



“Raising Awareness of the Risks and Solutions for Indoor Air Quality, Fire, Termites and Wood Rot Decay”

Eco AFL™

Providing precious minutes because *minutes matter in the event of fire.*

Improving comfort and quality of life through **improved indoor air quality.**

Protecting **Homeowners** from the risks of **wood rot decay and termite infestation.**



Eco AFL™: Providing precious minutes because *minutes matter in the event of fire.*

Modern Residential Fires

- UL (Underwriter’s Laboratories) determined that fires today are more dangerous and pose more risks than in the past. Fire propagation is faster, and time to flashover, escape times and collapse times are all shorter. *Minutes Matter.*
- UL’s research scientists and engineers have conducted a number of innovative tests and identified that the modern home fire is a “perfect storm” of conditions and outcomes: larger homes + open house geometries + increased fuel loads + new construction materials = faster fire propagation, shorter time to flashover, rapid changes in fire dynamics, shorter escape times and shorter structural collapse times. *Minutes Matter.*

Excerpted from UL New Science. Read the full report here: <http://newscience.ul.com/articles/modern-residential-fires>

This document is the property of Eco Building Products, Inc. any unauthorized use is in violation with copyright protection. All rights reserved Eco Building Products, Inc 2016



The Case For Eco AFL™: *Minutes Matter*

WHY IT MATTERS

- The overall finding of UL's fire testing is that the changes in the modern home create fires that reach flashover more than eight times faster than homes built 50 years ago. This rapid progression to flashover gives residents, firefighters and other first responders much less time to react, creating significant hazards to health and property.
 - Flashover occurs when the majority of exposed surfaces in a space are heated to their auto-ignition temperature and emit flammable gases.
 - UL testing found modern houses reached flashover in less than 5 minutes. *Minutes Matter.*
- The change in modern wall linings now allows for more content fires to become structural fires by penetrating the wall linings and involving the void spaces. This shift causes faster fire propagation and shorter times to collapse. Structural components have generally been made lighter by removing mass, which causes them to collapse significantly faster.
 - UL's first-of-its-kind testing also identified collapse implications. Specifically, in the modern fire environment, if firefighters arrive at eight minutes, collapse is possible as soon as 90 seconds later. *Minutes Matter.*

Excerpted from UL New Science. Read the full report here: <http://newscience.ul.com/articles/modern-residential-fires>

