

saCup

ANTIMICROBIAL COPPER
PRODUCT RANGE

KME Germany GmbH
COPPER DIVISION
[EN]



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NATURALLY ELIMINATES BACTERIA AND VIRUSES –
FOR A SAFER AND MORE SUSTAINABLE FUTURE.

WHAT IS ANTIMICROBIAL COPPER?

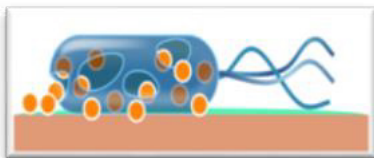
Antimicrobial copper neutralizes harmful microorganisms such as bacteria, viruses, fungi and mold and inhibits their growth. The scientific literature confirms that copper can eliminate or inactivate various types of bacteria, fungi and viruses. Notable ones include **E. Coli bacteria**, **Influenza**, **MRSA** (Methicillin Resistant Staphylococcus), **Rotavirus**, **Salmonella**, **Campylobacter**, **Legionella** and **Coronavirus** (including **SARS-CoV2**).

Healthcare-acquired infections

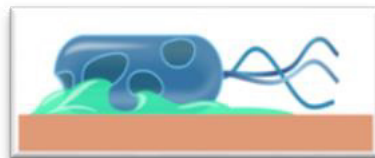
The transmission of infections is a critical issue in hospital hygiene: Nosocomial infections cause up to 100,000 deaths per year in the EU. Numerous international studies have shown that viruses and bacteria, including SARS-CoV2, can survive on stainless steel or plastic for days or even weeks. On the other hand, copper has a permanent germ-neutralizing effect due to its intrinsic properties, which takes place in a few hours.

Studies carried out in some hospitals have shown that the surfaces of objects made of copper or copper alloys have, on average, 80% less germ load than equivalent objects made of other materials. In particular, the results of the research carried out by Sally Oaks Hospital, Birmingham, showed a 90% reduction in germs. The study found that intensive care units in three US hospitals showed a decrease in germs of 83%.

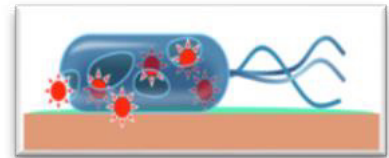
MECHANISM



A: Contact with copper weakens cell membrane (massive peroxidation of membrane lipids). Cu ions on the surface penetrate into the cells



B: High Cu-ion dose damages the normal cell functions and the cytoplasmic membrane (by oxidative stress)



C: Cu ions impede cell respiration or cell metabolism and damage cell DNA

(see C. Rensing & G. Grass 2006)

photo . John_T / shutterstock

SCIENTIFIC EVIDENCE

THE INSTITUTE OF VIROLOGY AT THE UNIVERSITY OF PISA, 2020

The viral load of SARS-CoV2 on copper surfaces is reduced by 90% in 10 minutes and 100% neutralized in 60 minutes. This property also applies to copper alloys, where the viral load is reduced by 85% after 10 minutes and 100% after 60 minutes.

JOURNAL OF HOSPITAL INFECTION, 2019

Specific antibacterial activity of copper alloy touch surfaces in five long-term care facilities for older adults

Contamination of healthcare facilities touch surfaces can be the source for the spread of bacteria through the institution. This in situ study shows that the frequency of the contamination as well as the specific bacterial population bioburden is reduced on copper alloy surfaces.

MATERIALS, 2018

Copper alloy touch surfaces in healthcare facilities: An effective solution to prevent bacterial spreading

Five French long-term care facilities were at 50% fitted with copper alloys door handles and handrails. 1400 samples were carried out on copper and control surfaces over three years after copper installation. Results show that copper containing surfaces are promising in preventing the spread of environmental bacterial contamination in healthcare facilities.

AMERICAN JOURNAL OF INFECTION CONTROL, 2017

Self-sanitizing copper-impregnated surfaces for bioburden reduction in patient rooms

The results suggest that a novel SSSCu solid surface may indeed result in persistently lower microbial burden compared with a standard non-copper surface in a real-world hospital setting.

Residual SARS-CoV-2 infectious dose following contact with KME Copper and Copper Alloys

		CONTACT TIME (minutes)				
		0	5	10	30	60
Copper	TCID ₅₀	154.8817	66.0693	14.4544	3.1623	0.0003
	% reduction TCID ₅₀ *		55.34	90.67	97.96	100.00
	Log TCID ₅₀	2.19	1.82	1.19	0.50	-3.50
	% reduction LogTCID ₅₀ *		16.89	47.03	77.17	259.82
Copper Alloy	TCID ₅₀	154.8817	87.0964	23.9883	6.6069	0.1585
	% reduction TCID ₅₀ *		43.77	84.51	95.73	99.90
	Log TCID ₅₀	2.19	1.94	1.38	0.82	-0.80
	% reduction LogTCID ₅₀ *		11.42	36.99	62.56	136.53

* % reduction compared to viral stock



photo . Andrew Fox / adobe stock



POTENTIAL APPLICATIONS

KME has developed a dedicated antimicrobial copper and copper-alloy product line called “SaCup” to significantly reduce the risk of infections via touch surfaces.

