

# INTRODUCING...

Who will  
Benefit  
from Biolam™?



Schools



Health Care



Restaurants

## BIOLAM™ with antimicrobial

Another Innovative Product By  Cleveland Menu

BioLam™ is a thermal laminating film enhanced with a patented antimicrobial compound that inhibits the growth and reproduction of bacteria and other damaging microbes. This antimicrobial surface allows BioLam™ to reduce and control the growth of bacteria on laminated documents.

Bacteria can be found everywhere. It is in the air, soil, and water and on plants and animals, including humans. Each square centimeter of your skin contains approximately 100,000 bacteria. In fact, the human mouth is home to more than 500 species of bacteria. Though microscopic and made up of just a single cell, don't let their small size and simplicity deceive you. Bacteria, mold and mildew lead to unsanitary conditions if allowed to grow unrestrained.

One common method of spreading bacteria and other damaging microbes is through contact with a contaminated surface. Touching an unclean surface may lead to filth in other locations. While frequent hand washing is your first line of defense, many fail to perform regular hand washing.

Printed documents are frequently handled by many, perpetuating the growth of bacteria, mold and mildew. Some items, like menus in a restaurant, charts in a doctor's office and schoolbooks for children, are used in environments where unwelcome microorganisms are common. When bacteria are exposed to the active agents on the BioLam™ film, the lifecycle processes of the organism are interrupted and the reproductive capabilities are affected.

BioLam™ incorporates the natural protection of Silver, utilizing AgION's antimicrobial technology. The surface protection on BioLam™ remains on the film structure and does not wash off. Most likely, the laminated item will wear out or become outdated before the antimicrobial properties would lose effectiveness.

If you have a need for maintaining a hygienic environment, incorporating BioLam™ on your printed piece provides another line of defense against the growth of bacteria, molds, mildews and fungi. BioLam™, quite simply, is the most effective way to control the growth of microorganisms on everyday laminated items. BioLam™, making your world a cleaner place.

### Who will Benefit from Biolam™?

- Schools and day care facilities, hospitals and clinics, dental offices, restaurants and food service environments, retailers, and more...

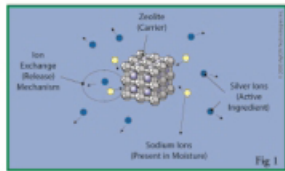
### Biolam™ Applications

- Menus, book covers, anatomical charts, counter mats, classroom materials, manuals, instruction or reference sheets, and more...

## What is Biolam™?

- Biolam™ is a thermally applied laminating film enhanced with antimicrobial protection built into the structure.
- Antimicrobials are used to reduce the growth of bacteria and mold on surfaces.

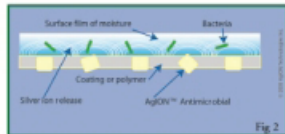
## How it Works



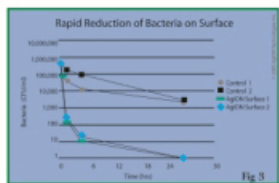
Through a partnership with AgION, BioLam™ film from Protect-all incorporates the natural protection of silver which is a powerful antimicrobial ion that is safe, effective and durable. What makes the surface of BioLam™ truly unique is the patented delivery system. The multifaceted Zeolite crystal carrier provides efficient release of silver ions, independent of the particle orientation in the substrate (Figure 1).

The Zeolite crystals are randomly oriented and distributed through the surface of the film (Figure 2). In conditions that support bacterial growth, the silver ions attack multiple targets in the microbe to prevent it from growing to a destructive population.

The silver ions interfere with cell growth in three ways. First, the silver ions inhibit transport functions in the cell wall, then it interrupts the cell's energy generation or metabolism and finally prevents the cell's ability to reproduce. This tri-modal efficacy is unique to inorganic metal ion antimicrobials and reduces the possibility of developing resistant bacteria.



## Efficacy



A graphical presentation of AgION's ability to reduce the growth and population of a common bacteria is illustrated in Figure 3.

Measurable results are seen within two hours while a log 5, or 99.99% reduction is observed at the end of the twenty-four hour test.

## Safety and Regulatory\*

AgION antimicrobials are EPA registered for a broad range of uses including food and water contact. They are FDA listed under the FDA food contact substance notification for use in all types of food contact polymers in 21 CFR. For more details regarding BioLam's™ safety, contact Protect-all.

\*AgION antimicrobial does not protect against illness