



An example of a high-touch surface that can be protected by Drytac's Protac AMP antimicrobial film. Courtesy of Drytac.

Antimicrobial Protection for Print and Graphics: Yes, No, and Maybe

Antimicrobial solutions can help PSPs meet the continued demand for clean environments, but the benefits must be correctly stated.



By Patrick Henry,
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Word has been circulating in the printing and graphics industries about coatings and additives that protect not just against scratches, scuffs, mildew, odor, and mold, but reportedly against the spread of disease as well.

Full stop: these so-called antimicrobial treatments for printing substrates, fabrics, and textiles exist, and they offer genuine benefits. But, although the treatments may do everything their manufacturers say, print service providers and other end users must be cautious when stating what the products are intended for: the U.S. Environmental Protection Agency (EPA) forbids any and all public health claims based upon their use.

This means that antimicrobial treatments can't legally be promoted as preventative measures

against COVID-19 or any other sickness. Nevertheless, their advocates believe they have an important role to play in creating the clean environments that consumers will insist on inhabiting even after the pandemic is under control — as long as statements made about them don't transgress what the EPA permits.

Unfortunately, misinformation abounds. Gary Jones, director of environmental, health, and safety affairs for PRINTING United Alliance, says that the "wild, wild West" atmosphere of ill-informed claims surrounding antimicrobial solutions forces would-be adopters to "fill in the blanks" about what works, and what doesn't. Moreover, test results cited to validate the claims don't always align with the way germs behave in the real world.



But, none of this is an excuse for saying the legally unsayable. “You can’t market antiviral,” says Jeff Cheatham, director of sales for Fisher Textiles, adding that many textile and fabric providers didn’t initially understand the EPA’s stance on such statements. He notes that the picture is further clouded by the fact that some claims made for antimicrobial products in other countries can’t be repeated in the U.S. without breaking the rules.

This is why Drytac watches its language when it promotes Protac AMP, a surface protection film that uses ZPTech zinc-based antimicrobial technology by Microban. When it comes to product publicity, says Amanda Brown, global marketing manager, “all of our material is approved by Microban’s lawyers.”

Trust, but Verify

John P. Beadel, president of Associated Printing Productions (APPi), in Miami Lakes, Fla., came to this awareness as he looked for a

way to repair some of the damage that the pandemic had done to his commercial printing business, which caters to South Florida’s hard-hit cruise line, hospitality, and leisure industries. Beadel had heard about antimicrobial coatings for print, but he says he became suspicious of the unsupported claims made by the suppliers he approached initially.

His due diligence eventually led him to two sources he invited into a trusted partnership: Biomaster USA, the U.S. distributor of an antimicrobial agent made by Addmaster Ltd. in the U.K., and coating manufacturer Ctg2 Technologies, which blends the agent into a line of coatings it calls SHIELD that Beadel markets to his customers as APi Antimicrobial Protection.

The active ingredient, registered with the EPA as an approved antimicrobial substance, is based on silver ions — charged particles that keep bacteria from growing, producing cellular energy, or replicating. Charlie Matthews, co-owner of Biomaster

USA, explains that when the Biomaster technology is incorporated into a product such as a coating, the product then becomes a “treated article” that is exempt from further registration requirements by the EPA.

Printers who use Biomaster-infused coatings thus are free to repeat whatever the manufacturer permissibly can claim in the U.S. about the solution’s antimicrobial efficacy: for instance, that it provides effective and lasting antibacterial protection for the lifetime of the product it is being applied to. It’s also acceptable to state that a surface coated with Biomaster silver ions will be “99.99%+ cleaner” than an uncoated surface, according to Matthews.

Staying within these limits also gives fabric and textile providers plenty of scope to promote the legitimate benefits of antimicrobial protection.

For example, treating a polyester garment with an antimicrobial agent in the fabric “stops things growing and smelling in it,” giving the garment a longer useful life, says Michael L. Sanders, director of printable textiles and finishing technology for TVF. He notes that Nike, Under Armour, and other major brands were users of treated fabrics long before the appearance of COVID-19.

