panels in accordance with the data provided.

All details must for this reason be fully defined during the conceptual project phase, and the panels will leave the factory with a high level of precision, ready for direct assembly on site.



100% renewable and recyclable. Timber is the only material that at the end of its life cycle achieves a negative carbon footprint, compensating for CO₂ emissions emitted during production with the amount of CO₂ it absorbs from the atmosphere while it grows in the form of a tree.

The development of energy-efficient cities poses a challenge for the immediate future and the use of the CLT can assist with the construction of buildings as “carbon sinks”, thus achieving a more environmentally friendly building system that exists in harmony with the immediate environment.



Aesthetics and warmth. CLT offers great aesthetic versatility for designers. It enables versatility and adaptation for diverse designs and project ideas. It can be left visible inside creating a warmer aesthetic, or it can be clad with other materials to achieve endless design effects, such as coverings with melamine panels, plasterboard, and other decorative surfaces.

If you are planning a CLT project or would like to know more, do get in touch at clt@xilonor.es



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