



## Product Description

Antimicrobial BactiBlock® is a proprietary (patent pending) nanoadditive based on silver functionalized nanoclays that acts as a natural antimicrobial to prevent the growth of bacteria, mold, fungus and other microorganisms on the protected surfaces.

Silver is a naturally occurring antimicrobial agent with a widely known antimicrobial spectrum but recognized as safe for human beings. In the present product, the nanoclay is used as carrier for the antimicrobial agent offering strong synergies between the two naturally sourced materials.

## Nanoclay-Silver Synergies

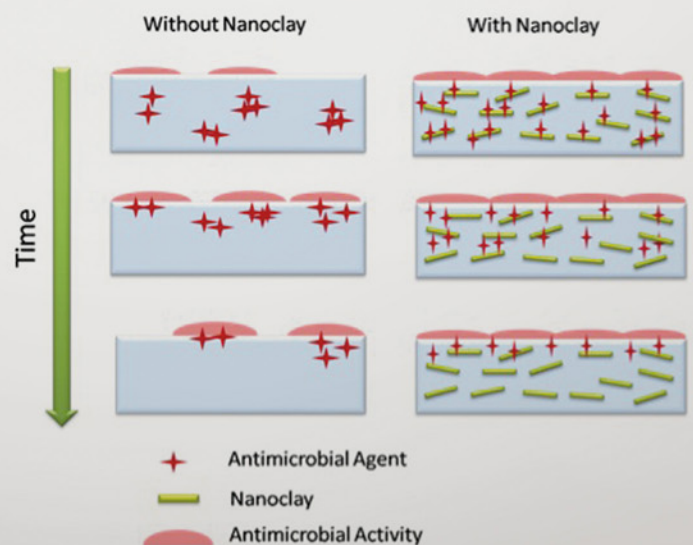
During the nanoadditive production process silver species are linked on the nanoclay surface obtaining smaller particle size than using other conventional methods. Moreover, silver deposition on the nanoclay helps to prevent particle agglomeration and high efficiency for longer periods of time is achieved through a controlled release mechanism.

The presence of the nanoclay may also improve other properties such as barrier properties (O<sub>2</sub>TR, WVTR, etc) as well as thermal and mechanical properties for some specific cases. Finally, BactiBlock® provides high compatibility with most matrices through adaptable formulations.

## How does the Antimicrobial BactiBlock® work?

Controlled accumulation of the antimicrobial agent on the surface provides protection against microorganism growth. Due to the small particle size of the silver distributed on the nanoclay layers, dispersion is optimized compared to the system without nanoclay, as presented in the schematic drawing below.

BactiBlock® combines higher dispersion with the presence of smaller (more reactive) particles, creating a more uniform, durable and continuous protection of the surface. As a result, the surface containing BactiBlock® presents a higher overall protection and higher efficiency for longer periods of time.



In order to inhibit microorganism growth, the silver/clay-based technology attacks microorganisms impeding cell division while affecting some of the vital functions such as respiration and metabolism. Silver has broad-spectrum antimicrobial functionality and resistance to it is almost nonexistent.

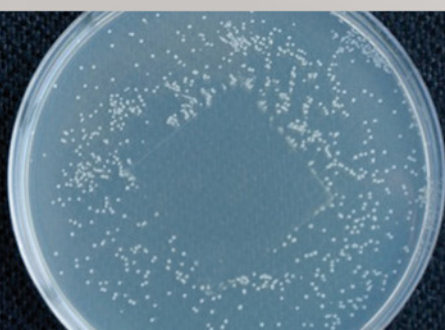
Although durability and longevity in most cases depend on the specific environment (temperature and humidity) as well as wear and tear conditions, the antimicrobial activity is expected to maintain performance for years.

### BactiBlock® Applications

Because silver is considered not to affect humans, animals or plants, BactiBlock® can be used in a wide range of applications in which hygiene, inhibition of biofilm formation and cleanliness are main targets.

BactiBlock® can be added to almost any material although most common applications are based on elastomers, thermoplastics, thermosets as well as surface coatings. Most popular applications are found in construction, electronics, textile, biomedical, personal care and food markets.

- ▼ Petri dish containing a film with antimicrobial BactiBlock®, inhibited bacterial (E. Coli) growth on the film.



### BactiBlock® dosage

The accumulation of silver biocide species on the surface is dependent on the nature of the matrix in which the nanoadditive is dispersed. Typical recommended BactiBlock® concentrations fall in the range between 0.5% and 2.5% in order to provide active antimicrobial surface activity.

### How is antimicrobial activity of final surfaces tested?

The Antimicrobial activity of BactiBlock® has been studied in a wide range of matrixes and conditions in our internal facilities and also by external labs using the standard norm for surface antimicrobial activity analysis JIS Z 2801 equivalent to ISO 22196:2007.

Partnership with our clients is usually necessary to adapt BactiBlock® dosage and guide our partners to reach the final target.

### How is BactiBlock® delivered?

BactiBlock® is presented as a micro-powder additive (safe handling). For thermoplastic applications it can also be delivered as a concentrate in a specific resin containing up to 20% of the antimicrobial nano-dispersed additive.

For more information  
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