

Finishing Glued Laminated Timbers

Structural glued laminated timbers (glulam) are manufactured from individual wood members (laminations or lams) that are bonded together with wet-use adhesives to form a finished member. These individual lams are typically solid-sawn lumber members but the outermost laminations of bending members may sometimes be composed of laminated veneer lumber (LVL). This discussion is intended to primarily address glulam manufactured entirely from solid-sawn lumber.

Appearance Classifications

Glulam is manufactured in various appearance classifications such as Premium, Architectural, Industrial and Framing. These appearance classifications distinguish various levels of natural growth and manufacturing characteristics that are visible at the glulam surface. They do not characterize or affect the structural performance of glulam.

Of these appearance classifications, Premium and Architectural are used in applications where finishing may be desirable. The Premium Classification may be specified where appearance is the primary design consideration. Architectural is suitable for use in applications where appearance is important but not the primary consideration. Additional details of appearance classifications may be found in *APA Technical Note, Glulam Appearance Classifications for Construction Applications*, Form Y110 (www.apawood.org).

Finishing Considerations

Finishes help to enhance and maintain the appearance of wood. Glulam is manufactured primarily from lumber components and is therefore finished much the same as other flat-grain lumber products. As such, many of the same finishing characteristics should be considered. Glulam is available with either a smooth or a rough textured surface. Rough textured surfaces hold more finish and may require up to twice as much finish as smooth surfaces.

Some wood species used in the manufacture of glulam may contain wood extractives. These are chemical components that give wood its characteristic color. Many of these extractives are water-soluble and can “bleed” through the coating and cause discoloration of light-colored finishes. This discoloration is often referred to as extractive staining, which can generally be controlled through the use of stain-blocking primers. See *APA Technical Note: Staining of Finishes from Water-Soluble Extractives*, Form L810 for details.

Most glulam is used in protected conditions where decay is not a hazard. Glulam may be finished with a wide variety of architectural coatings when not exposed to the weather. Clear finishes such as water repellants or film-forming coatings such as varnishes or urethanes provide the most natural appearance. Clear film-forming finishes, however, should not be used in situations where fluctuating humidity may cause dimensional changes significant enough to crack and stress the finish to the point that flaking or peeling occurs. Oil-based semitransparent stains can also provide a natural appearance and are available in a variety of colors that emulate the natural color of various wood species while letting the natural grain show through.

Solid-color stains and two-coat house paints are also available in a wide variety of colors; most hide the wood grain. Solid-color stains are available in both oil-based and latex formulations. Light-colored latex formulations may show extractive staining on some species but staining can be prevented or minimized by use of a top-quality stain-blocking primer. If a two-coat house paint is preferred, best performance can be expected with a stain-blocking acrylic latex primer and 100 percent acrylic latex topcoat.

When glulam is used in applications that may be subject to frequent or long-term moisture content of 20 percent or greater, it should be pressure-preservative treated or produced from the heartwood of a naturally durable species. Pressure-preservative-treated glulam needs to be dried to a moisture content of 16 percent or less before finishing. See *APA Technical Note, Preservative Treatment of Glulam Beams*, Form S580 for details and appropriate American Wood Protection Association (AWPA) Use Categories. In general, treated glulam may be finished similar to untreated members with the following exceptions:

- Clear film-forming finishes such as lacquers, varnishes or urethanes should not be used because they have a short service life and require extensive surface preparation prior to refinishing.
- Creosote or pentachlorophenol in oil is not paintable on a practical basis. Pentachlorophenol in light solvents can be finished with natural finishes such as clear water repellents or oil-based semitransparent stains.
- Glulam that has been treated with waterborne preservatives such as CCA can be finished with clear water repellents, oil-based semitransparent stains, or film-forming finishes such as solid-color stains or paint systems. The treatment, however, may leave a green or brown color on the glulam surface that can affect the color and appearance of the finish and may cause an aesthetic distraction. Therefore, use of earth tones with oil-based semitransparent stains will help minimize discoloration from the preservatives much as from wood extractives.
- If an opaque coating is desired over waterborne preservative-treated glulam, the most durable finish is a top-quality paint system such as a stain-blocking acrylic latex primer followed by up to two all-acrylic latex topcoats, preferably from the same manufacturer. A stain-blocking primer may also be required under light-colored solid-color latex stains to help minimize discoloration of the finish. Always follow the coating manufacturer’s recommendations.
- If treated wood is used indoors, follow the EPA recommendations for appropriate sealing of the wood.
- See Table 2 from APA Technical Note S580 for additional information regarding the various treatment types for glulam and their finishability.

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