SILVERGUARD®
Q & A

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SILVER ION TECHNOLOGY

What is the nature of SILVERGUARD and is it safe?

- SILVERGUARD is a silver-glass compound that has been registered with the US EPA specifically for use as an antibacterial additive for protecting textiles, coatings and polymers.
- The SILVERGUARD Antibacterial has US FDA approval for use food packaging
- The level of silver is very low, less than 0.3 grams per kilogram of treated material or 0.03%.
- Silver is NOT absorbed through the skin.
- Silver is not carcinogenic and except at very high doses (hundreds of grams) non-toxic.
- Argyia, the discoloration of the skin due to silver, occurs only when significant amounts of silver are ingested into the body. The estimated dose required is at least 25 to 30 grams.

Will the SILVERGUARD harm the environment?

- Silver is a naturally occurring element.
- The SILVERGUARD has very low solubility, is imbedded in the vinyl and is used in low concentrations. The result is that potential to release silver is minimized.
- In the environment silver rapidly forms insoluble compounds that are sequestered or immobilized meaning that the silver is not available to be ingested or absorbed by living organisms.

Will SILVERGUARD lead to "superbugs" and increased resistance in bacteria?

- Resistance is an issue with antibiotics which are drugs used to treat bacterial infections.
- The SILVERGUARD works to control bacteria through a number of modes of action as opposed to antibiotics that only have one mode of action. It is far easier for bacteria to develop a defense against a single mode of action than multiple modes of action.
- Research has not shown that bacteria in the environment becoming resistant to silver despite silver having been used by humans since about 3000 BC.

Is the SILVERGUARD a nano-silver?

- No. SILVERGUARD is actually a relatively large molecule.

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Why does the EPA have a problem with Nano-silver?

- Nano-particles behave differently than regular sized particles. That is what makes Nano so interesting and potentially useful.
- Until recently the research with Nano-particles was focused on their potential usefulness.
- More research has to be done on the safety of Nano-particles to ensure that they are really safe before the EPA is prepared to register Nano-silver or any Nano-particles.

How does the SILVERGUARD work?

- SILVERGUARD silver consists of silver molecules incorporated into a glass-like matrix. This silver, either through direct contact at the surface of the molecule or by the slow generation of silver ions, attaches to the bacteria cell.
- The silver can attach to the cell wall, or to various organelles in the cell or to enzymes present in the cell.
- By attaching to these components in the bacteria cell the silver disrupts the normal activity of the bacteria cell thereby preventing it from growing and re-producing.
- It is the multiple sites of action that helps prevent resistance to silver by bacteria
- The silver can only effectively attach to the bacteria cell in the presence of moisture. The moisture acts to create a good contact between the silver and the bacterial cell.

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