



## BUILDING INTUITION, LLC

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September 10, 2020

Jeff R. Filler, Ph.D., P.E.  
Senior Staff Engineer  
ICC Evaluation Service  
900 Montclair Road, Ste. A  
Birmingham, AL 35213

**Subject:** Proposed New Acceptance Criteria for Factory Applied Fire-Retardant Penetrant for Wood Structural Panels and Sawn Lumber, Subject AC516-1020-R3

Dear Dr. Filler and the ICC-ES Evaluation Committee:

I want to thank you, your staff, and the Evaluation Committee for allowing me to comment on this ongoing and evolving acceptance criteria.

I am encouraged by subsequent changes made in the criteria to address significant deficiencies. My comments will primarily address these changes or potential omissions that should be considered as this AC progresses forward.

### **Acceptance Criteria and Code Equivalence**

The preface statement for all ICC-ES Acceptance Criteria repeats and emphasizes the alternate methods and materials provisions of IBC Section 104.11. It demands that an alternate method or material be determined that “for the purpose intended, (is) not less than the equivalent in quality, strength, effectiveness, fire resistance, durability, and safety.”

The specific product use limitations contained in previous versions of AC 516 have been eliminated in this version of AC 516. The AC now allows these alternatively treated products to be used in any application where pressure-impregnated fire retardant treated wood (FRTW) is allowed by the building code. With these changes, the burden of proof of equivalency is now increased to accommodate all end use applications allowed by the code.

Pressure impregnated FRTW has been used in building construction in the United States for nearly a century. Since World War II, it has had extensive and successful use in large wooden buildings. In the 1960's, its proven track record allowed it to be prescriptively placed and utilized in US building codes. Improvements have been made in its performance and its track record has been solid for the past several decades.

The proposed AC intends to evaluate a product, produced using a new technology that lacks this historic record or in situ performance. The performance of wood products that are pressure impregnated cannot automatically be ascribed to the performance to a material using a non-pressure penetration process. For that reason, it is essential to test for all aspects of its performance, consider its unique characteristics, and understand and evaluate it for conditions where it will be placed in a building.

This extra testing and performance verification is absolutely essential in order to demonstrate and assert equivalence in "quality, strength, effectiveness, fire resistance, durability, and safety." Otherwise, the code official cannot approve it as an alternative.

#### **Minimum Expectations of Penetration**

I have previously testified to the need to provide some assurance of an acceptable level of penetration depth into the wood substrate using this non-pressure, penetrant technology. In my opinion, micro-penetration does not have the same inherent durability potential exhibited in pressure-impregnated materials. Pressure impregnation has been shown to provide deep, if not complete penetration of the treated material. The proposed "chemical penetration" depth is vague and uncertain unless a minimum is specified.

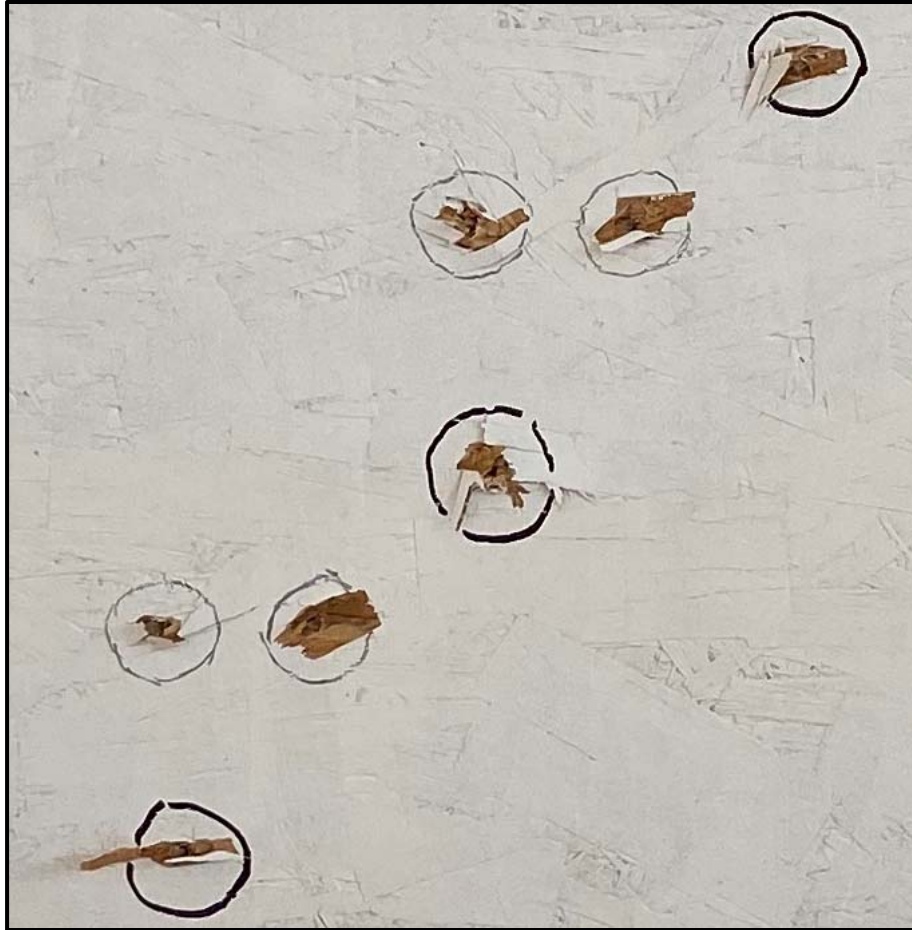
As it stands, AC 516 has no minimum expectation of the extent of penetration provided by the chemical treatment process. Many of my comments below relate to this unknown circumstance and must assume the worst case lacking any stipulated minimum embodied in the AC.

#### **Elimination of Nail Placement in the Extended ASTM E84 Test**

As AC 516 does not establish an acceptable depth of penetration of the fire retardant chemical, it is possible that a product may only exhibit shallow or micro-penetration. Pressure impregnated FRTW for which this the product is being evaluated as an equivalent has very deep if not complete penetration.

Shallow and micro-penetration has similar concerns as that of coated products. A protective layer at the surface of a material is obviously not inherently protected and available deep within the substrate as found with conventional FRTW.

In the case of exterior wall and roof sheathing applications, nails installed nearly always result in some amount of surface delamination. This delamination may remove most, if not all of the protective chemical, leaving untreated wood exposed to heat and flame. This obviously will have some impact on the rate of surface burning propagation and must be evaluated to determine equivalence.



Nail Penetration Delaminated Surface on Oriented Strand Board (OSB)  
Pneumatically Placed Roofing Nails at Industry Standard 90psi

The nail placement criteria previously contained in AC 516 Section 3.2 ASTM E-84/UL 723 has been removed in this version. The placement of nails in the Steiner Tunnel test must be restored if an acceptable minimum level of penetration is not mandated by the acceptance criteria. Failure to assess for this phenomenon for materials with minimal surface penetration will most certainly result in substandard surface fire propagation.

Allowing this to proceed unaddressed would fail to meet the Section 104.11 evaluation for “fire resistance, effectiveness, and safety”.

#### **AC 516 Section 3.3.1 – Wetting During Construction Test**

I am pleased to see the addition of a water exposure test method in this most recent iteration. This is absolutely necessary to address real world exposures that the product will experience on construction sites.

Unfortunately, no definitive description is provided on how the test is to be conducted. As it is currently written, extremely wide latitude in performing the test is inevitable. This will not permit valid repeatability between laboratories charged with performing this test.