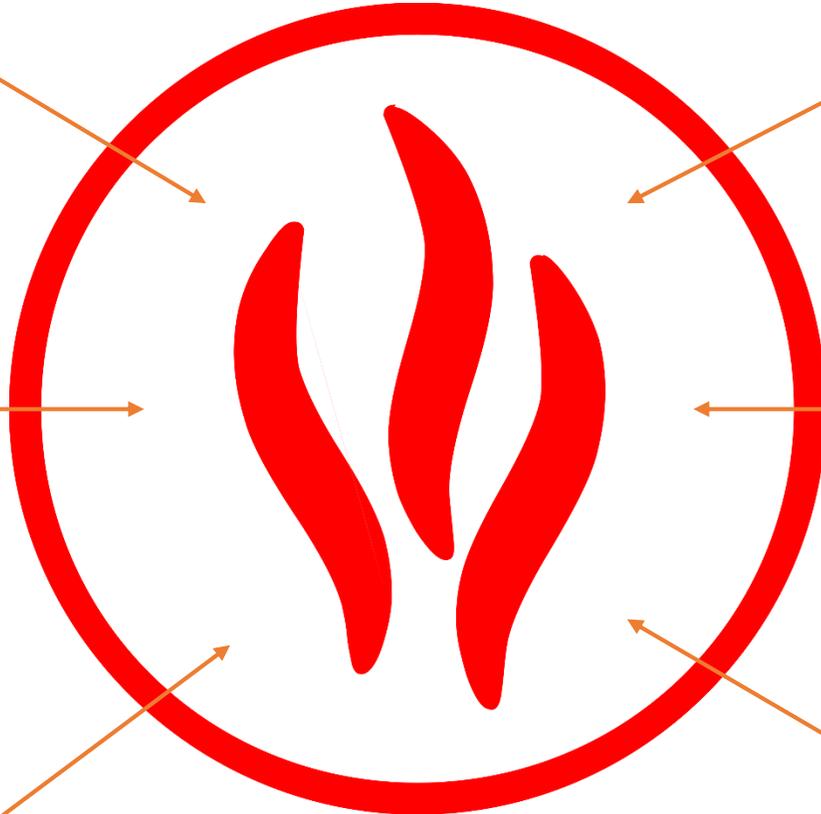


Eco AFL™ fire inhibitors provide precious minutes in the event of fire

Every 30 minutes a civilian fire is reported.

Every 85 seconds one residential fire is reported.

85% of all U.S. fire deaths in 2009 occurred in homes.



67% increase in Firefighter deaths due to traumatic injuries over the past 30 years.

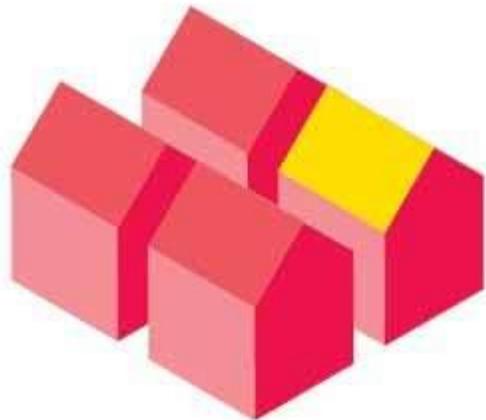
In 10 seconds fires can increase in temp from 250 degrees to 1,500 degrees F.

Today in less than 3 minutes a house fire can become uncontrollable.

Source: UL New Science

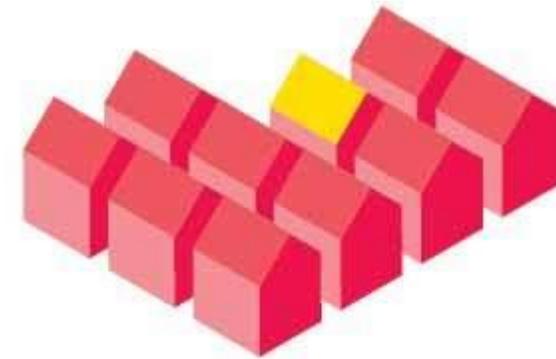


You, your loved ones and or someone you know will likely be impacted by a residential fire.



Chances your household will have a reported home fire in an average lifetime: **1 in 4**

Data Sources: National Fire Protection Association, Underwriters Laboratories, National Fire Sprinkler Association



Chances that someone in your household will suffer a fire injury in an average lifetime: **1 in 10**

Data Sources: National Fire Protection Association, Underwriters Laboratories, National Fire Sprinkler Association



Eco AFL™ provides precious minutes when *minutes matter*

Here's how.....

- Eco Red Shield technology incorporates a Fire Inhibitor which prevents ignition – *Inhibiting Flame Spread* and dramatically reducing the amount of *Smoke Produced* - Fire destroys property but smoke kills people...
- Wood products treated with Eco Red Shield AFL become class “A & B” fire rated per **ASTM E84 10 minute testing. The mere fact these materials now “*Inhibit Ignition*” will have an *exponential impact on the time for flashover to occur*.
- Untreated Timberstrand LSL Stud has a *flame spread index* of *140 – Add Eco Red Shield and the *flame spread index* is 45 – Not Class “A” however 67.8% improvement over untreated material.
- Imagine a roof truss system that will not propagate the spread of fire throughout the entire building.

• Test data obtained from the ILevel Fire Facts Guide #1500 – ILevel and Timberstrand are registered trademarks of Weyerhaeuser Corporation

** ASTM E84 Surface Burning Characteristics – 10 minute test only - performed by third party laboratory



Eco AFL™

Improving Homeowner safety and quality of life through improved **indoor air quality**.

