



Glue Laminated Timber (Glulam)



Sustainable Construction Services Pty Ltd (SCS) supplies and installs Cross Laminated Timber (CLT) and Glue Laminated Timber (Glulam) products across Australia. SCS has an extensive network of manufacturers and suppliers across Europe in order to supply the latest and highest-quality products.



CLT and Glulam is becoming an increasingly popular and exciting product on the Australian market. CLT and Glulam construction methods combine all of the advantages of solid structures such as sound insulation, thermal insulation, fire protection and structural integrity with the added ecological benefit of utilising wood as a sustainable raw material. Some of the main features of CLT and Glulam can be seen below.

Prefabrication: *short construction times, high degree of prefabrication, simple systems*

Structural stability: *high dimensional stability*

Lightweight: *reduced footing requirements, minimal labour required on-site for installation*

More Space: *relatively small component thicknesses are possible, thinner walls without compromising on thermal performance*

Permeable: *acts as a vapour barrier, eliminates need for additional wall wraps, dampen peak indoor humidity, resulting in comfortable balanced room climate*

Wood mass: *comfortable living environment; heat storage in winter, insulation in summer*

Visual quality: *pleasantly warm wood surfaces, nature in architecture*

SCS Glue Laminated Timber (Glulam) Products

Glulam is an engineered wood product used for beams and posts. Glulam has numerous advantages, given its structural strength and natural finish. Glulam consists of at least 3 timber lamellas glued parallel to the grain. Through grading by strength and homogenization of the timber lamellas, a high level of load-bearing capacity is achieved in comparison to common timber products. High load-bearing capacity, dimensional stability, product variety, and excellent surface quality allow for a broad range of application options in the area of construction.



General benefits of using Glulam in construction can be seen below:

High load-bearing capacity
Dimensional stability
Short construction times
Low weight
High value surface quality
High level of prefabrication
Large variety of shapes
Small component dimensions with high strength levels
Architectural and construction versatility



Engineering Solutions

Glulam engineering services are provided by SCS and our experienced team. We have technically experienced in-house staff and a wide network of engineering consultants that we can engage in order to deliver your Glulam solutions. We provide you with comprehensive advice and sound services throughout the whole process. Our qualified engineers and construction specialists can provide you with support throughout the whole process from initial design to completion. Our main services include:

- Structural engineering and physical characteristics
- Fire engineering and data
- Advice on construction techniques and connection materials
- Construction details and connection details

Description

Glulam is manufactured as standard units, in a variety of lengths, dimensions, strength classes and surface finishes based on the clients' requirements.

Wood Species	Spruce
Surface Finish	Visible quality, non-visible quality
Strength Classes	GL24c, GL24h, GL28c, GL28h, GL30c, GL30h*, GL32c*, GL32h*
Surface and Finger Joint Gluing	Modified melamine resin, for categories 1-2, UV-proof and weather proof, light
Width	60 – 280 mm** (in 20 mm steps)
Height	Up to 1280 mm (in 40 mm steps)
Length	6 – 18 m***
Cut to Length	3.5 – 18 m***

*Only visible quality

**Width 60 mm is split, only available in GL24. Width 280mm in GL24 available, in GL28c on request

***Maximum length subject to transport solution available

Surface Finish

Glulam products are available in Visible Quality and Non-Visible Quality surface finish. The quality features of the Glulam are supplied in Compliance to European Standard EN 14080. These features are further defined in the table below.

Grade	Visible Quality	Non-Visible Quality
Surface	Planed on 4 sides, chamfered	Planed on 4 sides, chamfered, rough areas permitted in some cases
Insect Attack	Not permitted	Permitted to a minor degree
Pith	Permitted	Permitted
Discoloration (Blue Stain / Red Stain)	In principle free of colour defects, up to 5% of the surface permitted	Permitted
Resin Pocket	Admissible up to 5 x 50 mm, no cluster	Permitted
Intergrown Knots	Permitted	Permitted
Black Knots	Permitted up to 30 m	Permitted
Fallen Out Knots	Permitted up to 10 m	Permitted up to 20 mm
Pin Knots	Permitted	Permitted

