

# MICROBAN<sup>®</sup> ANTIMICROBIAL PRODUCT PROTECTION

FREQUENTLY ASKED QUESTIONS

### What is an antimicrobial?

An antimicrobial can be defined as a substance that works to inhibit the growth and reproduction of microorganisms such as bacteria.

#### What is Microban® antimicrobial product protection?

Microban<sup>®</sup> is built-in protection for solid products, coatings and fibers. The technology works to inhibit the growth of microbes on a surface that can cause staining, bad odors and premature degradation. Microban<sup>®</sup> has a portfolio of more than 25 approved antimicrobial technologies that are selected and optimized for a broad range of product applications.

#### How does Microban® technology work?

Microban<sup>®</sup> antimicrobial technology works at a cellular level to continually disrupt the growth and reproduction of microorganisms. It operates a multi-modal attack, damaging the protein, cell membrane, DNA and internal systems of a microbe. Once infused into a product, Microban<sup>®</sup> antimicrobial technology will start to work as soon as a microorganism comes into contact with the protected surface.

#### How is Microban® incorporated into products?

Microban<sup>®</sup> antimicrobial additives can be supplied in powder, polymer pellet or liquid forms, depending on the product to be treated and the manufacturing process employed. For example, polymer masterbatches are supplied in a choice of carrier resins, closely matched to the virgin polymer to allow homogeneous mixing and distribution.



# Does Microban<sup>®</sup> product protection begin working immediately?

Microban<sup>®</sup> protection begins to work as soon as a microorganism comes into contact with the product surface. It then works continuously to maintain a consistently lower bio-burden than would be expected on a product without Microban<sup>®</sup> antimicrobial protection.

### What active ingredients are contained within Microban<sup>®</sup> antimicrobial additives?

Microban<sup>®</sup> antimicrobial additives are predominantly based on silver and zinc active ingredients. However, we have the world's largest portfolio of antimicrobial technologies that can be customized to suit almost any product application.

### What types of microorganisms does Microban<sup>®</sup> technology work against?

Microban<sup>®</sup> antimicrobial protection will inhibit the growth of most common bacteria, yeasts, molds and fungi. It has even been proven effective against a broad spectrum of gram-negative and grampositive bacteria.

### Does Microban<sup>®</sup> product protection reduce the need for regular cleaning?

No. Microban<sup>®</sup> antimicrobial technology is designed to complement existing cleaning practices and should not replace them. Regular cleaning practices should be maintained.

### Is Microban® technology a surface coating?

Microban<sup>®</sup> antimicrobial additives are used in a range of material types including polymers, coatings, ceramics and textiles. When incorporated into paints, lacquers or powder coatings, Microban<sup>®</sup> is designed to function in the coating only. However, when incorporated into solid materials such as polymers, Microban<sup>®</sup> is homogeneously distributed throughout the entire product.

### How do Microban<sup>®</sup> antimicrobial additives differ from disinfectants?

Unlike disinfectants which provide a limited residual activity once the treated surface dries, integrated Microban<sup>®</sup> antimicrobial technology works to continuously inhibit the growth of microbes throughout the entire life cycle of a product.

#### How durable is Microban® product protection?

Integrated Microban<sup>®</sup> product protection will remain present in a product for its expected lifetime. The technology will not wash off, leach out or wear away.

#### How is Microban® technology tested?

Microban<sup>®</sup> treated products are tested for their efficacy in accordance with internationally recognized standards such as ISO 22196:2007, JIS Z 2801:2000, ISO 20743:2007, JIS L 1902:2002, AATCC TM100, AATCC TM30 Pt III. The test method will be selected depending on the product type and antimicrobial additive used.

### How are antimicrobial additives regulated in North America?

The biocidal active components of Microban® antimicrobial additives are regulated by the Environmental Protection Agency as treated articles and are registered for their specific end use applications. FIFRA guidelines provide specific regulations on claims that can or cannot be made about treated articles. FIFRA provides pesticide regulation to protect applicators, consumers, and the environment.

### Is Microban<sup>®</sup> technology safe to use?

Microban<sup>®</sup> antimicrobial additives have undergone extensive independent laboratory testing and have a long history of safe use, across a wide range of product types. The biocidal active components of Microban<sup>®</sup> antimicrobial additives are regulated by the Environmental Protection Agency as treated articles and are proven safe and effective for their specific end use applications.

### Is Microban<sup>®</sup> technology approved for use in foodcontact applications?

For use in direct food contact applications, Microban® has a range of antimicrobial additives that are available. These are registered with the Environmental Protection Agency as additives which may be used in the manufacture of materials that come in direct contact with food. Microban® also has food contact additives that are registered with the Environmental Protection Agency (EPA) and the Food and Drug Administration (FDA) in the United States of America.

## Could Microban<sup>®</sup> technology be potentially harmful for the environment via waste water?

Microban<sup>®</sup> is a safe and effective antimicrobial technology. It is unable to enter the waste water as it is bound into the solid treated product during manufacture. Therefore, the potential to leach is negligible.



### Is it possible to recycle Microban<sup>®</sup>-treated polymer products?

The environmental fate of antimicrobial additives used within a polymer product is dependent on the antimicrobial type and the disposal method used to deal with the waste in question. These disposal methods can include incineration or landfilling of waste which may contain antimicrobial products.

Microban<sup>®</sup>-treated polymer products will contain the antimicrobial treatment until the end of their useful life and until recycled. The active antimicrobial additive will be present at low concentrations in the polymer matrix at the point of recycling. If, for example, the polymer is re-melted and mixed with other post consumer polymer waste of a similar type, the active antimicrobial will be diluted but remain in the resultant polymer blend. The antimicrobial efficacy will diminish as the additive is diluted during the recycling process.

#### Can Microban<sup>®</sup> technology create antibioticresistant strains of bacteria?

After more than 30 years of use in numerous consumer, industrial and medical applications around the world, there has been no evidence that Microban® additives create antibiotic-resistant strains of bacteria. Unlike antibiotics, Microban® technology has multiple modes of action which makes it harder for bacteria to form a resistance to its effects.

#### Does Microban® utilize nanotechnologies?

The antimicrobial products developed and used by Microban<sup>®</sup> are not based on nanotechnologies. Microban<sup>®</sup> consciously chooses not to use any form of nanotechnology in our antimicrobial additive portfolio because of concerns surrounding their negative effects on both the environment and human health.

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