Protecting against **toxic molds** and **formaldehyde** emissions.



Eco AFL™: Protecting against **toxic molds** and **formaldehyde** emissions.

HEALTH-RELATED CONCERNS ARE DRIVING PRODUCT SELECTION.

Concern about indoor air quality



Concern about chemicals found in products that come in contact with their skin (such as lotions, carpeting, or electronics)?



Source: Builder Magazine, Home Buyers Are Concerned About Indoor Air Quality, March 16, 2015



Eco AFL™: Protecting against **toxic molds** and **formaldehyde emissions**.

- Specific to the building/home improvement category, **health ranked first on consumers' list of decision influencers**. Claims that addressed health concerns (e.g., toxic materials and indoor air quality) were consistently rated more important for purchase influence, perceived value, and positive brand impact than other claims. *
- The survey of over 1,000 consumers revealed the top three drivers for making green or sustainable purchases were health and safety, waste reduction, and conservation of natural resources. **Forty-three percent of those surveyed said they were concerned about indoor air quality (IAQ)**. *
- According to a 2007 study funded by the EPA, "Of the 21.8 million people reported to have asthma in the U.S., approximately 4.6 million cases are estimated to be attributable to dampness and mold exposure in the home."
- Recognizing the importance of IAQ, the EPA has expanded their Energy Star rating to include indoor air quality construction and materials – **EPA Indoor Air Plus**

* Source: Builder Magazine, Home Buyers Are Concerned About Indoor Air Quality, March 16. 2015

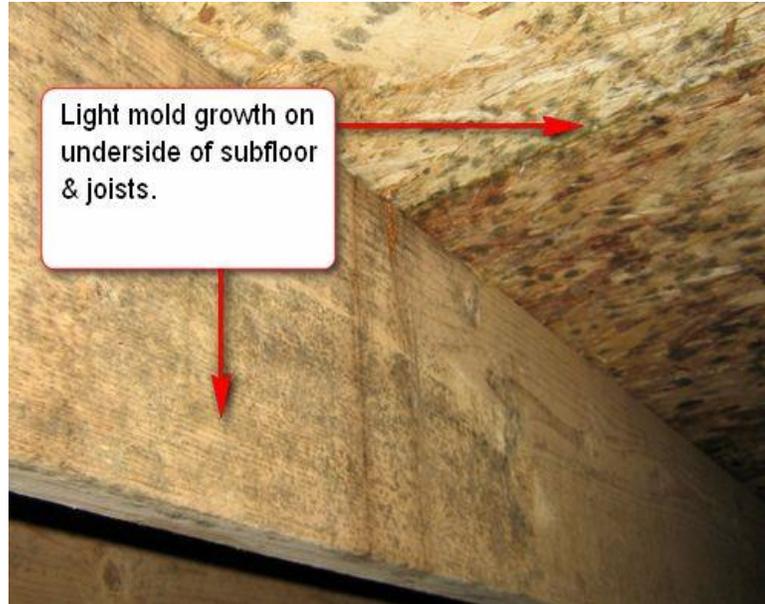


Eco AFL™: Protecting against toxic molds and formaldehyde emissions.

- **Indoor Air Quality** is “The sleeping giant of building performance”. Erin Grossi, Chief Economist for Underwriters Labs.
- Claims for defective construction and exposure to **toxic mold** is a burgeoning area of litigation. The number of pending building mold cases around the United States is now more than 14,000 and with juries awarding multi-million dollar settlements for it, building owners and their attorneys are actively looking for ways to protect against mold and moisture problems.
- **Formaldehyde** emission is another issue of growing awareness and concern.
- **Formaldehyde** is a known human carcinogen - U.S. Department of Health and Human Services.
- After building materials containing **formaldehyde** are installed, formaldehyde may be released over time as the products age resulting in some concentration of formaldehyde in the air.
- Exposure to elevated airborne concentrations of **formaldehyde** may result in headaches or irritation of the throat and eyes. In certain instances, exposure to elevated airborne concentrations of formaldehyde may also cause respiratory issues, including asthma. Exposure over a long period of time has been associated with cancer in humans.