They’ve Got a Little List

But the water’s edge for publicity, as far as the EPA is concerned, is disease prevention. Matthews says the agency has “a whole list of things” that printers can’t assert about what antimicrobial coatings do, including claims that they are effective against the COVID-19 virus or any of its cousins. (The guidance document is EPA’s PRN 2000-1: Applicability of the Treated Articles Exemption to Antimicrobial Pesticides.)

He points out that even if scientific data in support of the claim were available, using language like “COVID killer” would still be verboten unless the coating had been registered with the EPA as a disinfectant: a process, according to Matthews, “that would take millions of dollars and many years” to complete. ▶

Solutions that combine ease of use with peace of mind are certain to catch the attention of print and graphics service providers in the hypersensitized climate surrounding COVID-19, even if the products can't be advertised as weapons against the pandemic.

But, the semantic confusion hasn't dampened anyone's curiosity. John Honaker, president of Ctg2 Technologies, reports being "inundated" with requests from printers as far away as Thailand for information about antimicrobial coatings. "I've lost count," he says.

In response, the company has published a "quick points" summary of the benefits and the limits the EPA places on what can be said about them. Honaker says he even offers to edit customers' promotional materials about antimicrobial protection so that they don't run afoul of the rules.

"We're very adamant — don't make unfounded or illegal claims," Beadel emphasizes. "You can't say

that it protects the person. You're not coating the person, you're coating the product." On the other hand, it's fair to assert that the Biomaster/Ctg2 combination affords "permanent protection of your printed product" within the scope of EPA's permission.

High Tech, High Touch

Brown notes that because Drytac's Protac AMP film offers three kinds of protection — against bacteria, fungi, and algae — it's an antimicrobial solution for any space with public access and a high frequency of surface contact.

She says that gyms, for example, might wrap treadmill handles with it; hotels could use it as a barrier for reception desks and elevator

buttons. These surfaces would still have to be cleaned regularly, but the underlying protection would be continuous. (Protac AMP was one of three Drytac products to win PRINTING United Product of the Year awards, which recognize the most outstanding print solutions available in 2020 produced by members of the PRINTING United Alliance.)

Sanders says that supplying antimicrobially treated material for face masks has been "humongous" for TVF lately as an offset to declines in other types of demand. "If you don't pivot," he observes, "you're out of the market."

Masks, however, are far from being the only products for which the company manufactures antimicrobial fabrics. TVF provides them mainly for home décor, signage, and apparel, its principal application areas. Its spotlight product for these markets — and another PRINTING United Alliance Product of the Year award winner — is Deko-Tex 7048AMPGFS, a polyester fabric with antimicrobial technology that meets test standards for reducing bacteria and mildew by 99.9%.

Disinfectex (DFX) fabrics from Fisher Textiles are treated with

Separation panels are one application for TVF's Deko-Tex 7048AMPGFS, a polyester fabric with antimicrobial technology that's said to reduce bacteria and mildew by 99.9%.
Courtesy of TVF.



HeiQ V-BLOCK, a silver-based technology that makes them hygienic and suitable for sublimation printing. Like Sanders, Cheatham reports that customers are buying DFX fabrics to make COVID-related items such as face masks, gowns, and gaiters.

He says that a different kind of application is separation dividers for restaurants, offices, and other environments in lieu of smudge-prone, hard-to-keep-clean plexiglass barriers. They're created by mounting DFX fabrics in silicone edge graphic frames, a type of display hardware commonly seen at trade shows.