At a very minimum, the method used to apply the water must be fully described. Assuming a spray method, this should include as a minimum the intended number/density of nozzles, orifice size, water pressure at the nozzle, volume calibration at each nozzle, distance of the nozzle to the sample, etc.

As the test proposed at Section 3.3.1 is not based on any existing consensus standard, its testing methodology and assumed efficacy must be understood and agreed upon by the Evaluation Committee. As this is intended to represent a rain event, I would expect some form of water droplet spray application equivalent to a normal wind-driven rainstorm event. This is necessary to replicate any detriment that water under normally anticipated force will have on the chemical treatment.

Assuming an appropriately designed and described test, the currently prescribed volume and duration seems reasonable for a site exposed material that will be permanently shielded within the building envelope.

As a caveat, this test may not prove a representative evaluation of long term wetting that may occur within exterior wall assemblies. This phenomenon may require evaluation through another testing means. Testimony from a water testing expert on the appropriateness of the short-duration rain exposure test to these long term conditions would be helpful.

### **Freeze-Thaw Testing**

The current AC has no provision for freeze-thaw testing.

Moisture moves through building envelope cavities and will condense on solid surfaces where dewpoint is reached. This is an undisputed scientific fact. In cold weather climates, this is building interior to outward flow where condensation usually takes place on the interior side face of exterior wall sheathing.

In the majority of Colorado, we typically see a freeze-thaw cycle occur on a daily basis during the winter months. This equates to 90-120 freeze-thaw cycles per year.

Our daytime temperatures and sun exposure will result in liquid moisture condensing on the wall interior side of the sheathing surface. After the sun sets, that same moisture will freeze to the surface. Over time, the freeze-thaw may start to lever, lift, and curl the surface furnish "wafers" of sheathing products. These lifted materials are thin and therefore have more surface area exposed, making them more vulnerable to surface fire spread. This may also reduce the structural load carrying capacity of the material over time.

At a minimum, it is necessary to test for freeze-thaw to determine if there is any detriment to the efficacy of the fire retardant treatment. If long term exposure to freeze-thaw results in substandard fire performance, then the product will not meet the "fire resistance, effectiveness, and safety" equivalency of Section 104.11.

If the chemical treatment has a hygroscopic effect and accelerates the structural degradation of wood materials exposed to wetting and subsequent freeze-thaw, that factor must also be considered, understood, and tested for equivalence. This evaluation would address the "durability and strength" characteristics of Section 104.11.



Significant Moisture Condensation at Inside Surface of Exterior Wall Sheathing  
Test Building Interior at 72°F and 42% RH, Exterior 38°F and 53% RH  
Meyers - February 2020 ICC-ES Hearing Testimony

### **NFPA 285**

The NFPA 285 test mandated by IBC Section 1402.5 is omitted from the proposed AC. ESR's are considered to be full and complete product approvals for substitution of code prescribed materials. Since this AC now permits any application where FRTW is permitted for use by the code, Section 1405.2 and its NFPA 285 fire test evaluation cannot be ignored.

If NFPA 285 testing is not deemed necessary in the AC516 evaluation, then a caveat stating that "NFPA 285 testing is not a subject of this report" should be included in the Section 6 "Evaluation Report Requirements".

I thank you and the ICC ES Evaluation Committee for your time in reviewing this letter and my concerns.

Respectfully,

A handwritten signature in black ink, appearing to read "T. Meyers", written in a cursive style.

Thomas Meyers, CBO  
President



7067 Sampey Road, Groveland FL 34736

Phone: 877-751-0990 Fax: 888-893-3564

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September 3, 2020

Jeff Filler, Ph.D., P.E.  
Senior Staff Engineer  
ICC Evaluation Services, LLC  
900 Montclair Road, Suite A  
Birmingham, AL 35213  
*Via email es@icc-es.org*

Re: ICC-ES Proposal AC516-1020-R3  
"Factory Applied Fire-Retardant Penetrant for Wood Structural Panels and Sawn Lumber"

Dear Mr. Chairman, Committee Members and ICC-ES Staff:

Global Fireproof Solutions (GFS) specializes in factory and field application of fire retardants and intumescent coatings with three factory facilities located in Atlanta, Dallas and Orlando. For the past 15 years, we have provided solutions to commercial and multi-family architects, engineers, contractors, and building material suppliers, to achieve the required fire ratings on various substrates such as wood, steel, plastics, and fabrics.

GFS supports the AC516 in order to address the need for "non-pressure" applied fire-retardant solutions that meet the performance requirements as defined in Section 2303.2 of the International Building Code for Fire-retardant-treated wood. The necessity for a non-pressure application method is due to the fact that a large majority of the wood in the construction industry cannot be pressure treated without severe impact on the structural design values.

Over the years, the code modifications to fire-retardant treated wood have been focused solely on the pressure-applied application method, and not the fire-retardant performance or alternative methods. Therefore, our industry has been greatly impacted by not having an alternative solution to meet the high demand necessary for fire performance requirements on more diverse structural wood substrates. Today's fire-rated assemblies need a non-pressure applied fire-retardant penetrant solution to meet the demand for safer construction which is the platform the AC516 can help provide.


For the first time in fire-retardant treated wood history, the concern of interior fire-retardant chemicals leaching from wood during construction is being addressed through a durability test. This added component takes the performance ability to the next level for Fire Retardant Treated Wood.

In addition, Alternative Method and Material is a major attribute of the AC516, which in my opinion provides the fire performance requirements for Building and/or Fire Officials to reference. This can apply to not only in new construction but existing wood structures, where wood that needs to meet fire retardant treated ratings can get the necessary application without the current implied restrictions of only wood that is "pressure-applied" meets the requirement.

In summary, the International Code Council has provided a single, code approved application method for the manufacturing of fire-retardant-treated wood. The intention of the AC516 is to provide code approved guidelines for alternative, non-pressure application methods to manufacturers and applicators of factory applied fire-retardant penetrants for sawn lumber, plywood, and OSB. Furthermore, all fire-retardant penetrants manufactured in accordance with the AC516 shall be required to meet the same performance requirements, adhere to a robust, ICC-ES approved quality-control program, and be subjected to the required ASTM test standards as defined in Section 2303.2 of the International Building Code for fire-retardant-treated wood.

We greatly appreciate the opportunity to provide our comments and recommend the committee move forward with the AC516.

Sincerely,

A handwritten signature in black ink, appearing to read "Chris Birchfield". The signature is fluid and cursive, with a prominent initial "C".

Chris Birchfield, CEO

*ICC Certified Special Inspector for Fireproofing*

*ICC Preferred Provider*

*AIA Certified Provider*

*ASTM Subcommittee Member*



**Sales Office, 266 Wire Road, Thomson, GA 30824**

**Telephone: 1-800-531-5558 Fax:706-595-8462**

Dr. Jeff R Filler, P.E.  
Senior Staff Engineer  
ICC Evaluation Service, LLC  
900 Montclair Road, Suite A  
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**RE: A.C. 516-1020-R3 (JF/WG)**

Mr. Chairman, Members of the Committee, and Staff:

The Proposed Acceptance Criteria for Factory-applied Fire-retardant Penetrant for Wood Structural Panels and Sawn Lumber (AC516), is addressed in IBC section 2303.2 and AC66 Acceptance Criteria for Fire-Retardant-Treated Wood. Therefore, it is recommended that staff does not continue with the development of AC516.