Eco AFL™: Protecting against **toxic molds** and **formaldehyde emissions**.



- The number of pending building **mold cases** around the United States is now more than 14,000 and with juries awarding multi-million dollar settlements for it. Source: Erin Grossi, UL Labs.
- The average cost of **mold remediation** is \$2,162 with most homeowners spending between \$1,289 and \$3,470. Source: HomeAdvisor www.homeadvisor.com



Eco AFL™: Improving **Homeowner** safety and quality of life through improved **indoor air quality**.

Protecting against **toxic molds** and **formaldehyde** emissions.

Here's how...

- Eco Red Shield treatment creates a semi permeable vapor barrier on the surface of the wood encapsulating it and eliminating its exposure to oxygen. Oxygen is a required food source to promote mold growth.
- Eco Red Shield treatment incorporates several people friendly biocides which are deposited on the surface of the wood providing long term efficacy against mold growth. These molecules are encapsulated for life.
- Eco Red Shield treatment was tested and compared to typical standards as defined by GREENGUARD certification program. Eco Building Products tested below quantifiable levels for Formaldehyde; TVOC's measured a magnitude of 10 times lower than the established limits and total Aldehydes measured ~75% below limits established by GREENGUARD for Children and Schools classifications.
- Furthermore, independent testing data from Air Quality Sciences (AQS) indicates that raw lumber does not meet California 01350 or GREENGUARD Gold (*formerly known as GREENGUARD Children & Schools Certification*) for formaldehyde emissions limits. When Eco Building Products, Inc. compared emissions data from raw lumber to emissions data from the Eco Red Shield treated lumber, **we discovered that Eco Red Shield coatings significantly reduced the natural formaldehyde emissions from raw lumber.**
- Eco Red Shield treatment was designed and tested against mold growth on lumber while in the supply chain and during construction (periods of high moisture contents) and for long term efficacy while in the cavity of the wall.



Eco AFL™

Protecting **Homeowners** from the risks of **wood rot decay** and **termite infestation**.



Eco AFL™: Protecting Homeowners from the risks of **wood rot decay** and **termite infestation**.

- **Wood rot** results in substantial structural degradation often leading to catastrophic failures. There are many instances to cite but most recently is the balcony collapse at UC Berkeley that resulted in the deaths of six students – **wood rot** was identified as the root cause.
 - Structural failures accounted for about 5,600 injuries from balcony-related falls from 1990 to 2006, according to data collected by the Center for Injury Research and Policy in Columbus, Ohio, and published in 2009 by the American Journal of Emergency Medicine.
 - Current estimates show that replacement materials, needed to repair damage caused by rot alone, account for nearly 10 percent of U.S. annual wood production. Source: William F. Lyon, Old House Web and Ohio State University Extension.
- Damage from **termite** infestation is a growing problem with substantial risks from structural degradation and building performance.
 - According to Dr. Vernard Lewis of U.C. Berkeley, over \$300 million is spent annually in California alone to remediate **termite** damage while consuming over 1 billion BF of replacement lumber.



Eco AFL™: Protecting Homeowners from the risks of wood rot decay and termite infestation.



- Structural failures accounted for about 5,600 injuries from balcony-related falls from 1990 to 2006. Source: American Journal of Emergency Medicine.



Balcony collapse – UC Berkeley, 2015. Six students fell to their deaths.



Eco AFL™: Protecting Homeowners from the risks of wood rot decay and termite infestation.

