



## The Benefits of Designing with Antimicrobial Copper Alloys

The increasing threat from pathogenic micro organisms, be it superbugs or swine flu, is highlighting the role that touch surfaces have in the transmission of infection and the role antimicrobial materials have to play in helping curb the spread of disease.

Many frequently touched surfaces are reservoirs for pathogens. And, despite recommended protocols to wash hands and disinfect as a first line of defence against infections, 80% of infectious disease is transmitted by touch<sup>1</sup> according to Dr. Philip M. Tierno, Jr., Director of Clinical Microbiology & Immunology at New York University Langone Medical Center. Growing concern over hospital- and community-acquired infections is prompting calls to action from consumer groups, legislative bodies, medical professionals and hospital administrators.

### Designing with Copper Alloys

Known since ancient times for their antimicrobial activities, a recent series of South African and international laboratory and clinical trials has revitalised interest in harnessing the natural, broad spectrum antimicrobial activities of copper and its alloys. These studies have conclusively shown that copper is effective against *inter alia* the headline-making organisms threatening public health today – MRSA, E.coli, Influenza A, Clostridium difficile and tuberculosis. Lead researcher from the University of Stellenbosch's Infection Prevention and Control Unit, Professor Shaheen Mehtar, notes that copper's observed ability to control TB - one of Africa's biggest killers - is of special interest to Africans. Further stringent

testing carried out to satisfy the US Environmental Protection Agency (EPA), all combine to provide a solid scientific body of evidence which has been peer reviewed and published.

The antimicrobial properties of copper alloys are intrinsic to the metal, last the lifetime of the product, and offer continuous protection against disease-causing bacteria, killing 99.9% within two hours. In addition to their effectiveness in killing bacteria, these inherently antimicrobial materials offer designers a wide array of colours—from golden yellows, to silvery-whites, to rich reds—textures and finishes from which to choose. And, aside from being visually appealing, they are in line with the design trends towards creating warmer, soothing, healing environments. Antimicrobial copper alloy products are also 100% recyclable and support sustainable building design and construction. Interior wall and work surfaces lend themselves to dramatic and practical applications that can enhance décor while providing a supplemental defence against disease-causing bacteria. In addition to



***Frequently touched surfaces made with antimicrobial copper alloys are a second line of defense that should be viewed as a supplement to, but not a replacement for, standard infection control practices.***

door hardware products, grab bars, railings and plumbing fixtures, work stations, tables and counters are all candidates for copper alloys that can help to reduce the presence of disease-causing bacteria.

Now architects and designers are able to specify copper-based materials with inherent antimicrobial properties to help reduce the amount of disease causing bacteria\* on touch surfaces. Copper alloys offer designers ample choices and the opportunity to achieve nearly any design intent.

### EPA Approval

The United States Environmental Protection Agency (EPA) registered a wide range of antimicrobial copper alloys including brasses, bronzes, copper nickels and nickel silvers, which, though silver-like in colour, contain absolutely no silver. Tests conducted under stringent EPA-approved protocols confirm that copper and its alloys are effective at killing potentially deadly pathogenic bacteria\*. When cleaned regularly, copper, brass and bronze surfaces kill more than 99.9% of bacteria\* within two hours of exposure and continue killing more than 99% of bacteria\*—even after repeated contamination.

Other than copper, no plastic, wood, aluminium, stainless steel, solid surface material or coating has received EPA registration as an antimicrobial material.

### Filling a Need

Whilst hand hygiene is the number one measure to prevent the spread of disease in the community and in our hospitals, it is recognised that even among healthcare workers compliance rates are less than satisfactory. Copper touch surfaces, which effectively self-disinfect between cleans, can help to significantly reduce the risk of infection.

### Proper Use and Care

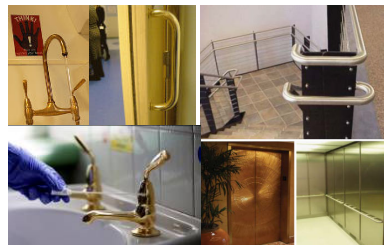
It's important to remember that the use of uncoated copper alloy surfaces is a

supplement to and not a substitute for standard infection control practices; users must continue to follow all current infection control practices, including those practices related to cleaning and disinfection of environmental surfaces. To retain their antimicrobial efficacy, copper alloy surfaces must not be oiled, painted, waxed, lacquered, or coated in any way. It is also beneficial to note that the natural tarnishing of copper surfaces does not impair their antimicrobial efficacy.

### Getting Started

Copper Development Association – Africa is working with material suppliers to support designers and architects through the provision of information via their website, [www.copper.co.za](http://www.copper.co.za). For more information about the benefits and opportunities associated with selecting and using antimicrobial copper products, visit [www.copper.co.za](http://www.copper.co.za) or e-mail [coppershield@copper.co.za](mailto:coppershield@copper.co.za). Typical uses to date for antimicrobial copper alloys includes, but is not limited to,

Counter tops	Keyboards
Railings	Doorknobs
Grab Bars	Push plates
IV poles	Bath fixtures
Call buttons	Shower fixtures
Chairs	Remote controls
Dispensers	Phones



**Frequently-touched surfaces in healthcare and other community facilities, including public and commercial buildings, can become contaminated with bacteria. Using uncoated copper alloys can be an effective way to kill the bacteria on surfaces such as those shown above.**

1 Tierno, P. *The Secret Life of Germs*. Atria Books: New York, 2001.

\* US EPA testing demonstrates effective antibacterial activity against *Staphylococcus aureus*, *Enterobacter aerogenes*, *Escherichia coli* O157:H7, *Pseudomonas aeruginosa* and Methicillin-resistant *Staphylococcus aureus* (MRSA).