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# The Benefits of Designing with Antimicrobial Copper Alloys

## A new approach to hygienic design

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### Introduction

Designers and architects have a key role to play in designing infection out of our hospitals and public spaces, and now they have a new ally: copper.

Copper and its alloys have made the news with a recently-rediscovered property – rapid antimicrobial efficacy – that is driving a reassessment of these traditional, workhorse materials to provide an innovative and cost-effective approach to fighting the spread of disease.

The increasing threat from microorganisms, in hospitals and the wider community, is highlighting the role frequently-touched surfaces such as door handles and taps have in the transmission of infection. Germs can survive on these surfaces for days, even months, waiting to be transferred to the next hand that touches them. While hand hygiene and cleaning are undoubtedly the first line of defence, more needs to be done.

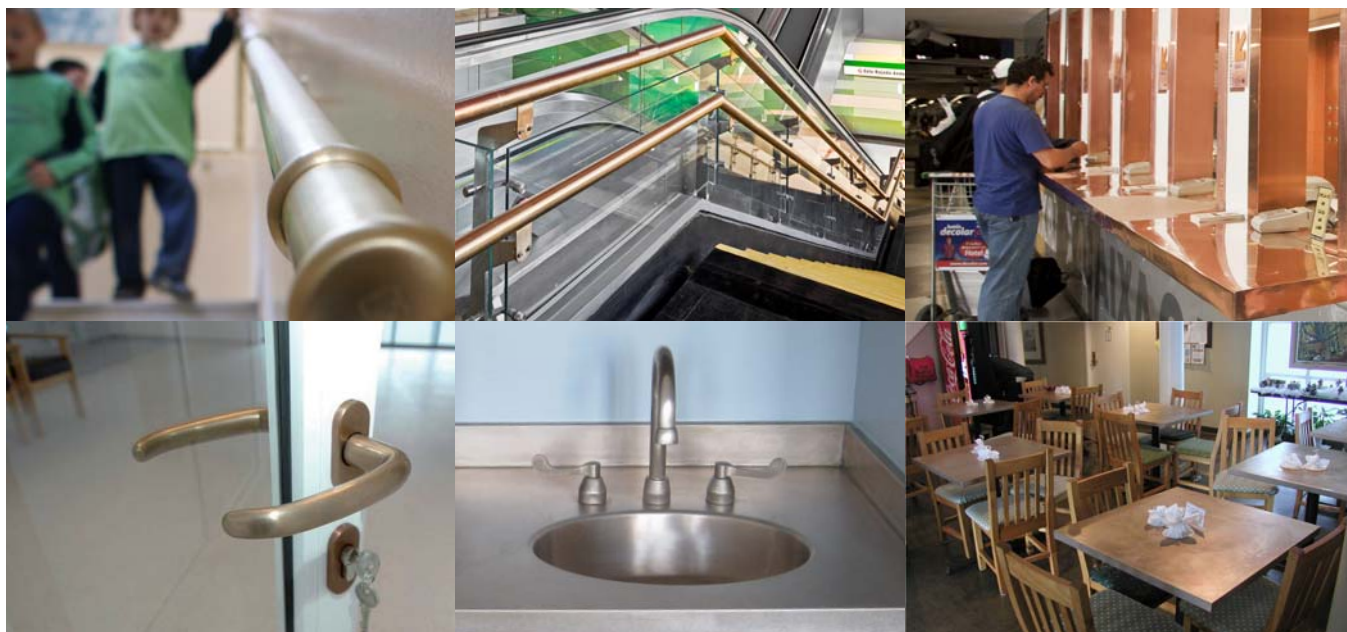
Copper can help break the chain of infection as it is a proven broad-spectrum antimicrobial, effective against headline-making germs including MRSA, Norovirus, *E. coli*, Influenza A and *Clostridium difficile*. Microbes that land on copper, whether through a cough, sneeze or just a touch, are rapidly destroyed,

continuously, 24/7. Fewer germs on frequently-touched surfaces means lower risk of diseases spreading.

The laboratory and clinical research has been peer-reviewed and published and stringent testing has been carried out to satisfy the US Environmental Protection Agency to support an official registration as an approved antimicrobial material. The most recent clinical research shows that by incorporating copper alloys into just six key touch surfaces in Intensive Care Unit rooms, healthcare-associated infections can be more than halved.

According to a recent assessment by York Health Economics Consortium, this simple intervention is cost-effective, with estimated return on investment of less than two months when comparing the small additional cost of copper alloy components with the considerable savings due to fewer infections.

Copper forms a range of alloys that are in regular production and many of these share the antimicrobial characteristics of the pure metal. Designers and architects now have a palette of materials for innovative designs that are hygienic as well as practical and aesthetically pleasing, for hospitals, care homes, schools, transport hubs, cruise ships and public buildings.



**Copper Development  
Association**  
Copper Alliance

**Antimicrobial  
Copper**



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## Designing with Copper Alloys

Copper alloys are easy to work with and form into different shapes so designs can be readily realised. While copper is the active element with the antimicrobial effect, most touch surface applications require enhanced mechanical properties, such as strength and wear resistance, and these can be provided by one of the families of copper alloys.

Copper combines readily with a range of alloying elements to form brasses, bronzes, nickel-silvers and copper-nickels, each of these being generic terms for alloy families. Specific alloys are classified by EN material designations with defined compositional and property ranges.

More than 400 alloys have been recognised by the US EPA as antimicrobial. Download our document 'Antimicrobial Copper Alloys – Guidance on Selection' from the News and Downloads section of our website for further information to help choose from the more commonly available alloys.

Uniquely, the copper alloy system provides a palette of colours: from the rich reds of the high coppers through the warm golden-yellows of the brasses to the silvery-whites of the nickel-silvers. These choices can help designers create a warmer, more soothing, healing environment.

### Which Surfaces can Benefit?

The interior elements and products that could benefit from copper's antimicrobial properties include:

- ◆ worktops
- ◆ banister rails
- ◆ lift interiors (particularly control panels)
- ◆ door handles and push plates
- ◆ bathroom fittings - taps, grab rails and toilet seats.



Antimicrobial Copper door furniture installed at Homerton Hospital, London

The antimicrobial properties are intrinsic to the metal so last the lifetime of the product, even if subject to knocking and scratching, and offer continuous protection against disease-causing germs. At end of life, products are 100% recyclable and so contribute towards sustainable design.

### Proper Use and Care

For copper alloys to retain their antimicrobial efficacy, their surfaces must not be oiled, painted, waxed, lacquered or coated in any way. Surfaces should be cleaned as per standard procedures. Any natural oxidation that occurs to these active surfaces under these circumstances does not impair their antimicrobial efficacy.

### Antimicrobial Copper Brand and Cu<sup>+</sup> Mark

The AMC brand and Cu<sup>+</sup> mark represent an industry stewardship scheme that is designed to provide confidence to all sectors. The use of the brand and mark by an organisation indicates it has permission to do so based upon adherence to particular rules that guide that organisation's understanding of the underlying technology and the way they promote, advise on and deploy it in line with existing research, regulatory and legislative requirements.



### Further Information

Visit the website [www.antimicrobialcopper.org](http://www.antimicrobialcopper.org) to:

- ◆ Contact your local Copper Centre with any query
- ◆ Request Cu<sup>+</sup> alloy sample sets
- ◆ Browse the Cu<sup>+</sup> product directory
- ◆ View scientific references, case studies and news
- ◆ Sign up to the quarterly newsletter
- ◆ Join the LinkedIn group.