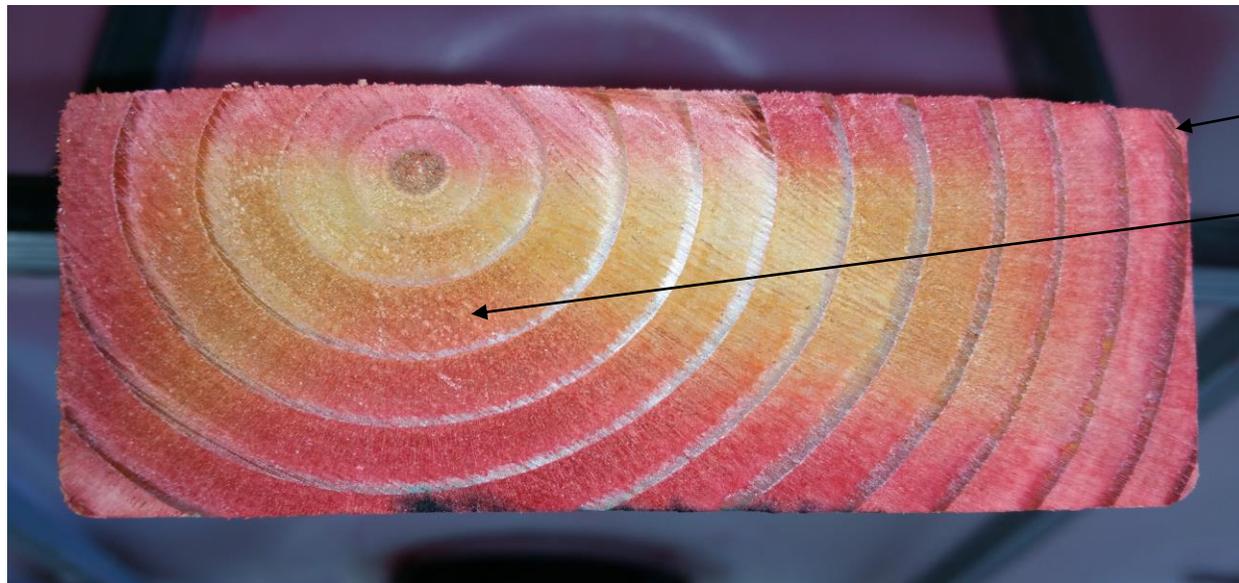


According to the National Pest Management Association, termites cause more than 5 billion dollars in damage to US property each year. Many insurance plans won't cover the damage.



How Does Eco Red Shield Chemistry Work?

- Traditional pressure treating incises or drives DOT/borates into the wood fiber in order to minimize the effects of the chemistry leaching outward. It is a mechanical impregnation process that degrades the properties of the wood.
- Eco's patent pending WSFC™ (Wood surface film concentrate) encases the treated material in a semi-permeable polymer barrier -- allowing it to breathe, but locking in hard-working mold, termite, rot and fire protections for a life time.



Biocides stay at the surface

While the borates and fire inhibitors diffuse into the fiber.

WSFC™ greatly reduces moisture transpiration resulting in greatly improved stability - less shrinkage, warping and twisting.



Eco AFL™: Protecting Homeowners from the risks of wood rot decay and termite infestation.

Impregnation
through
diffusion



- Eco “Red Shield” prevents termites from colonizing.
- Wood-Rot: A fungus that attacks wood, *G. trabeum*, *N lepidus* and *P. placenta*, particularly known as Brown Rot, which attacks our common wood used as building materials. If you treat your building material with **Eco Red Shield** our laboratory test results indicate that Douglas Fir wood is 117.8 times better than untreated wood and Southern Yellow Pine is 175 times better than untreated wood against *G. trabeum*, while OSB is 12.4 times better against *G. trabeum*, 16.6 times better against *P. placenta*, 30.9 times better against *N lepidus* than untreated OSB panels.

Above data cited from a laboratory test report WDL_2011-01B prepared by LSU Wood Durability Laboratory which is IAS Accredited.



Finally whole house protection is within reach of the average homeowner.

Because Eco's innovative technology does NOT degrade the natural strength of lumber like traditional pressure treating does, the entire structure can be treated.

For the cost of an average granite kitchen counter top, Builders and Homeowners can have protection from the risks associated with fire, mold, formaldehyde, termites and wood rot decay.