AC516 Section 1.4.1 introduces a definition for Factory Applied Fire-Retardant Penetrant: The factory applied fire-retardant penetrant is a proprietary formulation that is applied to all sides of the wood structural panels and all faces of sawn lumber that chemically penetrates the wood to impart fire-retarding qualities to the wood substrate.

The IBC provides guidance for fire-retardant-treated wood:

2303.2 Fire-retardant-treated wood. Fire-retardant-treated wood is any wood product that, when impregnated with chemicals by a pressure process or other means during manufacture, shall have, when tested in accordance with ASTM E84 or UL 723, a listed flame spread index of 25 or less and show no evidence of significant progressive combustion when the test is continued for an additional 20-minute period. Additionally, the flame front shall not progress more than 10 1/2 feet (3200 mm) beyond the centerline of the burners at any time during the test.

2303.2.1 Pressure process. For wood products impregnated with chemicals by a pressure process, the process shall be performed in closed vessels under pressures not less than 50 pounds per square inch gauge (psig) (345 kPa).

2303.2.2 Other means during manufacture. For wood products impregnated with chemicals by other means during manufacture, the treatment shall be an integral





part of the manufacturing process of the wood product. The treatment shall provide permanent protection to all surfaces of the wood product. The use of paints, coating, stains or other surface treatments is not an approved method of protection as required in this section.

How does staff differentiate between 'chemically penetrates' and 'impregnated with chemicals?' The two terms are synonymous in this context.

While the proposed criteria is modeled on AC66, Section 5.0, Quality Control, has been condensed. Section 5.0, Quality Control, of AC66 was developed by APA, AWC, AWPA (the recognized experts of the treated wood industry), lumber and plywood manufacturers, and wood treaters. It was designed to ensure that the level of chemical retention of manufactured products is the same as those tested for fire listings, physical and mechanical properties, and structural performance. Suggesting that AC516 be approved without a similarly robust section on Quality Control, ignores the importance of this section in meeting the intent of IBC §104.11 and could lead to significant performance issues that the AC66 Quality Control section was designed to prevent.

We have and will continue to offer guidance for incorporating the proponent's product and process into AC66. It is recommended that staff does not continue with the development of AC516.

Sincerely,

A handwritten signature in blue ink, appearing to read "C. Athari", with the date "9/9/20" written to its right.

Christopher K. Athari  
Codes and Education Specialist  
Hoover Treated Wood Products, Inc.

September 10, 2020

Jeff Filler, Ph.D., P.E.  
ICC Evaluation Service, LLC  
Eastern Regional Office  
900 Montclair Road, Suite A  
Birmingham, AL 35213

RE: Proposed New Acceptance Criteria for Factory Applied Fire-Retardant Penetrant for Wood Structural Panels and Sawn Lumber, Subject AC516-1020-R3

Dear Jeff:

Thank you for the opportunity to comment on *AC516 Proposed New Acceptance Criteria for Factory Applied Fire-Retardant Penetrant for Wood Structural Panels and Sawn Lumber*. We have the following comments and suggested revisions on the proposed draft AC:

#### Weather Exposure and Durability Testing

In our public comments to the draft of AC516 that was proposed for the June 2020 Evaluation Committee meeting, we noted that durability testing is needed and the UV-waterspray and freeze-thaw exposures from AC479 should be included. While the draft currently under consideration includes some durability testing provisions, we find the proposed provisions to be inadequate. It is important to note that these “interior use” products, whose primary use is in exterior walls of mid-rise construction, are commonly exposed to weeks or months of weathering during construction. We have the following specific comments regarding the proposed durability provisions:

1. The cover letter indicates that the proposed new waterspray test in Section 3.3.1 would expose specimens to a volume of water representing about 48 inches of direct rainfall. By comparison, the AC479 exposure (based on a shortened version of ASTM D2898, Method C) results in a total of 693 inches of water – 14 times the amount proposed in AC516. It should be noted, however, that the total *amount* of water may not be as important as the *duration* of wetting and number of *cycles* between wetting events. The six wetting cycles specified in AC479 result in a cumulative total of 24 hours of active waterspray, and each cycle is followed by four hours of UV exposure. This cumulative wetting time is four times longer than the single six-hour wetting exposure in the proposed provision, and it includes cycling between wetting and drying periods. The proposed single six-hour wetting period is not enough time and is devoid of the cycling necessary to represent a series of wetting events to which the evaluated product would likely be exposed during construction.
2. ASTM D2898 Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing has four accelerated aging exposures designed specifically to evaluate the leaching of chemicals from fire-retardant-treated wood (FRTW). It is unclear why AC516 proposes a completely different exposure which was adapted from a test that was not designed to evaluate the leaching of chemicals from FRTW. A shortened version of one of the D2898 tests should be used to evaluate the durability of interior use products, because these exposures have been designed specifically to evaluate FRTW.
  - a. The specified angle of 70-80 degrees in Section 3.3.1 is a much steeper slope than those specified in ASTM D2898 and in other ACs for similar products. This nearly vertical orientation would lead to more rapid drainage of water from the surface of the test

specimen, resulting in a less severe exposure than the standardized methods. By comparison, the UV-Waterspray Exposure of AC479 Section 4.1.3 references AC107 which specifies a 4:12 slope. Section 3.3.1 of proposed AC516 should be revised to specify a 4:12 slope for consistency with other methods and to be more representative of typical roof slopes.

- b. The proposed waterspray provisions are lacking specific guidance on variables such as the acceptable temperature range of the water to be used, performance characteristics of the nozzles, restrictions on water recirculation, etc. These factors could lead to a difference in test results and should therefore be specified. As with our other concerns, these concerns can be addressed by maintaining consistency with the provisions of AC479 Section 4.1.3.
3. The proposed waterspray test in Section 3.3.1 is not coupled with any ultraviolet (UV) exposure cycling. Without substantiation through testing under established exposure provisions such as those specified in Section 4.1.3 of AC479, any claims that products evaluated under AC516 are not susceptible to degradation from UV exposure, in combination with repeated wetting, are unsupported. Not only would this loophole create an inconsistency between evaluations of products intended for identical use under AC516 versus AC479; it also represents a serious omission from a thorough evaluation of products which are likely to be exposed to both wetting and sunlight during construction. The result would be a lack of assurance that the product will perform as expected following typical exposure during construction.
4. Section 3.3.2 references ASTM D2898 as the standard to which the durability exposure is to be conducted on products intended for exterior use; however, it does not specify which method is to be followed. ASTM D2898 has four different exposure methods, so this needs to be specified. As stated in Section 4.3 of D2898, Method A is the method normally specified for regulatory purposes when testing products that are intended for exterior applications. Thus, Section 3.3.2 of AC516 should specify Method A of D2898.

#### Mechanical Properties

5. The mechanical properties testing and evaluation provisions of Sections 3.4, 4.1 and 4.2 are improved over previous drafts of AC516; however, the adjustment factors derived in accordance with these provisions are not effectively conveyed and implemented in a mandatory sense within Section 6.0 (Evaluation Report Requirements) and Section 2.1.5 (Packaging and Identification). For example, there is no explicit requirement in Section 6.2, stating that the evaluation report is required to report the treatment adjustment factors. This raises concerns that product users and report users will not be adequately informed of applicable adjustment factors and how to apply them.
6. The first sentence of Section 3.4.1 requires wood structural panels to be tested “separately” for effects on strength and stiffness properties. The word “separately” can be misinterpreted to mean that the performed to determine strength must be separate from the tests performed to determine stiffness. The word “separately” should be deleted.

