

SPECIFICATION DETAILS

STRUCTURAL GRADES

There are a range of structural grades of glue laminated timber beams produced in New Zealand in accordance with Standard AS/NZS 1328.1 – 1998. These grades were developed by the Australian and New Zealand industries to assist designers and specifiers in the selection of Glulam members and their associated design properties. The following table of structural grade characteristics is referenced from AS/NZS 1328 part 2.

Characteristic Strengths and Elastic Moduli for Glulam Grades

GL Grade	Characteristic Strengths (MPa)			Elastic Moduli (MPa)		
	Bending	Tension parallel to grain	Shear in Beam	Compression parallel to grain	Short modulus of elasticity parallel to the end grain	Short duration modulus of rigidity for beams
GL 12	25	12.5	3.7	29	11500	770
GL 10	22	11	3.7	26	10000	670
GL 8	19	10	3.7	24	8000	530

Note: All tables in this reference guide are based upon characteristics of Glulam meeting GL8 and GL10 grades. For references for higher grades than GL8 and GL10 as incorporated in these Span Tables please refer to a qualified producer. There is a list of qualified producers in the index at the back of this publication. **Higher grades** (i.e. GL12, etc) will give **greater span and load** carrying capability than GL8 and GL10 for the same section size.

APPEARANCE GRADES

There are three standard finishing grades that may be specified, as defined in AS/NZS 1328 part 1. The appearance grades relate to the aesthetic appearance of the visible surfaces of the glued laminated members. This classification bears no relationship to the structural performance of the timber.

Definition of Appearance Grades

Appearance Grade	Description
A	This grade is intended for use in applications where appearance of the member is important and clear or painted finishes are used. All surface voids are filled or repaired. Unless it is specified otherwise, the surfaces shall be sanded to a minimum of 60-grit finish.
B	The grade is intended for use in painted applications where appearance is important but a planed finish is acceptable. The machining shall conform to No. 2 dressed surfaces grade as defined in AS 2796. Occasional skips in the surface are permissible and minor blemishes, voids and machining want shall be acceptable. The outer-most laminations shall be free of loose knots and voids.
C	This grade is intended for use in applications where appearance is not important. All blemishes and voids are acceptable.

Note: The Appearance Grades most commonly produced in New Zealand are Grades A and B.



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SERVICE CLASSES

The Service Class defines the environmental conditions in which glue laminated beams may be used. There are three service classes defined as shown in the following table.

Definition of Environmental Conditions for Glulam Service Classes

Service Class	Description	Environmental Conditions
1	Interior	Service Class characterised by moisture content in the materials corresponding to a temperature of 20°C and relative humidity of the surrounding air only exceeding 65% for a few weeks per year. For example: Domestic Houses, Commercial Offices.
2	Exterior, under cover	Service Class characterised by moisture content in the materials corresponding to a temperature of 20°C and relative humidity of the surrounding air only exceeding 85% for a few weeks per year. For example: Open sheds, exposed beams under soffits, porches, wool scouring plants, laundries.
3	Exterior, fully exposed	Service Class characterised by climatic conditions leading to higher moisture content than Service Class 2, or where timber is directly exposed to sun and/or rain. For example: Marine structures, bridges.

TIMBER TREATMENT SPECIFICATION OPTIONS

In order to meet the Services Classes outlined above, depending on where the Glulam structure is to be used, specifiers will need to select timber treatment levels based on one of the following:

Hazard Class	End Use
H1	Low decay hazard
H2	Slight risk of decay and risk of termite attack
H3	Moderate decay hazard
H4	High decay hazard
H5	Severe decay hazard
H6	Marine hazard

Timber treatment options can be either CCA treatment (the requirement for H5 or H6 is rare and specific situations should be discussed with the manufacturer) or LOSP (up to H3). LOSP is an envelope treatment, and because of this, care must be taken when cutting or drilling post-treatment that the affected area is recoated with a suitable protective coating.

PAINTING PROCEDURE

If Glulam has been pre-primed, the protective coating primer may tend to deteriorate over a period of time and become slightly chalky – unable to bond adequately to any additional coating systems without some preparation work. A simple way of testing whether there has been any deterioration is to cut a small “x” through the existing coating system with a sharp blade. Press some cellulose sticky tape firmly across the cut and then rip off the tape. If any of the coating comes off with the tape then the primer is not adequately sound and must be removed by sanding. Sand back until the surface is completely free from all dirt and degraded material and dust off. Prime all surfaces, paying particular attention to cut ends and joints, with a good quality solvent-based alkyd primer. Water based primers are less effective in this application. Allow to dry as per the manufacturers instructions and lightly sand to an even finish. Apply two coats of premium brand acrylic exterior grade top coat to the manufacturers recommendations.

