



# Building Standards and Codes

New York State  
Department of State  
Division of Building  
Standards and Codes  
One Commerce Plaza  
99 Washington Avenue, Suite 1160  
Albany, NY 12231-0001  
(518) 474-4073  
Fax: (518) 474-5788  
www.dos.ny.gov

TB-1026-RCNYS

## TECHNICAL BULLETIN

**Code Effective Date:** October 3, 2016

**Source Documents:** 19NYCRR 1220 - *Residential Code of New York State*

**Topic:** TJI Joists with Flak Jacket Protection

This bulletin is intended to provide guidance to Code Enforcement Officials in relation to the Weyerhaeuser TJI Joists with Flak Jacket Protection remediation due to formaldehyde emission. It is intended to address only the issues related to the NYS Uniform Fire Prevention and Building Code and not the ability of the proposed remediation to effectively address the formaldehyde odor issues. Additionally, the choice to remediate and which remediation option to choose remains that of the contractor/builder/applicant/manufacture and not the Code Enforcement Official or this Department.

### **Terminology:**

*Uniform Code* - The Uniform Fire Prevention and Building Code  
*RCNYS* - Residential Code of New York State<sup>1</sup>  
*AHJ* - Authority Having Jurisdiction  
*ICC-ES* - International Code Council Evaluation Service

### **Background:**

The Weyerhaeuser Company issued a statement on July 18, 2017 and subsequent guidance documents outlining the remedial solutions to the approximate 2,200 houses affected by the formaldehyde odor caused by their TJI Joists with Flak Jacket Protection. A document outlining the remediation solutions from the Weyerhaeuser Company is attached to this Bulletin. Remediation includes solutions such as rebuilding or replacing of the TJI Joists, top coating of the TJI Joists or removing the coating. The number of potential homes within New York State is approximately 175, per the Weyerhaeuser Company representative.

### **Code Issues:**

Installation of the effected TJI Joists as previously approved by the AHJ is not necessarily in itself a code violation or issue. An ICC-ES listing report and evaluation report exist for the TJI Joists with Flak Jacket Protection (ESL-1091 and ESR-1153 respectively). This combined with the NYS Uniform Code Supplement Section 103.3 "*Alternate materials, design and methods of construction and equipment*" is in part what many AHJ's use to justify the TJI Joists compliance with the Uniform Code. The remediation of the formaldehyde odor emission is where the potential for issues with the Uniform Code arise.

1. RCNYS is defined as the 2015 editions of respective International Code Council codes (the IRC) as modified by the Uniform Code Supplement (see <http://www.dos.ny.gov/dcea/noticadopt.html> for more information).

Replacement of the TJI Joists with new factory coated ones would not affect the AHJ's prior approval. Rebuilding, top coating or removing of the coatings or any other field modification to the TJI Joists may not comply with the conditions of use of the ICC-ES documents. To date there is no known modified or new ICC-ES ESL or ESR outlining the remediation solutions and their effect on the compliance with ICC Codes and the fire resistance of the TJI Joists. ICC-ES has issued an opinion to Weyerhaeuser on the manufacturer's proposed top coat material (W20115 formaldehyde scavenging paint). This opinion is attached to this Bulletin and in part indicates that:

"although the TJI Joists with the Flak Jacket coating with the W20115 paint applied over the coating have not been tested in accordance with our AC14, Sections A4.4.1 through A4.4.3 (modified ASTM E119 test), it is our belief that the application of the aforementioned paint does not affect the compliance of the coated I-joist with the fire performance specified in AC14. Our opinion and the content of this letter is limited to the sample witness tested by PFS and cannot be extended to all W20115 formaldehyde scavenging paint since such products are not under the ICC-ES continuous compliance inspection program. It is, also, applicable only to the TJI Joist product identified in ICC-ES ESL-1091 issued November 2016."

Therefore, unless new or updated information addressing the remediation options are produced and accepted by the AHJ, remediation by means of replacement with an alternative structural component, rebuilding of TJI Joists, top coating, coating removal or any remediation method that in the opinion of the AHJ, negates the use of the existing ICC-ES documents or the AHJ's prior approval, must show how the remediation meets the Uniform Code requirements to the satisfaction of the AHJ.

***Applicable Code Sections:***

Per Section *R302.13* and *R502.1.2* of the RCNYS:

*R302.13 Fire protection of floors.* Floor assemblies that are not required elsewhere in this code to be fire-resistance rated, shall be provided with a 1/2-inch (12.7 mm) gypsum wallboard membrane, 5/8-inch (16 mm) wood structural panel membrane, or equivalent on the underside of the floor framing member. Penetrations or openings for ducts, vents, electrical outlets, lighting, devices, luminaires, wires, speakers, drainage, piping and similar openings or penetrations shall be permitted.

*Exceptions:*

1. Floor assemblies located directly over a space protected by an automatic sprinkler system in accordance with Section P2904, NFPA 13D, or other approved equivalent sprinkler system.
2. Floor assemblies located directly over a crawl space not intended for storage or fuel-fired appliances.
3. Portions of floor assemblies shall be permitted to be unprotected where complying with the following:
  - 3.1. The aggregate area of the unprotected portions does not exceed 80 square feet (7.4 m<sup>2</sup>) per story
  - 3.2. Fireblocking in accordance with Section R302.11.1 is installed along the perimeter of the unprotected portion to separate the unprotected portion from the remainder of the floor assembly.
4. Wood floor assemblies using dimension lumber or structural composite lumber equal to or greater than 2-inch by 10-inch (50.8 mm by 254 mm) nominal dimension, or other approved floor assemblies demonstrating equivalent fire performance.

