



# American Institute of Timber Construction

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## **Treating Glulam Timbers with Waterborne Preservatives Answers to Commonly Asked Questions**

### **Q. Can structural glued laminated timber (glulam) be treated with waterborne preservatives after laminating?**

- A. In general, the laminated timber industry recommends against using waterborne preservative chemicals to pressure-treat structural glued laminated timbers after bonding. This recommendation is intended to prevent appearance problems caused by the treatment and subsequent re-drying (AITC 109-2007). However, pressure-treatment with waterborne chemicals after bonding does not generally make the laminated timber structurally unfit. Treating structural glued laminated timber (glulam) with waterborne chemicals after bonding may be a viable option for applications where appearance is less critical.

While not generally recommended due to aesthetic issues, the pressure-treatment of structural glued laminated timbers with waterborne preservatives after bonding may be a viable option for many uses where appearance is less critical. Adhesives used in modern glulam are extremely durable and are considered waterproof. Glulam timbers treated after bonding will accept treatment and resist decay similar to treated sawn timbers of the same species and will perform similarly in service. If the appearance of this product is acceptable to the consumer, it can be used successfully in applications where treated wood is required.

### **Q. Why is wood pressure-treated?**

- A. Pressure-treatment is a process of applying preservative chemicals to wood to increase its resistance to decay. Pressure-treated wood is used in applications where wood will be wet and subject to decay. (See AITC 109, TN 12).

### **Q. Can pressure-treated glulam be used in place of treated sawn timbers?**

- A. Pressure-treated glulam will accept treatment and resist decay similar to sawn timbers of the same species. Provided that the structural requirements of the application are met, treated glulam timbers can be used in place of treated sawn timbers.

### **Q. Will pressure-treatment with waterborne chemicals after bonding cause delamination?**

- A. Pressure treatment of properly manufactured structural glued laminated timber members will not cause delamination. Delamination refers to adhesive failure leading to separation of bond lines. Adhesives used in modern glulam products must meet stringent standards for moisture resistance and durability. Additionally, adhesive bonds in glulam must also pass rigorous daily testing for strength and durability. Consequently, delamination is very rare in structural glued laminated timber whether it is pressure-treated after bonding or not. Checks can occur along bond lines due to stress concentrations between laminations and are often mistaken for delamination. The presence of wood fiber separations or torn wood fibers at the bond line is the key distinguishing characteristic of checks (AITC Technical Note 11).

**Q. How will pressure-treatment with waterborne chemicals after bonding affect the appearance of glulam?**

**A.** If glued laminated timbers are treated after bonding, dimensional changes caused by saturation of the wood with the water-borne preservatives and their carrier followed by subsequent re-drying may result in raised grain and warping, checking, or splitting. Examples of typical appearance are shown in Figures 1 and 2.



**Figure 1.** Checking on glulam beam treated with ACQ after bonding.

**Q. Does glulam need to be incised when it is treated after bonding?**

**A.** Some species do not accept treatment well and require incising while others can be treated successfully without incising. Southern Pine is generally not incised, while Douglas fir typically requires incising for adequate penetration of the preservative.

**Q. What waterborne chemicals are used to treat timbers?**

**A.** The most common waterborne chemicals used to treat timbers include chromated copper arsenate (CCA) and Ammoniacal Copper Quat (ACQ). Ammoniacal Copper Zinc Arsenate (ACZA), Acid Copper Chromate (ACC) and Copper Azole are also used occasionally.



**Figure 2.** Raised grain, shelling, and checking in glulam beam treated with CCA after bonding.