

CLT
solid wood
panels

Tod.

A renewable
material for a
home that is stable,
long lasting and
beautiful!

Want to know more about CLT
solid wood?

Contact us 514 331-9202

todboisfranc.com

 Sotramont

An experienced, innovative builder

— known for the quality
of their projects



“At Sotramont, quality has always been
our top priority.

We build high-performance homes that meet
the highest standards in energy efficiency and
sustainable development.”

— Marc-André Roy, President of Sotramont

In partnership with Nordic Wood Structures

The solid wood we use consists of layers of black spruce boards stacked crosswise and glued together. The panels are custom made by our partner, Nordic Wood Structures. Nordic is a Canadian manufacturer and like their sister company, Chantiers Chibougamau, has FSC^{®2} certification, a guarantee of responsible forest management.

The specialized teams we work with have the skills to design and build strong, efficient buildings using CLT. Regardless of whether we use solid wood panels or other materials, the entire structure is built to provide maximum protection in case of a fire and offers superior performance in terms of energy efficiency.

Building envelopes that rank best in the world in terms of performance

Known for their standards in quality, Sotramont targets LEED Gold certification for each and every one of their buildings. In 2014, the U.S. Green Building Council recognized one of our condo projects for having the world's best building envelope in terms of performance. Our teams bring this same quality commitment to our homes built with CLT solid wood panels.

Cutting-edge technology aligned with the most stringent standards for high-quality, solid, long lasting homes

Still considered cutting-edge technology in Quebec, CLT solid wood panels¹ were developed in Austria and Germany more than 20 years ago.

These panels gained popularity in the early 2000s, because in addition to being made from a renewable material, they can support heavy loads, just like concrete and steel.

In Europe, many 8, 10 and 12-storey buildings have already been built with CLT wood panels. Solid wood panels are the new benchmark in European countries with the best reputations for sustainable development.

¹ Cross-laminated timber
² Forest Stewardship Council[®]

Solid, efficient buildings

— that meet the highest
industry standards

The laminated boards of the
CLT panels are very strong,
with a bearing capacity similar
to reinforced concrete slabs

CLT solid wood panels are the product of a technology that turns timber into a new generation of building materials that can be used for the building frame, as well as for the walls, floors and roof.

Solid wood panels are manufactured taking into account the quality of the wood and the adhesive used to glue the boards together. Strict quality checks are performed at the factory to make sure that the material produced is functional and safe.

An ideal material for tall buildings

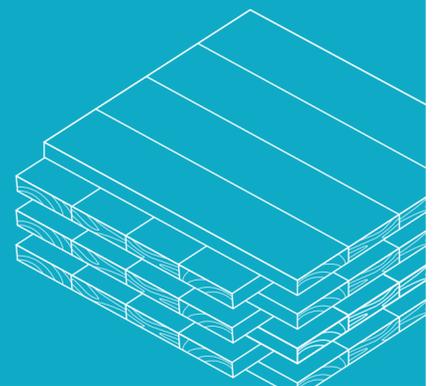
CLT panels increase the stability of the building when coupled with a light frame, so that buildings can be taller. Sotramont's solid wood buildings meet all the requirements of the Régie du bâtiment du Québec in this regard, particularly for the construction of solid wood buildings with six or more storeys.

Panels are as solid as concrete but five times lighter. They are 15 times lighter than steel, meaning less weight on the foundations and the ground that supports the buildings. Prefabricated panels are cut to the required dimensions before they are delivered to the site, and the openings for doors and windows are cut with an accuracy of one tenth of a millimeter using CNC³ precision machinery. Everything is planned and organized so that the building can be erected quickly.

CLT solid wood panels*

The CLT solid wood panels used in building construction are made of three to nine boards laid crosswise and glued together.

These panels can be up to 3 metres wide and 19 metres long.



Experienced, specialized teams

When building with wood, quality of assembly is essential for ensuring structural integrity, strength and stability. That is why we have a specialized team on site to assemble the CLT panels.

Sotramont's expertise in building envelopes also comes into play to keep the CLT panels warm and dry. By protecting them from water infiltration and moisture, we help preserve their thermal qualities over the longer term.

³ Computer numerical control
*Source: FPInnovations

Remarkably stable in a fire or earthquake

— with high energy efficiency and good acoustic performance



CLT panels hold up well in a fire and offer good thermal and acoustic insulation. The system is ideal for buildings in earthquake zones.

The way that wood behaves in a fire is a key factor to consider when building tall structures. Tests on solid wood buildings have been performed in Quebec and elsewhere in the world, including British Columbia and Europe. These tests all showed that solid wood panels offer excellent fire resistance, often comparable to non-combustible materials, because they char on the surface only.

1 Built-in fire resistance

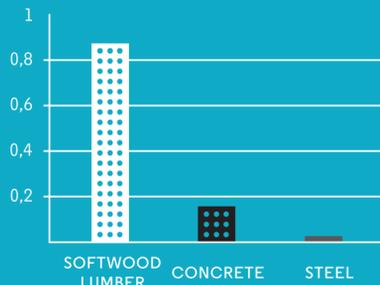
While high temperatures can cause concrete and steel to break or buckle, they have very little impact on the strength of wood. In addition, the thickness of the wood, or its mass, can be designed in advance to ensure optimal fire resistance. CLT panels are therefore an ideal choice for stairwells and elevator shafts.