*R502.1.2 Prefabricated wood I-joists.* Structural capacities and design provisions for prefabricated wood I-joists shall be established and monitored in accordance with ASTM D 5055.

***Conclusions:***

Ultimately the decision to accept an “*Alternate materials, design and methods of construction and equipment*” is that of the AHJ or the State Fire Prevention and Building Code Council. Replacement of the effected TJI Joists with factory built and coated TJI Joists with Flak Jacket would not affect the AHJ’s prior approval of the TJI Joists or the use of the ICC-ES ESL-1091, ESR-1153 and the NYS Uniform Code Supplement Section 103.3.

Replacement with an alternative structural component, top coating, rebuilding of TJI Joists, coating removal or any other remediation requires approval by the AHJ. Acceptance of top coating of the joists via the ICC-ES documents and the ICC-ES opinion letter of the W20115 paint is an option should the AHJ approve it. All remediation technique will need to be evaluated by the AHJ for compliance with the Uniform Code and may require additional documentation such as revised drawings and/or additional inspections to verify compliance with the Uniform Code.

If you have any questions pertaining to this or any Technical Support request, please e mail us at [codes@dos.ny.gov](mailto:codes@dos.ny.gov).

**John Addario, P.E., Director**  
**Division of Code Enforcement and Administration**

# TJI® JOISTS WITH FLAK JACKET® PROTECTION

## OVERVIEW OF SOLUTIONS



### TOP COAT SOLUTION

- This option is the quickest way to remediate affected basements and it preserves the existing fire protection. Once begun, it takes about a week to complete the top coat solution in unfinished basements.
- The latex paint used to apply the top coat is water-based and contains no heavy metals. It includes compounds that react with formaldehyde to permanently change it from a gas to an inert non-formaldehyde solid.
- Weyerhaeuser is providing a transferrable lifetime warranty on this solution in addition to the original warranty on the TJI Joists.
- Post-remediation air-sample analysis conducted by independent third-party laboratories demonstrate results below the World Health Organization guideline of 0.08 parts per million.

### COATING REMOVAL SOLUTION

- This option requires more specialized equipment and labor than the top coat solution. Once begun, this option will take 2-3 weeks to complete in unfinished basements.
- The process involves removal of most of the Flak Jacket protection coating using mechanical methods, such as dry-ice, scraping, sanding and micro-planing.
- Once the coating is removed, the joists may need to be painted with the top coat (see above) to address residual formaldehyde emissions. The warranty for this option is the same as it is for the top coat option.
- Because this option removes the original fire protection, the basement ceiling may need additional measures, such as drywall, to meet fire code requirements.

### REPLACEMENT SOLUTION

- This option involves removing most of the affected joists and replacing them with new joists. It is best suited for houses in early stages of construction.
- If this option is chosen for homes in later stages of construction, the process is much more complicated and will require extra time and steps to properly complete, such as obtaining appropriate permitting, submitting revised plans to building departments, and hiring an engineer of record.
- For some homes, the replacement option may not be feasible at all.

# TJI® JOISTS WITH FLAK JACKET® PROTECTION SOLUTION COMPARISON



Solution Characteristic	Top Coat Solution	Coating Removal Solution	Replacement Solution
<b>Speed from Start to Finish</b>	~1 week (in unfinished basements)	~2-3 weeks (in unfinished basements)	Varies
<b>Meets Fire Code</b>	Yes	Requires additional measures, such as drywall	Requires additional measures, such as drywall
<b>Original Warranty for TJI® Joists</b>	Lifetime Transferrable	Lifetime Transferrable	Only if TJI® Joists are used in replacement
<b>Additional Warranty for Top Coat Solution</b>	Lifetime Transferrable	Lifetime Transferrable (top coat is applied after coating removal)	Not required
<b>Level of Complexity to Implement</b>	Low	Medium	High

August 25, 2017

Mr. Jeffery D. Linville, PE  
Senior Engineer  
Industry and Code Activities  
Weyerhaeuser  
P. O. Box 6049  
WTC1K5  
Federal Way, WA 98063

*Re: W20115 Paint and ESL-1091*

Dear Mr. Linville,

We have reviewed the analysis you sent from the PFS fire protection engineer licensed in the state of California, with regard to the small scale Bunsen burner test that is normally conducted as a quality control test at the Weyerhaeuser facility.

Based upon the evaluation of the information forwarded, it is our view that the W20115 formaldehyde scavenging paint tested does not inhibit the ability of the Flak Jacket coating to expand or insulate the OSB member. Thus, although the TJI Joists with the Flak Jacket coating with the W20115 paint applied over the coating have not been tested in accordance with our AC14, Sections A4.4.1 through A4.4.3 (modified ASTM E119 test), it is our belief that the application of the aforementioned paint does not affect the compliance of the coated I-joist with the fire performance specified in AC14.

Our opinion and the content of this letter is limited to the sample witness tested by PFS and cannot be extended to all W20115 formaldehyde scavenging paint since such products are not under the ICC-ES continuous compliance inspection program. It is, also, applicable only to the TJI Joist product identified in ICC-ES ESL-1091 issued November 2016.

Feel free to contact me if you have any questions.

Sincerely,



Gary G. Nichols, PE, SECB  
Vice President/Engineering and AC Development