TECHNICAL DATA SHEET No 4

HISTORY OF GL GRADES

Technical Data Sheets

Introduction

The history of the glued laminated timber industry in Australia has its beginnings with the sawmilling industry which saw the opportunity to value-add structural timber into a valuable engineered product. There developed a range of proprietary brand products with section sizes and grades to suit the individual manufacturer's resource. Add to this array of varying products, design philosophies which varied from engineer to engineer due to individual application of deflection limits, and we had a confused user base of Glulam.

The result created confusion in the minds of the end users and made choice of material in the design phase of a structure very brand-specific. Early in this decade, the Glued Laminated Timber Association of Australia (GLTAA) set about developing standard Glulam grades, designs criteria and section sizes so the industry presented to end users a generic product, easily specified, engineered and procurable competitively anywhere in Australia.

The end result of this process is the publication of the new grades in AS 1720.1 - Timber Structures—Design methods standard.

Why GL Grades?

The new Glulam grades have been developed with a suite of structural properties which are different from the "F" ratings used on solid timber and the use of "F" ratings to grade Glulam is therefore now inappropriate. Modulus of Elasticity (E) is the structural property which generally governs the design of a Glulam beam and for this reason, the GLTAA adopted a descriptor based on the E value of the grade i.e. GL 18 means it has an E value of 18500 MPa (old F27 value).

The new system, in Table 1 below is that adopted in AS 1720.1 Timber Structures - Design methods standard.

Table 1 - Characteristic Strengths and Elastic Moduli for Horizontally Laminated Glulam Grades

Stress Grade	CHARACTERISTIC STRENGTHS (MPa)				ELASTIC MODULI (MPa)	
	Bending (f'b)	Tension parallel to grain (f't)	Shear in beam (f's)	Compression parallel to grain (f'c)	Short duration average modulus of elasticity parallel to grain (E)	Short duration average modulus of rigidity for beams (G)
GL 18	45	25	5.0	45	18500	1230
GL 17	40	20	4.2	33	16700	1110
GL 13	33	16	4.2	26	13300	900
GL 12	25	11	4.2	22	11500	770
GL 10	22	8	3.7	18	10000	670
GL 8	19	6	3.7	14	8000	530

Design Criteria

All GLTAA members publish safe load tables based on a uniform design criteria, which has been developed from good engineering practices in timber design. By adopting this approach, published safe load tables by all GLTAA members are consistent.

Conclusion

This approach by GLTAA members has benefits for end users.

- Availability
- Ease of specification
- Generic product specification ensures competitive market