#### Qualification for use in Shear Walls and Diaphragms

7. In previous drafts, section 3.8 applied to wood structural panels used in either shear walls or diaphragms. The provisions regarding usage in diaphragms should be added back to this section.
8. Although titles are typically considered non-mandatory, the title of Section 3.8 implies that the shear wall qualification provisions of that section are “optional.” If these provisions are considered optional, Section 6.0 should include a requirement that panels for which this testing and analysis is not performed, and the corresponding evaluation reports for those products, should be identified as "not evaluated for shear walls or diaphragms." Without this information, designers, builders, and inspectors will assume that the panels are suitable for shear walls and diaphragms. This could be of particular concern where Section 4.1.3 indicates a reduction in mechanical properties. If the treatment causes a reduction in mechanical properties, panels for use in shear walls should be qualified in accordance with AC 269.1 and 269.2, and panels for use in diaphragms should be similarly qualified by testing.
9. The third sentence of Section 3.8 requires the structural analysis of shear wall assemblies to be prepared by an independent third party. There is no need for this to be prepared by an independent third party. ICC-ES staff provides independent review. However, it is necessary for the structural analysis to be performed by an engineer. If a manufacturer has engineers on staff, they should be able to prepare the analysis. This sentence should be revised to read “The structural analysis shall be prepared by a licensed engineer experienced in shear wall design~~an independent third party.~~”

#### ASTM E84 Flame Spread Testing

10. In the second sentence of Section 3.2, the phrase “significant progressive combustion” should be removed because it is an undefined term which is no longer used in the building code (as of the 2021 I-codes) or applicable referenced standards. Also, it is technically incorrect to require that the FSI be determined “...when the test is continued for an additional 20-minute period.” The FSI is determined during the first 10 minutes of the test, which is the standard duration of an ASTM E84 test. The additional 20-minute period is performed for the sole purpose of establishing whether the flame front progresses more than 10-1/2 feet beyond the centerline of the burners. This has been corrected in the 2021 IBC. To correct these problems in the proposed text, please consider making the following revisions, which are similar to the corrections that were made to the 2021 IBC:

3.2 Surface Burning Characteristics: The surface burning characteristics (flame spread and smoke-developed index) of wood structural panels and sawn lumber with factory-applied fire-retardant penetrant shall be determined in accordance with ASTM E84 or UL 723 conducted after the durability requirements of Section 3.3.1 (interior use) or 3.3.2 (exterior use) as applicable. The flame spread index shall be 25 or less, ~~and there shall be no evidence of significant progressive combustion when the test is continued for an additional 20-minute period.~~ Additionally, the ASTM E84 or UL 723 test shall be continued for an additional 20-minute period, and the flame front shall not progress more than 10 feet-6 inches (3200 mm) beyond the centerline of the burners at any time during the test. The smoke-developed index shall be 450 or less.

11. The proposed requirement in the third paragraph of Section 3.2 to include a 1/8-inch cut (groove) running the length of the tunnel is not necessary, as there is no code provision or referenced standard provision requiring this in the I-code versions referenced in Section 1.3.1 of this proposed AC. It is also cause for concern because it differs from provisions that are currently being developed within ASTM E2579, which is a secondary reference standard, for compliance with provisions that are new to the 2021 IBC. The third paragraph of Section 3.2 should be deleted.

Requirements for “Independent” and/or “Third-Party” Evaluation.



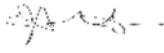



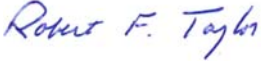

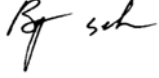




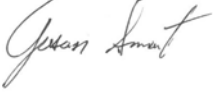

12. Lines 189, 190, 205, 206 and 218: The words “third-party” and “independent” should be stricken here because ICC-ES has provisions for allowing testing at the manufacturer's accredited testing laboratory. Also, ICC-ES provides the independent review. There is no justification for precluding a manufacturer's engineers and scientists from doing the evaluations and providing the statements for independent review by ICC-ES.

Editorial and/or Minor Clarifications

13. We recommend adding the following language in Section 1.1 to clarify that the purpose of the AC is to recognize products for use where fire retardant treated wood is required or permitted in the code:
  - 1.1 Purpose: The purpose of this acceptance criteria is to establish requirements for a factory-applied fire-retardant penetrant for wood structural panels and sawn lumber to be recognized in an ICC Evaluation Service, LLC (ICC-ES) evaluation report for use where fire retardant treated wood is required or permitted in ~~under~~ the 2018, 2015, 2012, and 2009 International Building Code® (IBC) and 2018, 2015, 2012, and 2009 International Residential Code® (IRC). Bases of evaluation are IBC Section 104.11 and IRC Section R104.11.
14. In the first sentence of Section 3.6.2, the acronym “IRC” needs to be added before the reference to “Section R317.3.”
15. Editorial revision on Line 256: The word “the” should be deleted before the word “temperature,” and “conditions” should be changed to “condition.”
16. Line 195: The wrong IBC section is referenced here. IBC Section 2304.10.5.1, as currently referenced, applies to fasteners for preservative-treated wood. The appropriate section references are 2304.10.5.3 and 2304.10.5.4, which apply to fasteners for exterior FRTW and interior FRTW, respectively.

Thank you for the opportunity to comment.

Sincerely,

 <p>Jeff Linville, P.E. Senior Engineer Weyerhaeuser Company</p>	
 <p>John Haluska Field Marketing Manager Norbord Inc.</p>	
 <p>Philip Vacca, PE, SE Sr. Engineer OSB/EWP Louisiana-Pacific Corp.</p>	
 <p>Robert Taylor, P.E., S.E Product Acceptance Manager Boise Cascade EWP</p>	
 <p>Borjen ("B.J.") Yeh, Ph.D., P.E. Director, Technical Services Division APA – The Engineered Wood Association</p>	
 <p>Linda Brown Engineer Southern Pine Inspection Bureau</p>	
 <p>Jeff Stefani, P.E. Midwest Regional Sales Manager Canfor Southern Pine</p>	
 <p>Jason Smart, P.E. Manager, Engineering Technology AWC</p>	

**J.R. Virnich**  
Director  
Industrial Business Development



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September 9, 2020

Jeff Filler, Ph.D., P.E.  
Senior Staff Engineer  
ICC Evaluation Services, LLC  
900 Montclair Road, Suite A  
Birmingham, AL 35213  
Via email [es@icc-es.org](mailto:es@icc-es.org)

Re: ICC-ES Proposal AC516-1020-R3  
"Factory Applied Fire-Retardant Penetrant for Wood Structural Panels and Sawn Lumber"

Dear ICC-ES staff, Proponent and Committee Members:

Koppers Performance Chemicals is a global leader in the development of progressive wood preservative systems and technologies.

With a dedicated staff of global wood science professionals, our premiere research capabilities position Koppers as the pioneer in wood preservation. Koppers provides wood preservatives, engineering services, and marketing to our valued customers in over 70 countries.

Wood preservatives and fire-retardant products from Koppers Performance Chemicals are available to meet the most demanding construction needs and model building code requirements.

Koppers Performance Chemicals feels it is both relevant and appropriate for the committee to see how products are misrepresented in the field. This unfortunately is somewhat common, the response typical, and a prime example of how inferior products are used in applications specified to meet AC66 Fire Retardant Treated Wood that meets the codes and is designed to protect life from fire and smoke.

