

RETROFIT Improvements

Making Homes Safer & More Resilient in Disaster-Prone Areas

Fire Retardant Wood Shingles or Shakes



SCOPE

This document provides homeowners with an overview of fire-retardant wood shingles or shakes to consider when replacing a roof on an existing home, particularly in areas prone to wildfires.

PURPOSE

Minimize the risk of fire hazard by making the roof more resistant to fire.

BENEFITS

- Protects lives of occupants.
- Limits property damage to house and contents by limiting the risk of fire.
- May be required for homeowner's insurance policy or discount.

RETROFIT OPPORTUNITY

During a roof replacement.

TERMINOLOGY

Wood Shingles have a smooth and uniform look across each plate and over an entire roof due to the traditional manufacturing method of sawing off singular cedar shingles from one block of wood.

Wood Shakes are traditionally hand split, which leads to a rougher texture and finish and leading to an ununiform surface of the individual shakes and the entire roof.

HAZARD AND RISK

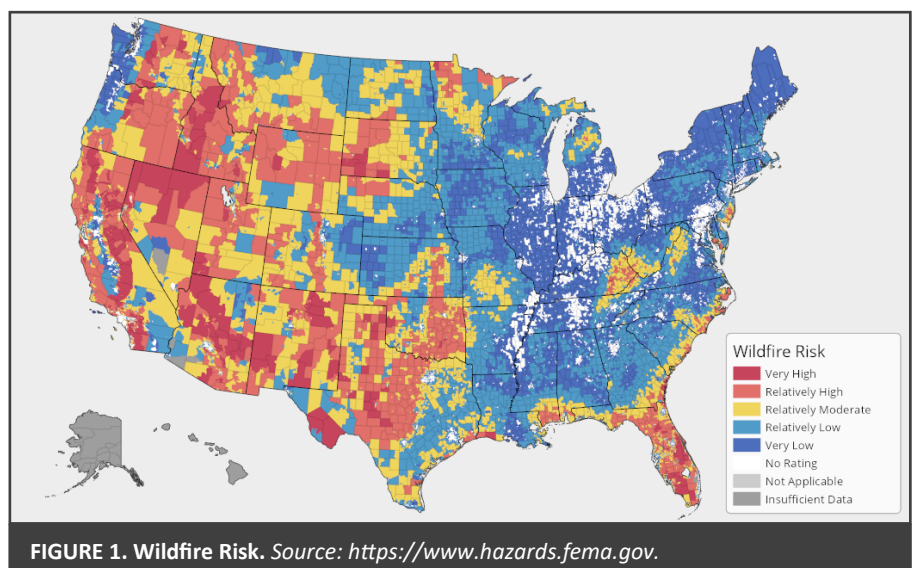
During a wildfire, or an adjacent building fire, roof coverings are exposed to ignition due to their large area and orientation. Leaves or dead vegetation collected in gutters can be easily ignited by embers, spreading flames to roof coverings and other roof components. The flames can subsequently propagate into the interior of the building, resulting in substantial damage or even total loss of the building.

SOLUTION

Replacing the roof is a prime opportunity to upgrade shingles and shakes to meet new standards and building codes, as well as decide if selecting an above-code strategy for an added level of protection is the right choice for the project.

Install a fire-resistant roof covering or roof assembly to protect your house against wildfires. Roof coverings can have fire classifications of either Class A, Class B, or Class C, or are considered "nonclassified" if the roof does not meet any of the classifications. Class A materials have the highest resistance to fire, and nonclassified materials have the least. Untreated wood roofing is considered nonclassified and is not allowed for new installations in some jurisdictions. Fire-retardant-treated wood shingles or shakes can typically qualify as Class B and can qualify as Class A where the roof assembly includes other fire-resistant materials for the roof deck or underlayment.

Code Considerations. The required roof fire classification depends on the fire hazard rating where you live. Ask your local building department if local code requirements exceed those of the national code. Also, a building permit may be required for a roof replacement. Per the International Residential Code, Class A, B, or C roofing must be tested in accordance with UL 790 or ASTM E108. Fire-retardant-treated wood shingles and shakes must also be tested in accordance with ASTM D2898 (this requirement is in International Building Code 1505.1), and the treatment must be in accordance with AWPAC1.



