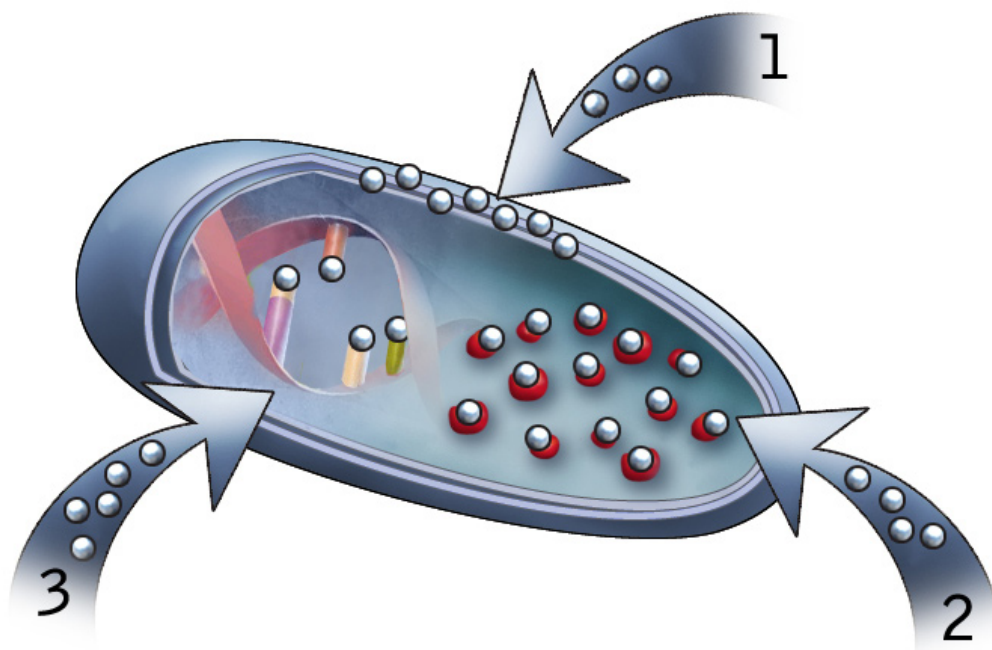


Silver is widely accepted as having broad-spectrum antimicrobial activity. In order to understand why this is so, it is necessary to examine the action of silver ions against microbes. The following diagram and comments will help to explain just how silver is so effective in the fight against microbes.



**(1)** Silver ions may bind nonspecifically to cell surfaces, causing some disruption to the cellular membrane function and allowing the silver ions to penetrate the microbe structure.

**(2)** Silver ions are highly reactive and readily bind to electron donor groups, with prime targets being the thiol groups (-SH) which are commonly found in enzymes within the microbe.

This causes the enzymes to be denatured thus effectively incapacitating the energy source of the cell. As a result the cell cannot maintain osmotic pressure, vital substances leak out of the cell and the microbe will quickly die.

**(3)** Silver ions react with the base pairs of DNA thus preventing DNA replication.

## Longevity of Biomaster

To explain why Biomaster has such a long-term efficacy it is necessary to refer to the work of Avogadro (1776 – 1856).

He carried out a programme of work which resulted in “Avogadro’s number”. This number can be used to calculate the concentration of silver ions.

For example if Biomaster TD100 was added to a polymer at 0.1% addition level this would give the following number of silver ions available in 1kg of polymer:

**836,000,000,000,000,000,000**

Although Biomaster products contain high levels of silver, they release silver ions at a very low, controlled rate. This low release rate is dependent upon the bacterial challenge present which ensures that they retain their efficacy for the lifetime of the products in which they are used.

Continued efficacy has been proven in textiles treated with Biomaster after 100 boil washes, as well as in articles which have undergone simulated 20 year use testing.

Leach rates for silver from Biomaster treated textiles are so low that they have gained approval and are being used in Class 1 medical devices (The Medical Devices Regulations 2002).

## Virucidal activity of silver

There is evidence dating back to the 1920’s showing that silver possesses virucidal properties. The mechanisms of action involve alteration of viral protein as well as damage to the viral nucleic acid\*.

The Department of Health Rapid Review Panel has given a Class 3 accreditation to Biomaster.

\*If you would like to discuss the virucidal claims which can be made using Biomaster products please contact our technical team.