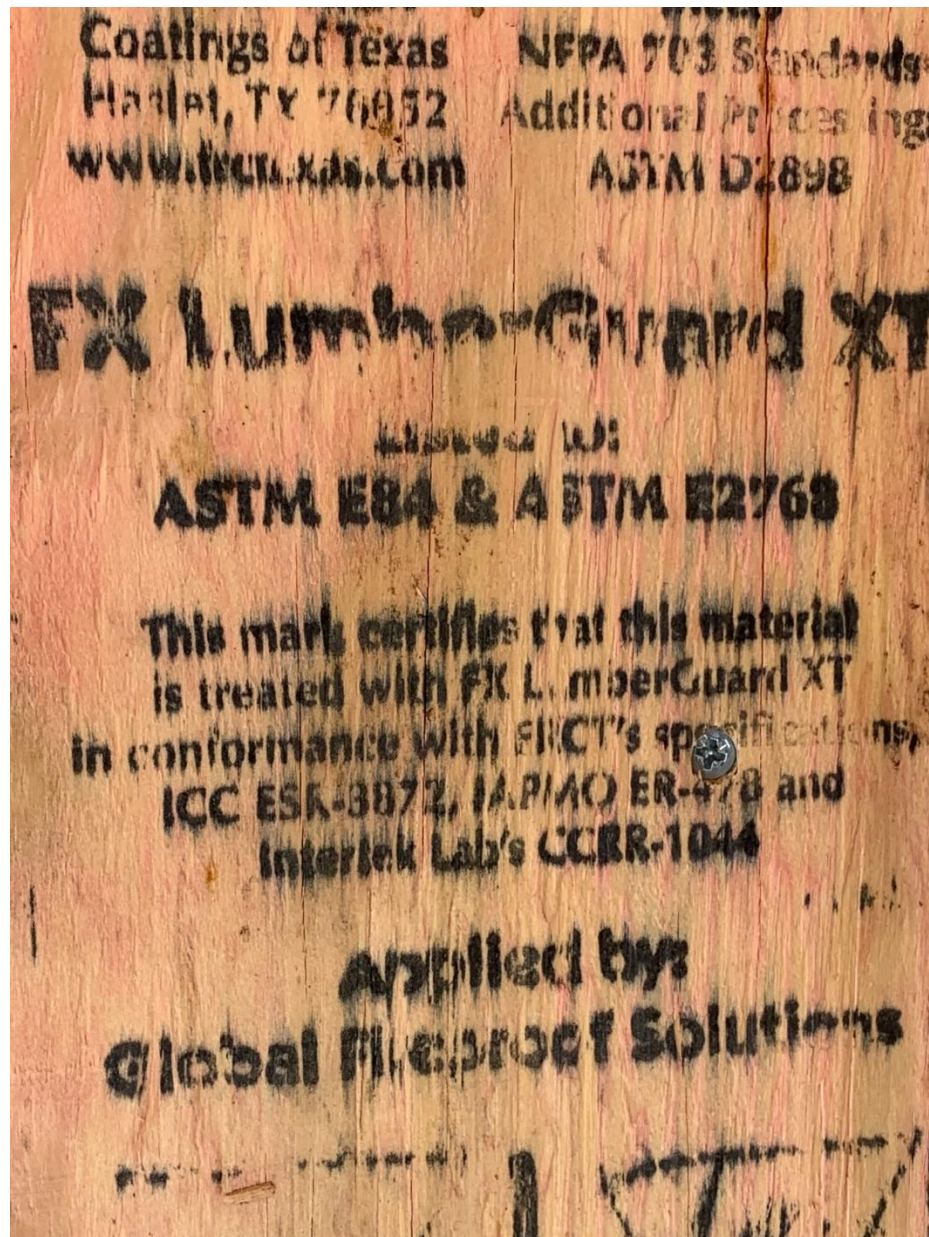


The above picture is a fire station built in Canton, GA 2020. During my regular commute I pass this site twice a day. Shortly after it was steel framed, several units of plywood in Global Fire Solutions paper wraps arrived on the job site and the plywood was being applied as wall and roof sheathing.

I stopped by the job site and took the following pictures:









I went on the ICC Directory: <https://icc-es.org/report-listing/esr-3872/>

Due to my concerns and frustration that products like these continue to end up in the field and used in incorrect applications, I sent this email and the pictures to several members of both the city of Canton, GA and Cherokee County, GA.:

-----Original Message-----

From: Virnich, JR

Sent: Tuesday, February 4, 2020 2:06 PM

To: [pelaney@cherokeega.com](mailto:pelaney@cherokeega.com); [jbass@cherokeega.com](mailto:jbass@cherokeega.com)

Subject: Code Compliance Waleska Road

Subject: Code Compliance Waleska Road

City of Canton:

I stopped by this job site on Waleska Road / Rienhardt Parkway wondering what the orange wood was? The stamp list ESR-3872.

3872 is for division 9 architecture coatings. Not division 6 rough carpentry where Fire Retardant Treated Wood is defined in the codes. It also REQUIRES field testing.

<http://frctexas.com/content/documentation/ESR-3872.pdf>

This is out of spec, does not meet the codes, and been exposed to the elements uncovered for several weeks.

I believe the site will be an indoor gun range or fire station where life, safety, and an approved Fire Retardant Treated Wood to protect from fire per the IBC & IRC is what was specified.

This product is not a substituted to Fire Retardant Treated Wood and does not have an approved ICC ESR Report for this end use.

J.R. Virnich  
770-653-9092

Despite sending multiple inquiries, below is the only response I received from the Senior Building Inspector of Cherokee County Building Inspections Department:

-----Original Message-----

From: Jeff Bass <[jbass@cherokeega.com](mailto:jbass@cherokeega.com)>  
Sent: Tuesday, February 4, 2020 2:53 PM  
To: Virnich, JR <[VirnichJR@koppers.com](mailto:VirnichJR@koppers.com)>  
Cc: Paul E. Laney <[pelaney@cherokeega.com](mailto:pelaney@cherokeega.com)>  
Subject: Re: Code Compliance Waleska Road

WARNING: External Sender

Mr. Virnich,

I appreciate your interest in our new Fire Station on Hwy 140, however this site is an active construction site and should not be entered by anyone except those working on the Fire station or a Cherokee County employee designated to be there. Thanks again for your interest but construction sites are dangerous, and we would not want you to be injured Thanks,

Jeff Bass  
Senior Building Inspector  
Cherokee County Building Inspections Department  
1130 Bluffs Parkway, Canton Ga. 30114  
678-493-6226

In addition, most of this material was directly exposed to the elements for well over sixty days. Weather.gov reports this area received 10.58 inches of rain in February, and 7.45 inches of rain in March. A total of 18.03 inches of direct rain exposure during construction.

This is a fire station! Paid for by taxpayers. In the town I reside. This job specified Fire Retardant Treated Wood by pressure impregnation per the requirements of AC66, Division 6 Rough Carpentry. NOT Division 9 Finishes.

Since the only response I received from the city and county did not meet my expectations, I referred to the ICC EVALUATION SERVICE, LLC, RULES OF PROCEDURE FOR EVALUATION REPORTS section 14.0 COMPLAINT PROCEDURE: "All complaints related to an evaluation report should be submitted in writing to the attention of the ICC-ES Quality System Director, accompanied by a filing fee of \$5,000."

Since the county, city, and the senior building inspector don't appear to be concerned, and that ICC requires a payment to notify them that products with ICC ES Reports are being approved and used incorrectly in the field by code officials, Koppers felt compelled to post this as public comment.

