



INCLT.ID

**Acacia
CLT panels
by
INCLT.id**

Technical brochure



INCLT.id Standard CLT panels

Type 51 - CLT

- Layer : 3

- Size : 2400 x 1200 x 51

- Size : 3600 x 1200 x 51

Wood : Acacia

Thickness : 17 x 17 x 17

m3 0.14688 : 90 kg

m3 0.22032 : 135 kg

Type 59 - CLT

- Layer : 3

- Size : 2400 x 1200 x 59

- Size : 3600 x 1200 x 59

Thickness : 17 x 25 x 17

m3 0.16992 : 100 kg

m3 0.25488 : 150 kg

Type 67 - CLT

- Layer : 3

- Size : 2400 x 1200 x 67

- Size : 3600 x 1200 x 67

Thickness : 25 x 17 x 25

m3 0.19296 : 115 kg

m3 0.28944 : 170 kg

Type 75 - CLT

- Layer : 3

- Size : 2400 x 1200 x 75

- Size : 3600 x 1200 x 75

Thickness : 25 x 25 x 25

m3 0.21600 : 130 kg

m3 0.32400 : 195 kg





INCLT.id Standard CLT panels

Product Data Sheet : CLT Acacia panels

- Wood Specie : Acacia Mangium
- Dimensions : 2400 x 1200 & 3600 x 1200
- Thickness : 51 / 59 / 67 / 75 in 3 Layers
- m2 : 2400 = 2,88m2 & 3600 = 4,32m2
- Costin : Cost calculation is based on m3
- Lamel : All component (lamel) are made to measure
- Press : 10kg per square centimeter
- Gluing : With aqueous polymers and isocyanate adhesive
- MC : [$\pm 2\%$] 12% Moist content
- Movement : Along the panel $\pm 0,01\%$ moisture change
- Weight : With a density between 550kg/m3 and 600kg/m3
- CNC cut : Rectangular cut with standard Radius 20mm
- CNC : Tolerance apply in plane & perpendicular surface of $\pm 1\text{mm}$
- Grain : Direction outer layers runs along the panel length
- Sanding : Surfaces in grade 150 - 180, or per request
- Surfaces : A. visual quality
B. industrial visual quality
C. non-visual quality





INCLT.id Standard CLT panels

Visual grading:

Excellent surface - Grade A

Consists of maximum one or two finger-jointed lamel. The lamel have a special lay-up where the wood grain and texture mix in a homogeneous appearance. The appearance of gaps is remarkably lessened. Repairs through wood patches are permissible.

Visual quality - Grade B

Consists of two or more finger-jointed lamel, which have a homogeneous appearance in texture and grain. Growth-related features occur in reduced form. Non-conforming growth-related features may be repaired through wood patches.

Industrial visual quality - Grade C

Consists of two or more finger-jointed lamel with color differences, wood grain and texture are categorically less relevant. Non-conforming growth-related features may be repaired through wood patches.

Please note:

To produce a single grade for one project will consume more time. Our raw materials come in all Grades and therefore we aim to have a balanced mix of all Grades.



INCLT.id Standard CLT panels

CLT is complimenting the visuality of structures. A plaster or wallpaper are not needed. The structure already looks good by itself, or a decorative stain can be applied. The panels are available in three grades:

Grade A



A: visual quality

Grade B



B: industrial visual quality

Grade C



C: non-visual quality

The first two types are suitable for interior and exterior elements that are visible. And the Grade C is used for structural elements that are concealed and/or where its visual appearance is not important.

Please note:

Wood is a natural material and comes with imperfection, color differences, and grain indentations. Wood has fluctuations and can change color over time.



INCLT.id Technical Information

Acacia CLT panels are made under the roofed Javanese conditions, and only contain Wood & Glue. Strict preparations of lamel are made, followed by QC and Lay-Up, before pressing the panels. After pressing, the panels will be cut to it's final (standard) size.

Acacia wood:

Our Acacia wood comes with a [$\pm 2\%$] 12%mc. The wood is durable, rot and insect resistant. Not waterproof, but does resist moisture very well. The Acacia tree is an 'fast-growing' specie, and therefore a sustainable resource for the CLT production.

Adhesive PU:

The aqueous polyvinyl urethane emulsion comes with the following properties: Dimensionally stable, Good hardness, Low shrinkage, Flexibilization & Toughened, Fatigue & Creep resistant, and Low stress.

The adhesive will have the best conditions between 0° and 35°. It comply to the Indonesia applicable regulations.



INCLT.id Technical Information

Acoustic & Insulation:

CLT brings insulation of sound and temperature differences, depending on the thickness. The acoustic behavior will reduce, or even remove outer noise, and benefit the inner acoustics.