Cheatham points out that it would be fair to say that an antimicrobial fabric like DFX doesn't let bacteria "nest and fester" and, as a result, "does give you a cleaner, healthier product" than an untreated fabric. The sanitation can be added at a cost of "a penny a square foot" with DFX fabrics, he says. ▶

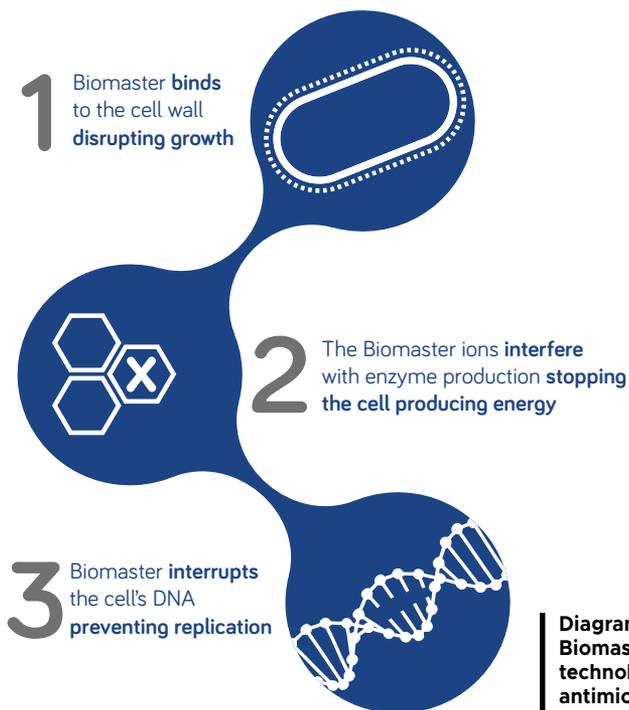


Diagram showing how Biomaster silver-ion technology provides antimicrobial protection. Courtesy of Biomaster.

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Post-Pandemic Market Opportunity

Solutions that combine ease of use with peace of mind are certain to catch the attention of print and graphics service providers in the hyper-sensitized climate surrounding COVID-19, even if the products can't be advertised as weapons against the pandemic. Polymeric Group, a maker of industrial inks and coatings with roots in the screen printing industry, is one supplier that recognized the opportunity long before the outbreak struck.

This was in 2011, when the company developed and patented

SilvaKure, a silver-ion-based additive for its FORTIFI line of UV-curable and water-based functional coatings. Polymeric Group now offers to license its SilvaKure coating technology to other companies seeking a first line of defense against microbial contamination and its ill effects. A press release said efficacy testing had shown FORTIFI to be "up to 99.999% effective in preventing bacterial growth for common and problematic bacteria."

The coatings use an EPA-registered active ingredient, but the entire coating must be tested for efficacy against biological and

viral agents before any benefit statements can be made for it. Terry Amerine, the company's VP of sales and marketing, says Polymeric Group plans to seek EPA registration once it has the necessary testing data.

Amerine believes that because of the heightened awareness of risk driven by COVID-19, "virtually any customer" would welcome having their printed products treated with SilvaKure-augmented FORTIFI coatings. "Creating environments that customers feel safe in is tantamount," he says. This convinces him that antimicrobial protection will move from "nice to have, to have to



By Paul Roba, Industry Consultant

This article was originally published on the PRINTING United Alliance Printing Press Blog.

Antimicrobials: What Installers Need to Know

Being in the graphics industry for more than 30 years, I have occasionally come across requests for information on antimicrobial coatings and films. In the past, I pushed these off by saying I did not have any knowledge and moved onto an area I knew more about.

However, with the advent of the COVID-19 pandemic, hospital and public space cleanliness concerns, and increases in infections, the times have changed. It is now necessary to learn more about antimicrobial agents, and how they may affect our lives by reducing and eliminating viruses, bacteria, fungi, etc. What are some of these products, how do they work, and how do we understand them at a very basic level?

What Are Antimicrobials?

Antimicrobial products kill or slow the spread of microorganisms. Microorganisms include bacteria, viruses, protozoans, and fungi such as mold and mildew.¹ You may find antimicrobial products in your home, workplace, or school.