Koppers Performance Chemicals ask ICC-ES staff, Proponent and Committee Members to stop allowing loopholes, inferior, and misrepresented products get through the codes and chain of custody.

In our option that is exactly what AC516 is and will be if adopted.

Finally, would ICC-ES please define what is considered a factory applied fire-retardant through the surface and what is not?

The definition is extremely vague and ambiguous.

Thank you very much for the opportunity to comment on AC516.

Dr. Jeff R. Filler, P.E.  
Senior Staff Engineer  
ICC Evaluation Service  
900 Montclair Road, Suite A,  
Montgomery, AL 35213

9 September 2020

RE: AC516-1020-R3 (MO/JF)

Mr. Chairman, Members of the Committee and Staff,

It is with continued regret that the company applying for this AC continues to waste valuable Committee time and Staff resources on this effort.

If the product is intended to identify as or be considered as an “equal to” product to FRTW then it must be tested and listed under AC 66.

“Fire Retardant Treated” means pressure treated, not a surface coating. See Definition in IBC 2021. However, to attempt to meet these criteria, the tests suggested for the product are for “Fire Retardant Treated” or per AC 66.

A prime example of what is missing from AC 516 is the need for a rigorous Q.C. program, like AC 66. Generally, not found in industrial coating system facilities, a professional Q.C. program is mandatory in producing a life safety product like FRTW.

To exhibit the lack of understanding of the company proposing this AC, please see Line 50. The proper name of the AWPA was changed almost 20 years ago to American Wood Protection Association. This is not a typo on their part, it is a lack of knowledge.

There is no definition for “penetrant” in the IBC, the IRC or the IFC, nor in this AC. What is it? The AHJ will likely want to know.

We do not know what the “penetrant” contains, nor if the “penetrant” is simply the carrier (i.e. water) for an active material.

Line 76: what is “post-treatment”?

Line 79: “treatment plant” – does this mean flow coater, spray system of rollers?

Note that it not until Line 123 that this “factory applied fire retardant “penetrant” treated wood” is even mentioned. It is not in the title, nor anywhere else and that again was deliberate, not an error. This what the AC is being developed for.

I shall repeat: if this AC 516 is meant to qualify this product as an “or equal” to FRTW, then it must be qualified within the guidelines of AC 66.

Respectfully,

Kris Owen  
Consultant  
Preservative and Fire Retardant Treated Wood  
Westfield, IN  
Kowen4568@gmail. Com  
219-405-8809



September 10, 2020

**Sent Via Email**

<https://es@icc-es.org>

Jeff R. Filler, Ph.D., P.E.  
Senior Staff Engineer ICC Evaluation Service  
900 Montclair Road, Ste. A  
Birmingham, AL 35213

**Subject:** Proposed New Acceptance Criteria for Factory Applied Fire-Retardant Penetrant for Wood Structural Panels and Sawn Lumber, Subject AC516-1020- R3

Dear Dr. Filler and members of the ICC-ES Evaluation Committee:

Thank you for the opportunity to submit public comments to the proposal from Fire-Retardant Coatings of Texas to create a new acceptance criterion for Factory Applied Fire-Retardant Penetrant for Wood Structural Panels and Sawn Lumber, Subject AC516-1020- R3.

I am a retired Building Official and so my comments will be based on my training and experience as a code enforcement official.

**No longer limited to “Interior Applications”**

The original proposed version of AC516 was titled “Proposed Acceptance Criteria for Factory Applied Fire-Retardant through the surface by a Non-Pressure Impregnated Process for Wood Structural Panels and Sawn Lumber Used for Interior Applications. Subject AC516-0220-R1 (MPO/JF).”

Evidently this product and process have undergone a tremendous leap forward in the last few months because it is no longer limited to “Interior Applications”. As such, I believe that this wood product and process are already addressed in IBC Section 2303.2 and AC66 Acceptance Criteria for Fire-Retardant-Treated Wood.



## **Chemical Penetration of the Wood**

The proposed definition “Factory Applied Fire-Retardant Penetrant” in proposed Section 1.4.1 on Page 4 describes “...applying the proprietary formulation that is applied to all sides of the wood structural panels and all faces of sawn lumber that chemically penetrates the wood to impart fire-retarding qualities to the wood substrate.

Isn't “chemical penetration” another way of saying “impregnation with chemicals”?

Fire-retardant treated wood is defined in IBC Chapter 2 (The definition is under **TREATED WOOD**.)

“**[BS] TREATED WOOD.** Wood products that are conditioned to enhance fire-retardant or preservative properties.

**Fire-retardant-treated wood.** Wood products that, when impregnated with chemicals by a pressure process or other means during manufacture, exhibit reduced surface-burning characteristics and resist propagation of fire.”

Note that wood products impregnated with chemicals can be achieved by “...other means during manufacture”. It does not have to be a pressure process.

## **Minimum Depth of Chemical Penetration is Conspicuously Absent**

What is the minimum depth of chemical penetration that must be achieved in order to be equivalent to FRTW in “quality, strength, effectiveness, fire resistance, durability, and safety” as required by IBC Section 104.11? How can the building official feel comfortable that this wood product and process is truly equivalent to FRTW if no minimum level of penetration is specified?

By comparison, FRTW is specifically regulated as to the depth of impregnation through the pressure process.

“**2303.2.1 Pressure process.** For wood products impregnated with chemicals by a pressure process, the process shall be performed in closed vessels under pressures not less than 50 pounds per square inch gauge (psig) (345 kPa).”

## **Alternate Materials Equivalency**

This wood product and process is being proposed as being not less than the equivalent of that prescribed in this code for fire-retardant-treated wood in quality, strength, effectiveness, *fire resistance*, durability and safety per IBC Section 104.11. This is a tremendous change from the original scope of proposed AC516.

“**A] 104.11 Alternative materials, design and methods of construction and equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed

by this code, provided that any such alternative has been *approved*. An alternative material, design or method of construction shall be *approved* where the *building official* finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, not less than the equivalent of that prescribed in this code in quality, strength, effectiveness, *fire resistance*, durability and safety. Where the alternative material, design or method of construction is not *approved*, the *building official* shall respond in writing, stating the reasons why the alternative was not *approved*.”

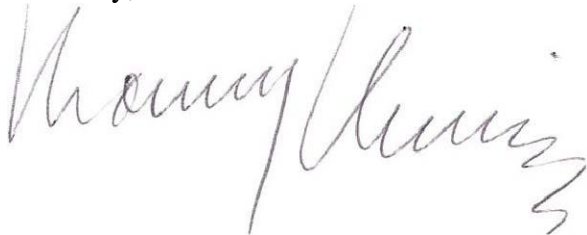
It is important to note that six distinct performances must be shown to be not less than the performance of FRTW in each and every application where FRTW is referenced in the IBC and IRC.

It appears to me that the true intent of creating AC516 is to avoid being regulated by IBC 2303.2 or by AC66 Acceptance Criteria for Fire-Retardant-Treated Wood.

I, therefore, request that ICC-ES not proceed with the development of AC516.

Thank you for your consideration.

Sincerely,

A handwritten signature in cursive script, appearing to read "Manny Muniz". The signature is written in dark ink and is positioned above the printed name.

