

SILVER

As an Antimicrobial

The antimicrobial properties of silver have been known to cultures around the world for centuries. The Phoenicians stored water and other liquids in silver coated bottles to discourage contamination by microbes, and silver dollars were put into milk bottles to keep milk fresh.

But what is the actual process by which silver helps to break down microbes?

Feng et al. (2000) studied the effects of silver ions on gram-positive and gram-negative bacteria, namely *Staphylococcus aureus* and

Escherichia coli. They treated cells with AgNO_3 , and monitored the effects that their treatments had. It was found that Silver had significant antimicrobial effects on the proteins of the pathogens. The antimicrobial properties of silver are due to its ionized form, Ag^+ , and its ability to cause damage to cells by interacting with thiol-containing proteins and DNA.

Silver has been shown to have relatively low toxicity in relation to its antimicrobial properties, and many industries are now rushing to incorporate it into their pathogen-control plans.



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ACROSS MATERIALS

Where Can Silver Be Used?

Water

Despite the fact that chlorine has long been used as the most common drinking water disinfectant, chlorinated water can lead to the formation of many hazardous compounds.

Based on its low known toxicity to humans, silver has been suggested as a possible disinfectant of drinking water.

Glass

Already, glass is being developed with antimicrobial properties (AGC: Antibacterial glass). Silver ions incorporated into the glass are responsible for the antimicrobial activity.

Food packaging

Various types of food packaging have been supplemented with silver-containing compounds to deter microbial growth and extend product shelf life.

Fogging

When the proven antimicrobial effects of silver are combined with Hydrogen Peroxide, it can be used as a powerful dry-fog capable of reaching into cracks and crevasses that other disinfecting methods miss.

You can learn more about fogging Silver and H₂O₂ by visiting our Halo Disinfection System page, located [here](#).

