



Heat-Resistant Adhesives (HRA) and Finger-Jointed Lumber

- HRA and Non-HRA marks added to finger-jointed lumber gradestamps.
- HRA finger-jointed lumber used where one-hour fire ratings required by code – multifamily, multistory or commercial construction.
- Non-HRA finger-jointed lumber can be used for single-family home construction under current building codes.
- Finger-jointed lumber with no HRA marks considered the same as Non-HRA marked products.

Background

Finger-jointed lumber and other structural-glued products have gained wide acceptance in the building and construction industry. These products are accepted for use under both the International Building Code (IBC) and the International Residential Code (IRC), and are considered interchangeable with solid-sawn dimension lumber of the same size, grade and species.

Western Wood Products Association is the West's top agency for finger-jointed lumber quality control, providing services to more finger-jointed lumber mills than any other Western grading agency.

In 2006, as part of the North American wood products industry's continuing effort to ensure the safety of its products, research was initiated to better understand the performance of adhesives used in end-jointed lumber in fire-resistance-rated assemblies. Fire tests on finger-jointed lumber assemblies were conducted by the American Forest & Paper Association (AF&PA), in cooperation with the USDA Forest Products Laboratory and Forintek Canada Corp.

As a result of the tests, the American Lumber Standard Committee, Inc. in early 2007 revised its Glued Lumber Policy to add elevated-temperature performance requirements for labeling finger-jointed lumber. The amended policy established two new designations on gradestamps for finger-jointed lumber.

Finger-jointed lumber gradestamps

Products joined with qualified heat-resistant adhesives include the designation "HRA" in the grade-mark (Fig. 1). Finger-jointed lumber joined with other adhesives is marked as "Non-HRA" (Fig. 2).



Fig. 1: Finger-jointed lumber joined with heat-resistant adhesives are marked with the designation HRA .



Fig 2: Finger-jointed lumber with no HRA marks will be considered the same as products carrying the Non-HRA designation.

As mills transition to the new designations, finger-jointed lumber without HRA designations in the gradestamp will be considered as produced with Non-HRA adhesives. These products should not be used in assemblies where fire-resistance ratings are required.

Use of HRA and Non-HRA lumber

IBC Section 2303.1.1 Sawn Lumber, states, "Approved end-jointed lumber is permitted to be used interchangeably with solid-sawn members of the same species and grade." The new HRA marks

are intended to provide regulators and users additional information to identify which finger-jointed products meet elevated-temperature performance requirements.

HRA-marked finger-jointed lumber should be used for assemblies that require a fire resistance rating under the IBC and IRC. Typically, one-hour fire ratings are required for multistory or multifamily structures in separations between living units. Common walls in commercial structures may also require one-hour fire rated assemblies.

Non-HRA grademarked lumber is suited for most residential construction. Under current building codes, detached single-family homes do not require one-hour fire-rated assemblies. Non-HRA marked lumber and finger-jointed products with no HRA designations can continue to be used in construction for most single-family homes.

Performance testing

Heat-resistant adhesives are evaluated according to the American Forest & Paper Association's Elevated-Temperature Adhesive Qualification Procedure. This protocol requires an adhesive to be exposed to elevated temperatures during a standard ASTM E119 fire test of a load-bearing end-jointed stud-wall assembly loaded to 100 percent of the lumber's allowable design load.

Fire tests are conducted on wall assembly designs specified in the 2003 and 2006 editions of the International Building Code Table 720.1(2), Item

Number 15-1.14. Adhesives qualify for HRA designation if the wall assembly performs to design specifications for at least one hour in the E119 fire test. All tests are conducted in International Accreditation Service, Inc. accredited laboratories in the U.S. and Canada.

WWPA is approved by the American Lumber Standard Committee, Inc. (ALSC), under U.S. Department of Commerce (DOC) Voluntary Product Standard PS-20, to certify structural-glued products in all species and species combinations. The American Lumber Standard PS-20 provides the framework for quality control of structural-glued lumber under its Glued Lumber Policy, which results in predictable, reliable products that may be used for structural purposes with confidence. DOC PS-20 is the referenced standard for lumber products in the I-Codes and predecessor "Legacy" codes.

References

American Lumber Standard Committee, Inc.
Glued Lumber Policy

**[www.alsc.org/greenbook/collection/
UntreatedProgram_GluedLbrPolicy.pdf](http://www.alsc.org/greenbook/collection/UntreatedProgram_GluedLbrPolicy.pdf)**

American Forest & Paper Association
Elevated-Temperature Adhesive Qualification
Procedure

**[www.awc.org/Technical/Elevated-
TemperatureAdhesiveQualificationProcedure.pdf](http://www.awc.org/Technical/Elevated-TemperatureAdhesiveQualificationProcedure.pdf)**