



# CREATING A FIRE ADAPTED HOME

## What Does it Take to Protect Your Home from Wildfire?

Protecting your home from wildfire damage requires limiting the amount of fuel that could bring flames and embers dangerously close to your property. The Insurance Institute for Business & Home Safety (IBHS) recommends you create three defensible zones around your home: 0-5 ft., 5 ft.-30 ft. and 30 ft.-100 ft. – or to the property line. Focus on limiting the amount of combustible items on your property, as well as using and maintaining noncombustible mulch and vegetation.

The following guidance is intended to help you choose appropriate materials and use proper construction practices when rebuilding, repairing or renovating your home. This information is based on field research and wildfire testing conducted at the IBHS Research Center and by other leading fire science organizations.



For additional wildfire preparedness resources visit [disastersafety.org/wildfire/](https://disastersafety.org/wildfire/).

# ROOFS

*While the fire rating of a roof covering is important, with a Class A rating being recommended, locations where the roof meets a wall, such as a dormer, or at the edge of the roof, where the gutter is attached also plays an important role in protecting your roof against damage during a wildfire. These photos from wildfire testing at the IBHS Research Center and at the University of California Fire Research Laboratory illustrate the importance of paying attention to roof intersections and the edge of the roof, and show how a lack of attention to these areas can compromise the performance of your roof, even one with a Class A fire rating.*

## How does a roof covering get its fire rating?



Fire ratings include Class A, B or C. This photo shows testing of a roof covering using a Class A brand, which is the largest of three sizes used in the rating tests. If the burning Class A brand doesn't result in fire penetrating completely through the roof covering and sheathing into what would be the attic space, then the roof covering would earn a Class A fire rating.

## What happens when a roof covering doesn't meet the desired fire rating?

This test photo shows fire burning through the roof cover and sheathing and into what would be the attic. This indicates that this roof covering did not pass the test and does not meet the fire rating requirements of a Class A roof.



# ROOFS

**Why is it important to keep the intersections between the roof and walls, such as at dormers, clear of debris?**



This test photo shows how burning debris at the intersection of the roof and walls exposes the wall to direct contact with flames once the debris is ignited by wind-blown embers.

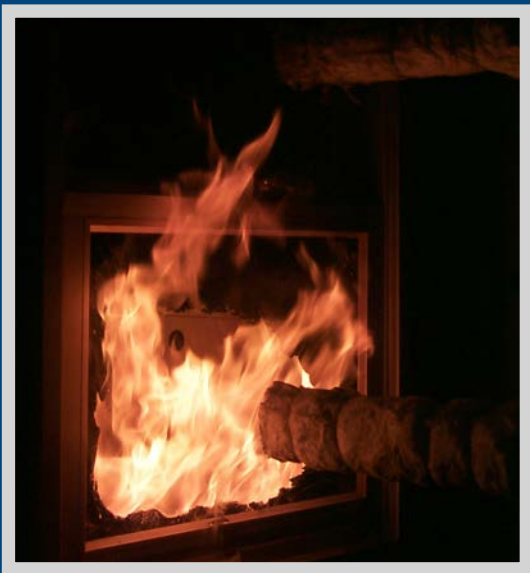
**Why should you make cleaning out debris from gutters a priority?**

This test photo shows how gutters filled with debris can be ignited by wind-blown embers that land there. Once ignited, the edge of the roof and fascia are exposed to direct flame contact.



# WINDOWS

The main components of a window are the frame and the glass. Of these, the glass is the most vulnerable to flame and radiant heat exposures. These photos were taken during wildfire testing at the IBHS Research Center and at the University of California Fire Research Lab. The photos demonstrate the vulnerability of windows to flames and radiant heat, the importance of metal reinforcement in vinyl-frame windows and why having tempered glass offers the best protection.



