



# Attic and Crawl Space Vents

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**Windblown embers can enter attics and crawl spaces through vents.**

**INSTALLING THE RECOMMENDED MESH SCREENING AND ELIMINATING STORAGE IS CRITICAL TO REDUCING BUILDING IGNITIONS DURING A WILDFIRE.**

## VENTS IN ATTICS AND CRAWL SPACES

Attic and crawl space vents, and other openings on the vertical wall of a home, serve important functions, including providing ventilation to remove unwanted moisture from these typically unoccupied spaces and oxygen for gas appliances such as hot water heaters and furnaces. Wind-blown embers are the principal cause of building ignition and can readily enter these spaces, which are often hot and dry. Providing air for ventilation, while also keeping out embers can present a dilemma. Dry materials are more easily ignited by embers, so limiting the entry of embers into attic spaces is critical. Adding to the problem are the combustible materials we tend to store in these spaces (e.g., cardboard boxes, old clothes and other combustible materials) because embers accumulate against them and they can be easily ignited.

## HOW VENTS FUNCTION

Ventilated attic spaces have openings in two locations. Inlet air comes from vents located in the under-eave area at the edge of your roof. Exiting air leaves through vents located on the roof or at the gable ends of your home. If your home is built over a crawl space, you will typically have vents on each face of your home to provide cross-ventilation. Experiments conducted at the IBHS Research Center demonstrated that regardless of whether a vent had an inlet or outlet function, when wind blows against its face, it is an inlet vent. Therefore, any vented opening on your home should be able to resist the entry of embers. Unvented attic and crawlspace designs are available for some areas of the country. These designs are more easily implemented with new construction. Check with local building code officials to see if this is an option where you live.

## USE MESH SCREENING TO REDUCE EMBER ENTRY INTO VENTS

Building codes require vent openings to be covered by corrosion resistant metal screens, which are typically 1/4-inch to keep out rodents. However, research shows that embers can pass through 1/4-inch mesh and ignite combustible materials, particularly smaller materials such as saw dust. Embers also can enter smaller screening, such as 1/16-inch, but cannot easily ignite even the finer fuels; however, this size screening is more easily plugged with wind-blown debris and is easily painted over if you are not careful when re-painting your house. Installing 1/8-inch mesh screening is suggested in wildfire prone areas, as it effectively minimizes the entry of embers. It's important to note that 1/8-inch screening only minimizes the size and number of embers and does not eliminate them entirely; making it very important to reduce what's stored in the attic and crawl space.

## BEST CHOICES FOR VENTS TO RESIST EMBER ENTRY:

**1** For (under-eave) inlet vents, opt for a soffited eave design. IBHS research demonstrates that gable end vents and other vent openings are vulnerable to wind-blown embers when the face of the vent is perpendicular to the wind flow, while embers are less likely to pass through vents with a face that is parallel to the wind flow. Therefore, soffited eave construction is preferred to open eave.

**2** For outlet vents, opt for a ridge that is rated to resist wind driven rain. These vents have an external baffle at the vent inlet. Vents that have been approved for use by the California Office of the State Fire Marshal.

**3** Turbine vents also help keep embers out, but you should attach a piece of 1/8-inch mesh to the bottom of the roof sheathing at the opening for the vent.



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