Technical Details

Product	Glue Laminated Timber (Glulam)
Application	Columns, posts, beams etc.
Strength Classes	GL24, GL28, GL30, GL32*
Assembly	Combined (c) / Homogeneous (h)
Manufacture	In accordance with EN 14080
Wood Species	Spruce
Mechanical Grading	In accordance with EN 14081-3
Lamellae	40 mm
Adhesive	Modified melamine resin, light, non-darkening joints
Moisture Content	9 – 14 %
Surface Quality	Planed on 4 sides, chamfered edges, visible quality, non-visible quality
Combustion Behaviour	0.7 mm / min
Fire Behaviour	D-s2, d0
Dimension Tolerance	Width +/- 2 mm Height +/- 2 mm Length +/- 0.1%
Change in Shape	Axially 0.01-0.02 % per % change in moisture content Radially 0.19% per % change in moisture content Tangentially 0.34% per % change in moisture content
Heat Conductivity	0.13 W/mk
Water Vapour Resistance Coefficient	$\mu = 40$

*Available upon request

Component	Combined Glulam				Homogeneous Glulam			
	GL24c	GL28c	GL30c	GL32c	GL24h	GL28h	GL30h	GL32h
Strength Class								
Strength Values (N/mm²)								
Deflection ($f_{m,g,k}$)	24	28	30	32	24	28	30	32
Tension: parallel ($f_{t,0,g,k}$)	17	19.5	19.5	19.5	19.2	22.3	24	25.6
Tension: at right angles ($f_{t,90,g,k}$)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Pressure: parallel ($f_{c,0,g,k}$)	21.5	24	24.5	24.5	24	28	30	32
Strength Values (N/mm²)								
Modulus of elasticity: parallel ($E_{0,g,mean}$)	11,000	12,500	13,000	13,500	11,500	12,600	13,600	14,200
Modulus of elasticity at right angles ($E_{90,g,mean}$)	300	300	300	300	300	300	300	300
Shear modulus: ($G_{g,mean}$)	650	650	650	650	650	650	650	650
Density Characteristic Values (kg/m³)								
Density g,k	365	390	390	400	385	425	440	440

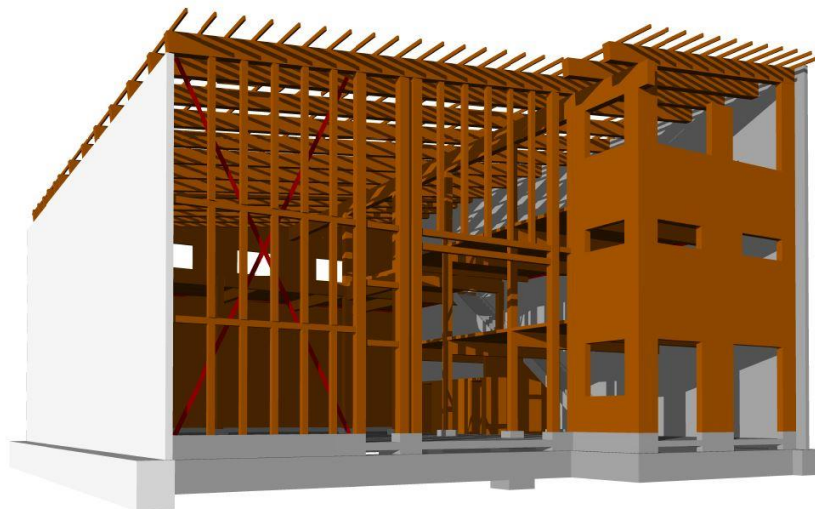
Note technical details to be used as a guide only, specifications and technical advice is provided on a project basis. Sustainable Construction Services Pty Ltd takes no responsibility for the figures provided above, as they are not intended to be used for engineering design and certification.

Design and Installation Services

SCS has extensive experience in the use and application of CLT and Glulam products. SCS can provide support and services through all stages of the project, including:

- Initial design and planning
- Engineering design and certification
- Material specification
- Wall, floor, ceiling and roof build up
- Drafting services
- Pricing
- Supply of products, accessories and connections
- Transport and customs clearance
- Installation
- Connection details and sealing
- Commissioning

Our experienced team at SCS can provide support services for any component of the work and will provide you with advice relating to finishes, for example, surface quality recommendations, paint types, or treatments. SCS can also provide information and details for connections (e.g., fixings, screws, brackets, etc.) and proper sealing for both acoustic and thermal insulation.



The actual installation process of CLT and Glulam is extremely efficient and straightforward. Engineered wood products are a lightweight material choice compared to concrete panels and masonry construction, resulting in simplified installation and minimal slab and footing requirements. Sophisticated manufacturing processes make a high level of prefabrication possible.

CNC (Computerized Numerical Control) technology, allows openings and penetrations to be cut in factory to the highest level of precision. The natural workability of timber also allows for these penetrations to be easily made onsite and for very straight-forward connections. Minimal manpower is required on-site, greatly reducing the labour cost of the project. Most CLT and Glulam projects only require 2 carpenters and 1 crane operator on-site to handle the installation of the building envelope.