WILDFIRE RESEARCH FACT SHEET

IMMEDIATE (NONCOMBUSTIBLE) ZONE

Why is it important to create and maintain 5 feet of noncombustible space around the exterior of a building?

Wildfire risks are on the rise, but there are ways home and business owners can take control of their vulnerabilities. Changes made to a structure and its surroundings within 100 feet can make a big impact. Research from the Insurance Institute for Business and Home Safety (IBHS) shows that the first 0 to 5 feet around the structure, known as the immediate zone or noncombustible zone, has the greatest impact on your risk. IBHS and the National Fire Protection Association® (NFPA®) recommend keeping this zone well-maintained and clear of combustible materials.

IBHS Research

The main objective of the 0-to-5-foot zone is to reduce the potential that embers landing near a building will ignite fuels and expose the area around a home to a direct flame (Figure 1). Removing anything that can ignite from embers is critically important. To verify how effective a 5-foot noncombustible zone is around a building, more than 180 tests were conducted in 2018 at the IBHS Research Center to evaluate fire behavior and heating of buildings (Figures 2a & 2b).

Key Observations

- For combustible landscaping, such as wood mulch, the thickness of the mulch bed, wind speed, and location of the flame and building all impact the potential of mulch to ignite and how quickly fire can spread to the building.
- Burning mulch generates embers that can ignite nearby mulch, increasing the chances of direct flame contact spreading to the building.
- When flames are 5 feet away, a building's surface temperature is below temperatures that could cause ignition. However, corners of a building (45-degree angles) experience a higher temperature when exposed to flames, even when a 5-foot space is present. Testing showed that corners can be more vulnerable due to fire spread through fuel (such as mulch) on the ground, because at the same wind speed, wind blowing directly at a wall (90-degree angle) will result in taller flames and more radiant heat, while wind on a corner (45-degree angle) will result in longer flames that are closer to the ground.

Recommendations

- Keep the corner areas of a building clear of combustible materials due to the higher probability of having direct flame touching the surrounding ground.
- Keep gutters free of debris and use metal gutters.
- Install hard surfaces, such as a concrete walkway, or use noncombustible mulch products, such as rock.
- Keep the lawn well irrigated and use low-growing herbaceous (non-woody) plants. Shrubs and trees are not recommended in the 5-foot zone.
- Remove dead vegetation and implement a maintenance strategy to keep the 5-foot zone clear of dead plant materials.
- Mitigating home ignition zones shouldn't stop at 5 feet from the building. It should be combined with the footprint of an attached deck and area that extends away from the building up to 100 feet or to the property line.

Figure 1 – Creating and maintaining home ignition zones (defensible space) around your property are proven ways to reduce risks of property damage during a wildfire, as tests at the IBHS Research Center have shown.

Figure 2a Experiments conducted at the IBHS Research Center to study the effectiveness of creating a noncomsbutible space around buildings.

Figure 2b Embers impacting a building: left side with combustible (wood) and the right with noncombustible (rock) mulch.

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- Access the latest research from IBHS at ibhs.org.

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