There are many products that have antimicrobial characteristics. These products can be clear polyester or cast films (as protective

laminates), fabrics and textiles, and applied coatings. The specific product may be used in different applications, have limited life of efficacy, have different compositions to aid in the interruption of the lifecycle of organisms, and may only be effective on certain pathogens.

Typically, the antimicrobial incorporates the use of silver, copper, titanium dioxide, and/or structured surfaces to interrupt the lifecycle processes of bacteria. Each of these reacts similarly by limiting the growth or replication of the cells. Some will bind with the cell and cause disruption of energy and enzyme function, plus minimize cell reproduction. Others create a physical barrier where the cells are unable to reach each other and replicate, therefore minimizing the number of bacteria, and causing eventual decay.

What to Look For

When evaluating microbials, look for independent or government lab testing and information on data sheets to understand what pathogens the specific product may be effective against. Match the performance to the ultimate end use, and follow the manufacturer's guidelines for use, and maintenance.

It is especially important to understand that an antimicrobial is not a cleaning/disinfecting process or product. Manufacturers will provide guidelines of how to disinfect a surface with recognized protocols and cleaners prior to the installation or maintenance of the antimicrobial product.

Even after installation, microbials should not be considered a be-all and end-all in the fight against bacteria, fungi, and viruses. These agents may improve the reduction of bacteria and germs, but do not replace the proper cleaning and disinfecting attributes associated with frequent and proper hand washing and use of recognized disinfectants during cleaning.

Be diligent in your battle with bacteria, and look for government, independent lab, and real-world testing, which supports the claims of any antimicrobial product or coating.

¹ *What are Antimicrobial Pesticides?; U.S Environmental Protection Agency, Office of Prevention, Pesticides, and Toxic Substances, Office of Pesticide Programs, U.S. Government Printing Office: Washington, DC, 2010.*

have” as a specification for printed materials of all kinds.

For example, a hotel that once might have balked at the added cost of antimicrobial wallcoverings now would see the expense as necessary to reassuring its guests. A decision whether to germ-proof retail signage, likewise, would come down to “where does it have to be, versus where does the customer perceive it needs to be,” Amerine says.

Beadel says he is seeing this kind of urgent demand from his cruise line customers, who want their passengers to know they are sailing in “sterile cabins” with equally sterile printed matter such as daily bulletins of shipboard activities. He identifies theme parks, resorts and hotels, hospitals, schools, airlines, and senior centers as other prime markets for antimicrobially coated print.

World War Against Germs

“This is risk mitigation, not risk elimination,” Amerine stresses. Nevertheless, he thinks that because people’s desire to be protected from germs will not end with the suppression of the pandemic, the market for microbe-thwarting printed products will continue to grow — especially when it comes to menus and other items “with a high degree of retouch.”

Fabric and textile manufacturers also foresee playing a long game in the market for antimicrobial protection. Cheatham thinks that as customers learn what kinds of protection antimicrobial treatment provides and how economical it can be, they’ll conclude, “why not have that extra step.” But, he also acknowledges that while interest will continue, many customers are “in hibernation” right now as far as

long-term planning is concerned.

“We really don’t know what our industries are going to want,” he says.

But, as Sanders points out, COVID-19 probably won’t be the last viral epidemic that the world will have to deal with — a reality that should sustain a general demand for antimicrobial fabrics and textiles in the future.

“We’re in a whole new place, and it’s going to be like a flu shot,” he says. Even if the comparison isn’t meant to be taken literally, “when people feel better about something, they’re going to wear it and use it.” ■

Patrick Henry is a senior editor for NAPCO Media’s Printing & Packaging Group. He has covered the graphic communications industry since 1984 and is the recipient of multiple awards for industry education and service.



John Beadel (left), president of Associated Printing Productions (APPi), partnered with Biomaster USA and Ctg2 Technologies to introduce a line of coatings he offers as APPI Antimicrobial Protection. With him are Peter Lundberg, VP; Julian Acosta, lead pressman; and Marni Bauman, general manager.
Courtesy of APPI.