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2015 Buyers’ Guide
Antimicrobial Fabrics Aim to Help Prevent Healthcare Associated Infections

University of Arizona study reveals 99.99 percent antimicrobial efficacy of fiber embedded with silver

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In the United States, more than 1.7 million people per year contract healthcare associated infections (HAIs) during hospital stays. This costs the healthcare system, and the broader economy, tens of billions of dollars annually. Patients enter hospitals to receive medical care and recover from illnesses and injuries. Because of these HAIs, patients can leave worse off than when they entered – if they are able to leave the hospital at all. According to the Centers for Disease Control and Prevention (CDC), an estimated 75,000 patients with infections picked up in healthcare facilities die from the infection each year in the U.S.

While solving the issue of HAIs is by no means simple, the textile industry has the opportunity to play a significant role in mitigating this issue through the production of antimicrobial fabrics. Some of the most critical tools for stopping disease are also some of the most routine. Sterilized instruments, clean
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bedding, gloves and masks, and regular hand washing all add up to the protective regimen that must be maintained to keep HAIs from spreading. Yet, despite intricate cleaning procedures, many of the germs that cause HAIs live and grow on bed linens, towels, hospital gowns, privacy curtains and other fabrics meant to keep patients clean and comfortable during their stay.

The challenge to textile manufacturers and healthcare professionals alike is in finding the right antimicrobial fabric that is not only capable of killing dangerous bacteria upon first use but also after a hundred industrial washes.

PROVEN TEXTILE TECHNOLOGY

The University of Arizona revealed the findings from a recent study commissioned by PurThread Technologies, Inc., on the antimicrobial capabilities of novel fabrics embedded with silver at IDWeek™, premier meeting on infectious disease prevention in the U.S. In the study, PurThread's silver-embedded fabrics were shown to kill 99.99 percent of bacteria such as MRSA, Salmonella, E. coli and P. acnes within four hours of contact.

A naturally occurring element with unique antimicrobial properties, silver kills hundreds of different types of bacteria and has been used by humans for centuries to protect against the spread of infection. By interrupting the chemical bonds needed to hold a bacterial cell together, silver causes the cells to literally fall apart.

However, when it comes to creating antimicrobial textiles using silver, there are many differences that hospitals and manufacturers alike must be aware of. Most antimicrobial textiles that use silver fall into three categories: fabrics dipped or coated in a silver solution, fabrics embedded with silver, and fabrics woven with silver threads. Each of these fabrics uses different processes and silver types in order to make the fabric antimicrobial.

SILVER DIPPED/COAT FABRIC

Fabrics can be coated or dipped in a silver solution to create an antimicrobial shield following the manufacture of the product. This method has been shown to kill bacteria, particularly when the product is new. However, as fabric wears, the silver coating on a dipped fiber can erode, opening patches to bacteria and thus weakening the antimicrobial efficacy. Additionally, dips and coatings can be applied unevenly, leaving parts of the fabrics unprotected. Textile manufacturers considering a silver dip should also consider that after several washes, particularly industrial washes that are required in the healthcare industry, the antimicrobial effects of the dip can be lost to the wash.

For manufacturing, dipped or coated fabric does require an additional step in the manufacturing process but does not present any other significant manufacturing challenges.

SILVER EMBEDDED FIBERS

Textiles manufactured with PurThread's silver embedded fiber are the type of fiber tested by the aforementioned University of Arizona study. With this method, silver is added at the molten stage before the fiber is pushed through the spinneret, allowing for uniform incorporation throughout the fiber. Keeping the levels of silver consistent throughout the fiber helps ensure uniform antimicrobial activity in a way dipped or coated fibers may not.

PurThread's novel method of embedding micro particles of silver into the fiber protects the silver from washing out, so the fiber remains fully effective at killing bacteria; multiple third-party testing of PurThread fabrics have shown no change in antimicrobial activity after 100 industrial launderings. From a manufacturing perspective, because PurThread is inside the fiber, there are no challenges to the manufacturing process – no specialized equipment or handling is required. Additionally, the silver-embedded fiber blends well with other yarns, including technical yarns; dyes well in white, black or color; withstands chlorine bleach and peroxide; and is available in fine denier, high tenacity polyester in staple and filament. For consumers, hospitals and patients, the fabrics feel and function

A reusable bag made from Purthread's silver embedded fiber. The company's novel method of embedding micro particles of silver, keeps its antimicrobial properties from being washed out over time.
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like a regular fabric.

FABRIC WOVEN WITH SILVER

Textiles woven with silver threads are another way in which manufacturers can make their products antimicrobial. When silver is woven into the fabric, it does not lose antimicrobial properties as easily through laundering, but the weaving process changes the look and feel of the material, typically adding striping to the fabric. While appearance is typically less of a concern for hospitals and healthcare facilities, manufacturers should consider the effect of woven silver on their equipment and process. Threads of silver can gum up weaving machines, making manufacturing more demanding and in some cases, causing manufacturing equipment to malfunction.

SILVER AND THE ENVIRONMENT

Silver is a naturally occurring element with unique antimicrobial properties that has been used for centuries to prevent infections, preserve drinking water and more. Silver ions are effective against a broad range of microorganisms and unlike some antibiotics; there is so far scant evidence for emerging bacterial resistance to silver.

The only lingering concern regarding silver and its effect on humans and the environment lies in the disposal of nano-silver particles. For humans, there is some evidence that suggests it is possible for nano-silver to penetrate the skin. While there is not enough research to conclude that this type of silver is dangerous, there is concern that silver penetrating skin could lead to cellular changes. For this reason, it is important that manufacturers seek a silver option that is an ionic micro particle. This size particle is too large to penetrate the skin and is safe for the environment.

WHAT’S NEXT

Society is blessed with better knowledge of pathogens today, and the next evolution in infection control will likely come about from more targeted research and patient adaptation of new technologies. But consumers should also be grateful for the little things that strengthen the current healthcare system, making it more resilient in the face of infections. One should also remember that even the seemingly small innovations might make the biggest difference.

There are thousands of companies, large and small, working on these kinds of unglamorous but critical innovations that help make hospitals safer and more sanitary places. As these infections can spread through fabrics, textile companies worldwide have the opportunity to be on the forefront of a minor change that can save lives.

For more information visit: www.purthread.com

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About Us
We do the Job which focus on Synthetic Fiber Technology and Equipment.
Our company devote to Technology development, Engineering scheme,Main technical process, Equipment manufacturing and “Turn-Key” Engineering Services

We Offer
PET POY/FDY Line
PET Bottle Flakes Recycling POY Line
PA POY/FDY Line
Micro Filaments POY/FDY_PP POY/FDY/BCF Line
All Type of Chemical Fiber Extruders/CPF
Old Spinning Project Modification
Engineering General Contractor (EPC)
Technical Engineering General Contractor (TEPC)
Project Consultant (PC)
Project Supervision (PS)
Joint Explore (JE)