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Strategies for Building a Fire Resistant Home

Strategies for building a fire-resistant home are a priority for today's homeowners and builders. After all, for most people, their home is their biggest investment. The increasing interest is fire-resistant home design is largely due to a rise in wildfires and longer wildfire seasons, particularly in the Western United States. Many scientists blame the increase in wildfires on climate change which is causing rising temperatures, early snow melts, and drier forests. Importantly, according to Verisk's 2017 Wildfire Risk Analysis (http://www.verisk.com/insurance/visualize/key-findings-from-the-2017-verisk-wildfire-risk-analysis.html?utm_source=Social&utm_medium=Twitter&utm_campaign=VeriskSM&utm_content=842017) 4.5 million U.S. homes are at high or extreme risk of wildfire with losses; 715,300 (https://www.iii.org/fact-statistic/facts-statistics-wildfires#Top 10 States For Wildfires Ranked By Number Of Fires And By Number Of Acres Burned, 2016) of these homes are in Texas. The increasing threat of wildfires is fueling the need for fire-resistant design in today's high-performance houses. Several crucial strategies for building a fireproof home include passive fire protection shields, and fireproof exterior walls, roofs, window, door, and vents.

Passive Fire Protection Shields for a Fire-Resistant Home

When a fire occurs in a home, passive fire protection shields the occupants and defends the house by limiting the spread of fire and smoke. Passive fire protection includes smoke barriers, fire barriers, firewalls, fire partitions, and horizontal assemblies. Passive fire protection is usually not visible to the occupants; however, its importance in saving lives and protecting property is clear when a fire occurs. Passive fire protection limits the spread of smoke and fire through vertical openings, like shafts. Additionally, it prevents the collapse of a house. Passive fire protection can save the home and the family living inside in the event of a fire.

Wall Assemblies for a Fire-Resistant Home

An essential element of passive fire protection of a fire-resistant home is the wall assemblies. A superb option for passive firewall protection is the Bautex Wall System (http://www.bautexsystems.com/bautex-wall-system/bautex-block/#). The Bautex Wall System is a lightweight composite block that meets and exceed industry's standard for fire-resistance. The Blocks have an ASTM E119 (https://www.bautexsystems.com/downloads/Bautex_Block_ASTM_E_119_1.pdf) fire rating of four hours (twice the two-hour requirement), and an ASTM E84 (https://www.bautexsystems.com/downloads/Bautex_Block_NFPA_286_Unfinished_1.pdf) reported values for flame speed of zero and smoke development of twenty. Because the blocks meet the E84 and NFPA 286 they in effect meet the NFPA 101 code. Along with excellent fire-resistance, the Bautex Blocks are moisture-resistant (https://www.bautexsystems.com/bautex-wall-system/air-moisture-barriers), disaster-resistant, noise-reducing, pest resistant, energy efficient and create a home with good indoor environmental quality. A best practice for building a fire-resistant home includes a fire-resistant wall assembly like the Bautex Wall System.

Fireproof Roofs for a Fire-Resistant Home

A fire-resistant home must include a fireproof roof. Roofs are susceptible to fire from embers from wildfires, lightning, chimney fires, sparks from burning debris, fireworks, etc. A roof constructed from fire-resistant materials is a home's best defense against a roof fire. Testing of roof assemblies is in accordance with ASTM E108 or UL 790 (https://codes.iccsafe.org/public/document/IBC2015/chapter-15-roof-assemblies-and-rooftop-structures). Fire-retardant-treated wood roof coverings must also be treated in accordance with ASTM D2898 (https://codes.iccsafe.org/public/document/IBC2015/chapter-15-roof-assemblies-and-rooftop-structures). Underwriters Laboratories, Inc. (https://www.osha.gov/dts/otpca/nrtl/ul.html) often conducts the test and determines the class of the fire-resistance of roof products. There are three classes of fire-resistant roofing. A best practice for building a fire-resistant home includes the use of Class A roofing.

- Class A roofing is effective against severe fire exposure and last two to four hours before igniting. Common Class A roof materials include concrete tiles, clay tiles, slate, asphalt glass, and fiber composition shingles.

- Class B roofing is effective against moderate fire exposures and last one hour before igniting. Common Class B roof materials include shingles and pressure-treated shakes.

- Class C roofing provides light fire protection and lasts 20 minutes before igniting. Common Class C roofing products include particleboard, untreated wood shakes and shingles, and plywood.

Fireproof Windows and Doors for a Fire-Resistant Home

A crucial element for a fire-resistant home is the use of fire-resistant glass in the windows and doors. Classification of fire-resistant glass in doors and windows is according to their integrity and insulation. Integrity is the amount of time the glazing contains the fire, smoke and hot flames in a space, so to minimize the spread.

Insulation is the amount of time the glazing product protects the home's occupants from the heat radiating from a fire. Underwriters Laboratory (UL) has developed a guide for understanding the basic elements of fire door and window assemblies, in association with the applicable codes and standards to ensure safe, code-compliant installations. UL Listed windows and doors are certified to safety-related standards and evaluated for potential safety-related hazards, including fire, electrical shock, and mechanical hazards.

UL Classified windows and doors are certified to a limited range of hazards, or for use under specific conditions. Both UL Limited and Classified can be "UL Certified" and bear the UL Certification Mark. UL certified windows and doors provide fire resistance and protect against the spread of fire and smoke within a home and the spread of fire to or from the home.

Fireproof Vents for a Fire-Resistant Home

Because embers and flames can enter a home through vents, vents must be designed to resist these intrusions. There are several methods for protecting vents from flying embers and ashes.

- Cover vent openings with 1/8-inch to 1/4-inch metal mesh.

- Protect vents in eaves or cornices with baffles to create a barrier between the embers and the vents.

Building fire-resistant homes is important to today's architects, contractors, and homeowners. The goal of a fire-resistant home is to protect both the house and the family that lives inside. Essential elements of a fire-resistant home include passive fire protection shields and fireproof exterior walls, roofs, window, door, and vents. Visit Bautex Wall System (http://www.bautexsystems.com/bautex-wall-system/bautex-block/#) for more strategies for building a fire-resistant home.

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