



Designation: D 3737 – 00a

Standard Practice for Establishing Stresses for Structural Glued Laminated Timber (Glulam)¹

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1. Scope

1.1 This practice covers the procedures for establishing allowable design stresses for structural glued laminated timber. Properties considered include bending, tension and compression parallel to the grain, modulus of elasticity, horizontal shear, and compression perpendicular to the grain.

1.2 This practice is limited to the calculation of design stresses for glulam subject to the given procedures for the selection and arrangement of grades of lumber of the species considered.

1.3 Requirements for production, inspection, and certification are not included, but in order to justify the design stresses developed using procedures in this practice, manufacturer must conform to recognized manufacturing standards for glulam. Refer to ANSI/AITC A190.1 and CSA 0122.

1.4 Stresses established by use of this practice are based on dry conditions of use (12 % average with less than 16 % moisture content). Modifications for wet-use conditions are given in 9.2.

1.5 The values stated in inch-pound units are to be regarded as standard.

1.6 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

- D 198 Test Methods of Static Tests of Timber in Structural Sizes²
- D 245 Practice for Establishing Structural Grades and Related Allowable Properties for Visually Graded Lumber²
- D 2395 Test Methods for Specific Gravity of Wood and Wood-Base Materials²
- D 2555 Test Methods for Establishing Clear Wood Strength Values²
- D 2915 Practice for Evaluating Allowable Properties for

Grades of Structural Lumber²

D 4761 Test Method for Mechanical Properties of Lumber and Wood-Base Structural Material²

E 105 Practice for Probability Sampling of Materials³

2.2 Other Standards:

ANSI/AITC A190.1 Structural Glued Laminated Timber⁴

CSA 0122 Structural Glued Laminated Timber⁵

3. Terminology

3.1 Definitions:

3.1.1 *E-rated lumber*—lumber graded for laminating by nondestructive measurement for a modulus of elasticity (*E*) and by visual inspection in accordance with the grading rules of the applicable grading or inspection agency.

3.1.2 *glulam*—a term used to denote structural glued laminated timber, which is a material glued up from suitably selected and prepared pieces of wood either in a straight or curved form with the grain of all pieces essentially parallel to the longitudinal axis of the member.

3.1.3 *horizontally laminated timber*—a glulam member designed to resist bending loads applied perpendicularly to the wide faces of the laminations.

3.1.4 *lamination*—a layer of lumber within the glued laminated timber.

3.1.5 *modulus of elasticity (E)*—for laminating, *E* is divided into two categories to distinguish mode of measurement and application.

3.1.6 *long-span E*—the *E* calculated from deflection measured in a flat-wise test of lumber with a center point loading and a span-depth ratio (*l/d*) of approximately 100.

3.1.7 *member E*—the design *E* of the finished glued laminated member as defined in this practice.

3.1.8 *vertically laminated timber*—a glulam member designed to resist bending loads applied parallel to the wide faces of the laminations.

3.1.9 *visually graded lumber*—lumber graded by visual inspection in accordance with the grading rules of the applicable grading or inspection agency.

3.2 Symbols:

¹ This practice is under the jurisdiction of ASTM Committee D7 on Wood and is the direct responsibility of Subcommittee D07.02 on Lumber and Engineered Wood Products.

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² *Annual Book of ASTM Standards*, Vol 04.10.

³ *Annual Book of ASTM Standards*, Vol 14.02.

⁴ Available from the American Institute of Timber Construction, 11818 S.E. Mill Plain Blvd., Suite 415, Vancouver, WA 98684.

⁵ Available from the Canadian Standards Association, 178 Rexdale Blvd., Rexdale, Ontario, Canada, M9W 1R3.