Earthquake:

In an event such as a earthquake, CLT is the right material. The wood fibers adapt to the movements of the earthquake, and comes back to its original shape. Under exceptional loads CLT, and its connectors, flex and absorb the energy, acting as a damper. Plus no brick will tumble down.

Health benefits:

CLT panels has captured and removed carbon on the long term.

And living in a CLT house will benefit your health directly, as the indoor climate is regulated automatically.

This creates a health promoting environment and has a calming effect.

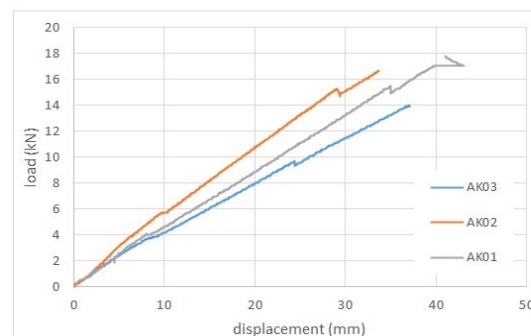
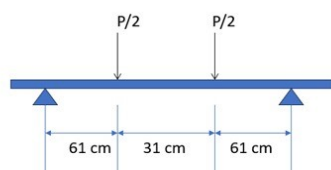
Simply, you will just feel more “Homy” in a CLT house.



INCLT.id Technical Information

Testing strength:

CLT has a high strength to weight ratio. Under severe conditions, the panels will crack, as our test shows. Under normal condition the panel will return to its original shape.



Kode	lebar (mm)	tinggi (mm)	a (mm)	span (mm)	M (Nmm)	I (mm ⁴)	MoR (N/mm ²)	MoE (N/mm ²)
AK01	250	51	610	1530	5418935	2763563	50.0	11114.1
AK02	250	51	610	1530	5085875	2763563	46.9	13108.0
AK03	250	51	610	1530	4279150	2763563	39.5	9721.2
average							45.5	11314.5





INCLT.id Technical Information

Testing fire retardant:

A major advantage of CLT is its inherent fire resistance, unlike steel it remains structurally stable when subjected to high temperatures. Depending on the CLT panel thickness and on the heat source CLT panels maintain the strength for sufficient time. Unlike steel, CLT remains structurally stable when subjected to high temperatures.





INCLT.id Building with CLT

Customized:

Because of such prefabricated building components, the building speed is super fast compared with traditional concrete buildings. Depending on the project, CLT can be customized to the specific dimensions and panel sizes as requested.

Our maximum size is
3900 x 1300 x 110



Logistics

Pre-fab CLT houses are strong, and lightweight. With our standard size panels easy transport is assured, including a fast build up. An often-ignored aspect of sustainable architecture is building placement. CLT units can make residential areas more accessible, and following the customer's design.

CLT panels are easy to be transported by standard truck.

A density of 600 kg/m³ can be applied to calculate the load weight.

The disadvantage with CLT components is a risk of damaging the components during transport and off-loading. Small repairs are easy to execute on site.

The image on the left side of the page is a vertical photograph showing a wooden structure under construction. It features large, light-colored wooden panels (CLT) and a dark brown metal plate. In the top left corner of the photograph, there is a circular logo with a stylized leaf design and the text 'INCLT.id' written vertically next to it.

INCLT.id Warranty

INCLT Acacia CLT panels come with a 20 years warranty for:

- : not bending**
- : not cracking**
- : not breaking**
- : maintaining structural strength and flexibility**

The warranty is subject to its location, design, and maintenance conditions.

Location : Coastal areas, exposed to UV and extreme weather elements and high temperature differences are weakening the durability.

Design : Overlapping-roofing and distancing the CLT from the foundation are priority terms to the warranty.

Maintenance : A customized maintenance plan will need to be applied per project to assure durability.

The key to the durability of timber has already been identified as
“keeping it dry”

INCLT warranty is based on the: “Keeping it dry” concept.



INCLT.id Warranty

INCLT Acacia CLT warranty conditions:

- Bending** : The panels will not bend under the correct bearing load, there might occur a deformation over the length of the panel with a maximum of 3mm.
- Cracking** : The panels will not crack, small gaps between the outer lamel might occur under certain conditions, with a maximum or 3mm.
- Breaking** : The panels, used in correct structural conditions, will not break during extreme events, such as earthquake, explosions, or heavy wind, and maintain strength and flexibility.
- Visual change** : UV light triggers a chemical reaction in the wood, photo oxidation. This process causing the color to change and can result in darkening, greying, or bleaching the color of the wooden surface overtime.

INCLT warranty is subject to the mentioned conditions.

When applying our maintenance plans and using recommended products each 4 year maintenance will be required, expanding the lifetime of the CLT.



Efficiency is our Priority

Acacia CLT panels by INCLT.id

The Solution is Solid

PT Hira Utama Group

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