Antimicrobial surfaces are particularly indicated for applications in healthcare facilities where potentially dangerous bacteria can be found, many of which have become resistant to antibiotics.

More generally however, the recent pandemic has shown that in highly frequented and confined spaces of public life, touch surfaces can be a potential source of infection. A new approach to infection prevention and control mechanisms is needed to lower the disease burden and avoid major epidemics.

HEALTHCARE

Hospitals, care facilities for the elderly or people with disabilities, medical cabinets

The elements that most risk to transmit pathogens to patients, visitors and staff in these settings are touch surfaces such as door handles, push plates, elevator buttons and hand rails. Inside the patient or resident rooms, other elements which are frequently touched are bed rails, chair rails, light switches and IV-poles. Furthermore, trolleys operated by staff to move from one room to another or benchtops used in laboratories are also potential transmission surfaces.

PUBLIC TRANSPORT

Trains, tramways, buses, underground, airports, stations

With millions of passengers using public transport to travel to work every day, bacteria and viruses can be transmitted via touch surfaces. This is particularly true when passengers hold on to hand or grab rails inside public transport means or use push buttons to open doors.

RETAIL

Supermarkets, shopping malls

The focus must be on locations with a high number of shoppers every day. Typically, supermarkets fall into this category. The most touched surfaces here are shopping carts and their handles, as well as opening bars of fridges/freezers.

PUBLIC BUILDINGS, SCHOOLS AND REAL ESTATE

Public administration, office building, large apartment buildings

Schools and buildings of public administrations with a large number of external visitors every day should require particular attention. In general, large office or apartment buildings with a high number of people passing through the doors, staircases and elevators are also potential infectious environments. Door handles, push plates, hand rails and elevator buttons are the most exposed elements.

HOSPITALITY

Hotels, restaurants, event locations

In these settings, particular attention should be made to public areas such as the reception area, hotel lobbys, bars, counter tops, as well as toilets. Key elements for the use of copper could be door handles and push plates, water taps, reception and counter tops, handrails and elevator buttons.

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CASE STUDY: AIRPORT MILAN LINATE

In June 2021, **KME** has installed its new saCup range at Milan Linate Airport. Thanks to the co-operation with SEA (Società Esercizi Aeroportuali), the most frequently touched surfaces at the airport have been equipped with **antimicrobial copper**: Stair handrails, luggage trolley handles and rails in buses operating on the airport premises are all made of solid copper.

The collaboration between **KME** and SEA has made it possible to use the saCup range in a high passenger traffic context such as Milan Linate Airport. The airport has been included in a new architectural project designed to offer passengers a pleasant, modern and increasingly safe travel experience.

Claudio Pinassi, CEO of **KME** SpA, comments: „Thanks to the use of copper for the design of highly frequented contact surfaces, transit passengers can move in a more relaxed way and enjoy their time at the airport with more safety and fun.“



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PRODUCT RANGE



photo . Jazmine Thomas / shutterstock

**The SaCup line includes a range of finished and semi-finished products:
Tubes, sheets and special films designed for use in a variety of environments.**

The following elements can then be produced by manufacturers:

- Door handles, knobs
- Push plates
- Water taps
- Rails: Hand rails, grab rails, balustrades, trolley handles
- Furniture for hospitals / healthcare facilities: Bed rails, IV-poles, trolleys, grab bars...

ALLOYS AND COLOURS

PURE COPPER AND COPPER ALLOYS

Evidence of antimicrobial properties has been proven for pure copper and alloys containing at least 60% of copper.

Pure copper: has the highest antimicrobial efficacy

Brass: an alloy of copper and zinc with at least 60% of copper has good antimicrobial properties

Bronze: an alloy of copper and tin with at least 90% of copper also has good antimicrobial properties

OXIDATION

It is a natural process, the most direct evidence of which is the colour change. In fact, copper and its alloys naturally oxidize and darken. This process does not affect the antimicrobial properties.

COLOUR CHANGE AND TREATMENTS

If surface treatments or coatings are applied, copper and its alloys will lose their antimicrobial properties. Only the natural surface will be able to neutralize bacteria and viruses. Therefore, it is not possible to treat these surfaces against the change of colour due to oxidation.

The most sensitive material to staining or darkening is pure copper. There is a range of more colour-stable copper alloys with antimicrobial efficacy available with a palette of colours from which to select.

- Copper nickel – depending on nickel content colour from reddish to bright silver (quite similar to stainless steel)
- Aluminium bronze – yellow to golden colour



* available as sheet metal

** available as standard sheet metal



[Find out more](#)

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