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Trial by Fire

Protecting Poles Against Growing Wildfire Threat

By David Skinner

According to the National Oceanic and Atmospheric Association (NOAA), 2017 was the third warmest year on record in the continental United States. With overall summer temperatures climbing to the fourth highest on record, 2018 has followed this warming trend. As temperatures rise and drought conditions worsen, the likelihood of wildfires increases. Last year, 71,000 wildfires burned more than 10 million acres across the U.S., according to the National Interagency Fire Center (NIFC).

It's imperative that electric utilities and other pole owners act to reduce their risk of fire damage to poles and the subsequent outages caused by pole failures. Effective right-of-way practices, including regular trimming, clearing

Table 1. Comparison of Fire Protection Products for Wood Poles

Favorable Characteristics	COATINGS			WRAPS		BARRIERS
	Latex Coating	Intumescent Coating	Epoxy Coating	Latex Wrap	Copper-Poly Wrap	Metal Shield
Breathable	•			•		
Gaffable	•	•		•	•	
Withstands multiple burns	•		•	•		•
Field repairable	•	•		•		
Quick and easy to install*	•			•	•	•
No specialized training required	•			•	•	
No 2-part sprayer required	•			•	•	•
No respirator or mask required				•	•	•
Suitable for emergencies**				•	•	•

*Easy setup, quick preparation and application time, and product easily transported from pole to pole
 **No cure time or waiting period required before product is viable.

and herbicide application, go a long way toward helping prevent fire damage. Many utilities choose to take those practices a step further by grubbing poles, which involves removing all brush around the pole base. Although removal of this fuel source reduces the likelihood that the pole will ignite, it provides no protection for the pole should it ultimately catch fire.

Effective Fire Protection

There are many products designed to protect wood poles from damage caused by fire. These products can generally be classified into one of three categories: coatings, wraps or barriers. All three are designed to protect poles from fire damage, but they vary in application method, cost and function (see Table 1). As pole owners prepare to evaluate available products, it's important to ensure the product of choice does not inhibit other vital maintenance practices. Products that prevent future inspection and remedial treatment of the pole, for example, can be counterproductive. While they may protect the pole from fire, they prevent proper maintenance of the pole, which effectually shortens the pole's service life. To be considered effective, a fire retardant should possess the following characteristics:

- **Breathable** – An effective product should allow the pole to breathe. Products that do not allow the pole to breathe will encapsulate moisture, promoting decay and subsequently decreasing the service life and safety of the pole.
- **Gaffable** – The product should not render the pole unclimbable, as this can cause problems for linemen who need to ascend the pole for any number of reasons. If the product is not climbable, extra expense will be incurred to install removable steps, and pole owners will need to work through additional safety procedures to perform aboveground maintenance.
- **Long-lasting** – The potential of the product to withstand multiple burns or to be easily repaired in the field makes it more cost-effective for pole owners. Products that are only effective for one burn can be a cost-effective strategy



Latex coatings and wraps allow the pole to withstand multiple burns making it more cost-effective for pole owners.



Latex wraps are quick and easy to install and allow the pole to remain climbable for linemen.

when fire is imminent, but they will need to be replaced following an event or the pole will be vulnerable to the next fire. And, if the product cannot be field-repaired in the event of damage or wear, the pole will again be vulnerable to fire damage. To provide long-term protection, coatings need to have high adhesion qualities. Poles that have been heavily treated with an initial treatment of creosote or pentachlorophenol can sometimes bleed excess preservative, preventing long-term adhesion. An effective application should be properly designed for the type of structure on which it will be used.

- **Safe to Apply** – Products that contain solvents, plasticizers or known carcinogens can pose a risk to the applicator. Proper review of the product's safety data sheet (SDS) prior to purchase will provide education about the dermal, eye and respiratory protection required to safely apply the product. Pole owners should also be aware of the potential environmental impact a product can have, such as volatile organic compound (VOC)

levels and any associated over-spray issues.

- **Easy to Install** – Products that are difficult to install or have a complex installation process typically turn out to be very ineffective from a cost-benefit perspective. Products that require cumbersome equipment, two-part sprayers, respirators, specialized training or have a short pot life (the application life of the product once mixed) can make field application difficult and acceptance by utility line crews improbable. While it's ideal to apply fire protection as part of routine maintenance, emergency situations often arise and require products that can be applied or installed quickly, leaving little time for specialized training. Wraps and barriers are effective in emergency situations because they do not require cure time or a waiting period before they are viable.

Trial by Fire: Successful Fire Mitigation

Winds, drought and high temperatures make the southwest U.S. susceptible to wildfires during the summer months. To prevent pole failures and subsequent power loss due to fire damage, an Arizona electric cooperative elected to apply a latex-based, fire protective coating to many of its wood poles. Just as crews began coating poles, a wildfire broke out in the Coronado National Forest. Rather than coating the poles originally selected, the cooperative chose to change course and coat the poles in the path of the fire.

Crews selected a starting point at a safe distance in front of the fire and began grubbing and coating poles. Crews applied the protective product to 1,100 poles. The fire blazed for more than a week, scorching 27,000 acres. In its 42-square-mile path, the fire claimed 60 homes, 14 buildings, four businesses and 220

uncoated poles — but failed to claim even one of the 1,100 poles with the fire protective coating.

Another large investor-owned utility in the western U.S. experienced similar results after proactively coating nearly 1,000 poles over several years. The poles made up multiple high-value transmission lines in an area at elevated risk for brush fires. In early 2017, these poles were exposed to not one but two fires in consecutive months. After both fires burned through the area, only one of the 1,000 poles failed due to damage that was well above the treated area. Power was not significantly impacted, and poles were able to be retreated with a renewed fire protective coating for protection against future fires.

Conclusion

The risks associated with pole ownership are numerous, and fires will continue to threaten service interruptions and cause physical damage to outside facilities. With a little research, pole owners will find that there are several available fire-retardant products that can be used as a cost-effective part of an overall strategy to mitigate some of the damage caused by fires. **UP**

THE AUTHOR: David Skinner is director of product business development at Osrose Utilities Services Inc. He has experience working with utilities, distributors and contractors both domestically and internationally. He supports the distribution, development and testing for Osrose's over 400 products including fire retardants. He is a member of the American Wood Protection Association (AWPA). For more information on fire protection products, contact him at dskinner@osrose.com.