

Fire tests confirm not all fire-retardant treatments are equal

ASTM E2768 testing shows wood treated with non-pressure applied fire retardants is unable to reliably achieve the results required by the building codes

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EINPresswire.com/ -- With the growing threat of wildfire fueling increased demand for fire-retardant treated wood (FRTW), some manufacturers are offering unproven lower-cost alternatives to help meet that demand, often making misleading claims to promote them. But recent testing shows it's easy to get burned when those claims don't stand up to scrutiny.



In the ASTM E2768 test a Steiner Tunnel is used to expose test samples directly to flames for the test's entire 30-minute duration. To be compliant under Section 2303.2 of the IBC, the flame front must not progress past the 10.5 foot mark at any point during the test.

The testing program, commissioned by Western Wood Preservers Institute (WWPI) with support from the Southern Forest Products Association (SFPA), involved testing lumber and plywood treated with six different fire-retardant formulations -- three pressure applied and three non-pressure applied. The tests were conducted at an independent laboratory in accordance with ASTM E2768-11 (reapproved 2018), the protocol specified in the International Building Code (IBC) and other fire safety codes for proving performance of fire-retardant-treated wood products as defined in Section 2303.2 of the IBC.

Results from the testing showed when it comes to meeting rigorous codes-specified fire testing requirements, wood products treated with non-pressure applied fire retardants are unreliable at best. In all 10 tests of pressure-treated FRTW, the products met the objective of the ASTM E2768 — the flame front did not progress beyond 10.5 feet at any point during the 30-minute test. But 19 of the 21 products treated with non-pressure applied fire retardants were unable to reach the 30-minute mark without the flame front progressing beyond 10.5 feet.

For the two non-pressure applied wood tests that went the full duration, it is surmised the test samples' substrate, Select Structural Douglas fir lumber, may have contributed to the positive test results. An untreated sample of the same substrate was tested and lasted 27.3 minutes, more than 90 percent of the test's 30-minute duration, before the flame front moved beyond 10.5 feet.

In Section 2303.2, the IBC defines fire-retardant-treated wood as having been "impregnated with chemicals by a pressure process or other means." It identifies specific testing protocols -- ASTM E2768, an extended version of UL723 or ASTM E84 — that must be used to assess its effectiveness in resisting fire. The code states, "The use of paints, coating, stains or other surface treatments is not an approved method of protection as required in this section."



Fire-retardant-treated wood is often required to be used in high occupancy wood frame structures such as multi-story apartment buildings. Due to the threat to human welfare posed by fire, FRTW is tested rigorously before it can be code-approved.

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... fire-retardant-treated wood is used to build high-occupancy structures such as multi-story apartments; the stakes are too high to risk using potentially ineffective products...”

Butch Bernhardt, Western Wood Preservers Institute

The fire protection provisions in Section 2303.2 of the IBC are intended to ensure in the event of a fire building occupants have ample time to escape and fire fighters have a chance to enter the building safely to douse the flames. Because of the obvious human safety factors involved, code requirements are rigorous and the language is specific. Products governed by this part of the codes are structural in nature; if those products fail prematurely the building could collapse, trapping occupants and/or first responders inside.

The extended test duration specified in Section 2303.2 is the primary distinction between the code's requirement for structural FRTW and its requirements for non-structural products such as interior finishes, addressed in Chapter 8 of the IBC. Interior finishes require ASTM E84's 10-minute flame exposure.

"This testing program underscores the importance of the code language and performance testing requirements," said Butch Bernhardt, executive director of Western Wood Preservers

Institute (WWPI). "Since fire-retardant-treated wood is used to build high-occupancy structures such as multi-story apartments, the stakes are too high to risk using potentially ineffective products based on questionable marketing claims."



Non-pressure applied fire-retardant manufacturers have been known to use terms such as "code-compliant," "Class A rated" and "ASTM E84 tested" to promote their products as equivalent to pressure treated FRTW. However, none of those claims qualify the product for use as FRTW under Chapter 23 of the IBC.

A summary report on the testing program, including details about its methodology and test results can be found at <https://bit.ly/48QjM9C>.

A two-page synopsis describing what fire-retardant-treated wood is -- and what it isn't -- according to the codes is available from WWPI at <https://bit.ly/3KvWRZi>.

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About WWPI

WWPI represents preserved wood treaters, preservative manufacturers and others serving the industry throughout western North America. For more than 75 years, WWPI has provided technical support and market outreach supporting the use of preserved wood in outdoor applications.

LINK for EDITORS: Images for publication, along with supporting documents including the test report summary and the two page synopsis piece can be found [here](#).

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