

Coatings

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Product types, application requirements and performance limitations

Buildings threatened by wildfire can be mitigated through the development of a strategy that addresses the built environment, vegetation, and other combustible materials on the property. Use of noncombustible materials and ember-resistant design features are examples of strategies that reduce the vulnerability of homes to wildfire. The use of coatings has been suggested as a strategy to provide enhanced protection against extended radiant heat and flame contact exposures for homes located in wildfire-prone areas, particularly when a combustible siding product is installed and other homes are nearby. In these cases, it can be argued that applying a coating is a less expensive option than replacing a combustible product with one that is noncombustible.

COMMON USE OF COATINGS

The term “coatings” is a generic term referring to products that are applied to various building components. These building components can be combustible or noncombustible materials and are used to provide added protection from various environmental factors. The most common use for coatings applied on wood, and wood-based products, is to provide protection from water or water vapor where the coating reduces the rate that moisture enters and leaves. Depending on additives and the chemical makeup, coatings can also improve the fire retardancy or fire resistance of the wood or other combustible material.

GELS

Another example of a coating is what’s commonly referred to as a “gel.” Gels are water absorbent polymers that can be applied to a building component to provide temporary protection from radiant heat or flames. You may have heard of these products being applied to homes when a wildfire is threatening. Once applied, the absorbed water starts to evaporate, whether or not the wildfire actually arrives, and therefore the time that a gel coating is effective is limited. The effective time is on the order of hours.

RECOMMENDATIONS

Given the current performance limitations of coatings, we recommend other proven mitigation strategies to reduce the vulnerabilities of homes to wildfire, such as using ember-resistant design features and creating and maintaining the home ignition zones. For more information visit: disastersafety.org/wildfire



Photo Captions:

- A** Gel product applied to wood siding.
- B** Using a wet-film gauge to ensure the film thickness is adequate.

INTUMESCENT PAINTS

A common example of a coating providing enhanced performance when exposed to fire is intumescent paints (i.e., they form a film when dry). When an intumescent coating is heated by elevated levels of radiant heat, or flames, it can swell up to 20 times the original dry-film thickness; creating an insulation layer that protects the combustible building component.

Intumescent coatings are commonly used in interior applications. However, caution is advised - when these products are used in an exterior application. Researchers at the USDA Forest Service Forest Products Laboratory reported that fire-retardant coatings have an uncertain “shelf life” when used in an exterior location and would therefore need to be reapplied regularly.

If an intumescent coating is being considered, ensure the manufacturer has provided test results demonstrating enhanced performance, either after a defined accelerated weathering period or an extended natural weathering period. Acknowledging their uncertain performance when used in exterior applications, the use of coatings is not allowed for compliance with provisions of the California Building Code, Chapter 7A, which provides requirements for building in wildfire-prone areas in California.