



ANTIMICROBIAL COPPER

Copper alloys, such as brass and bronze, are making a comeback in hospitals due to their inherent ability to kill germs – and fungi – in private hospitals to provide a homely or hotel feel, this new generation of handles, and other touch surface components, are uncoated – plated – antimicrobial copper within.

In ancient times, copper was found useful for its curative powers — largely due to its antibacterial and antifungal properties — in the treatment of wounds and skin diseases. The ancient Egyptians, Greeks, Romans and Aztecs all used copper in the treatment of wounds and diseases.

There are now reams of scientific papers documenting how copper surfaces (and materials such as brass and bronze, which contain copper,) can very quickly kill millions of microbes applied to them. The most recent work has been carried out at the University of Southampton by Prof Bill Keevil, who has proved copper kills MRSA, Clostridium difficile, E. coli and even Influenza A (H1N1). Interestingly, whilst it is widely accepted that both silver and copper have antimicrobial properties, and indeed the use of silver in catheters and wound dressings is well known, Keevil recently reported that under typical indoor conditions, i.e. 22°C and 50% relative humidity, silver showed no activity. A higher temperature and humidity was needed for the silver material to show an effect. So, for indoor touch surface applications, copper materials have the required performance.

Copper has also been proven to reduce contamination in a clinical setting, with reductions of 90- toilet seats, taps and push plates in the ongoing clinical trial at Selly Oak hospital in Birmingham. 80% of infectious diseases are spread by touch so, logically, reducing contamination on touch surfaces must mean reducing the risk of spreading disease. According to the trial leader, Prof Tom Elliott: “The findings of a 90 to 100% killing of those organisms, even after a busy day on a medical ward with items being touched by numerous people, is remarkable. It may well offer us another mechanism for trying to defeat the spread of infection.”

Copper and its alloys are easy to form into long- suitable for service in the healthcare environment. They are homogenous, so a product such as a brass door handle is antimicrobial through and through, even when scratched; the properties last the lifetime of the product. Whole- costs are comparable with other materials and, at the end of their service life, products are fully recyclable and therefore contribute to sustainable design. Recycled copper can be used for exactly the same applications as the newly- it does not need to be downgraded, unlike recycled paper, and in Europe, 42% of the copper demand is already satisfied by recycled material.

Whilst copper is established as a ‘green’ material, Professor Elliott is also calling it ‘an intelligent metal’: “The copper is quietly working away in the background, killing organisms all the time. It needs to be part of what we call a bundle of care in terms of an approach to

preventing infection. In our trust, led by our senior nurse, we have what I would say is some of the highest quality infection prevention measures in terms of washing of hands, cleaning surfaces and managing the environment.”

So copper, brass and bronze surfaces can augment standard hygiene practices such as hand washing and cleaning and provide an additional barrier to germs, between cleans. The infection control team can identify which surfaces would benefit from copper in particular areas. In the Selly Oak trial, door handles, push plates, grab rails, taps, light switches and sockets and toilet seats were just some of the copper components installed. Hospitals do not need to instigate special cleaning

routines to care for the surfaces, either. At Selly Oak, standard cleaning agents and protocols are used.

News of copper’s outstanding antimicrobial performance in the trial is making infection control teams around the world consider where best to deploy copper, brass and bronze fittings, furniture and equipment, and architects are already starting to specify copper in environments where hygiene is of paramount importance.

Copper- a variety of guises ranging in colour from gold to bronze to silver depending on composition. Being active surfaces, they immediately set to work killing germs, and the surface appearance may dull or darken slightly, a process known as patination. Only poorly cleaned surfaces will discolour to a greater degree than this, and the bathroom fittings installed at Selly Oak show only a gentle patination, even after two years’ service. Rest assured though that as this patination occurs, the surface is becoming even more effective at killing germs.

Products are now available from a variety of manufacturers, at prices comparable to the same stainless steel components. A product catalogue is being developed to make sourcing items easy for facilities managers and architects, and can be viewed at www.copperinfo.co.uk/antimicrobial/prod

For more information, or to join the Interest Group to receive quarterly updates on developments and research from the UK, US, Japan, Africa and Germany, please visit www.copperinfo.co.uk/antimicrobial.