Manny Muniz



2801 E BELTLINE NE  
GRAND RAPIDS, MI 49525  
616.364.6161  
UFPI.com

September 3, 2020

Jeff Filler, Ph.D., P.E.  
Senior Staff Engineer  
ICC Evaluation Services, LLC  
900 Montclair Road, Suite A  
Birmingham, AL 35213  
*Via email es@icc-es.org*

Re: ICC-ES Proposal AC516-1020-R3 "Factory Applied Fire-Retardant Penetrant for Wood Structural Panels and Sawn Lumber"

Ref: AC 66

Dear ICC-ES staff, Proponent and Committee Members:

UFP Retail owns and operated pressure treating plants in the US producing both preservative treated and fire-retardant treated wood products. We are a subsidiary of UFP Industries with business that are directly involved in commercial construction. With respect to AC 516 and the broader topic of fire-retardant Acceptance Criteria, we are both a manufacturer and a user.

We urge ICC-ES to reject the proposed AC 516. We have tried to stay engaged on this topic and have provided input to staff and the committee on previous versions of this proposed AC. This document is much better than previous versions and while we will describe our significant concerns with the current proposal, it is important to acknowledge the progress being made.

### **Fundamental Misunderstanding**

Pressure-treated wood products are great! It is a highly efficient way to produce a terrific and reliable building material suitable for a wide range of structural and aesthetic applications. (And yes, I am a pressure-treater!) But it is not a cure-all/panacea any more than dip or spray application is an Achilles' Heel. This is especially true of interior fire-retardants where penetration is not even necessarily an advantage. I suspect that staff and committee members will hear references to "complete penetration" or "uniform treatment" as an accolade attached to pressure-treating and as a justification for testing requirements not found in AC 66. That is simply wrong. I say that based on a lifetime career in pressure-treating with a great focus in the last fifteen years on quality control of (preservative) pressure-treated

products. I say that as participant in the AWPAs technical committees for more than three decades. I say that as the Past President of AWPAs. I say that as the Vice President of Wood Preservation for a large pressure-treater for twenty years.

### Primary Concerns

1. Periodic surface-burning test requirement cannot be applied unless comparable language is first applied to AC 66. ICC-ES simply cannot argue this is somehow appropriate and necessary for a “penetrant” and not for a “pressure-treated” product. This is an industry changing requirement that has major implication for all current ICC-ES ESR fire-retardants. It requires major industry, agency and ICC-ES staff input to work through such a change. This was contemplated several years ago but dropped mysteriously by ICC-ES. We should resume that hard work and delay consideration of this AC or remove the requirement from this AC.
2. Gap and groove requirements for panels are not consistent with AC 66 and are based on a false impression of the difference in penetration required by AC 66. The penetration requirements for pressure-treated products are often minimal (e.g., 0.125 inches) and always allow for a significant portion of the QC test sample to have NO PENETRATION whatsoever. The proposed “groove test” for panels is especially puzzling. There is no basis for this distinction between the requirements of AC 66 and those of the proposed AC 516. The language in AC 516 should be amended to match AC 66.

### Specific Comments

Section 1.4.1, line 63. Strike the work “chemically”. Penetration may be achieved through a variety of mechanisms which could not be considered chemical in nature. In reality, ICC-ES staff will not have the ability to determine if penetration was achieved through chemical means or some other means. Ultimately, this is a result of failing to address these products via modification to AC 66. ICC-ES staff is making a false distinction between two different application methods. Reviewing previous versions of AC 516 as well as the current one demonstrates the incredible acrobatics being performed to maintain this false narrative. Relatively minor changes could be made to AC 66 (primarily the title) to handle these products in a consistent way with the existing AC 66 products including possible improvements to those currently commercialized, code-accepted products.

Section 3.2, line 106. (sentence clarity) Replace “after the durability” with “on material which has undergone the durability”.

Section 3.2, lines 113-116. (primary concern) Panels are typically loaded in 2’ x 8’ sections into the Steiner Tunnel for E84 testing. Presumably, this requirement stems from the misunderstanding that pressure-treated products are treated “through and through” so there is never untreated edge exposed. This is simply wrong. To make this point for the committee, I ask that ICC-ES provide a summary of current ESR’s for AC66 products and the exact penetration requirements per species. ICC-ES staff should be able to find a way to present this information without violating the confidentiality requirements it maintains with report holders and manufactures. If this is truly needed to ensure that we have the right performance from these building materials, surely the next critical step is to address the millions on board feet of

material being installed EVERY DAY rather than messing around with an AC which might result in limited product entering the market over the next couple years. In short, if this needs to be in here, by definition, ICC-ES staff is failing to address a critical issue with products in the market today. Either remove this requirement from AC 516 or put AC516 on hold and go address the real issue which are the AC 66 products in the market today. Our position is this is not needed and should simply be dropped from the proposed AC 516.

Section 3.2, line 117-121. (primary concern) All of the points made above to the gap apply even more readily to the proposed groove. Additionally, it is not clear why this would only be required of panels and not lumber.

Section 3.3.1. lines 125-132. (general comment) Having a mechanism to assess wetting during construction makes sense. There are two problems with what is proposed. First, once again, there is no basis for requiring this in AC 516 while ignoring it in AC 66. And it is NOT appropriate to address it herein just because while ignoring for the millions of board feet of product being installed EVERY DAY. The second problem is this is an entirely made up test. It is not well defined and there is no ability to assess how successfully it addresses the concern. ICC-ES staff should provide results of this testing with E84 results before and after this leaching procedure on at least five major AC 66 products in the market today to allow the committee to fully understand what it is voting on. Bottom line is this *may be* a great first step at addressing this legitimate concern around interior fire-retardants but there is not way to determine that at this time ; it is pre-mature and must be removed from the proposed AC 516.

Section 3.3.2, line 133. (section clarity) Strike the work “Optional” from the title. It is not optional; it is required for exterior applications. Placing optional in the header means that everything that come in this section is optional. Therefore the application ASTM D2898 for exterior products is *optional* even for exterior products. That is clearly not staff’s intent.

Section 3.3.2, line 136. (section clarity) Add a sentence at the end comparable to the 3.3.1 making it clear that E84 is conducted on this material post D2898.

Section 3.7, line 208. (section clarity) Strike the work “Optional” from the title. See previous logic.

Section 3.8, line 214. (section clarity) Strike the work “Optional” from the title. See previous logic.

Section 5.4, lines 318-322. (primary concern) The need for “periodic third-party testing to verify the surface burning characteristics” is a really, really big deal. It is a very important topic. It is clearly a much more important topic for the products being installed EVERY DAY in new construction across the United States, being produced in high volume every day under existing AC 66 based ICC-ES ESR’s. Placing this requirement in AC 516 is both an acknowledgement that it is needed and an acknowledgement of ICC-ES’s failing to address a huge issue. You cannot have it both ways. Either remove it from the proposed AC or set the proposed AC aside and address the issue under AC 66.

Section 5.4, line 320. (general comment) Strike “bench fire tests” as this is not a fundamental requirement and, I would argue has both very limited value and limited applicability. It may fit in some QC programs but it is certainly not ubiquitous.

## Summary

We appreciate the progress being made by ICC-ES staff on this AC. The proposed AC 516 should be rejected. Instead, two things should happen under AC66.

1. Address the legitimate weaknesses in AC 66 which are on display in the proposed AC, particularly the interior durability leach test and periodic E84 fire performance testing. This must be done in with significant industry input and a plan for retroactively applying to existing products.
2. Make simple changes to AC 66 (like the title) to allow non-pressure products to be addressed appropriately and consistently with their pressure-treated brethren.