Using CLT panels for floors and bearing walls also helps increase fire resistance and reduce the risk of the fire spreading. When built with modern fire protection techniques, especially sprinklers, solid wood buildings have proven to be very safe.

2 A benchmark in earthquake resistance

The connections used to assemble solid wood frames give the structures their ductility and allow them to dissipate energy. The higher the number of connections, the greater the capacity of a solid wood building to absorb seismic shocks. This type of construction is well suited to earthquake zones, as confirmed in tests conducted in 2010 in Kobe, Japan, by the Italian research institute IVALLSA.

Thermal resistance of different materials 100 mm (4 inches) thick, in RSI



To convince the Régie du bâtiment du Québec to allow wood buildings more than six storeys high, fire tests were conducted to prove that the buildings were stable and airtight.

A three storeys staircase and adjacent condo unit were set on fire. Two hours later, the integrity of the structure was still intact and the smoke had not spread.

3 Good energy efficiency and acoustic performance

Wood is more resistant to heat loss than other materials: seven times more than concrete and 500 times more than steel. It therefore takes less energy to heat and cool buildings built of wood. CLT panels also deliver good acoustic performance.

However, in our climate, buildings built of solid wood must be properly insulated to ensure that they are soundproof and comfortable for their occupants. The wood must also be protected from rain and humidity. Hence the importance of providing tight-fitting interior walls that keep cooking or cigarette odours from migrating to other residential units. Hence, too, the importance of erecting a high-performance building envelope that protects the building and its occupants from the outdoor climate.

Wood is not the only material used in buildings frames, however. Regardless of whether wood, concrete or steel is used, proper insulation is a must.

Not only do all Sotramont buildings have a reputation for superior quality construction, in 2014 the U.S. Green Building Council recognized Sotramont as the builder of the world's best building envelope in terms of performance.

City living in harmony with nature

— in warm interiors

Through the years, every generation has been attracted by wood interiors. They can be even more appealing using wood products designed for today's condo living, in buildings where architectural vision and sustainable construction go hand in hand.

Did you know that wood interiors promote better health for a building's occupants? Studies have established a link between the presence of visual wood surfaces in a room and the activity of the sympathetic nervous system, which is responsible for physiological stress reactions.

New options for healthy living

New opportunities are now available for people who enjoy urban condo living, yet want to live in a healthy environment that is also energy efficient and eco-friendly. New condos in multi-storey buildings built using CLT panels have many positive features that can live up to the highest expectations.

Even when dried, glued and cut, wood is a material that restores us to nature, calms the mind and brings beauty indoors, whether in the city or in the country. Why live without it?



The undeniable beauty of wood

In addition to knowing that they live in a home made from renewable material, urbanites can now comfortably enjoy the pleasant surface temperature of wood and its ability to mitigate sudden changes in temperature and humidity. And, of course, let's not forget the elegance of the wooden beams and posts that grace their condo's interior.

"The carbon story here is a really good one. If we built a 20-story building out of cement and concrete, the process would result in the manufacturing of that cement and 1,200 tonnes of carbon dioxide.

If we did it in wood, in this solution, we'd sequester about 3,100 tonnes, for a net difference of 4,300 tonnes. That's the equivalent of about 900 cars removed from the road in one year."

— "Why we should build wooden skyscrapers", Michael Green, TED Talks - February 2013

A renewable resource, responsibly managed

— to protect the environment

In addition to providing long-term carbon storage, CLT panels consume less energy, both during the manufacturing process and when they are used on construction sites.

Unlike other building materials, wood is a renewable resource that grows naturally, especially in Quebec's forests. It also has a lower environmental impact than other materials in terms of energy, climate change and air pollution.

Carbon positive buildings

Using wood helps fight climate change by reducing greenhouse gas emissions through carbon sequestration. Every tree captures CO₂ in the atmosphere as it grows, and turns the carbon it absorbs into cellulose and lignin. When used as a substitute for other building materials, one cubic metre of dry wood prevents the emission of 1.1 tonnes of CO₂ into the atmosphere⁴.

The process of manufacturing CLT panels is energy efficient. The CO₂ sequestered in the wood will stay there for as long as the building remains standing and beyond. In fact, even if the building is eventually demolished, the recycled wood will continue to sequester CO₂. The same holds true for recycled wood scraps from construction.



Responsible forest management

Nordic Wood Structures, which manufactures the CLT panels Sotramont uses in its construction projects, is FSC-certified by the Forest Stewardship Council, an independent international organization dedicated to promoting responsible management of the world's forests.

Nordic Wood Structures and its sister company, Chantiers Chibougamau, both hold FSC certification, confirming that they adhere to forest management principles and criteria.

⁴ <http://www.voirvert.ca/nouvelles/dossiers/le-lamelles-croise-fait-nid> (in French only)