



# ENGINEERED WOOD WEEK

NEWS NOTES FROM AITC. THE ORIGINAL TRADE ASSOCIATION FOR ENGINEERED WOOD

June 15, 2007

## Adhesives for Glulam Explained

As previously announced in Engineered Wood Week, the newly revised ANSI/AITC A190.1-2007 is being published. We are anticipating transitioning to the new standard this fall.

The newly revised Standard, has very few changes in requirements, however the organization of the Standard has changed dramatically. For example, previously the section on wood inserts (2002 edition, section 4.3.10) was under the section “Lumber for Laminating”. In the 2007 edition, the requirements for wood inserts have been given their own section, 4.6 to clarify the text. The reorganization of the standard should make the standard easier to read and understand.

One significant change is in the requirements for adhesives used in the manufacture of glulam. Previously, there were different, fairly convoluted paths for adhesives to be approved. The new standard prescribes a single, consistent path for adhesive approval.

### Old Requirements for Adhesives

The 2002 edition of ANSI/AITC A190.1 stated that “new adhesive types as defined in AITC

405 shall be qualified by the procedures set forth therein.” It also stated that “adhesives shall conform to ASTM D2559.” However, AITC 405-92 defined “new adhesive types” as those “with little or no in-service performance record,” a very subjective criteria. It also stated that the testing “shall be reported to the AITC Technical Review Board for



review.”

The 2002 edition provided that “new adhesives” must simply test and pass ASTM D2559 and an in-plant qualification. “New adhesive types” were under the jurisdiction of AITC 405 and were defined as those with little or no in-service performance record. These adhesives had to be subjected to a barrage of tests and be approved by AITC’s Technical Review Board before they could begin in-plant

trials. The testing included: ASTM D2559, ASTM D3434, ASTM D4299, ASTM D4300, PS-1 – *Heat Durability Test*, and a 3-Year, Full Scale Beam Exposure Test.

It should be noted that ASTM D4299 has been revoked, making AITC 405-92 out dated. Also, ASTM D4300 is included by reference in ASTM D2559, so the reference in AITC 405-92 is redundant. Finally, the 3-year full scale beam exposure test has been performed only one time, and comparative data is non-existent.

There are several general types of adhesives that were approved for use and could use the “short route” outlined above. Those included (but may not be limited to):

- PRF – Phenol Resorcinol Formaldehyde
- RF – Resorcinol Formaldehyde
- MF – Melamine Formaldehyde
- MUF/MURF – Melamine Urea Formaldehyde/Melamine Urea Resorcinol Formaldehyde – These adhesive types were subject to further testing unless the resulting glulam products were marked “Do Not Chemically Treat” before shipment.

Unfortunately, the “short route” relied heavily on the pedigree of an adhesive and did not ensure adequate performance of these adhesive types. All other adhesives were required to be subjected to the excessively prohibitive requirements of the 1992 version of AITC 405, or the provisions in the 2005 version.

The lack of clear distinction between “new adhesives” and “new adhesive types,” and the outdated references in AITC 405-92 caused a great deal of confusion and necessitated the revision of the standard. The result was AITC 405-2005.

## New Requirements for Adhesives

The 2007 revision of ANSI/AITC A190.1 simply requires that all adhesives conform to AITC 405-2005. AITC 405-2005 doesn’t distinguish between adhesive “types”. It is intended to be a universal standard and has already been adopted by the Technical Review Board as an alternative to the 1992 version. AITC 405-2005 has uniform testing requirements to ensure consistency throughout the industry. No adhesive is required to be tested more, or held to a higher standard than any another adhesive. In making the testing requirements consistent, the door has been opened for new adhesive technology to be developed and used in the manufacture of glulam. The testing is adequate to ensure reliable performance, but not so prohibitive as to keep good adhesives from being approved for use in glulam.

Several characteristics are critical for glulam adhesives: moisture resistance and durability, high and low temperature performance, creep (at room temperature and under heat), and resistance to salt water exposure. AITC 405-2005 prescribes performance standards for each of these characteristics.

To avoid expensive, unnecessary testing of adhesives currently in use, AITC has adopted an official policy that allows continued use without re-qualification. It is the AITC Inspection Bureau’s position that adhesives that are currently approved will continue to be approved and be allowed to be used subject only to the normal in-plant qualification. Adhesives not already approved for use will be required to pass AITC 405-2005 for use in glulam.

If you have questions about any of the standards mentioned, or adhesives which are approved for use in glulam, please contact Ron Goff.