Sincerely,



Scott W. Conklin  
Vice President Wood Preservation  
UFP Retail Solutions

Sept. 10, 2020

ICC Evaluation Services, LLC  
900 Montclair Road, Suite A  
Birmingham, AL 35213

Re: ICC-ES Proposal AC516-1020-R3 "Factory Applied Fire-Retardant Penetrant for Wood Structural Panels and Sawn Lumber"

The Western Wood Preservers Institute would like you to consider our comments as outlined below.

#### Section 1.4.1

Line 62- The term "proprietary" is used in the definition. Does that exclude future non-proprietary formulations? We suggest deleting this term.

Line 63 – Revise "lumber that chemically penetrates the wood" to "lumber that penetrates into the wood". While there may be some chemical-induced penetration, most penetration is simply mechanical impregnation of water and fire retardant through the pits in cell walls. **NOTE: As defined in Section 1.4.1, all pressure treated fire-retardants would fit under this definition and could move from AC 66 to AC516.**

#### Section 1.4.2

Line 65 – Change the word defined from "Retention Rate" to "Retention by Assay" to match the AWWPA definition of retention by assay. This is because the retention in AC66 can be by assay borings or a gauge retention can be used. But gauge can only be used in a batch process by analyzing how much fire retardant went into the retort compared to how much came out. That cannot be done on an inline system.

Change Line 65-68 – The definition should be: "The determination of fire-retardant retention in a specified zone of wood by extraction or analysis of specified samples by increment borer cores."

#### Section 2.1.2

Line 79 - The term "factory" has been changed to "applicator." This could cause confusion with field applicators and should be revised to: "treatment plant/applicator factory". **NOTE: Again, as stated in Section 2.1.2 all pressure treated fire-retardants would fit under this term "treatment plant" and could move from AC 66 to AC516.**

#### Section 2.1.3

Line 80 – Source of Treatment Chemical. This is confusing as it is asking for the name of the chemical, not who is manufacturing the chemical used.

#### Section 2.1.5

Line 86 – Again, confusing. Are the treated product and wood-based substrate different? We suggest revising "treated product, wood-based substrate" to "wood products".

Line 88 – To be consistent with AC 66, add to end "and in accordance with Section 2.1.5 of AC10".

## Section 2.4

Note: We ask the following language be inserted to ensure samples have not previously been tampered with by dual treatments: The inspection agency shall use of a boron indicator on the test samples before application of the fire-retardant penetrant. The agency shall also take a sample for use with a phosphorus indicator. Any trace of boron or phosphorus before samples have fire-retardant penetrant applied shall negate all further testing results of those samples.

## Section 3.0

If this is proposed as an alternative to AC 66, it should match exactly as possible to AC 66. At present, OSB is not covered under AC 66. It could be broken out in a separate section, as outlined below:

### 3.1 Lumber

3.1.1 Strength and Stiffness Properties

3.1.2 Hygroscopic properties

3.1.3 Durability

3.1.4 Surface Burning Characteristics

### 3.2 Plywood Panels

3.2.1 Flexural Strength and Stiffness Properties

3.2.2 Hygroscopic properties

3.2.3 Durability

3.2.4 Surface Burning Characteristics

### 3.3 OSB Panels

3.3.1 Flexural Strength and Stiffness Properties

3.3.2 Hygroscopic properties

3.3.3 Durability

3.3.4 Surface Burning Characteristics

## Section 3.3.1

Note that no testing has been done to confirm the testing described below actually works to replicate fire retardants used on exterior walls that are subjected to rain and snow during installation:

“3.3.1 Interior Use: To address possible wetting during construction, wood structural panels and sawn lumber with factory-applied fire-retardant penetrant intended for interior use shall be subject to wetting at a rate of 5 gallons per hour per square foot of surface continually for 6 hours with the surface oriented at an angle of 70-80 degrees (nearly vertical).”

Standard test methods such as ASTM G7, E661 and D7032 have been considered but none have proven effective. This is a project ICC-ES, AWWA, ASTM and industry needs to address. It is critical to develop the correct test requirements. As such, we continue to recommend the testing defined in AC 479, Sections 4.1.2 and 4.1.3 until such time as a proper test is developed for AC 66 and AC 516.

## Section 3.3.2

Line 133 – This section is optional, but if an exterior test is conducted, the requirements are not optional. Since interior use is separated from exterior use, the word optional is not needed and should be deleted. For clarification, add the term “requirements” after each subsection in 3.3.1 Interior Use Requirements and 3.3.2 Exterior Use Requirements.



## Section 5.2

Line 301 – The term used in 2.1.2 is treatment plant/applicator. The title here should be consistent with the other sections by adding “/applicator factory”

Line 302 – For consistency, add “/applicator factory” after treatment plants.

Line 308 – For consistency, add “/applicator factory” after treatment facility

**NOTE: As previously noted, all pressure treated fire-retardants would fit under this term “treatment plant” and could move from AC 66 to AC516.**

## Section 5.3

There is no reference to AC 304 and there are no defined requirements for frequency of inspections. This should match AC 66.

## Section 5.4

The “Quality Control Program” and “Quality Control Documentation” defined here seems to be a big departure from the AC 66 quality assurance program. It is lacking in the detail found in AC 66, but does have new ongoing quality control third-party periodic testing of E84 surface-burning characteristics for treatment facilities QCP. We support this, but again it needs more detail so that it is applied consistently across ESRs and, if changed, across ACs.

Line 319 – Retention rate should be revised to “Retention by Assay” and expressed as: “The amount of fire retardant, in pcf or kg/m<sup>3</sup>”, as this is used in AC 326 when expressing an assay retention.

Line 322- be consistent and add “/applicator factory” after treatment facility

**NOTE: Again, as previously noted, in section 5.4 all pressure treated fire-retardants would fit under this term “treatment facility” and could move from AC 66 to AC516.**

Section 5.5 and all subsections.

We disagree with the removal of this section. Stains, glues, coatings, penetrants and pressure treatments used on wood are impacted by two main properties of the wood: moisture content and surface structure. If the wood is too dry, the penetrant cannot move into the wood as there is no moisture to carry it in. Additionally, if the wood is case hardened from drying, then the cell pits aspirate preventing penetration. If the wood has been through a planer then the surface will be smoothed and hardened from the blade making it more resistant to penetration.

Proper penetration into wood fiber is an art as much as it is a science and this should be highlighted in the quality control section to ensure the coverage rate usage achieves the desired penetration and retention.

## Section 6.7

Note: This is where the durability testing is a concern. A proper test method must be developed to determine how wet the wood can get before it must be replaced. See comments for Section 3.3.1

## Section 6.11

Line 377 and 378 – Modify “3. Name or identification number and location of factory-applied fire-retardant

penetrant treater” to include the following: “3. Name or identification number and location of factory-applied fire-retardant penetrant treater” Also add the statement: “By non-Pressure Process” if applied by a factory applicator.

**NOTE: Again, as stated before, in section 6.11 all pressure treated fire-retardants would fit under this term “penetrant treater” and could move from AC 66 to AC516.**

Line 379 – Add back item 4 from ACC 66 line 2.1.3 “4. When testing has been conducted at 80°F only, (4.1.3) labels shall state that the products shall not be used in roofing applications.”

WWPI’s position is that AC66, AC479 and the proposed AC516 should all be harmonized and we look forward to staff addressing this issue.

Should you have any questions, please contact me at (360) 693-9958 or [dallin@wwpi.org](mailto:dallin@wwpi.org).

Sincerely,

A handwritten signature in blue ink that reads "Dallin Brooks".

Dallin Brooks  
Executive Director  
Western Wood Preservers Institute