TIPS

- Roof assemblies should be inspected by a professional to ensure shakes and shingles are intact and do not require replacement.
- Roofing should be installed by a professional roofing contractor.
- Roof eaves and overhangs are also susceptible to fire: a roof replacement is a good time to install ignition-resistant materials to protect fascia, and soffits, and noncombustible, corrosion-resistant mesh to protect any vents from embers.

COST

The cost to install a Class A roof assembly will vary considerably by product and local labor rates. Below are estimated installed cost ranges for common roofing options. Costs are per 100 sq. ft. of roof area (SQ) and do not include removing existing roofing or replacing materials at the roof eaves/overhangs.

- Fire Retardant Cedar
 - Shingles: \$690-\$790
 - Shakes: \$740-\$820
- Underlayment
 - #15 felt: \$15-\$20
 - Class A: \$86-\$96
- Asphalt Shingles
 - Standard: \$175-\$214
 - Laminated: \$230-\$288
- Metal roofing: \$390-\$710

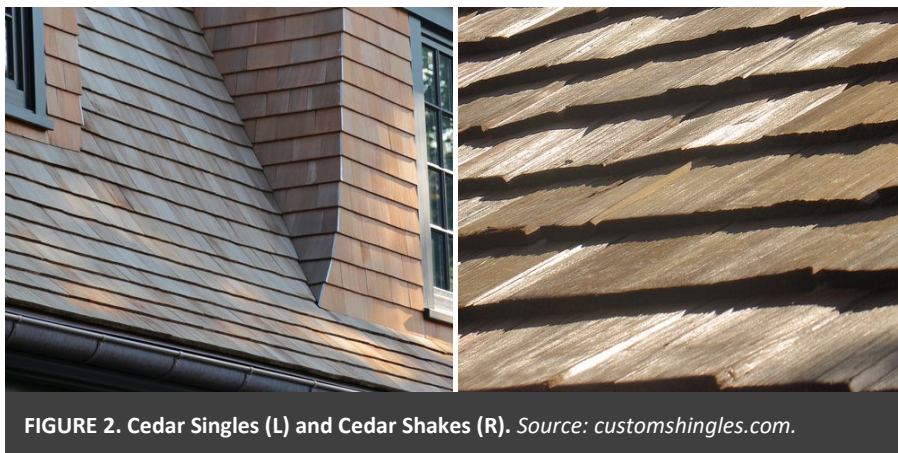


FIGURE 2. Cedar Shingles (L) and Cedar Shakes (R). Source: customshingles.com.

Best Practices. Install Class A roof coverings or Class A roof assemblies in accordance with manufacturer instructions. Class B wood roofing products require a particular combination of noncombustible roof deck or listed underlayment, that has been tested as part of the assembly, for the entire roof assembly to qualify as Class A. An example of a noncombustible deck is gypsum panels installed above a wood structural panel deck. Noncombustible roof deck and underlayment products are recommended for all applications and may be required by local jurisdictions.

A full roof replacement is always recommended instead of a roof recover. A full replacement includes removing all existing roofing materials down to the roof deck, inspecting the roof deck, and repairing as required. A roof recover is where an additional roof covering is installed on top of an existing roof covering, i.e., without removing existing roofing materials, and is generally not permitted where the existing roof already has two or more types of roof covering.

Alternatives to fire-retardant-treated wood roofing: Class A roof coverings include asphalt shingles, metal sheet roofing and clay or concrete roof tiles. Some Class A roof coverings, e.g., metal sheet roofing, also require a noncombustible roof deck or a listed underlayment tested for use with the intended roof covering for the entire roof assembly to qualify as Class A.

ADDITIONAL RESOURCES

- [1] [Regional Wildfire Retrofit Guides](#) (IBHS Wildfire Guides)
- [2] [Durability by Design](#), see page 124 (U.S. Dept. of HUD)
- [3] [Home Builders Guide to Construction in Wildfire Zones](#) (FEMA)
- [4] [ICC IRC R902](#) (iccsafe.org)
- [5] [Mastering Roof Inspections](#) (www.nachi.org)
- [6] <http://cecentralsierra.ucanr.edu>
- [7] <https://www.customshingles.com>
- [8] [Fire Ratings for Roofing Material](#) (USDA)

Alternatives to fire-retardant-treated wood roofing

- [9] Building America Solution Centre
 - [Clay or Concrete Tile Roofs](#)
 - [Metal Roofs](#)
 - [Asphalt Shingle Roofs](#)

