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A New Bronze Age: Copper Becomes a Legitimate and Compelling Choice

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Everywhere you look in our hygiene-obsessed world there is an abundance of infection control measures. There are antimicrobial soaps, sanitizer gels, chemicals and disinfectants—in fact, many people even carry their own personal hand-sanitizer with them everywhere they go. However, despite these preventative measures, contaminated surface areas still cause the spread of infection at an alarming rate. The effect is at its worst in places designed with these very health issues in mind—hospitals. According to the Centers for Disease Control, Atlanta, so-called “superbugs,” such as methicillin-resistant *Staphylococcus aureus*, remain a serious problem with hospital-acquired infections affecting nearly two million people and causing approximately 100,000 deaths each year.

Is there a way to improve on the design of public spaces to help control or prevent the spread of infection? The answer can be found in the production material itself.





The U.S. Environmental Protection Agency recently approved the registration of naturally antimicrobial copper alloys as a supplement to standard preventative measures in eliminating specific disease-causing bacteria. Independent lab tests confirmed that copper alloys eliminate more than 99.9 percent of bacterial contamination within two hours of exposure. Copper, brass and bronze products have proven particularly effective against *Staphylococcus aureus*, *Enterobacter aerogenes*, methicillin-resistant *Staphylococcus aureus*, *Escherichia coli* O157: H7 and *Pseudomonas aeruginosa*.

What does this mean for the architecture and design community? No longer just an aesthetically pleasing decorative material, copper has now been shown to benefit human health. Architects, engineers and designers now have the unique opportunity to incorporate copper into their designs from the onset, using the naturally antimicrobial metal on touch surfaces in public places, such as offices, schools and hospitals to combat the spread of infection. Imagine doors, hallways, kitchens and bathrooms—all designed to literally fight harmful bacteria.



Spotlight on Copper

Throughout history, copper has been a staple in architecture. Because of its durability, low maintenance and ease of use, copper has been used in roofing and similar applications for centuries, seen on some of the oldest churches across Europe. More recently, copper has been a key material in facility infrastructure—used in pipes, wiring, and heating and cooling units. In addition to its practical applications, copper has also been used for decorative purposes. The recent EPA ruling, making copper the only officially registered solid surface material with antimicrobial properties, brings copper into the spotlight, creating a host of new architectural applications.

Copper is an ideal material for designing spaces with human health in mind. Other antimicrobial coatings are fragile and can erode over time, while other materials, such as stainless steel, possess no antimicrobial properties and must be constantly sanitized with caustic chemicals and sprays. The intrinsic antimicrobial properties of copper, brass and bronze last the lifetime of the metal. Even as uncoated copper and copper alloy surfaces oxidize or darken with age, they are still effective against various bacteria.

Imagine walking through a health care facility, office, school or other public space—where might copper be used to prevent the spread of infection? Upon entering, copper can be used on doorway touch surfaces, including knobs, pulls and handles. Once inside, copper can be used on railings in hallways and stairwells in addition to faucets, sinks, showerheads and grab bars in bathrooms. The EPA has also approved copper for use in floor tiles, nonporous ceiling tiles and wall tiles.

Aside from the obvious antimicrobial characteristics of copper, there are several additional benefits that make it an ideal material for interior design. Uncoated copper, brass and bronze surfaces are aesthetically appealing and available in a wide range of colors and finishes. This makes copper alloys a good choice in the current trend to create more warm and welcoming atmospheres in hospitals and assisted living facilities. In addition, copper is easily recyclable and dovetails with the industry-wide push toward sustainable design and construction.



The Future Looks Bright

Looking toward future applications, preliminary testing has proven copper effective against other harmful fungal and microbial organisms, including *Aspergillus niger* (black mold), Influenza A and *Legionella pneumophila*. With this in mind and funded by the U.S. Department of Defense, test trials are currently being run at Memorial Sloan-Kettering Cancer Center, New York; Medical University of South Carolina, Charleston; and the Ralph H. Johnson VA Medical Center, Charleston. The results of these tests will determine the efficacy of copper in additional applications, expanding the usefulness of copper in facility architecture and design.

A staple in design and construction for hundreds of years, copper has not necessarily played a prominent role in interior design. However, with the recent EPA announcement, copper is no longer just a durable material for rooftops or an aesthetically pleasing material for interior trim. Copper now is a legitimate and compelling choice for use in public places where spread of infection via touch surfaces is a cause for concern. This opportunity to incorporate a naturally antimicrobial material into the physical design of public spaces might lead to a second Bronze Age in architecture and design. Warren Bartel is senior vice president and special advisor for Luvata. Formerly known as Outokumpu Copper Products and acquired from Outokumpu OYJ by Nordic Capital in 2005, Luvata, with many international locations, is a major international supplier of solutions, services, components and materials for manufacturing and construction.

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