This test photo illustrates how flames can break the glass in a window and penetrate into the interior of a home. Having a dual-pane, tempered glass window offers the best protection because tempered glass does a much better job resisting breakage and even if the outer-pane of glass breaks, the inner pane may remain intact. Keep all windows closed during wildfires – the most vulnerable window during a wildfire is one that is left open.

This test photo illustrates the ignition and burn through of the frame of a window. In this case, flames were able to penetrate through the joint at the horizontal meeting rail between the top and bottom frames of a single-hung window.



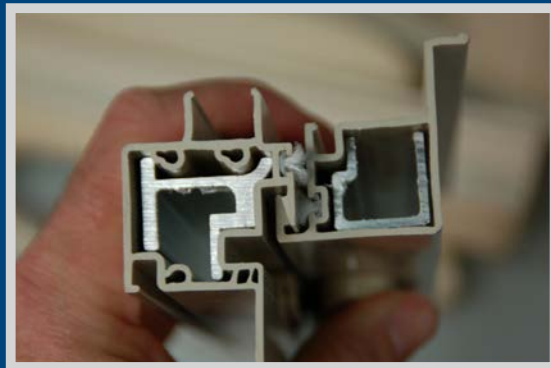


# WINDOWS



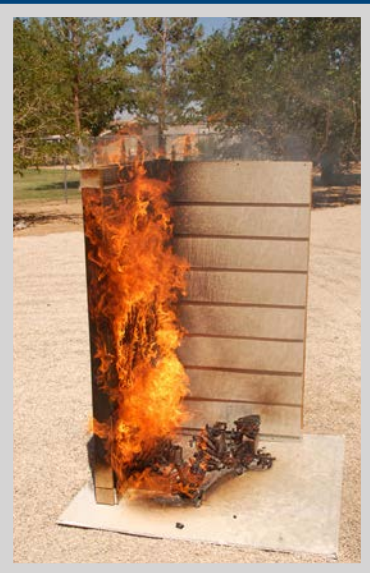
IBHS conducted a test to see whether cotton curtains ignited when exposed to radiant heat that might threaten a window during a wildfire. This test photo shows the curtain burning. However, the curtain only ignited after the glass broke and fell out of the window. This reinforces the advantage of using dual-pane windows, particularly those with tempered glass in the outside panel for the best wildfire protection.

Many homes have vinyl-frame windows. If your home has these windows or if you are considering installing them, make sure the horizontal and vertical members in single-hung and casement windows have metal reinforcement, as shown in this photo, to reduce the vulnerability of the windows from exposure to radiant heat from a wildfire or nearby burning vegetation or out-building (such as a play house, tool shed or gazebo).



# SIDING

*Siding is an expensive element of any home, and many types of siding are combustible. These photos were taken during testing at the IBHS Research Center and in field demonstrations conducted by the University of California Cooperative Extension. The images show how combustible and noncombustible siding performs during a wildfire. Combustible siding is vulnerable to direct flame contact and radiant heat exposure, and therefore it is important to keep the area within 5 ft. of your home free of combustible items, plants and debris that could catch fire and brings flames dangerously close to the siding. Once ignited, flames from burning siding can encroach on windows and eaves – potentially endangering the entire house.*



This test photo shows how flames from burning combustible siding can spread upward and expose windows and eaves to flames. The siding that isn't burning is a noncombustible product. Even though it had the same initial fire exposure, the siding did not ignite.



When siding catches fire, the flames can burn into the stud wall cavity at a lap joint, as shown in this test photo. When this occurs, the entire house can be lost to wildfire.



This test photo illustrates the importance of creating a noncombustible zone within 5 ft. of your home, along with zones within the 5 ft. to 30 ft. area and 30 ft. to 100 ft. or to the property line. Use noncombustible mulch and vegetation next to the house. This will help reduce the chances that flames will come into contact with windows and eaves on the home.



