

Fire Management Tech Tips

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EmberGuard Spark Arresting Campfire Enclosure

by

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Introduction

A new product, the EmberGuard Spark Arresting Campfire Enclosure, designed by EmberGuard Solutions, may provide land management agencies with a new fire-prevention tool that increases campfire safety. Its main feature, a mesh safety screen, is intended to reduce the escape of hot embers from campfires.

The Forest Service, San Dimas Technology and Development Center (“we”) evaluated the EmberGuard Spark Arresting Campfire Enclosure for ease of installation, durability, and public acceptance. This publication provides information about the product and does not constitute an endorsement.

The EmberGuard unit has a unique domed-shaped safety screen (figure 1), which may reduce hot embers from escaping from campfires or while cooking. The unit adapts to an existing 30- to 32-inch outside-diameter campfire ring commonly found in public campgrounds; or, the user can purchase an entire unit—campfire ring, grill, and EmberGuard—from the manufacturer.

Installation

The San Bernardino and Angeles National Forests installed EmberGuards. We chose these forests for their proximity to large urban areas and their high visitor use. For this evaluation, the unit included an optional, detachable campfire ring.

The EmberGuard weighs 150 pounds including the detachable campfire ring. The ring can be detached easily to reduce the weight during installation. Also, it is possible to use an existing campfire ring if, during installation, three 1/2-inch holes are drilled into the existing ring to attach the EmberGuard. Tools for installation are:

- Cordless drill, a 1/2-inch diameter steel cutting bit, (if attaching to an existing campfire ring).
- Two adjustable wrenches.
- Shovel.
- Sledge hammer.
- Three 7/16- by 2-inch bolts and locking washers.
- Two 5/8-inch diameter, 2-1/2-foot pieces (minimum length) of rebar for security anchors.

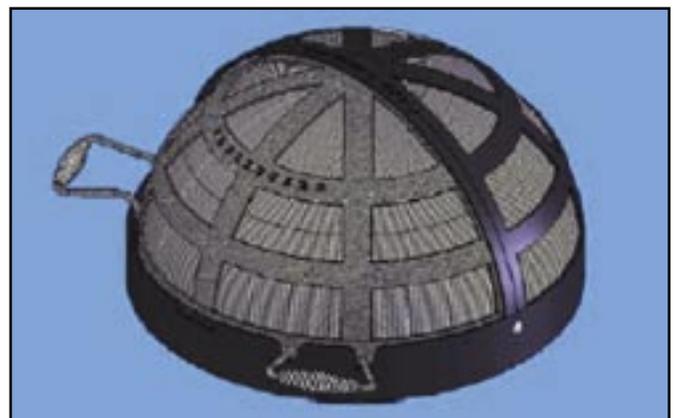


Figure 1—EmberGuard.

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If using an existing campfire ring, the bolt length will depend on the campfire ring's diameter. The EmberGuard is somewhat awkward to install due to its spherical shape and weight. Wear gloves to protect your fingers from being pinched when moving the EmberGuard. An optional lifting kit is available from the company at additional cost. During SDTDC's evaluation, four people did the first installation, which was faster and easier than the two-person crew that installed the campfire ring and second EmberGuard (figure 2).



Figure 2—EmberGuard with campfire ring installed.

Following the safe lifting techniques described in Chapter 39.64 of the Forest Service Health and Safety Code Handbook, the crew, following the manufacturer's instructions, installed the EmberGuard in approximately 2 hours, including the digging of a new area for the campfire ring and the adding of rebar as a security anchor. The crew drove the security anchor into the ground about 2 feet deep. They attached the top portion of the rebar to the bottom campfire-ring strap by inserting the end of the rebar into the predrilled holes and then using the sledge hammer to bend the top of the rebar flat on top of the strap. A security anchor kit is available from the manufacturer. To replicate materials common in the field, the crews used rebar for both installations.

Performance

Both recreation staff and a campground host noted favorable comments from forest visitors using the EmberGuard. These visitors liked the basic design and the added option of sliding

the EmberGuard screen back to use the hinged grill for cooking. Visitors also liked the ability to close the EmberGuard screen at night once the fire died down. Visitors noted that firewood burned longer when the EmberGuard was closed. Recreation personnel mentioned that the EmberGuard prevented users from using too much wood in the unit. Also, visitors must use the proper size firewood for the EmberGuard to close. Maintenance and clean up, according to reports, is comparable to a standard fire ring. Monitoring of the EmberGuard's mesh screen revealed a soot buildup, which may reduce airflow and lower fire temperatures within the campfire ring. This could, in turn, possibly reduce embers from escaping from the unit. As a precaution, this evaluation collected no data on wind speed or ambient temperatures, both of which can greatly influence fire and ember release. The EmberGuard is effective only when the dome is down. Usefulness diminishes when the dome is up.

When evaluating the EmberGuard against the Americans with Disabilities Act (ADA) standard, we used a common hand scale to measure lifting pounds needed to open and close the ember screen and grill. The hand scale was calibrated with 5-, 10-, and 20-pound weights. The ADA standard is a lifting force of 5-pounds maximum to open or close a variety of mechanisms. We determined that in a standing or sitting position the lifting force needed to open the ember screen was approximately 15 to 20 pounds. The lifting force needed for the grill was approximately 18 pounds.

EmberGuard's Dimensions

The body of the unit is circular-shaped 1/4-inch steel plate. The spark arresting screen is available with either 1/8- or 1/4-inch openings. The steel mesh gets support from metal straps that crisscross the unit, contouring its spherical shape. The straps also reinforce the unit under unexpected heavy loads, such as snow or broken tree limbs. The entire unit is painted black, providing both a clean look and corrosion resistance. The unit also has handles formed into coils for a cooler grip for opening or closing the unit over an active campfire. Users can pull back the dome shaped EmberGuard for adding wood, enjoying a campfire without the guard, or using the built in hinged-steel cooking grill (figure 3). For

added protection against theft, steel straps cross the bottom of the unit to secure the unit after installation. During this evaluation, an EmberGuard unit was stolen from the campground.

During the evaluation, we only used rebar to secure the unit. In areas where theft is a problem, it is advisable to secure the unit with rebar and cement. Even with an EmberGuard, no campfire should ever be left unattended.



Figure 3—EmberGuard configurations.

Additional Information

EmberGuards—and several optional accessories—are available directly from the manufacturer. The manufacturer’s Web site: <http://www.emberguard.com> or srenfrow@emberguard.com lists prices for equipment and kits. Call the manufacturer at 1–888–214–7934 or 1–805–801–3437.

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