

# Therapeutic Uses For Copper Alloy Shoes

## New York farrier demonstrates benefits of bacteria-killing appliance

By Jeff Cota, Managing Editor

**C**opper-alloy horseshoes certainly make an impression when applied on a horse. Yet, they are much more than a pretty shoe, says Webster, N.Y., farrier Esco Buff.

In its purest form, copper simply is not suited for use as a horseshoe.

“I’ve put them on draft horses for weddings,” Buff told attendees at the 2017 International Hoof-Care Summit in Cincinnati, Ohio. “Usually by the time the wedding party is done, the copper — and I’m using ¾-inch — is nearly worn all the way through.”

To be conducive, it’s necessary to alloy other metals with copper horseshoes.

“That gives it the strength, wear resistance, hardness, antimicrobial abilities, thermal conductivity and corrosion resistance — making it ideal for therapeutic uses,” says the Kawell Horseshoes clinician. “So, this is not necessarily a shoe that you would be using every day in your practice, because they run \$30, \$35 a pair. It’s something that you would want to use more for therapeutic reasons.”

A significant amount of research has proven its efficacy in the prevention of infections.

“The U.S. Environmental Protection Agency [EPA] has acknowledged and

tested 350 different variations of copper alloys,” Buff says. “Copper is the only metal in which its antimicrobial properties have been certified by the EPA to kill bacteria.”

Not all copper alloys are created equal, though.

“In order for a copper-alloy company to make any claims about killing bacteria on their labels, they have to undergo rigorous testing and certification by the EPA,” he says. “To date, the only company that has ever been tested and proven by the EPA to actually work is Kawell copper-alloy horseshoes.”

### Killing Bacteria

Copper kills bacteria two ways — direct contact or touch surface, and by means of a galvanic reaction.

**Touch surface.** “If you’re doing any research in the medical industry or in this industry, look up ‘touch surface copper alloy killing,’” Buff says. “It kills 99.9% of bacteria on contact. That means any bacteria that come in contact with our shoe will be killed.”

When a copper alloy shoe is removed from the foot after a typical 6-week cycle,



Figure 1



Figure 2

it will appear darkened (**Figure 1**).

“It’s going to be greenish or greenish-black,” he says. “It’s the copper alloy killing the bacteria on contact. I clean them up with a wire brush and I reapply them. Do you have to clean them up with a wire brush? No, you can just put them right back on and they’ll continue to kill bacteria. I just like to see shiny metal there when I put it back on, because for me, I think it works better.”

**Galvanic reaction.** This occurs when two dissimilar metals are employed.

“When you remove an aluminum shoe that was held on with steel nails, you see that pitting occurs in the aluminum,” Buff says. “It’s breaking down. It’s sometimes crumbly. That is aluminum oxide that’s created between the steel and aluminum.”

When steel nails are used in the application of copper shoes, a galvanic reaction also takes place.

“When you take a steel nail and put it into a copper-alloy horseshoe, what is produced are copper salts (**Figure 2**),” he explains. “Copper salts are leeching out between the nail contact and leeching out further on the foot, and it will migrate to the sole and migrate across the sole. This is the reaction we want with these.

“There will be a ring around the shoe and nails. That’s killing bacteria. It’s advantageous when the horse has had some white line issues. It could very easily help with having copper salts being infiltrated in the foot every day.”

## FARRIER TAKEAWAYS

- Kawell’s copper-alloy horseshoes kill 99.9% of bacteria — the only product to gain approval from the Environmental Protection Agency for this purpose.
- Copper alloy kills bacteria via direct contact and a galvanic reaction.
- Copper alloy can be brazed or welded to a steel shoe.
- Improvement from bacterial conditions can be seen after just one shoeing.



Figure 3



Figure 4



Figure 5



Figure 6

### Frog Plate

To demonstrate the effectiveness of copper, Buff shared a case study involving Stella. The other involved a foot in the beginning stages of delamination and a horse living in a wet environment.

Stella, a horse at Meredith Manor Farrier School in Waverly, W.Va., that was experiencing thrush and central sulci problems. To alleviate the problem, John Crothers, the head of the Farrier Department at Meredith Manor, used an old piece of copper-alloy shoe to fashion an insert into a steel shoe (Figure 3).

"It can be brazed in, welded in the exact same way or put into a copper-alloy horseshoe," Buff says. "It's no different

in brazing and welding than if you were putting a steel piece in there. You'll notice the bar isn't touching each other into a nice point or anything. You don't really need to do that, because it's going to be leeching out on the foot."

A marked difference is evident from when the shoe first was applied Aug. 9 (Figure 4) to the next visit Sept. 20 (Figure 5).

"The frog and central sulcus are already cleaned up just in one shoeing," Buff says. "The shoe went back on and on Jan. 23, you can see the issues are all fairly resolved (Figure 6), as far as its habitual thrush issues."

The frog plate can make a significant

difference with those clients who fail to follow through.

"Most of the concerns we have as farriers are owners who aren't compliant with going out there and taking care of the foot every day," he says. "Usually, that lasts about 2 days of tending to it. Then when you show up 6 weeks later, it looks like nothing has been done."

"Central sulcus dermatologic issues are so hard to combat. Depending on the frog, I've found that using a frog plate — a straight piece across the back so it's leeching in — has done more to help those than most anything I've ever done. It seems to be working a whole lot better." ♪

**TEXAS FARRIER SUPPLY  
BW**