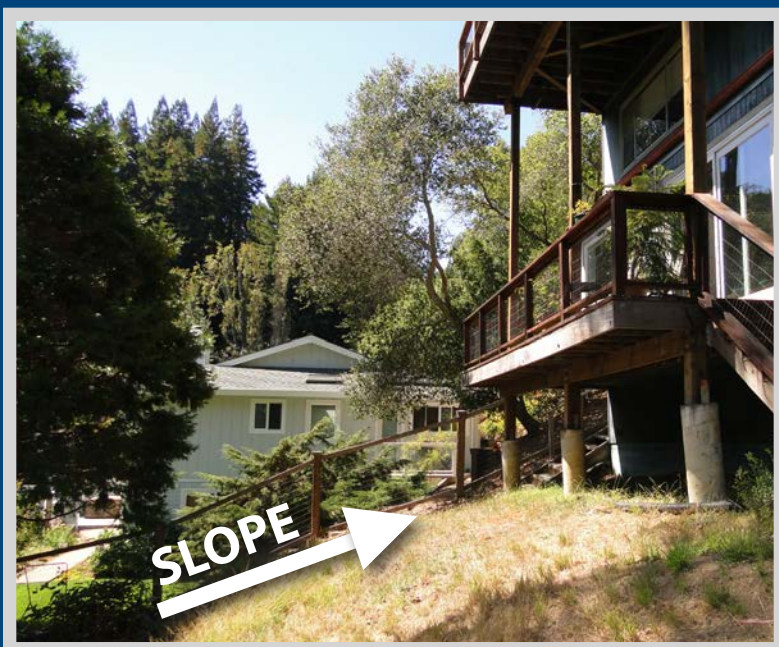
# DECKS

*The vulnerability of decks to wildfire depends on three things: slope leading up to the deck, combustible materials stored underneath the deck or debris that can accumulate there, and materials used to build the deck. These test photos show how wildfire can affect decking materials, the importance of keeping the areas under the deck clear and maintaining vegetation in the area surrounding the deck.*

*When it comes to choosing deck materials, IBHS recommends referring to the California Building Code. In addition to having a long history of rebuilding after wildfires, California is the only state that has specific wildfire approval standards for products based on performance criteria. Find additional information about specific deck material requirements in the California Building Code. Refer to information maintained by the Office of the State Fire Marshal, Building Materials Listing Program:*

*[http://osfm.fire.ca.gov/strucfireengineer/strucfireengineer\\_bml.php](http://osfm.fire.ca.gov/strucfireengineer/strucfireengineer_bml.php)*

Fortunately, even those living outside of California have access to decking products that meet California requirements because some are distributed nationally by their manufacturers. Refer to the manufacturer's information, which likely can be found on their website, to find out if a particular product complies with California's requirements for use in wildland urban interface areas.



Managing vegetation on the slope is important for reducing the exposure to the deck and minimizing the chance of ignition from a wildfire. Fire burning up the slope to the deck can expose the bottom and top of the deck to heat, flames and embers.





# DECKS



No deck, regardless of the material used to build it, would be safe if this amount of fuel beneath the deck caught fire. Even decks that may have a noncombustible surface, such as light-weight concrete, use lumber and timbers for structural support and those materials can catch fire.

When it comes to decking materials both wood-plastic composite and wood are combustible, as illustrated in the photograph on the right. The difference is in how hot and long the materials burn. The longer something burns and the larger the fire gets, the more likely it is to generate flames and embers that can ignite surrounding combustible materials, such as siding, or break the glass in windows or doors.



Wood and wood-plastic composite with a fire retardant incorporated in the material can achieve similar performance, and both types of these materials meet the requirements of the California Building Code. The photograph on the right shows three types of deck materials: wood-plastic composite without fire retardant (left), wood-plastic composite with fire retardant (center), and traditional non-fire retardant treated 2-in. thick redwood (right.) The wood-plastic material on the left ignited and continued to burn longer and hotter than the other materials, which could put the rest of your home at risk.

